

PRESSURE VESSEL & COLUMN INSPECTION REPORT

LSD: 12-05-054-20w5m

Date: May 4, 2015

SAP Equipment ID: 66068139

VESSEL STATIC DATA									
Plant Galloway Plant				Op Unit			System		
Prov. Insp. # A0465811				CRN P-7688.2			Equip Tag # 052139		
Equipment Description Stabilizer Tower							Serial # 2001-6729-01		
Manufacturer Alco Gas & Oil							Vessel Class		
Internal Access: Description: 3" nozzle btm shell							Year Built 2001		
MAWP 230		PSI		@ 294		°F		MDMT -20 °F	
CODE : U				RT : 2			PWHT : No		
Diameter 20in		Length (S/S)		in		OAL		mm	
Shell Mat'l SA-106-B		Thickness		0.375		in		Corr Allowance 0.0625 in	
Head Mat'l SA-516-70		Thickness		0.270		in		Corr Allowance 0.0625 in	
Nozzle Mat'l		Thickness				mm / in		Corr Allowance mm	
Internal Coating:				Internal Clad :			Capacity cuft		
Manway : NO				Inspection Port : YES			Skirt		
Nozzle Rating 150		lb ANSI		Painted : YES			Insulated NO		
PROCESS DATA									
Product Description Condensate						Sweet			
Operating Pressure 70				PSI		Operating Temperature 250 °F			
PSV STATIC DATA									
Serial No.	Location	Set Pressure	Capacity SCFM	Manufacturer	Model / Type	Service Date / Company			
437853-1-A11	shell	230psi	3675	Farris	26ha10-120	Wizard 30-May-11			
PSV DETAILS									
	Type (Thread/Flange)			ANSI Rating			Size (inches)		
PRD Inlet	Flanged			150			1.5"		
PRD Outlet	Flanged			150			3"		
NDE Equipment Records									
Procedure#	Description	Manufacturer	Model#	Serial#	Due Date				

INSPECTION SUMMARY

Vessel and piping are insulated and clad, cladding in good condition. Vessel and piping are well supported and secure. Dataplate secure and legible. PSV service up to date, set at MAWP, vents to flare header. UT corrosion survey conducted by Streamline May 2015. Appears to be minor weeping from control flange on return line from stab. reboiler. No access to btm skirt inspection port.

RECOMMENDATIONS

Check / replace flange gasket.
Consider cutting inspection port in skirt in an accessible location.

NONCONFORMANCES / INSPECTION DEFICIENCIES

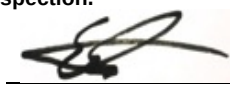
None noted

INSPECTION PLANNING

Inspection Strategy	Availability	Inspection Interval
Inspection Date May 4, 2015	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	May 4, 2015
Company	Streamline Inspection Ltd	PESL #	000711	API # 27479
Reviewed and Approved by			Date	
		PESL #		API #

PRESSURE VESSEL & COLUMN INSPECTION REPORT

LSD: 12-05-054-20w5m

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Criticality Assessment Rerun

Inspection Planning Rerun

Assessed Next Inspection Date

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DETAILED INSPECTION VISUAL EXTERNAL

ID	Description	Condition	Location	NCR	Comments
V1	General Other (Please Explain)	Good			Overall no significant concerns observed
V2	General Corrosion	N/A			No corrosion concerns noted
V3	General Leaks	Good	control flange on return from stab. reboiler		minor weeping
V4	Vibration	N/A			
V5	Dissimilar Flange Rating	Good			None noted
V6	Ladder/Stairway	N/A			
V7	Heads	Good			No concerns noted only btm head visible
V8	Guy Wires	N/A			
V9	Electrical Ground	Good			Securely grounded Ground cable securely connected to skid.
V10	Painted Inactive Corrosion	N/A			
V11	Coating/Painting	Good			No significant failures observed only btm head and uninsulated piping / nozzles visible
V12	Expansion Joint or Bellows	N/A			
V13	Gauge/Site Glass	Good	pressure, temp, level		Working within design limits clear and legible
V14	Shell	N/A			insulated and clad
V15	Jacket	N/A			
V21	Support Other (Please explain)	Good	piping		well supported
V22	Foundation	Good			No concerns noted steel skid on steel piles
V23	Anchor Bolts	Good			Securely in place
V24	Saddle/Skirt	Good	skirt		Securely in place no access to skirt inspection port
V25	Davit	N/A			
V26	Fireproofing	N/A			
V31	Connections Other (Please explain)	Good			all threaded connections appear secure
V32	Small Branches	Good	tubing		No significant sign of strain or concerns
V33	Nozzles	Good			No stresses, corrosion or misalignment
V34	Manways	N/A			
V35	Reinforcing Pads	N/A			insulated
V36	Inadequate Thread Engagement	Good			No concerns noted
V37	Bolting	Good			Intact with no missing bolts or short bolting
V38	Flanges	Fair	Return line from stab reboiler control flange		minor weeping
V39	Leak Clamps	N/A			
V41	Insulation Other (Please explain)	Good	shell and piping		No evidence of CUI or other concerns insulated and clad
V42	Damage	Good			None noted
V43	Penetrations	Good	UT ports		Coverplates in place
V44	Insulation Jacket	Good	shell and piping		No concerns tin clad
V45	Banding	N/A			
V46	Seals/Joints	Good	Vessel through roof		Seal appears intact below roof
V51	Relief Devices Other (Please explain)	Good			Serviced and seal intact
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



