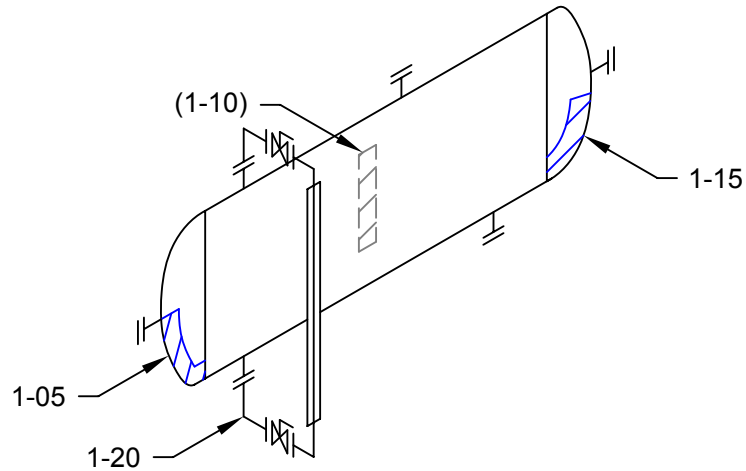
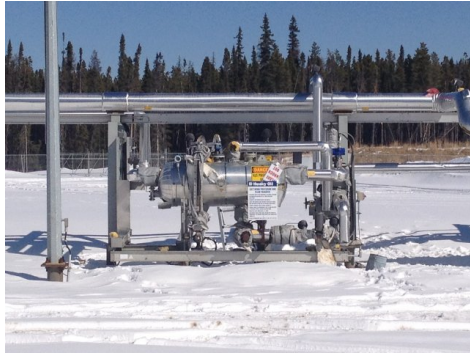


LOW PRESSURE FLARE KO DRUM 66156026

ITEM:

~~HIGH PRESSURE KNOCKOUT DRUM~~

A0595438



ASSET INTEGRITY
SYLVAN LAKE, AB (403) 887-3562
PIPELINE INTEGRITY
WHITECOURT, AB (780) 778-5584
NON-DESTRUCTIVE TESTING
GRANDE PRAIRIE, AB (780) 518-9757

TECHNICIAN:

DANIEL MACLEAN
SNT LEVEL II
CGSB 48.9712
LEVEL II # 15997

DATE: 4/01/14

DWG: 1

CLIENT: HUSKY ENERGY

LSD: B-49-C-93-P-02

INSPECTOR : WARREN FAST

LOCATION : BULL MOOSE

DISTRICT UNIT : NEBC

BLDG/SKID : -

PROCESS : SOUR

CODE : ASME SEC VIII DIV 1

SPECIFICATION : AS PER ASME SE 797

TECHNIQUE : UT 1-1, REV .1

METHOD : UT CONTINUOUS / A SCAN

SURFACE COND : PAINTED

SURFACE TEMP : AMBIENT

VESSEL INFORMATION

VESSEL # : A0595438

CRN # : U8380.213

SERIAL # : 007095-01

MANUFACTURER : TORNADO

DATE BUILT : 2009

CLIENT ID / TAG : 66156028

M.A.W.P : 50 PSI

M.A.W.T. : 212° F

JOINT EFFICIENCY/RT : RT 1

STRESS RELIEVED : YES

INSULATED : YES

MANWAY : NO

VESSEL SPECIFICATIONS

	OD	NOMINAL	MATERIAL	CA
VESSEL HEAD	20"	.3130"	SA-516-70	.125"
VESSEL SHELL	20"	.375"	SA-516-70	.125"
BOOT HEAD	-	-	-	-
BOOT SHELL	-	-	-	-

COMMENTS:

NO ACCESS TO BOTTOM OF VESSEL SHELL DUE TO HEAT TRACED

PROJECT:

C61088



ULTRASONIC CORROSION SURVEY (METRIC)

Survey Name: HUSKY ENERGY

LSD: B-49-C-93-P-02 Dwg: 1 Vessel Number: A0595438 Manufacturer: TORNADO Survey Date: 4/01/14
District Unit: NEBC Vessel Name: HIGH PRESSURE KNOCKOUT DRUM Serial Number: 007095-01 Inspector: WARREN FAST
Location: BULL MOOSE Year Built: 2009 Shell MAWP PSI: 50 MAWT F: 212 Process: SOUR
Skid: - Tag Number: 66156028 Tube MAWP PSI: 0 MAWT F: 0 Project #: C61088
CRN: U8380.213 Vessel CA: 0.1250

