

PRESSURE VESSEL & COLUMN INSPECTION REPORT

LSD: 06-34-050-27W3

Date: 2013-08-13

SAP Equipment ID

62019555

VESSEL STATIC DATA

VESSEL OWNERS DATA									
Plant:		Aberfeldy/Northminster			OP Unit:			System:	
Prov. Insp . #:		2916624			CRN:			K2422.23	
Equipment Description:					SEPARATOR				
Manufacturer:					R.J.V. Gasfield Service				
Internal Access:					No				
Description:									
MAWP:					4964 kpa				
At Temp					38 C				
Code:					RT: RT2				
PWHT:					No				
Diameter:					508 mm				
Length:					1524 mm				
(T/T):					mm				
OAL:					mm				
Orientation:					Vertical				
SHELL					Mat'l: SA-516 70				
Thickness:					0 mm				
Corr Allowance:					0 mm				
HEAD					Mat'l: Unknown				
Thickness:					0 mm				
Corr Allowance:					0 mm				
Nozzle					Mat'l:				
Thickness:									
Corr Allowance:									
Internal Coating:					No				
Internal Clad:					No				
Capacity:					m3				
Manway:					No				
Inspection Port:					Yes				
Skirt					X				
Legs					Saddle				
Nozzle Rating:					lb ANSI				
Painted:					Yes				
Insulated:					No				

PROCESS DATA

Production Description:	Sweet	Sour:	
Operating Pressure	kpa	Operating Temp:	C

PSV STATIC DATA

Tag #	Serial No.	Location	Size(mm)		Set Press (kPa)	Capacity Imperial (SCFM)	Manufacturer	Model	Last Service	Service Company
			Inlet	Outlet						
02	94C0025	Shell	25.40	25.40	4964	3562	CONSOLIDATED	1996C	2009/08/01	

INSPECTION SUMMARY

MINOR CORROSION ON FLANGES, PIPING, AND SKIRT.

RECOMMENDATIONS

VESSEL IS FIT FOR SERVICE

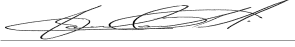
NONCONFORMANCES/INSPECTION DEFICIENCIES

INSPECTION PLANNING

Inspection Strategy		Availability		Inspection Interval	5 years
Inspection Date	2013/08/13	Date of Last Inspect		Date of Next Insp	2018-08

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	Jamey Tanasichuk		Cert #	089	Date	2013/08/13
Reviewed and Approved by					Date	
Criticality Assessment Rerun			Inspection Planning Rerun			
Assessed Next Inspection Date	2018-08					

PRESSURE VESSEL & COLUMN INSPECTION REPORT

LSD: 06-34-050-27W3 **Date:** 2013-08-13 **SAP Equipment ID** 62019555

DETAILED INSPECTION VISUAL EXTERNAL

ID	Description	Condition	Location	NCR	Comments
V1	General Other (Please Explain)	Accept		No	GOOD CONDITION. MINOR CORROSION ON FLANGES, PIPING, AND SKIRT.
V2	General Corrosion	Accept		No	MINOR CORROSION ON FLANGES, PIPING, AND SKIRT.
V3	General Leaks	N/A		No	NOT IN SERVICE
V4	Vibration	N/A		No	
V5	Dissimilar Flange Rating	N/A		No	
V6	Ladder/Stairway	N/A		No	
V7	Heads	Accept		No	GOOD CONDITION
V8	Guy Wires	N/A		No	
V9	Electrical Ground	N/A		No	
V10	Painted Inactive Corrosion	N/A		No	
V11	Coating/Painting	Accept		No	MINOR PAINT PEELING
V12	Expansion Joint or Bellows	N/A		No	
V13	Gauge/Site Glass	N/A		No	
V14	Shell	Accept		No	GOOD CONDITION
V15	Jacket	N/A		No	
V21	Support Other (Please explain)	N/A		No	
V22	Foundation	N/A		No	
V23	Anchor Bolts	Accept		No	GOOD CONDITION, MINOR CORROSION
V24	Saddle/Skirt	Accept		No	GOOD CONDITION, MINOR CORROSION
V25	Davit	N/A		No	
V26	Fireproofing	N/A		No	
V31	Connections Other (Please explain)	N/A		No	
V32	Small Branches	N/A		No	
V33	Nozzles	Accept		No	GOOD CONDITION, NOT IN SERVICE
V34	Manways	N/A		No	
V35	Reinforcing Pads	N/A		No	
V36	Inadequate Thread Engagement	N/A		No	
V37	Bolting	Accept		No	GOOD CONDITION, VESSEL IS SECURE
V38	Flanges	Accept		No	MINOR CORROSION
V39	Leak Clamps	N/A		No	
V41	Insulation Other (Please explain)	N/A		No	
V42	Damage	N/A		No	
V43	Penetrations	N/A		No	
V44	Insulation Jacket	N/A		No	
V45	Banding	N/A		No	
V46	Seals/Joints	N/A		No	
V51	Relief Devices Other (Please explain)	N/A		No	
V52	Corrosion	Accept		No	MINOR CORROSION ON FLANGES, PIPING, AND SKIRT.
V53	Leaks	N/A		No	NOT IN SERVICE
V54	Restricted Inlet/Outlet	N/A		No	

