

## SHELL & TUBE INSPECTION REPORT

1000029755

LSD: 10-34-051-04W4

Date: APRIL 12 2016

SAP Equipment ID: 1000029775

SHELL & TUBE STATIC DATA											
Plant <b>MORGAN</b>			Op Unit			System					
Prov. Insp. # <b>0656771</b>			CRN <b>Y0315.23</b>			Equip Tag #					
Equipment Description <b>HEAT EXCHANGER</b>						Serial # <b>15-2253B</b>					
Manufacturer <b>ALTEX INDUSTRIES INC.</b>						Vessel Class					
Internal Access: <b>YES</b> Description:						Year Built <b>2015</b>					
SHELL SIDE DATA											
MAWP <b>150</b>		PSI		@ <b>500</b>		/ °F		MDMT <b>-20</b> °F			
CODE : ASME		Fluid Service <b>Sweet</b>				PWHT : <b>NO</b>					
Diameter <b>30</b>		Length		(T/T) mm/in		OAL <b>224</b> in		HORIZONTAL			
Shell Mat'l	SA 51670N		Thickness <b>N/S</b>		mm / in		Corr Allowance <b>0.125</b> in				
Nozzle Mat'l	N/S		Thickness <b>N/S</b>		mm / in		Corr Allowance <b>N/S</b> mm / in				
Internal Coating: <b>N/S</b>			Internal Clad : <b>N/S</b>			Capacity <b>N/S</b> m <sup>3</sup>					
Manway : <b>YES</b>			Inspection Port : <b>NO</b>			SADDLE					
Nozzle Rating	<b>150</b> lb ANSI		Painted : <b>YES</b>			Insulated <b>NO</b>					
Operating Pressure <b>10</b>			PSI			Operating Temperature <b>80</b>			°C		
TUBE/CHANNEL SIDE DATA											
MAWP <b>75</b>		PSI		@ <b>300</b>		°F		MDMT <b>-20</b> °F			
CODE : ASME		Fluid Service <b>Sweet</b>				PWHT : <b>YES</b>					
Diameter <b>30</b>		Length		(T/T) mm/in		OAL <b>224</b> in		Horizontal			
Shell Mat'l	SA 51670N		Thickness <b>N/S</b>		mm / in		Corr Allowance <b>0.125</b> in				
Nozzle Mat'l	N/S		Thickness <b>N/S</b>		mm / in		Corr Allowance <b>N/S</b> mm / in				
Internal Coating: <b>N/S</b>			Internal Clad : <b>N/S</b>			Capacity <b>N/S</b> m <sup>3</sup>					
Manway : <b>YES</b>			Inspection Port : <b>NO</b>			Saddle					
Nozzle Rating	<b>150</b> lb ANSI		Painted : <b>YES</b>			Insulated <b>NO</b>					
Operating Pressure <b>40</b>			PSI			Operating Temperature <b>N/S</b>			°C / °F		
PSV STATIC DATA											
Serial No.	Location		Set Pressure		Capacity SCFM		Manufacturer		Model / Type		
<b>10148-04</b> CE-27954-A10	TUBE SIDE		75 PSI		4.81		<b>ACCUSEAL</b> <b>FARRIS</b>		<b>18E441110N70410</b> <b>26DA10-120/SP</b>		
	SHELL SIDE		100 PSI		4.94						
PSV DETAILS											
	Type (Thread/Flange)				ANSI Rating			Size (IN)			
PRD Inlet	THREADED (TUBE SIDE) FLANGED (SHELL SIDE)							1"			
PRD Outlet	THREADED (TUBE SIDE) FLANGED (SHELL SIDE)							1"			
NDE Equipment records											
Procedure#	Description		Manufacturer		Model#		Serial#		Due Date		

### INSPECTION SUMMARY

TUBE SIDE PSV SERVICE SEAL IS BROKEN. MINOR LEAK LOCATED ON 1" NOZZLE ON 6" DRAIN NOZZLE

### RECOMMENDATIONS

RECOMMEND TO SERVICE TUBE-SIDE PSV. RECOMMEND TO TIGHTEN THREADED CONNECTION TO STOP LEAKAGE.

