

## PRESSURE VESSEL & COLUMN INSPECTION REPORT

LSD: 07-27-051-19W5M

Date: JULY 10, 2014

SAP Equipment ID: 66177833

VESSEL STATIC DATA						
Plant		Ansell Gas Plant		Op Unit		System
Prov. Insp. #		A0583706		CRN		R-2294.213
Equipment Description		Glycol Flash Separator		Serial #		2011-8230-01
Manufacturer		Alco Gas & Oil		Vessel Class		
Internal Access:		no		Description:		Year Built
MAWP		250		PSI		@ 200 °F
CODE : U		RT : 2		PWHT : no		
Diameter		12.75 in		Length (s/s)		60 in
Shell		Mat'l SA-106-B		Thickness		0.375 in
Head		Mat'l SA-516-70		Thickness		0.280 in
Nozzle		Mat'l		Thickness		in
Internal Coating:		YES — NO		Internal Clad :		YES — NO
Manway :		no		Inspection Port :		no
Nozzle Rating		lb ANSI		Painted :		yes
				Insulated		no
PROCESS DATA						
Product Description		Glycol		Sweet		
Operating Pressure		PSI		Operating Temperature		°F
PSV STATIC DATA						
Serial No.	Location	Set Pressure	Capacity SCFM / Lbs/Hr / GPM	Manufacturer	Model / Type	Service Date / Company
693349	Top head	250psi	2089scfm	Mercer	8134251V13 G11	02-Sep-2011. Wizard. PSV- 2493-08
PSV DETAILS						
	Type (Thread/Flange)		ANSI Rating		Size (in)	
PRD Inlet	Threaded				1.5"	
PRD Outlet	Threaded				2"	
NDE Equipment records						
Procedure#	Description	Manufacturer	Model#	Serial#	Due Date	

### INSPECTION SUMMARY

A visual external inspection was conducted on vessel. In plant 1 dehy building. Plant 1 down at time of inspection. Dataplate secure and legible. Vessel and piping are in good condition, piping well supported. No significant paint deterioration found. Vessel skirt securely welded to skid floor. Inspection port present in skirt. Ground cable securely attached to skid. PSV service up to date, set at MAWP, vents to flare header. UT inspection performed 2014 by Streamline Inspection.

Vessel was found to be in good condition and fit for continued service.

### RECOMMENDATIONS

Review UT survey results.

### NONCONFORMANCES / INSPECTION DEFICIENCIES

No deficiencies noted

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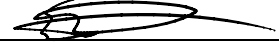
SAP Equipment ID: 66177833

**INSPECTION PLANNING**

Inspection Strategy	Availability	Inspection Interval
Inspection Date July 10, 2014	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	Ed Tymensen		Date	July 10, 2014	
Company	Streamline Inspection	PESL #	000711	API #	27479
Reviewed and Approved by			Date		
		PESL #		API #	
Criticality Assessment Rerun		Inspection Planning Rerun			
Assessed Next Inspection Date					

## PRESSURE VESSEL & COLUMN INSPECTION REPORT

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### DETAILED INSPECTION VISUAL EXTERNAL

ID	Description	Condition	Location	NCR	Comments
V1	General Other (Please Explain)	Good			Overall
V2	General Corrosion	n/a			No corrosion noted
V3	General Leaks	n/a			No leaks noted
V4	Vibration	n/a			
V5	Dissimilar Flange Rating	n/a			Threaded piping
V6	Ladder/Stairway	n/a			
V7	Heads	Good			No corrosion or damage noted
V8	Guy Wires	n/a			
V9	Electrical Ground	Good	Attached to skid		Ground cable present and secure
V10	Painted Inactive Corrosion	n/a			
V11	Coating/Painting	Good			No deterioration noted
V12	Expansion Joint or Bellows	n/a			
V13	Gauge/Site Glass	Good	temp, level, pressure		Gauges clear and legible
V14	Shell	Good			No corrosion or damage noted
V15	Jacket	n/a			
V21	Support Other (Please explain)	Good	Piping		Well supported
V22	Foundation	Good			Vessel on steel skid.
V23	Anchor Bolts	n/a			
V24	Saddle/Skirt	Good	Skirt		Welded to skid, inspection port present
V25	Davit	n/a			
V26	Fireproofing	n/a			
V31	Connections Other (Please explain)	Good			All connections appear secure
V32	Small Branches	Good	Tubing		No leaks or kinks
V33	Nozzles	n/a			
V34	Manways	n/a			
V35	Reinforcing Pads	n/a			
V36	Inadequate Thread Engagement	n/a			
V37	Bolting	n/a			
V38	Flanges	n/a			
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	n/a			
V51	Relief Devices Other (Please explain)	Good	Top head		Service up to date, set at MAWP
V52	Corrosion	n/a			None noted
V53	Leaks	n/a			None noted
V54	Restricted Inlet/Outlet	n/a			
V55	Manual Operation Lever	n/a			