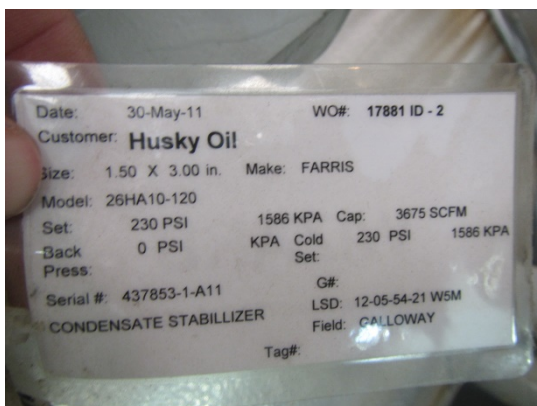
DATAPLATE



VESSEL OVERVIEW



OVERVIEW ABOVE ROOF



PSV SERVICE TAG



PSV DATAPLATE

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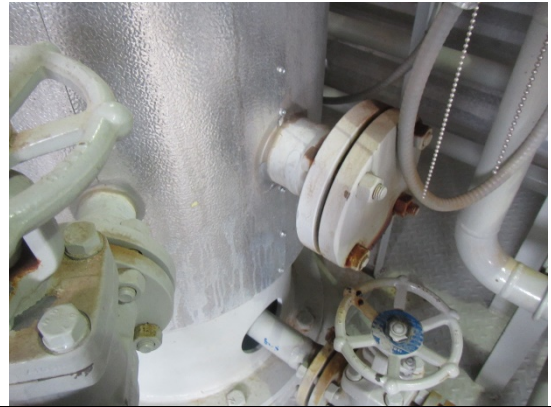
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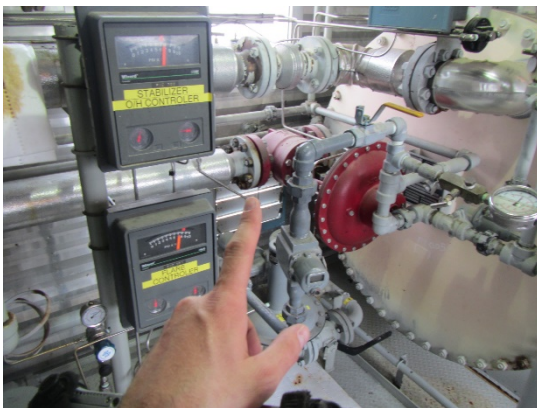
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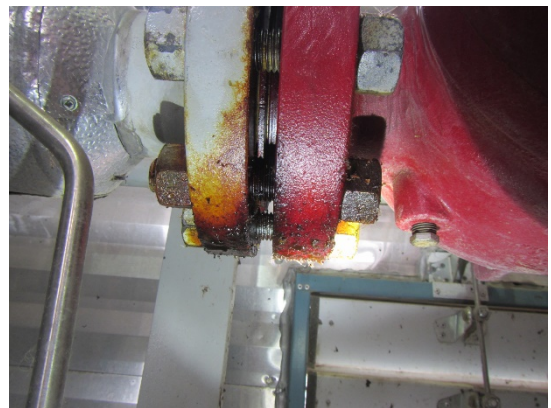
PSV OVERVIEW