### NONCONFORMANCES / INSPECTION DEFICIENCIES

Tube side PSV s/n 10148-04 has been serviced. See attached service report and photo of PSV.

1000040795  
62065357



## PRESSURE VESSEL & COLUMN INSPECTION REPORT

**LSD:** 10-34-051-04W4**Date:** 2016-04-12**SAP Equipment ID**

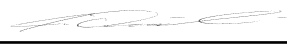
1000029755

### INSPECTION PLANNING

Inspection Strategy		Availability		Inspection Interval	5 year
Inspection Date	2016/04/12	Date of Last Inspect		Date of Next Insp	2020/04/12

### 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	Justin Orichowski		AB Cert #	758	SK PEI #	214	Date	2016/04/12
Reviewed and Approved by							Date	
Criticality Assessment Rerun			Inspection Planning Rerun					
Assessed Next Inspection Date	2021							

Tube side PSV s/n 10148-04 has been serviced. See attached service report and photo of PSV.

# PRESSURE VESSEL & COLUMN INSPECTION REPORT

**LSD:** 10-34-051-04W4      **Date:** 2016-04-12      **SAP Equipment ID** 1000029755

## DETAILED INSPECTION VISUAL EXTERNAL

ID	Description	Condition	Location	NCR	Comments
V1	General Other (Please Explain)	Accept		No	GOOD CONDITION.
V2	General Corrosion	Accept		No	NO CORROSION OBSERVED.
V3	General Leaks	Concern		No	MINOR LEAK LOCATED ON 1" NOZZLE ON 6" DRAIN NOZZLE.
V4	Vibration	Accept		No	NONE.
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	Accept		No	VESSEL IS GROUNDED.
V10	Painted Inactive Corrosion	N/A		No	
V11	Coating/Painting	Accept		No	GOOD CONDITION.
V12	Expansion Joint or Bellows	N/A		No	
V13	Gauge/Site Glass	Accept		No	PSI GAUGE IS IN GOOD WORKING ORDER.
V14	Shell	Accept		No	GOOD CONDITION.
V15	Jacket	N/A		No	
V21	Support Other (Please explain)	N/A		No	
V22	Foundation	Accept		No	METAL.
V23	Anchor Bolts	Accept		No	THREADS FULLY ENGAGED.
V24	Saddle/Skirt	Accept		No	SADDLE NO ISSUES OBSERVED.
V25	Davit	N/A		No	
V26	Fireproofing	N/A		No	
V31	Connections Other (Please explain)	Accept		No	GOOD CONDITION.
V32	Small Branches	Accept		No	GOOD CONDITION.
V33	Nozzles	Concern		No	MINOR LEAK LOCATED ON 1" NOZZLE ON 6" DRAIN NOZZLE.
V34	Manways	Accept		No	GOOD CONDITION.
V35	Reinforcing Pads	Accept		No	RE-PADS ARE IN GOOD CONDITION. WEEP HOLE NOZZLES APPEAR CLEAN.
V36	Inadequate Thread Engagement	N/A		No	
V37	Bolting	Accept		No	BOLTS SECURE.
V38	Flanges	Accept		No	NO ISSUES OBSERVED.
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)	Reject		No	TUBE-SIDE PSV SERVICED 11/10/2015, SERVICE TAG NO LONGER ATTACHED. TUBE-SIDE PSV SERVICE SEAL IS BROKEN. SHELL -SIDE PSV SERVICED 11/10/2015, GOOD CONDITION.
V52	Corrosion	Accept		No	NONE.
V53	Leaks	Accept		No	NONE.