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LSD: 07-27-051-19W5M

Date: JULY 10, 2014

SAP Equipment ID: 66177833

### DETAILED INSPECTION VISUAL INTERNAL

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

### DETAILED INSPECTION OTHER TECHNIQUES

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

### DETAILED INSPECTION UT THICKNESS

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

## PRESSURE VESSEL & COLUMN INSPECTION REPORT

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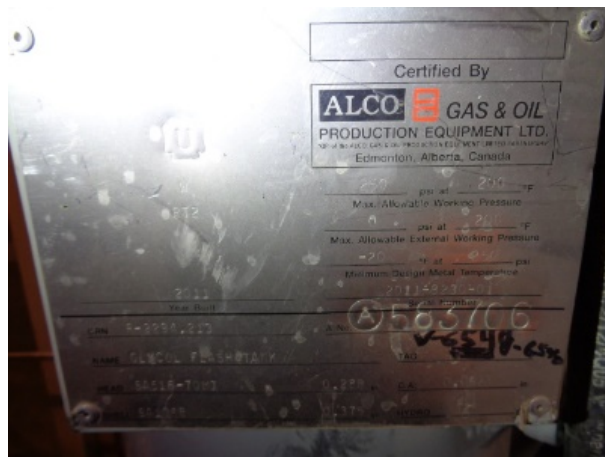
Date: JULY 10, 2014

