

PRESSURE VESSEL & COLUMN INSPECTION REPORT

Plant	Minehead Field	Op Unit		System	
Asset #	222149	Equipment ID		Asset Type	
Description	Horizontal Separator (Surplus)	Prov. Insp. #	A0516664	Serial #	138-02-04
Manufacturer	Mar-Quinn Industries Ltd.	CRN	R-9125.213	Year Built	2004
MAWP	5102	KPag	@ 38 °C	MDMT	-29 °C
Code	RT-1	Fluid Service	Natural Gas	Sour	PWHT Yes
Internal Access	Yes	Insulated	No	Internal Coating	Yes
Operating Pressure	N/A	KPag		Operating Temp	N/A °C

PSV DATA

PSV ID #	Location	Size		Set Pressure	Capacity SCFM / Lbs/Hr / GPM	Manufacturer	Model	Last Service
		Inlet	Outlet					
222150	Vessel	38.1 mm	50.8 mm	1760 kPa	153 GPM	Farris	26FA12L-120	Dec. 2004

INSPECTION SUMMARY

The vessel was previously in sour service. The vessel is going to be moved to Ansel Plant #2 and put into sweet service.

Isolated coating repairs were performed around the manway and drain boot.

The manway davit arm is only single nutted.

RECOMMENDATIONS

The manway davit arm should be double nutted.

NONCONFORMANCES / INSPECTION DEFICIENCIES

--

INSPECTION PLANNING

Inspection Strategy		Availability		Inspection Interval	
Inspection Date	Sept. 17, 2012	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	Adam Fitzgerald		Date	Oct. 31, 2012
Reviewed and Approved by			Date	
Criticality Assessment Rerun		Inspection Planning Rerun		
Assessed Next Inspection Date				

PRESSURE VESSEL & COLUMN INSPECTION REPORT

ID	General	Condition
V1	Other (please explain)	☒ Good ☐ Fair ☐ Poor ☐ N/A
The vessel was previously in sour service. The vessel is going to be moved to Ansel Plant #2 and put into sweet service.		
V2	General Corrosion	☐ Yes ☒ No
V3	General Leaks	☐ Yes ☒ No
V4	Vibration	☐ Yes ☒ No
V5	Dissimilar Flange Rating	☐ Yes ☒ No
V6	Ladder/Stairway	☐ Yes ☒ No
V7	Heads	☒ Good ☐ Fair ☐ Poor ☐ N/A
V8	Guy Wires	☐ Good ☐ Fair ☐ Poor ☒ N/A
V9	Electrical Ground	☒ Good ☐ Fair ☐ Poor ☐ N/A
V10	Painted Inactive Corrosion	☐ Good ☐ Fair ☐ Poor ☒ N/A
V11	Coating/Painting	☒ Good ☐ Fair ☐ Poor ☐ N/A
V12	Expansion Joint or Bellows	☐ Good ☐ Fair ☐ Poor ☒ N/A
V13	Gauge/Site Glass	☒ Good ☐ Fair ☐ Poor ☐ N/A
V14	Shell	☒ Good ☐ Fair ☐ Poor ☐ N/A
V15	Jacket	☐ Good ☐ Fair ☐ Poor ☒ N/A
	Supports	Condition
V21	Other (please explain)	☐ Good ☐ Fair ☐ Poor ☒ N/A
V22	Foundation	☐ Good ☐ Fair ☐ Poor ☒ N/A
V23	Anchor Bolts	☒ Good ☐ Fair ☐ Poor ☐ N/A
V24	Saddle Skirt	☒ Good ☐ Fair ☐ Poor ☐ N/A
V25	Davit	☐ Good ☒ Fair ☐ Poor ☐ N/A
The manway davit arm is only single nitted.		
V26	Fireproofing	☐ Good ☐ Fair ☐ Poor ☒ N/A
	Connections	Condition
V31	Other (please explain)	☐ Good ☐ Fair ☐ Poor ☒ N/A
V32	Small Branches	☒ Good ☐ Fair ☐ Poor ☐ N/A