## PRESSURE VESSEL & COLUMN INSPECTION REPORT

**LSD:** 10-34-051-04W4      **Date:** 2016-04-12      **SAP Equipment ID** 1000029755


V54	Restricted Inlet/Outlet	Accept		No	NONE.
V55	Manual Operation Lever	N/A		No	

### DETAILED INSPECTION OTHER TECHNIQUES

ID	Location	Observation/Measurement	Acceptance Criteria	NCR	Comments

### DETAILED INSPECTION UT THICKNESS

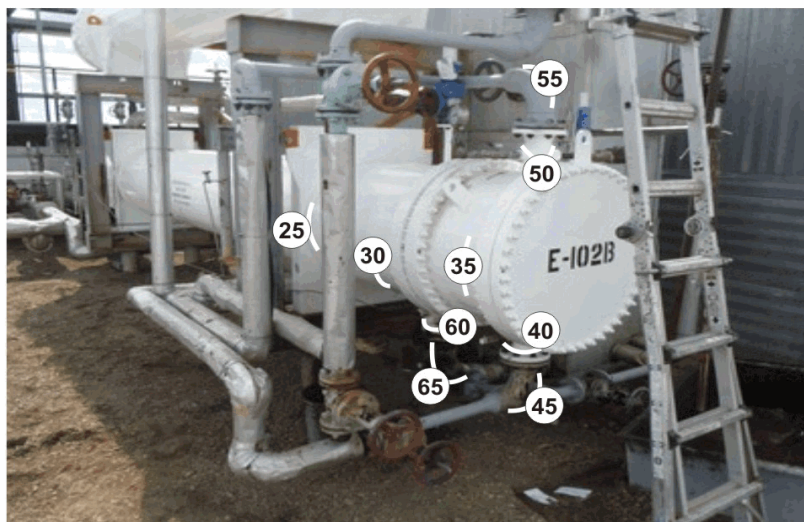
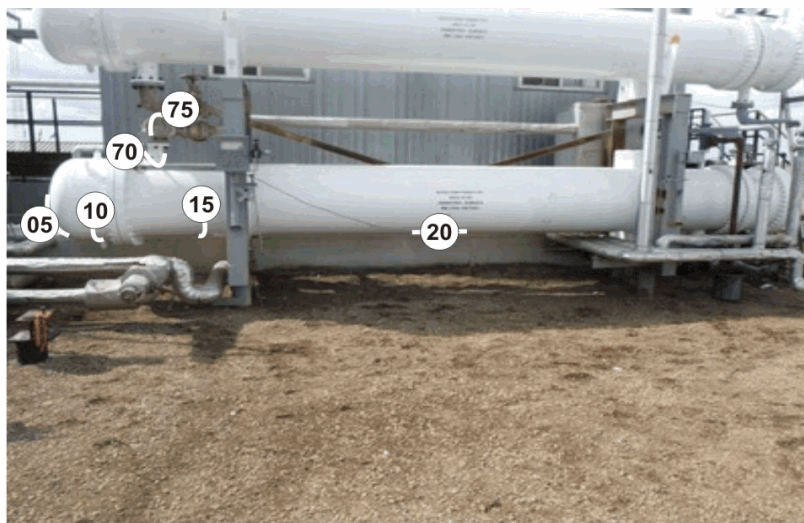
	CML	Nom. Thickness (mm)	CURRENT READINGS (mm)	short term corr rate (mm/y)	long term corr rate (mm/y)	remaining life (year)	Survey Date	Comments
10.2 mm	05 (HEAD) SA 516-70	0.00	12.27	0.0000	0.0000	198.0	2016/04/12	NO COMMENTS
9.53 mm	10 (SHELL) SA 516-70	0.00	9.91	0.0000	0.0000	198.0	2016/04/12	NO COMMENTS
9.53 mm	15 (SHELL) SA 516-70	0.00	10.21	0.0000	0.0000	198.0	2016/04/12	NO COMMENTS
9.53 mm	20 (SHELL) SA 516-70	0.00	9.98	0.0000	0.0000	198.0	2016/04/12	NO COMMENTS
9.53 mm	25 (SHELL) SA 516-70	0.00	10.16	0.0000	0.0000	198.0	2016/04/12	NO COMMENTS
9.53 mm	30 (SHELL) SA 516-70	0.00	10.03	0.0000	0.0000	198.0	2016/04/12	NO COMMENTS
9.53 mm	35 (SHELL) SA 516-70	0.00	10.39	0.0000	0.0000	198.0	2016/04/12	NO COMMENTS
	40 (BAND 4 160)	13.49	11.25	1.5778	1.5778	6.9	2016/04/12	NO COMMENTS within C/A - monitor
	45 (90L 4 STD)	6.02	5.61	0.2869	0.2869	18.1	2016/04/12	NO COMMENTS within C/A - monitor
	50 (BAND 4 160)	13.49	11.23	1.5957	1.5957	6.8	2016/04/12	NO COMMENTS within C/A - monitor
	55 (90L 4 STD)	6.02	5.61	0.2869	0.2869	18.1	2016/04/12	NO COMMENTS within C/A - monitor
	60 (BAND 6 XS)	10.97	11.35	0.0000	0.0000	198.0	2016/04/12	NO COMMENTS
	65 (90L 6 STD)	7.11	7.01	0.0717	0.0717	89.0	2016/04/12	NO COMMENTS within C/A - monitor
	70 (BAND 6 XS)	10.97	11.25	0.0000	0.0000	198.0	2016/04/12	NO COMMENTS
	75 (90L 6 STD)	7.11	7.72	0.0000	0.0000	198.0	2016/04/12	NO COMMENTS