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### PHOTOS



LSD sign



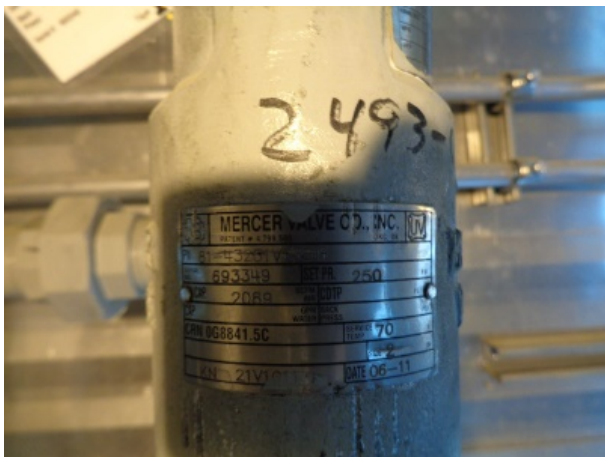
DATAPLATE



VESSEL OVERVIEW



PSV SERVICE TAG



PSV DATAPLATE



PSV DATAPLATE

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**PHOTOS**

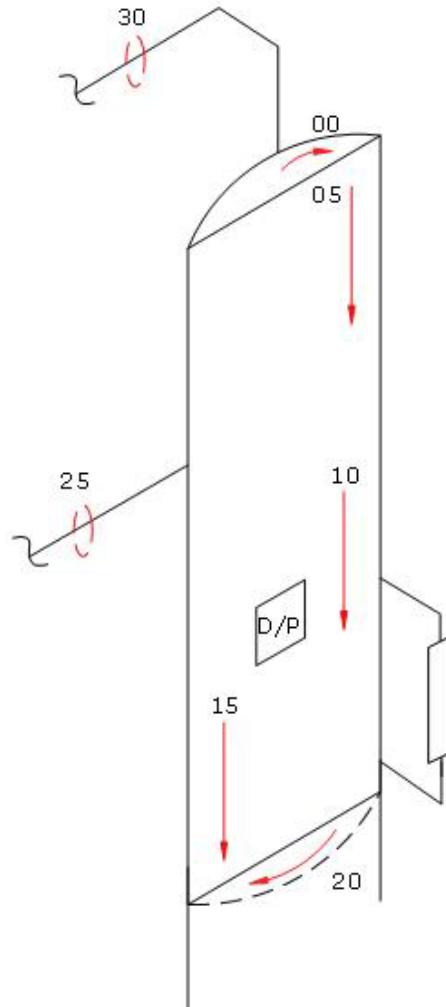


PSV OVERVIEW

Location Name:	ANSELL GAS PLANT	LSD:	07-27-051-19W5
A#:	A0583706	Equipment/Tag No.	V-6540
Equipment Description:	GLYCOL FLASH SEPARATOR	Serial Number:	2011-8230-01
MAWP:	250 PSIG	CRN: (or other ID#)	R2294.213
Shell Material:	SA 106 B	Design Temp:	200°F
Shell Thickness:	0.375"	Head Material:	SA 516 70
Corrosion Allowance:	0.0625"	Head Thickness:	0.280"
Size:	12.75"	Date Built:	2011
		Manufacturer:	ALCO

Notes:









## Ultrasonic Corrosion Survey

Survey Name: Husky Energy

Date: Jul 11, 2014

Inspector: C. Graham

LSD: 07-27-051-19W5      Area: Ansell      Location: Gas Plant  
A #: A0583706      Tag Number: V-6540      Vessel Name: Glycol Flash Separator  
CRN: R2294.213      Year Built: 2011      Serial Number: 2011-8230-01  
Vessel CA: 1.5875 mm      Manufacturer: Alco  
Shell MAWP: 250psi      MAWTF: 200°F      Tube MAWP:      MAWTF:

<b>TML Description</b>		Baseline				<b>Material:</b>	SA-516-70
<b>00</b>	Head	<b>2014</b>	<b>Flag</b>	<b>CA</b>	<b>Nominal</b>	<b>T Min</b>	<b>Corr. Rate</b>
<b>Shape:</b>	Ellipsoidal	<b>Min</b>	9.300	5.525	1.588	7.112	
<b>OD:</b>	12.75"	<b>Avg</b>	9.420				<b>Remaining Life:</b>
<b>Spec:</b>	ASME VIII Div.1	<b>Comments:</b>					<b>Retirement Date:</b>

<b>TML Description</b>		Baseline				<b>Material:</b>	SA-106-B
<b>05</b>	Shell	<b>2014</b>	<b>Flag</b>	<b>CA</b>	<b>Nominal</b>	<b>T Min</b>	<b>Corr. Rate</b>
<b>Shape:</b>	Cylindrical	<b>Min</b>	9.630	7.938	1.588	9.525	
<b>OD:</b>	12.75"	<b>Avg</b>	9.750				<b>Remaining Life:</b>
<b>Spec:</b>	ASME VIII Div.1	<b>Comments:</b>					<b>Retirement Date:</b>

<b>TML Description</b>		Baseline				<b>Material:</b>	SA-106-B
<b>10</b>	Shell	<b>2014</b>	<b>Flag</b>	<b>CA</b>	<b>Nominal</b>	<b>T Min</b>	<b>Corr. Rate</b>
<b>Shape:</b>	Cylindrical	<b>Min</b>	9.680	7.938	1.588	9.525	
<b>OD:</b>	12.75"	<b>Avg</b>	10.030				<b>Remaining Life:</b>
<b>Spec:</b>	ASME VIII Div.1	<b>Comments:</b>					<b>Retirement Date:</b>