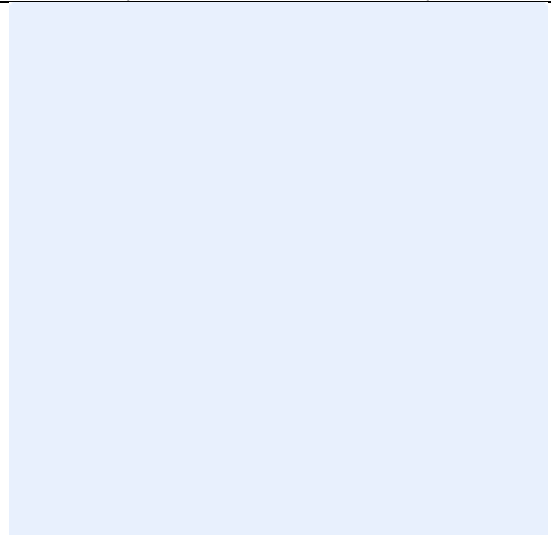
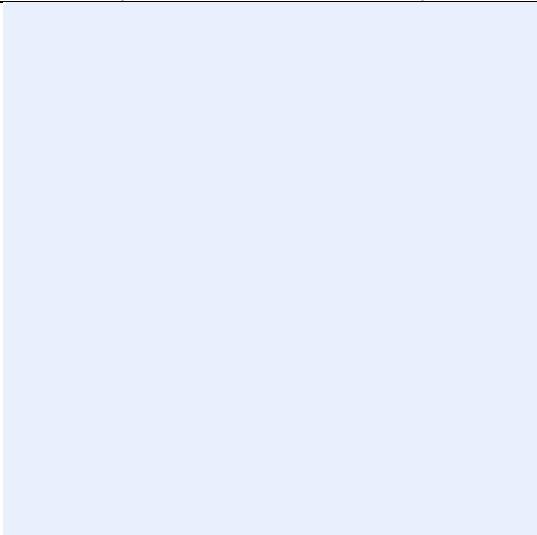
INSPECTION NOZZLE ON BTM SHELL



MINOR WEEKPING FROM RETURN LINE CONTROL FLANGE
(FROM REBOILER TO TOWER)



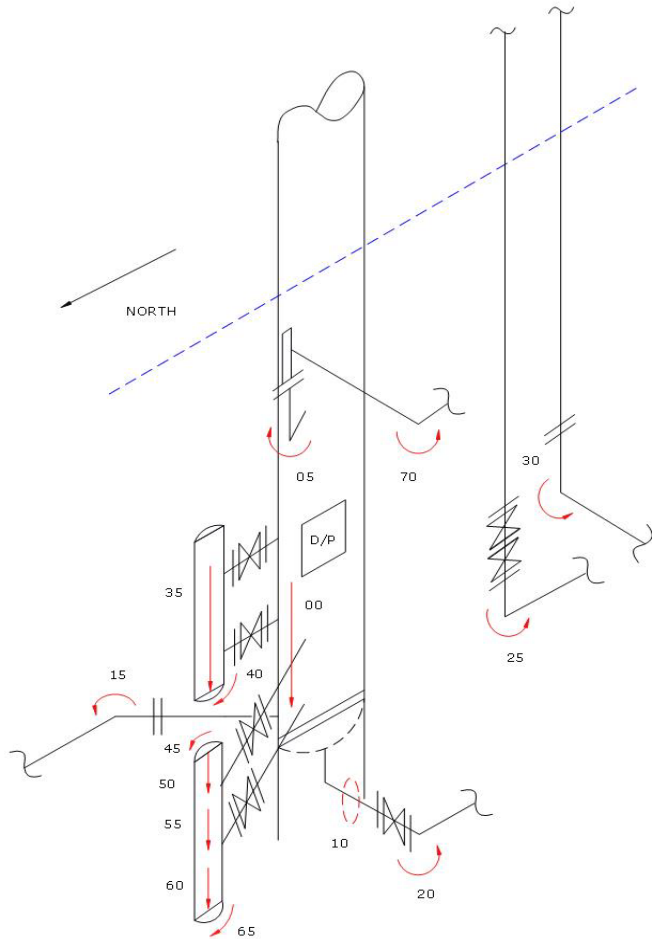
MINOR WEEKPING FROM RETURN LINE CONTROL FLANGE
(FROM REBOILER TO TOWER)



Location Name:	GALLOWAY	LSD:	12-05-054-20W5M
A#:	A0465811	Equipment/Tag No.	52139
Equipment Description:	STABILIZER TOWER		
Manufacturer:	ALCO GAS & OIL		
Serial Number:	2001-6729-01	CRN:	P-7688.2
Shell MAWP:	230	PSI	Shell Design Temp: 294 °F
Tube MAWP:		PSI	Tube Design Temp: °F
Shell Material:	SA-106-B	Head Material:	SA-516-70
Shell Thickness:	9.53	mm	Head Thickness: 6.86 mm
Corrosion Allowance:	1.5875	mm	Date Built: 2001
Size:	508	mm	Pipe / Rolled Plate: INSULATED
RT:	2		

NOTES: SAP 66068139. NO ACCESS UNDER SKIRT. NO ACCESS TO TOWER ABOVE ROOF.