PRESSURE VESSEL & COLUMN INSPECTION REPORT

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V55	Manual Operation Lever	N/A		No	
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DETAILED INSPECTION OTHER TECHNIQUES

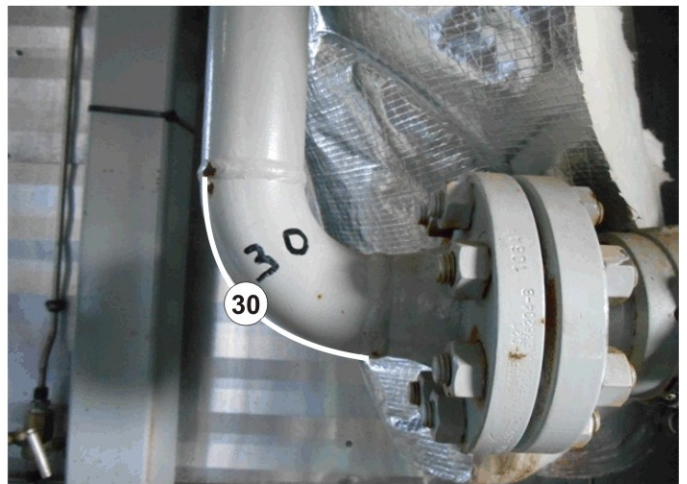
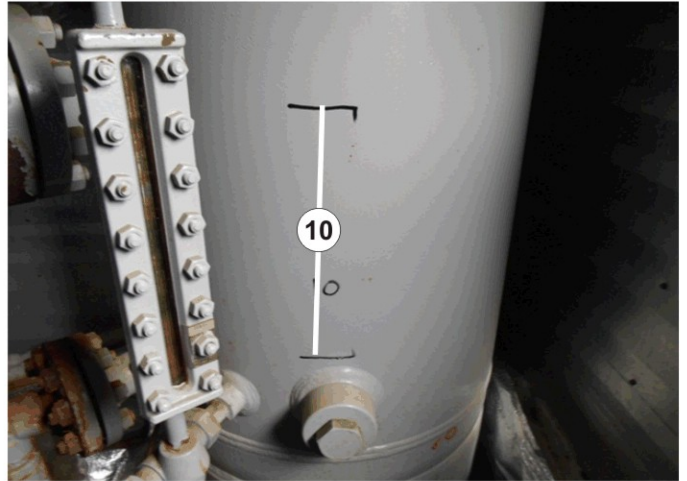
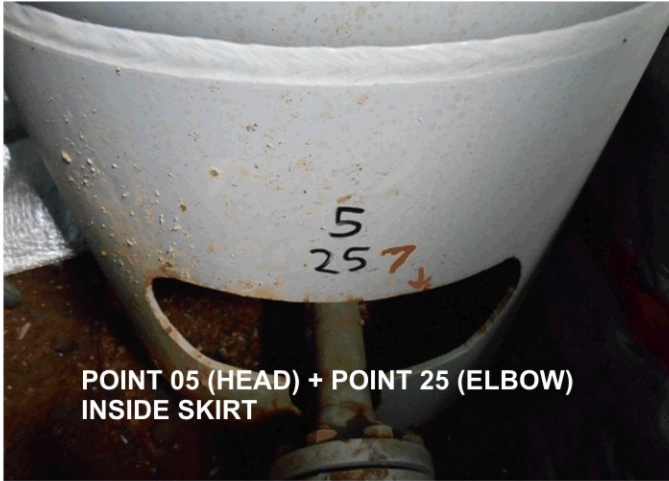
ID	Location	Observation/Measurement	Acceptance Criteria	NCR	Comments

DETAILED INSPECTION UT THICKNESS

CML	Nom. Thickness	CURRENT READINGS	short term corr rate	long term corr rate	remaining life	Survey Date	Comments
05 (HEAD)	15.87	19.28	0.0000	0.0000	198.0	2013/08/13	
10 (SHELL)	15.87	15.72	0.0000	0.0000	198.0	2013/08/13	
15 (SHELL)	15.87	16.00	0.0000	0.0000	198.0	2013/08/13	
20 (HEAD)	15.87	18.80	0.0000	0.0000	198.0	2013/08/13	
25 (90L 2 XS)	5.54	10.82	0.0000	0.0000	198.0	2013/08/13	
30 (90L 2 STD)	3.91	3.33	0.0012	0.0012	75.5	2013/08/13	