PRESSURE VESSEL & COLUMN INSPECTION REPORT

V33	Nozzles	☒ Good ☐ Fair ☐ Poor ☐ N/A
V34	Manways	☒ Good ☐ Fair ☐ Poor ☐ N/A
V35	Reinforcing Pads	☒ Good ☐ Fair ☐ Poor ☐ N/A
V36	Inadequate Thread Engagement	☐ Good ☐ Poor ☒ N/A
V37	Bolting	☒ Good ☐ Poor ☐ N/A
V38	Flanges	☒ Good ☐ Fair ☐ Poor ☐ N/A
V39	Leak Clamps	☐ Good ☐ Poor ☒ N/A
	Insulation	Condition
V41	Other (please explain)	☐ Good ☐ Fair ☐ Poor ☒ N/A
V42	Damage	☐ Good ☐ Fair ☐ Poor ☒ N/A
V43	Penetrations	☐ Good ☐ Fair ☐ Poor ☒ N/A
V44	Jacket	☐ Good ☐ Fair ☐ Poor ☒ N/A
V45	Banding	☐ Good ☐ Fair ☐ Poor ☒ N/A
V46	Seals/Joints	☐ Good ☐ Fair ☐ Poor ☒ N/A
	Relief Device	Condition
V51	Other (please explain)	☐ Good ☒ Fair ☐ Poor ☐ N/A
The PSV will need to be serviced prior to returning the vessel into service. Ensure that the block valves on the PSV inlet and outlet are car-sealed open.		
V52	Corrosion	☐ Yes ☒ No
V53	Leaks	☐ Yes ☒ No
V54	Restricted Inlet/Outlet	☐ Yes ☒ No
V55	Manual Operation Lever	☐ Yes ☒ No

PRESSURE VESSEL & COLUMN INSPECTION REPORT

ID	General	Condition
V1	Other (Please Explain)	☐ Good ☒ Fair ☐ Poor ☐ N/A
The vessel was adequately cleaned for the visual inspection, but there were some areas of debris/deposits present inside the vessel.		
V2	Corrosion (Depth, Length, Width)	☐ Good ☐ Fair ☐ Poor ☒ N/A
V3	Erosion	☐ Yes ☒ No
V4	Distortion	☐ Yes ☒ No
V5	Blisters	☐ Yes ☒ No
V6	Deposits	☒ Yes ☐ No
There were areas of debris/deposits present along the shell, heads and drain boot.		
V7	Heads	☒ Good ☐ Fair ☐ Poor ☐ N/A
V8	Welds	☒ Good ☐ Fair ☐ Poor ☐ N/A
V9	Nozzles	☒ Good ☐ Fair ☐ Poor ☐ N/A
V10	Shell	☒ Good ☐ Fair ☐ Poor ☐ N/A
V11	Gasket Surfaces	☒ Good ☐ Fair ☐ Poor ☐ N/A
	Internals	Condition
V21	Other (please explain)	☒ Good ☐ Fair ☐ Poor ☐ N/A
The vortex beakers were in place and appeared to be in good condition.		
V22	Demister	☒ Good ☐ Fair ☐ Poor ☐ N/A
V23	Baffle / Weir	☒ Good ☐ Fair ☐ Poor ☐ N/A
V24	Sparger	☐ Good ☐ Fair ☐ Poor ☒ N/A
V25	Thermowells	☒ Good ☐ Fair ☐ Poor ☐ N/A
V26	Metallic Linings	☐ Good ☐ Fair ☐ Poor ☒ N/A
V27	Non-Metallic Linings	☒ Good ☐ Fair ☐ Poor ☐ N/A
Average coating thickness was measured to be approximately 0.012". Isolated coating repairs were performed at the time of inspection around the drain boot and along the manway.		
V28	Trays	☐ Good ☐ Fair ☐ Poor ☒ N/A
V29	Tray Rings	☐ Good ☐ Fair ☐ Poor ☒ N/A
V30	Other Welded Attachments	☐ Good ☐ Fair ☐ Poor ☒ N/A