Inspected By	Signature	CGSB Level	CGSB No.	Survey Date	UT Equip	Due Date OF Calibration	NDE Procedure No.
Justin Orichowski		SNT LV 2	16325	04/12/2016	104_91638503_EPOCH4	06/27/2016	WQS UT-001

Corrosion Allowance = 0.125" 3.2 mm. See attached MDR

## EXAMINATION ILLUSTRATION

DISTRICT:	ALBERTA NORTH	FACILITY:	MORGAN	LOCATION/LSD:	10-34-051-04W4
EQUIP NAME:	HEAT EXCHANGER			PROV REG No.:	0656771
SERIAL No.:	15-2253B	Equip No.:	1000029755	National Board No.:	

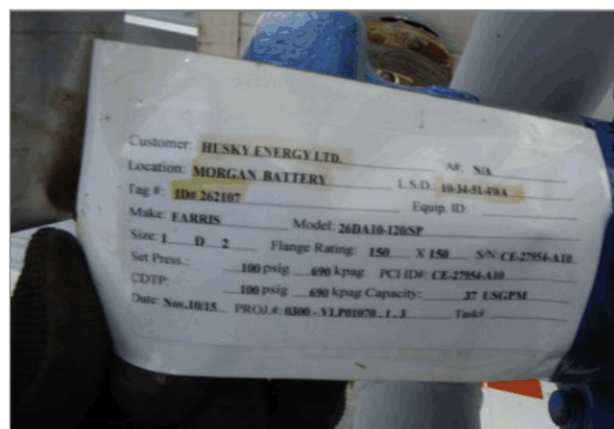


NOTES:



## PHOTOGRAPHS

<b>EQUIP NAME:</b>	HEAT EXCHANGER	<b>PROV REG No.:</b>	0656771
<b>SERIAL No.:</b>	15-2253B	<b>Equip No.:</b>	1000029755
		<b>National Board No.:</b>	



NOTES:

## PHOTOGRAPHS

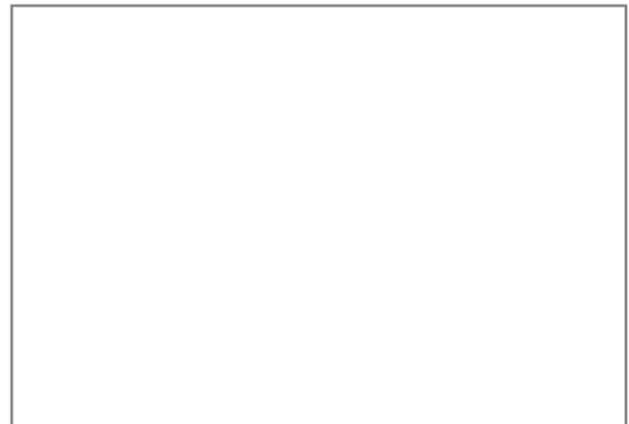
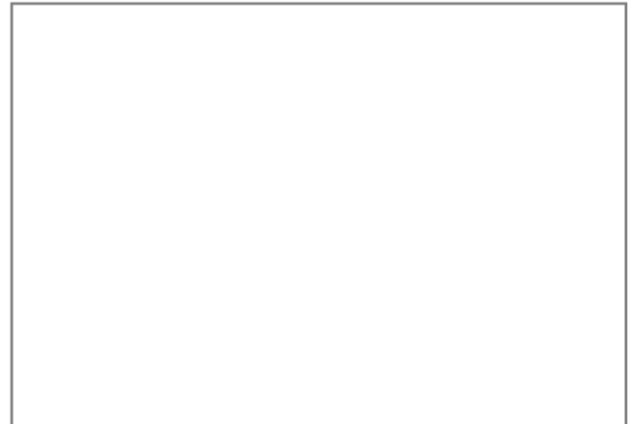
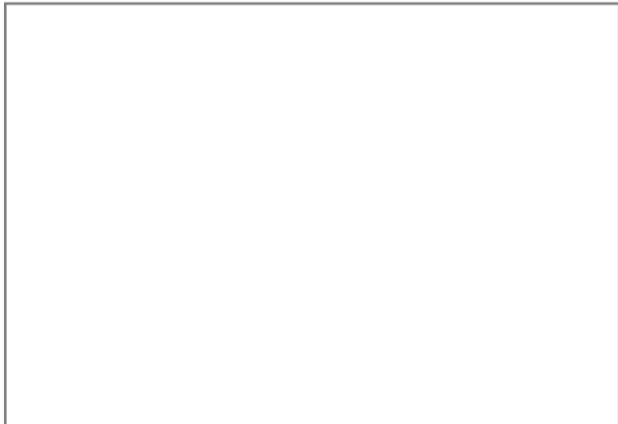
EQUIP NAME:	HEAT EXCHANGER			PROV REG No.:	0656771
SERIAL No.:	15-2253B	Equip No.:	1000029755	National Board No.:	



OVERALL



OVERALL



NOTES:



Guest Controls (2001) Ltd.

Box 10701  
6320 - 63 Street  
Lloydminster, AB T9V 3A7  
Phone: (780) 875-5822 Fax: (780) 875-5824  
Toll Free (877) 288-5094

QR33.37

# Service Report

1000040795

GCS- **27442**

Customer: **HUSKY ENERGY** LSD: **10-34-051-04 W4** Land Desc: **MORGAN BATTERY** Date: **15-AUG-16**

Contact: **MARC CASE** Phone: **78-0-205-2377** PO: **CC. 10063984** Tag#: **98132** SO#: **37420**

Customer Area: **FA 2000205** ☐ Test Only Requested Completion Date: \_\_\_\_\_

☒ Recondition & Test ☒ Pre-Pop Test ☐ Supply Only ☐ Reset \_\_\_\_\_ psig

☐ Re-Identify Valve ☐ Priority Rate ☐ Customer Supplied ☐ After Hours Repair \_\_\_\_\_ hr.

Make: **ACCUSEAL** Model: **18F41110N70410** S/N: **10148-04** CRN: **0G086012**

Size: **1** Inlet ☐ Flanged **Visual Cond:** ☐ New ☐ Dirty ☒ UV Op Temp: **AMB**

**E** Orifice ☒ NPT ☐ Good ☐ Plugged Capacity: **36** usgpm

**1** Outlet ☐ Skidded ☐ Fair ☐ Poor Set Pressure: **75** psig

Customer # **ID# 262108** ☒ Fair Back Pressure: **0** psig

Cap Assembly: ☐ Open Adj. Screw Meas: \_\_\_\_\_ CDT: **75** psig

☒ Closed Ring Settings: **-** Upper Last Service Date: \_\_\_\_\_

☐ Lift Lever **FIXED** Lower Date Plate Condition: ☒ Good ☐ Fair ☐ Re-Identify

Old GCV#: \_\_\_\_\_ Seals Intact: ☐ Yes ☐ No Stamp: \_\_\_\_\_ Technician: **DAN.K**

PreTest Relieve Press. 1st **74** Re-Seat @ **68** 2nd **73** 3rd \_\_\_\_\_ ☐ No Re-Seat