Band	Description			Readings						Year	Avg mm	Min mm	Nominal	CA	TMIN	Recommended Next Inspection	Recommended Retirement Date
				1	2	3	4	5	6								
1-05		Head	Baseline	9.4	9.3	9.3	9.2	9.2	9.2	2014	9.3	9.2	8	3.2	0.6	2015	2034
Shape	Ellipsoidal	shell Side	Previous										Comments-->				
OD	508		Current	9.4	9.3	9.3	9.2	9.2	9.2	2014	9.3	9.2	OD ASSUMED				
Spec.	VIII Div 1												ST Loss MPY				
Material	SA 516 - 70												LT Loss MPY 0				
													OK				
1-10		Shell	Baseline	9.8	9.8	9.6	9.6	9.7	9.7	2014	9.7	9.6	9.5	3.2	0.6	2015	2034
Shape	Cylindrical	shell Side	Previous										Comments-->				
OD	508		Current	9.8	9.8	9.6	9.6	9.7	9.7	2014	9.7	9.6	OD ASSUMED				
Spec.	VIII Div 1												ST Loss MPY				
Material	SA 516 - 70												LT Loss MPY 0				
													OK				
1-15		Head	Baseline	9.5	9.4	9.5	9.6	9.6	9.6	2014	9.5	9.4	8	3.2	0.6	2015	2034
Shape	Ellipsoidal	shell Side	Previous										Comments-->				
OD	508		Current	9.5	9.4	9.5	9.6	9.6	9.6	2014	9.5	9.4	OD ASSUMED				
Spec.	VIII Div 1												ST Loss MPY				
Material	SA 516 - 70												LT Loss MPY 0				
													OK				
1-20		Nozzle	Baseline	6	6	6.2	6.3	6.4	6.6	2014	6.2	6	7.6	3.2	0.1	2015	2034
Shape	90° Elbow	shell Side	Previous										Comments-->				
OD	88.9		Current	6	6	6.2	6.3	6.4	6.6	2014	6.2	6	ID PITTING NOMINAL ASSUMED				
Spec.	VIII Div 1												ST Loss MPY				
Material	SA 234 - WPB												LT Loss MPY 0				
													OK				



ULTRASONIC CORROSION SURVEY (METRIC)

Survey Name: HUSKY ENERGY

LSD:	B-49-C-93-P-02	Dwg:	1	Vessel Number:	A0595438	Manufacturer:	TORNADO	Survey Date:	4/01/14
District Unit:	NEBC	Vessel Name:	HIGH PRESSURE KNOCKOUT DRUM	Serial Number:	007095-01	Inspector:	WARREN FAST		
Location:	BULL MOOSE	Year Built:	2009	Shell MAWP PSI:	50	MAWT F:	212	Process:	SOUR
Skid:	-	Tag Number:	66156028	Tube MAWP PSI:	0	MAWT F:	0	Project #:	C61088
		CRN:	U8380.213	Vessel CA:	0.1250				

Band	Description			Readings						Year	Avg mm	Min mm	Nominal	CA	TMIN	Recommended Next Inspection	Recommended Retirement Date
				1	2	3	4	5	6								
1-25		Piping	Baseline	4.4	4.4	4.2	4.2	4.2	4.4	2014	4.3	4.2	6	0.8	0.1	2015	2034
Shape	90° Elbow	shell Side	Previous										Comments-->				
OD	114.3		Current	4.4	4.4	4.2	4.2	4.2	4.4	2014	4.3	4.2	ID PITTING NOMINAL ASSUMED				
Spec.	B31.3								ST Loss MPY				Caution				
Material	A 234 - WPB								LT Loss MPY	0							
1-30		Piping	Baseline	4.8	4.7	5	4.9	4.3	4.3	2014	4.7	4.3	6	0.8	0.1	2015	2034
Shape	90° Elbow	shell Side	Previous										Comments-->				
OD	114.3		Current	4.8	4.7	5	4.9	4.3	4.3	2014	4.7	4.3	ID PITTING NOMINAL ASSUMED				
Spec.	B31.3								ST Loss MPY				Caution				
Material	A 234 - WPB								LT Loss MPY	0							
1-35		Piping	Baseline	3.8	3.6	3.6	3.4	3.3	2.8	2014	3.4	2.8	6	0.8	0.1	2015	2034
Shape	90° Elbow	shell Side	Previous										Comments-->				
OD	114.3		Current	3.8	3.6	3.6	3.4	3.3	2.8	2014	3.4	2.8	ID PITTING NOMINAL ASSUMED				
Spec.	B31.3								ST Loss MPY				Caution				
Material	A 234 - WPB								LT Loss MPY	0							
1-40		Piping	Baseline	6	6	6.1	6.1	6.1	6	2014	6.1	6	7.6	1	0.1	2015	2034
Shape	90° Elbow	shell Side	Previous										Comments-->				
OD	88.9		Current	6	6	6.1	6.1	6.1	6	2014	6.1	6	ID PITTING NOMINAL ASSUMED				
Spec.	B31.3								ST Loss MPY				Caution				
Material	A 234 - WPB								LT Loss MPY	0							