<b>TML Description</b>		Baseline				<b>Material:</b>	SA-106-B
<b>15</b>	Shell	<b>2014</b>	<b>Flag</b>	<b>CA</b>	<b>Nominal</b>	<b>T Min</b>	<b>Corr. Rate</b>
<b>Shape:</b>	Cylindrical	<b>Min</b>	9.680	7.938	1.588	9.525	
<b>OD:</b>	12.75"	<b>Avg</b>	9.910				<b>Remaining Life:</b>
<b>Spec:</b>	ASME VIII Div.1	<b>Comments:</b>					<b>Retirement Date:</b>



## Ultrasonic Corrosion Survey

Survey Name: Husky Energy

Date: Jul 11, 2014

Inspector: C. Graham

LSD: 07-27-051-19W5    Area: Ansell    Location: Gas Plant  
A #: A0583706    Tag Number: V-6540    Vessel Name: Glycol Flash Separator  
CRN: R2294.213    Year Built: 2011    Serial Number: 2011-8230-01  
Vessel CA: 1.5875 mm    Manufacturer: Alco  
Shell MAWP: 250psi    MAWTF: 200°F    Tube MAWP:    MAWTF:

<b>TML Description</b>		Baseline				<b>Material:</b>	SA-516-70
<b>20</b>	Head	<b>2014</b>	<b>Flag</b>	<b>CA</b>	<b>Nominal</b>	<b>T Min</b>	<b>Corr. Rate</b>
<b>Shape:</b>	Ellipsoidal	<b>Min</b>	8.860	5.525	1.588	7.112	
<b>OD:</b>	12.75"	<b>Avg</b>	9.190				<b>Remaining Life:</b>
<b>Spec:</b>	ASME VIII Div.1	<b>Comments:</b>					<b>Retirement Date:</b>

<b>TML Description</b>		Baseline				<b>Material:</b>	A-234-WPB
<b>25</b>	Piping	<b>2014</b>	<b>Flag</b>	<b>CA</b>	<b>Nominal</b>	<b>T Min</b>	<b>Corr. Rate</b>
<b>Shape:</b>	360° Circ	<b>Min</b>	5.510	4.845	0.692	5.537	
<b>OD:</b>	2.375"	<b>Avg</b>	5.640			Assumed	<b>Remaining Life:</b>
<b>Spec:</b>	ASME B31.3	<b>Comments:</b>					<b>Retirement Date:</b>

<b>TML Description</b>		Baseline				<b>Material:</b>	A-234-WPB
<b>30</b>	Piping	<b>2014</b>	<b>Flag</b>	<b>CA</b>	<b>Nominal</b>	<b>T Min</b>	<b>Corr. Rate</b>
<b>Shape:</b>	360° Circ	<b>Min</b>	5.590	4.845	0.692	5.537	
<b>OD:</b>	2.375"	<b>Avg</b>	5.840			Assumed	<b>Remaining Life:</b>
<b>Spec:</b>	ASME B31.3	<b>Comments:</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 Code Rules, Section VIII, Division 1

A583706

1. Manufactured and certified by Alco Gas & Oil Production Equipment LTD. 5203 75th St., Edmonton, Alberta T6E 5S5 Canada  
(Name and address of manufacturer)  
2. Manufactured for Husky Oil Operations Ltd - Box 4490 Station D, Calgary, AB T2P 3G7  
(Name and address of purchaser)  
3. Location of installation EDSON, AB  
(Name and address)

4. Type: VERTICAL 2011-8230-01 R-2294.213 D-2003-6970-01-001/1R1 N/A 2011  
(Horiz. or vert., tank) (Mfrs serial No.) (CRN) (Drawing No.) (Nat'l. Bd. No.) (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 EDITION  
to \_\_\_\_\_ Year

6. Shell: SA-106B 3/8" 1/16" 12" 5' 0"SM/SM  
(Material spec. number, grade) (Nominal thickness) (Corr. allow.) (Inner diameter) (Length (overall))  
7. Seams: SEAMLESS N/A 100% N/A N/A TYPE 1 SPOT 70% 1  
Long. (Welded, Dbl., Sngl., Lap, Butt) R.T. (Spot or Full) Eff. (%) H.T. Temp. (° F) Time (hr) Girth (Welded, Dbl., Sngl., Lap, Butt) R.T. [Spot, or Full] Eff. (%) No. of Courses  
8. Heads: (a) Matl. SA-516Gr.70MT (b) Matl. SA-516Gr.70MT  
(Spec. No., Grade) (Spec. No., Grade)