PRESSURE VESSEL & COLUMN INSPECTION REPORT

DETAILED INSPECTION UT THICKNESS

CML	Nom. Thk	Current Reading	Short Term Corr Rate	Long Term Corr Rate	Remaining Life	Comments
2200	33.27	35.19	0.00	0.00	100+	
2205	34.92	35.82	0.00	0.00	100+	
2210	34.92	35.98	0.00	0.00	100+	
2215	34.92	35.88	0.00	0.00	100+	
2220	34.92	35.54	0.00	0.00	100+	
2225	34.92	35.65	0.00	0.00	100+	
2230	34.92	35.80	0.00	0.00	100+	
2235	33.27	35.44	0.00	0.00	100+	
2240	22.22	22.70	0.00	0.00	100+	
2245	20.62	20.85	0.00	0.00	100+	
2250	10.97	10.73	0.03	0.03	97.3	
2252	10.97	10.60	0.04	0.04	60.9	
2254	10.97	10.55	0.05	0.05	52.5	
2256	10.97	10.68	0.03	0.03	79.0	
2260	12.7	11.09	0.19	0.19	8.40	Possible indications of internal corrosion may be present to a low of 11.09 mm. Nominal thickness is 12.7 mm. This elbow also may have been manufactured thin which could account for the low readings.
2265	12.7	11.77	0.11	0.11	21.0	
2270	10.97	10.32	0.07	0.07	30.8	
2275	10.97	8.85	0.24	0.24	3.40	Possible indications of internal corrosion may be present to a low of 8.85 mm. Nominal thickness is 10.97 mm. This elbow also may have been manufactured thin which could account for the low readings.
2280	5.54	5.01	0.06	0.06	28.7	
2282	8.56	8.19	0.04	0.04	53.2	
2284	5.54	4.98	0.06	0.06	27.0	
2286	8.56	7.88	0.08	0.08	25.3	

The internal condition of the vessel was also assessed via an ultrasonic corrosion survey on a representative sample of the vessel and the associated piping. Results of the corrosion survey found indications of possible internal corrosion in the lower inlet and outlet elbows that were located near the blinded flanges. The minimum thickness was found to be 8.85 mm (Nominal 10.97 mm) in the outlet elbow.

Please refer to the attached corrosion survey report for further details of the inspection results.