ULTRASONIC CORROSION SURVEY (METRIC)

Survey Name: HUSKY ENERGY

LSD:	B-49-C-93-P-02	Dwg:	1	Vessel Number:	A0595438	Manufacturer:	TORNADO	Survey Date:	4/01/14
District Unit:	NEBC	Vessel Name:	HIGH PRESSURE KNOCKOUT DRUM	Serial Number:	007095-01	Inspector:	WARREN FAST		
Location:	BULL MOOSE	Year Built:	2009	Shell MAWP PSI:	50	MAWT F:	212	Process:	SOUR
Skid:	-	Tag Number:	66156028	Tube MAWP PSI:	0	MAWT F:	0	Project #:	C61088
		CRN:	U8380.213	Vessel CA:	0.1250				

Band	Description			Readings						Year	Avg mm	Min mm	Nominal	CA	TMIN	Recommended Next Inspection	Recommended Retirement Date
				1	2	3	4	5	6								
1-45		Piping	Baseline	5.9	5.9	6.1	6.1	6.3	6	2014	6	5.9	5.5	0.7	0.1	2015	2034
Shape	90° Elbow	shell Side	Previous										Comments-->				
OD	60.3		Current	5.9	5.9	6.1	6.1	6.3	6	2014	6	5.9					
Spec.	B31.3												ST Loss MPY				
Material	A 234 - WPB												LT Loss MPY 0				
													OK				
1-50		Piping	Baseline	5.2	5.2	5.2	5.3	5.4	5.2	2014	5.3	5.2	5.5	0.7	0.1	2015	2034
Shape	90° Elbow	shell Side	Previous										Comments-->				
OD	60.3		Current	5.2	5.2	5.2	5.3	5.4	5.2	2014	5.3	5.2					
Spec.	B31.3												ST Loss MPY				
Material	A 234 - WPB												LT Loss MPY 0				
													OK				
1-55		Piping	Baseline	5.6	5.3	5.3	5.1	5	5.2	2014	5.2	5	5.5	0.7	0.1	2015	2034
Shape	90° Elbow	shell Side	Previous										Comments-->				
OD	60.3		Current	5.6	5.3	5.3	5.1	5	5.2	2014	5.2	5					
Spec.	B31.3												ST Loss MPY				
Material	A 234 - WPB												LT Loss MPY 0				
													OK				
1-60		Piping	Baseline	5.3	5.3	5.3	5.3	5.3	5.3	2014	5.3	5.3	6	0.8	0.1	2015	2034
Shape	90° Elbow	shell Side	Previous										Comments-->				
OD	114.3		Current	5.3	5.3	5.3	5.3	5.3	5.3	2014	5.3	5.3					
Spec.	B31.3												ST Loss MPY				
Material	A 234 - WPB												LT Loss MPY 0				
													OK				



ULTRASONIC CORROSION SURVEY (METRIC)

Survey Name: HUSKY ENERGY

LSD: B-49-C-93-P-02 Dwg: 1 Vessel Number: A0595438 Manufacturer: TORNADO Survey Date: 4/01/14
District Unit: NEBC Vessel Name: HIGH PRESSURE KNOCKOUT DRUM Serial Number: 007095-01 Inspector: WARREN FAST
Location: BULL MOOSE Year Built: 2009 Shell MAWP PSI: 50 MAWT F: 212 Process: SOUR
Skid: - Tag Number: 66156028 Tube MAWP PSI: 0 MAWT F: 0 Project #: C61088
CRN: U8380.213 Vessel CA: 0.1250

Band	Description			Readings						Year	Avg mm	Min mm	Nominal	CA	TMIN	Recommended Next Inspection	Recommended Retirement Date
				1	2	3	4	5	6								
1-65		Piping	Baseline	5.4	5.3	5.3	5.3	5.4	5.5	2014	5.4	5.3	6	0.8	0.1	2015	2034
Shape	90° Elbow	shell Side	Previous										Comments-->				
OD	114.3		Current	5.4	5.3	5.3	5.3	5.4	5.5	2014	5.4	5.3					
Spec.	B31.3																
Material	A 234 - WPB																
										ST Loss MPY							
										LT Loss MPY		0					