Location (Top, Bottom, Ends)	Minimum Thickness	Corrosion Allowance	Crown Radius	Knuckle Radius	Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure (Convex or Concave)
(a) TOP	0.280"	1/16"	N/A	N/A	2:1	N/A	N/A	N/A	Concave
(b) BOTTOM	0.280"	1/16"	N/A	N/A	2:1	N/A	N/A	N/A	Concave

If removable, bolts used (describe other fastenings) N/A  
9. MAWP: 250 PSI 0 PSI at max. temp. 200°F 200°F  
(internal) (external) (internal) (external)  
Min. design metal temp. -20°F at 250 PSI Hydro., pneu., or comb. test pressure Hydrostatic 325 PSI  
10. Nozzles, inspection and safety valve openings:

Purpose (Inlet, Outlet, Drain)	No.	Diam. or Size	Type	Matl.	Nom. Thk.	Reinforcement Matl.	How Attached	Location
INLET	1	2"	TOL	SA105N	CL6000	N/A	UW16.1(a)	SHELL
GAS OUTLET	1	2"	TOL	SA105N	CL6000	N/A	UW16.1(a)	TOP HEAD
LIQUID OUT	1	1"	COUPLING	SA105N	CL6000	N/A	UW16.1(c)	SHELL
LC / INSP	1	2.375"	TOL	SA105N	CL6000	N/A	UW16.1(a)	SHELL
LG / TI / INSP	4	1.050"	TOL	SA105N	CL6000	N/A	UW16.1(a)	SHELL
PRESS IND	1	1/2"	TOL	SA105N	CL6000	N/A	UW16.1(a)	SHELL
INSPECTION	1	1.050"	TOL	SA105N	CL6000	N/A	UW16.1(a)	TOP HEAD
H.C. SKIMMER	1	1"	TOL	SA105N	CL6000	N/A	UW16.1(a)	SHELL

11. Supports: Skirt Yes Lugs NO Legs NO Other ----- Attached Welded To Bottom Head  
(Yes or no) (No.) (No.) (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: N/A

(Name of part, item number, Mfr's. name and identifying stamp)  
NO-IMPACT TEST EXEMPT PER UG 20 (f), TOL & COUPLING PER UCS-66(c) / RT PER UW-11(a)5(b)  
PSV LOCATED IN PIPING / GLYCOL FLASH TANK CAPACITY 4.3 FT<sup>3</sup>  
AS BUILT DRAWING D-2011-8230-01-001/001 R0 / HYDROTESTED HORIZONTALLY

<b>CERTIFICATE OF SHOP/FIELD COMPLIANCE</b>	
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 Code for Pressure Vessels, Section VIII, Division 1. "U" Certificate of Authorization No. <u>14259</u> expires <u>October 7, 2013</u>	
Date <u>AUG. 4, 2011</u> Co. name <u>Alco Gas &amp; Oil Production Equipment LTD.</u>	Signed <u>[Signature]</u> (Representative)
(Manufacturer)	
<b>CERTIFICATE OF SHOP/FIELD INSPECTION</b>	
Vessel constructed by <u>Alco Gas &amp; Oil Production Equipment LTD.</u> at <u>5203 75th St., Edmonton, Alberta T6E 5S5 Canada</u>	
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 <u>ALBERTA</u> and employed by <u>ABSA</u> have inspected	
the component described in this Manufacturer's Data Report on <u>AUGUST 4, 2011</u> , and state that, to the best of my knowledge and belief, the Manufacturer has constructed this pressure vessel in accordance with ASME Code, Section VIII, Division 1. By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his 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 <u>04 AUG 2011</u> Signed <u>[Signature]</u> Commissions <u>AB 136 NB 12304 A, B, N</u>	(Authorized Inspector) (Nat'l Board (incl. endorsements) State, Prov. and No.)