Tested By: **DAN.K** Leakage @ 90% **EXC** B/min Comments: **FAILED**

Item	Description	Condition Codes		Work Codes		Comments/Part#/Range	Condition Code Descriptions
1	Cap Assembly	J		1			<b>Condition Codes</b> A - Clean B - Bent C - Cracked D - Broken E - Collapsed F - Eroded G - Good H - Corroded Mild I - Corroded Severe J - Fair K - Deposits L - Galled M - Incorrect N - Missing O - Out of Tolerance P - Pitted Q - Plugged R - Poor S - Scratched T - Marked U - Leaks V - Seized W - Requires Replacing X - Stripped Threads Y - Steam Cut Z - N/A - Not Applicable  <b>Work Codes</b> 1 - Clean and Use 2 - Repaired 3 - Lapped 4 - Polished 5 - Machined 6 - Replaced 7 - Replace Next Service 8 - Left Alone 9 - N/A - Not Applicable
2	Lift Lever	Z					
3	Adjusting Screw/Nut	J		1			
4	Bonnet	Z					
5	Spring No. _____	J		1			
6	Spring Buttons	J		1			
7	Spindle/Stem	J		1			
8	Stem Retainer	Z					
9	Guide	J		1			
10	Bellows	Z					
11	Blowdown Ring(s)	J		1			
12	Ring Pin	Z					
13	Disc Holder	J		1			
14	Disc	U		6			
15	Nozzle	J		4			<b>NEW O-RING REQUIRED.</b>
16	Ball Keeper	Z					
17	Keeper Seal	Z					
18	Ball	Z					
19	Ball / Seat Assembly	Z					
20	Seat Frame	J		1			
21	Body	J		1			
22	Gaskets	J		1			
23	Inlet	J		1			
24	Outlet	J		1			

Measmnt Info	Manufacturer Specified Dimensions	Dimensions as Found	Dimensions after Machining
	Disc Ht. _____ Step _____	Disc Ht. _____ Step _____	Disc Ht. _____ Step _____
	Nozzle Ht. _____ Step _____	Nozzle Ht. _____ Step _____	Nozzle Ht. _____ Step _____
	QR29B #: _____	QR8B #: _____	

Set Pressure Def. **POP** Set Using: ☐ Air ☒ Liquid ☐ Red Tag Attached ☐ Beyond Econ. Repair ☒ Tagged/Sealed ☐ Ring Pin

Ring Setting: **-** Upper **FIXED** Lower ☒ Lock Nut Secured ☒ Ends Covered ☒ Painted

Capacity: **36** usgpm ☐ Lift Lever Secured ☒ Appearance ☐ Skidded

Set Press: **75** psig Back Pressure: **0** psig CDT: **75** psig

Bellows Test @ **-** psig Back Press Test: **35** psig Leakage @90% **67.5** psig **0** B/min

Is Valve acceptable for use in Pressure Service under Jurisdiction of ABSA? ☒ Yes ☐ No

Date: **15-AUG-2016** Tested By: **DAN.K** Witness: **COLE.P** Final Inspect: **DAN.K**





Model No. \_\_\_\_\_  
Serial No. \_\_\_\_\_  
Set Press. \_\_\_\_\_  
Capacity \_\_\_\_\_  
B Press. \_\_\_\_\_  
CDTP \_\_\_\_\_  
Flange Rt. \_\_\_\_\_  
Date \_\_\_\_\_  
QC Data 98132  
SO# 37420  
15-AUG-16

DATE \_\_\_\_\_  
TEMP \_\_\_\_\_  
F \_\_\_\_\_  
STD \_\_\_\_\_  
MAG \_\_\_\_\_  
Mfg by E & S Manufacturing, Los Angeles

FA  
2000205

262108

Company Info	
Name:	HUSKY ENERGY
Area:	MORGAN BATTERY
L.S.D.:	10-31-05-04 W4
Valve Loc.:	FA 2000205
Valve ID#:	ID# 262108
Item Description	
Make:	ACCUSEAL
Model:	18F-H110N70H10
Serial #:	10148-04
Size:	E - 1.00
Set Press:	75 psig
Capacity:	36 usgpm
B Press:	75 psig
CDTP:	THREADED
Flange Rt.:	75 psig
Tag #:	QC Data
GCS #:	27442
Date:	15-AUG-16