M. Whitman, 2013-11-14:

- Nominal thicknesses inserted above from manufacturer's data report.
- Corrosion allowance for shell and head per data report = 3.17in
- Min thickness for shell and head per data report = 12.7mm
- #30 (associated piping) - minimum required thickness with corrosion allowance = 2.67mm (see attached calculation sheet)



OWNER: HUSKY	SERIAL # 2532	NOTES
EQUIPMENT NAME: SEPARATOR	NB#	
REGISTRATION # 2916624	OWNER ID	
EQUIPMENT # 62019555		



NAMEPLATE



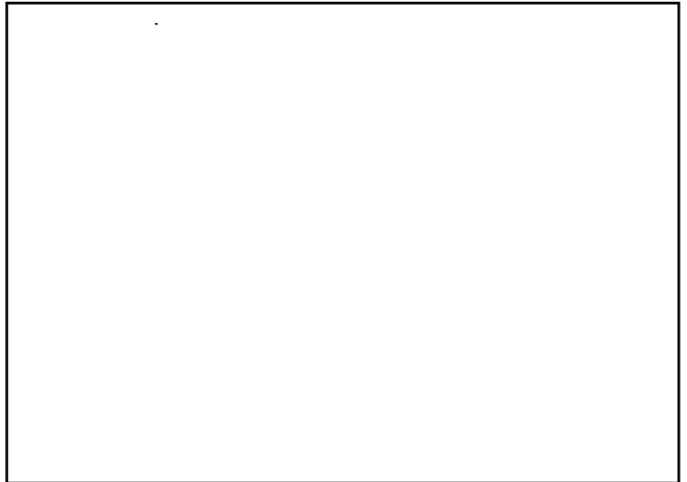
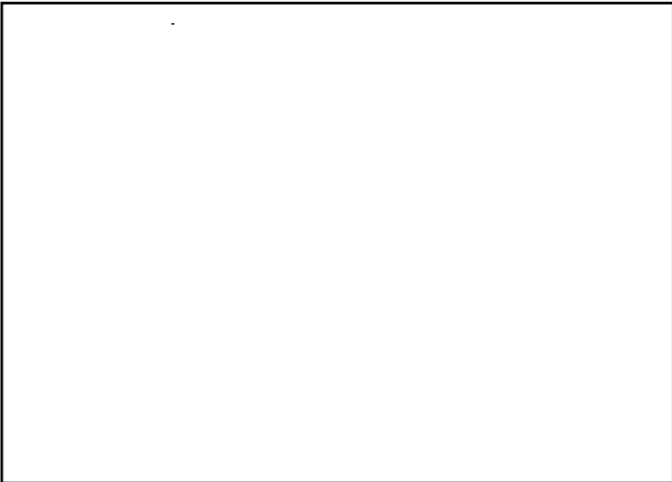
OVERALL



PSV



OVERALL



OWNER: HUSKY
EQUIPMENT NAME: SEPARATOR
REGISTRATION # 2916624
EQUIPMENT # 62019555

SERIAL # 2532
NB#
OWNER ID
S #

NOTES

Unit 1B 153 Pembina Rd
 Sherwood Park, AB T8H 0B9
 Sept 16, 2013

Attn: Ray Trachuk
 Husky Oil – Lloyd

The purpose of this letter is to communicate the inspector qualifications and equipment description & calibration for the UT Survey work performed for work performed in the following Husky areas in 2013.

ALBERTA NORTH	ALBERTA SOUTH	SASK WEST	SES-SEN THERMAL (to date)
Morgan	Wainwright	Furness/Epping	Pikes Peak Thermal
Soars	Rivercourse	Marsden	Bolney/Celtic Thermal
Lloydminster	Chauvin	Aberfeldy/Northminster	Paradise Hill Thermal
Kitscoty	Wildmere	Lashburn West	
Angling Lake	South Vermilion	Big Gully	
Moonshine	Auburndale	Tangleflags North	
Hindville	Edgerton	Tangleflags Central	
Mannville/Swimming		Hillmond	
Marwayne		Tangleflags CO2	
Clandonald		Tangleflags South	
Blackfoot/Lloyd		Baldwinton/Freemont	
		Pikes Peak	
		Landrose Battery	
		Bolney	

In regards to the above areas, all UT work was performed by one or combination of the following Technicians, using the coordinating equipment.