Ultrasonic Corrosion Survey

*All values are in millimeters unless otherwise stated.

Survey Name: Husky Energy

Date: May 5, 2015

Inspector: D. Skeard

LSD:	12-05-054-20W5M	Area:	GALLOWAY	Location:	GALLOWAY GAS PLANT
A #:	A0465811	Tag Number:	52139	Vessel Name:	STABILIZER TOWER
CRN:	P-7688.2	Year Built:	2001	Serial Number:	2001-6729-01
RT:	2	Vessel CA:	1.588 mm	Manufacturer:	ALCO GAS & OIL
		Shell MAWP:	230 PSI	Tube MAWP:	
		MAWTF:	294 °F	MAWTF:	
					Pipe/Plate
					INSULATED
TML Description		Baseline		Material: SA-106-B	
00	SHELL	2015	Flag	CA	Nominal
Shape:	Cylindrical	Min	10.69	7.938	1.588
OD:	508	Avg	10.97		9.525
Spec:	ASME VIII Div.1	Comments:			
					STCR mm/yr
					LTCR mm/yr
					Remaining Life:
					Retirement Date:
TML Description		Baseline		Material: A-234-WPB	
05	NOZZLE	2015	Flag	CA	Nominal
Shape:	90° Elbow	Min	7.21	6.245	0.892
OD:	48.26	Avg	7.52		7.137
Spec:	ASME VIII Div.1	Comments:	ASSUMED NOMINAL / LOW READING		
					STCR mm/yr
					LTCR mm/yr
					Remaining Life:
					Retirement Date:
TML Description		Baseline		Material: SA-106-B	
10	NOZZLE	2015	Flag	CA	Nominal
Shape:	360° Circ	Min	9.25	7.623	1.089
OD:	60.325	Avg	9.58		8.712
Spec:	ASME VIII Div.1	Comments:	ASSUMED NOMINAL		
					STCR mm/yr
					LTCR mm/yr
					Remaining Life:
					Retirement Date:
TML Description		Baseline		Material: A-234-WPB	
15	PIPING	2015	Flag	CA	Nominal
Shape:	45° Elbow	Min	3.96	3.423	0.489
OD:	60.325	Avg	4.09		3.912
Spec:	ASME B31.3	Comments:			
					STCR mm/yr
					LTCR mm/yr
					Remaining Life:
					Retirement Date:



Ultrasonic Corrosion Survey

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Date: May 5, 2015

Inspector: D. Skeard

LSD:	12-05-054-20W5M	Area:	GALLOWAY		Location:	GALLOWAY GAS PLANT			
A #:	A0465811	Tag Number:	52139		Vessel Name:	STABILIZER TOWER			
CRN:	P-7688.2	Year Built:	2001		Serial Number:	2001-6729-01			
RT:	2	Vessel CA:	1.588	mm	Manufacturer:	ALCO GAS & OIL			
		Shell MAWP:	230	MAWTF:	294	Tube MAWP:		MAWTF:	
			PSI		°F		PSI		°F
									Pipe/Plate
									INSULATED
TML Description			Baseline			Material: A-234-WPB			
20	PIPING		2015		Flag	CA	Nominal	T Min	STCR mm/yr
Shape:	90° Elbow	Min	4.19		3.423	0.489	3.912		0.000
OD:	60.325	Avg	4.34						0.000
Spec:	ASME B31.3	Comments:	ASSUMED NOMINAL				Remaining Life:		
									Retirement Date:
TML Description			Baseline			Material: A-234-WPB			
25	PIPING		2015		Flag	CA	Nominal	T Min	STCR mm/yr
Shape:	90° Elbow	Min	4.47		3.423	0.489	3.912		0.000
OD:	60.325	Avg	4.72						0.000
Spec:	ASME B31.3	Comments:	ASSUMED NOMINAL				Remaining Life:		
									Retirement Date:
TML Description			Baseline			Material: A-234-WPB			
30	PIPING		2015		Flag	CA	Nominal	T Min	STCR mm/yr
Shape:	90° Elbow	Min	3.78		3.423	0.489	3.912		0.000
OD:	60.325	Avg	3.89						0.009
Spec:	ASME B31.3	Comments:	ASSUMED NOMINAL				Remaining Life:		
									Retirement Date:
TML Description			Baseline			Material: SA-106-B			
35	PIPING		2015		Flag	CA	Nominal	T Min	STCR mm/yr
Shape:	Bridle	Min	6.71		5.267	0.752	6.020		0.000
OD:	114.3	Avg	6.93						0.000
Spec:	ASME B31.3	Comments:	ASSUMED NOMINAL				Remaining Life:		
									Retirement Date:



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Inspector: D. Skeard

LSD:	12-05-054-20W5M	Area:	GALLOWAY	Location:	GALLOWAY GAS PLANT
A #:	A0465811	Tag Number:	52139	Vessel Name:	STABILIZER TOWER
CRN:	P-7688.2	Year Built:	2001	Serial Number:	2001-6729-01
RT:	2	Vessel CA:	1.588 mm	Manufacturer:	ALCO GAS & OIL
		Shell MAWP:	230 PSI	Tube MAWP:	MAWTF: °F
			MAWTF: 294 °F		Pipe/Plate INSULATED
TML Description			Baseline	Material: A-234-WPB	
40	PIPING	2015	Flag	CA	Nominal T Min
Shape:	Ellipsoidal	Min	5.267	0.752	6.020
OD:	114.3	Avg	5.97		
Spec:	ASME B31.3	Comments:	ASSUMED NOMINAL		
					STCR mm/yr
					0.000
					LTCR mm/yr
					0.024
					Remaining Life:
					Retirement Date:
TML Description			Baseline	Material: A-234-WPB	
45	PIPING	2015	Flag	CA	Nominal T Min
Shape:	Ellipsoidal	Min	5.267	0.752	6.020
OD:	114.3	Avg	6.12		
Spec:	ASME B31.3	Comments:	ASSUMED NOMINAL		
					STCR mm/yr
					0.000
					LTCR mm/yr
					0.000
					Remaining Life:
					Retirement Date:
TML Description			Baseline	Material: SA-106-B	
50	PIPING	2015	Flag	CA	Nominal T Min
Shape:	Bridle	Min	5.267	0.752	6.020
OD:	114.3	Avg	6.68		
Spec:	ASME B31.3	Comments:	ASSUMED NOMINAL		
					STCR mm/yr
					0.000
					LTCR mm/yr
					0.000
					Remaining Life:
					Retirement Date:
TML Description			Baseline	Material: SA-106-B	
55	PIPING	2015	Flag	CA	Nominal T Min
Shape:	Bridle	Min	5.267	0.752	6.020
OD:	114.3	Avg	6.60		
Spec:	ASME B31.3	Comments:	ASSUMED NOMINAL		
					STCR mm/yr
					0.000
					LTCR mm/yr
					0.000
					Remaining Life:
					Retirement Date:



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Survey Name: Husky Energy

Date: May 5, 2015

Inspector: D. Skeard

LSD: 12-05-054-20W5M	Area: GALLOWAY	Location: GALLOWAY GAS PLANT
A #: A0465811	Tag Number: 52139	Vessel Name: STABILIZER TOWER
CRN: P-7688.2	Year Built: 2001	Serial Number: 2001-6729-01
RT: 2	Vessel CA: 1.588 mm	Manufacturer: ALCO GAS & OIL
	Shell MAWP: 230 PSI	Tube MAWP: MAWTF: °F
		MAWTF: °F
		Pipe/Plate INSULATED
TML Description	Baseline	Material: SA-106-B
60 PIPING	2015	Flag CA Nominal T Min STCR mm/yr LTCR mm/yr
Shape: Bridle	Min 6.65	5.267 0.752 6.020 0.000 0.000
OD: 114.3	Avg 6.96	
Spec: ASME B31.3	Comments: ASSUMED NOMINAL	Remaining Life: Retirement Date:
TML Description	Baseline	Material: A-234-WPB
65 PIPING	2015	Flag CA Nominal T Min STCR mm/yr LTCR mm/yr
Shape: Ellipsoidal	Min 6.58	5.267 0.752 6.020 0.000 0.000
OD: 114.3	Avg 6.81	
Spec: ASME B31.3	Comments: ASSUMED NOMINAL	Remaining Life: Retirement Date:
TML Description	Baseline	Material: A-234-WPB
70 PIPING	2015	Flag CA Nominal T Min STCR mm/yr LTCR mm/yr
Shape: 90° Elbow	Min 6.17	4.801 0.686 5.486 0.000 0.000
OD: 88.9	Avg 6.35	
Spec: ASME B31.3	Comments: ASSUMED NOMINAL	Remaining Life: Retirement Date:

FORM U-1A MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS
(Alternative Form for Single Chamber, Completely Shop-Fabricated Vessels Only)
As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1

A465811

1. Manufactured and certified by Alco Gas & Oil Production Equipment LTD. 5203-75 th STREET EDMONTON, ALBERTA
(Name and address of manufacturer)

2. Manufactured for HUSKY OIL OPERATIONS 707- 8 th AVENUE SW CALGARY, ALBERTA
(Name and address of purchaser)

3. Location of installation GALLOWAY COMPRESSOR STATION /LSD. 12 -5 -54 -20 W5M
(Name and address)

4. Type: Vertical 2001-6729-01 P-7688.2 D-2001-6729 -01-001 R1 N/A 2001
(Horiz. or vert. tank) (Mfr's serial No.) (CRN) (Drawing No.) (Nat'l. Bd. No.) (Year built)

5. The chemical and physical properties: 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 1998
to A-2000 N/A N/A
Addenda (Date) Code Case Nos. Special Service per UG-120(d)

6. Shell: SA-106B 3/8" 1/16" 19 1/4" 48' 6"
Matl. (Spec. No., Grade) Nom. Thk. (in.) Corr. Allow. (in.) Diam. I.D. (ft. & in.) Length (overall) (ft. & in.)

7. Seams: SEAMLESS N/A 100% NIL N/A TYPE I spot U/W 11a5b 4
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, Partial, or Full) No. of Courses

8. Heads: (a) Matl. SA-105N RFBLD (b) Matl. SA-516Gr. 70N
(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	150#	1/16"	N/A	N/A	N/A	N/A	N/A	19 1/4"	Flat
(b) Bottom	270"	1/16"	N/A	N/A	2:1	N/A	N/A	N/A	Concave

If removable, bolts used (describe other fastenings) 20-11/8" OD X 6 1/4" LG SA-193B7C/W SA-1942HNUT FOR BLD. FLG BOLTING
(Matl., Spec. No., Gr., Size, No.)

9. MAWP: 230 psi at max. temp. 294 °F
Min. design metal temp. -20 of at 230 psi. Hydro., pneu., or comb. test pressure Hydrostatic 299 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
COND. VAPOR	1	3"	CL150FLG	SA-106B/105N	SCH 80	N/A	U/W 16.1(c)	SHELL
COND TO REB	1	3"	CL150FLG	SA-106B/105N	SCH 80	N/A	U/W 16.1(c)	SHELL
INSPECTION	1	3"	CL150FLG	SA-106B/105N	SCH 80	N/A	U/W 16.1(c)	SHELL
COND INLET	1	2"	CL150FLG	SA105N234WPB	SCH 160	N/A	BOLTED	FEED INLET
				SA105N/516-70	.250"			NOZZLE
LOWER COND	1	2"	CL150FLG	SA-106B/234 WPB	SCH 160	N/A	BOLTED	LOWER
CONNECTION				SA105N/516-70N	.250"			FEED INLET
								NOZZLE

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: IMPACT TEST EXEMPT UG 20(f) UCS 66 (c)
(Name of part, item number, Mfr's. name and identifying stamp)

CONDENSATE STABILIZER TOWER / CAPACITY 2.8 CU.M

AS BUILT DRAWING D-2001-6729-01-001 R3 /SEE ATTACHED U4 DATA REPORT

CERTIFICATE OF SHOP COMPLIANCE

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. 14259 expires OCT 7 th 2004
Date JAN. 16.2002 Co. name Alco Gas & Oil Production Equipment LTD. Signed 
(Manufacturer) (Representative)

CERTIFICATE OF SHOP INSPECTION

Vessel constructed by Alco Gas & Oil Production Equipment LTD. at 5203-75 th STREET EDMONTON, ALBERTA

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 ALBERTA and employed by ALBERTA BOILERS SAFETY ASSOC. ALBERTA have inspected the component described in this Manufacturer's Data Report on Jan 18, 2002, 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 Jan 18, 2002 Signed  Commissions ALBERTA 487
(Authorized Inspector) (Nat'l. Board Incl. endorsements State, Prov. and No.)

Platform 01-00298

A465811

- . Nozzles, inspection, and safety valve openings:**

Remarks

Platcom 10-55298