Technician	CGSB No.-Method-Level	Equipment	Calibration Due Date
James Tanasichuck	CGSB#11444 UT1	109_ 81583903_EPOCH4	Jun 17, 2014
Gord Derewianko	CGSB#13896 UT1	101_ 91637903_EPOCH4+	Jun 17, 2014
Justin Orichowski	CGSB#16325 UT1	104_ 91638503_EPOCH4	Jun 17, 2014

***Please note that we are updating our database so that this information is provided on each future Husky Template report.*

Sincerely,



Eric Jensen
 Technical Manager
 Western Quality Services



Husky

Page	1 of 1	Rev.	Date	By
Project	62019555	1	14-Nov-13	MW
File No				

ASME B31.3 - 2010 PROCESS PIPING WALL THICKNESS CALCULATION(Straight Pipe Under Internal Pressure) ^{Note1}**DATA INPUT** (All underline cell can be input with data or selection)

Internal Design Pressure	4,965 kPa
Design Temperature	38 oC
Pipe Joint Type	Seamless
Pipe Material	A106-B
Corrosion Allowance	1.6 mm

CALCULATION

P = Internal Design Pressure	4,965 kPa
T = Design temperature	38 °C
S = Allowable Stress	138 MPa
E = Quality Factor	1.00
Y = Coefficient	0.4
W = Weld joint strength reduction factor	1
MT = Mill Under-tolerance ^{Note2}	0.125
CA = Corrosion allowance	1.6 mm

**** Calculation Detail ****	
D = Input pipe O.D.	60.30 mm
h = 0.8/n =	1.767 mm
t = PD/(2(SEW+PY))=	1.070 mm
t _{plain} = t+CA =	2.670 mm
t _{threaded} = t+CA+h =	4.437 mm

NOMINAL PIPE SIZE	PIPE O.D.	THREAD HEIGHT ^{Note3}	PRESSURE DESIGN THICKNESS	MINIMUM REQUIRED THICKNESS ^{Note3}		NOMINAL WALL THICKNESS		SELECTED PIPE SCHEDULE ^{Note3}	
				PLAIN	THREADED	PLAIN	THREADED	PLAIN	THREADED
	D	h	t	t _{plain}	t _{threaded}	t _n			
1/2	21.3	1.45	0.38	1.98	3.43	2.77	4.78	Sch40	Sch160
3/4	26.7	1.45	0.47	2.07	3.53	2.87	5.56	Sch40	Sch160
1	33.4	1.77	0.59	2.19	3.96	3.38	4.55	Sch40	Sch80
1 1/2	48.3	1.77	0.86	2.46	4.22	3.68	5.08	Sch40	Sch80
2	60.3	1.77	1.07	2.67	4.44	3.91	5.54	Sch40	Sch80
3	88.9	2.54	1.58	3.18	5.72	5.49	7.62	Sch40	Sch80
4	114.3	2.54	2.03	3.63	6.17	6.02	8.56	Sch40	Sch80
6	168.3	-	2.99	4.59	-	7.11	-	Sch40	-
8	219.1	-	3.89	5.49	-	8.18	-	Sch40	-
10	273	-	4.84	6.44	-	9.27	-	Sch40	-
12	323.8	-	5.75	7.35	-	9.53	-	STD	-
14	355.6	-	6.31	7.91	-	9.53	-	STD	-
16	406.4	-	7.21	8.81	-	12.7	-	XS	-
18	457	-	8.11	9.71	-	12.7	-	XS	-
20	508	-	9.01	10.61	-	12.7	-	XS	-
24	610	-	10.82	12.42	-	17.48	-	Sch40	-

NOTES

- The spread sheet application limits are: **t < D/6 and Pressure rating ≤ ANSI 1500#**
Design temperature ≤ 650°F
- For pipe other than CS seamless pipe, mill under tolerance (or Manufacturer's minus tolerance) should be further checked with applicable material specification.
- NPS2 threaded pipe is limited to use per applicable piping specification. Threaded pipe above NPS2 is not allowed.
- NSA stands for No Schedule Available

Rev. No.	Revision	Prepared by	Date	Checked by	Date	Approved by	Date
0	Issued for Use	C.D.	20/10/2006	R.S.	23/10/2006	RS	23/10/2006
1	Issued for Use	C.D.	21/11/2006	T.T.		T.T.	
2	Issued for Use	T.T.	27/08/2009	T.T.		T.T.	
3	Issued for Use	S.R.	22/12/2009	T.T.	22/12/2009	T.T.	22/12/2009
4	Issued for Use	S.R.	23/08/2011	T.T.	23/08/2011	T.T.	23/08/2011
5	Issued for Use	K.F.	22/11/2012	A.R.	30/11/2012	T.T.	30/11/2012