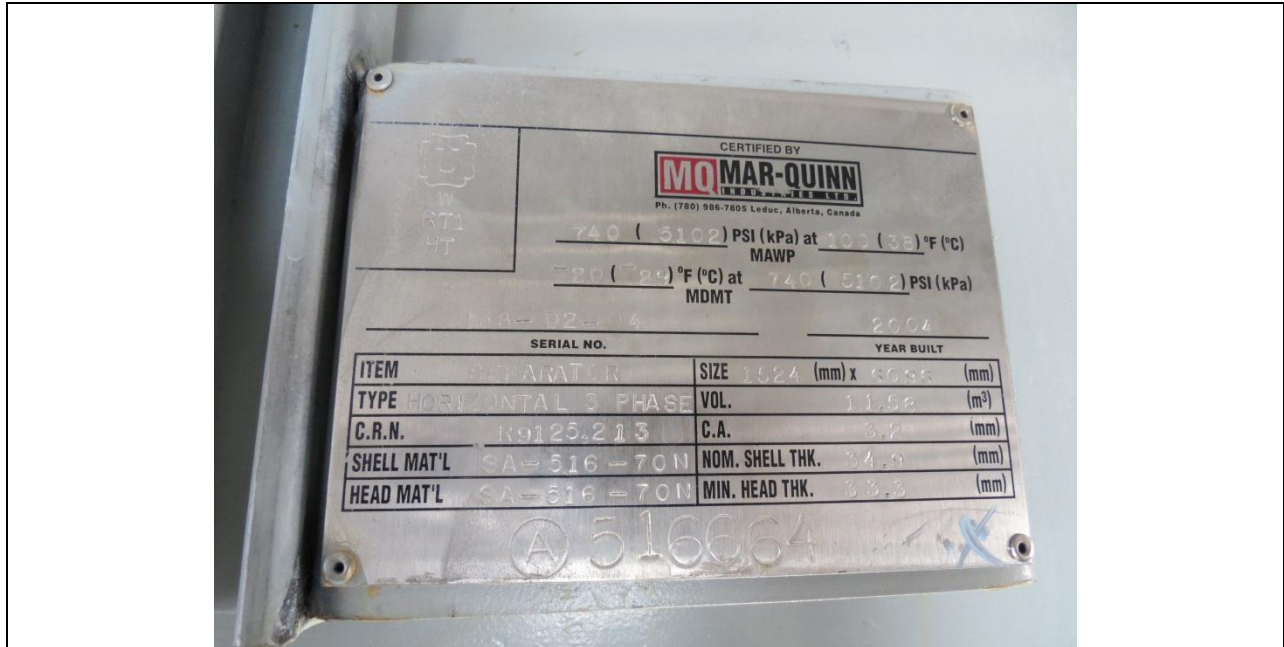
Chief Inspector Certification # _____

Assigned Interval _____

Chief Inspector Signature _____

Date _____

Pictures



Nameplate



General View of the Vessel



PSV Set Pressure



General View of the PSV



General Internal View From the East End



Outlet Nozzle (De-mister Removed)



Debris along Bottom Shell



Drain Boot



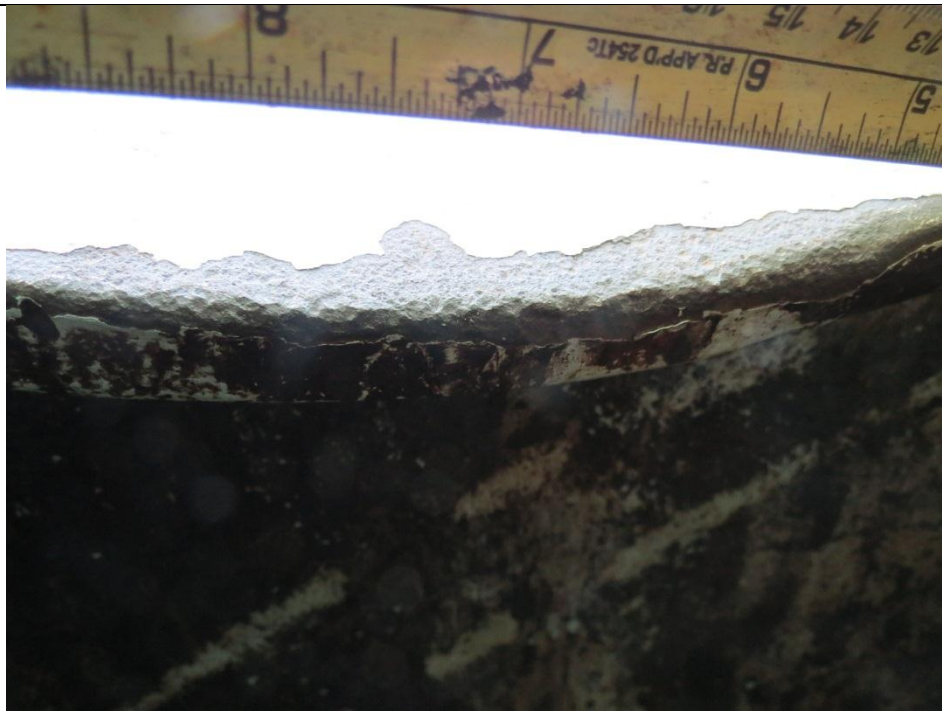
Small Coating Repairs Required Along the Drain Boot Weld



West Head



Vortex Breaker and Debris Deposits on Bottom Shell



Coating Damage Around Manway



Coating Damage Inside Manway Nozzle



Coating Damage around Manway



Demister Pad



Demister Pad



Coating Repairs inside Manway



Manway Davit Arm is single nutted

Cover Page

Client:	Husky Energy	Inspection Date:	September 17, 2012
Facility:	Minehead Field	LSD:	08-13-049-19W5M
Requested By:	Bob Marchak	A #:	A0516664
Equipment:	Horizontal Separator (Surplus)		

Status

☐ In Service	☒ Not In Service	☐ Standby	☐ Not At location
-------------------------------------	--	----------------------------------	--

Type of Inspection

☒ Visual External	☒ Visual Internal	☐ Shearwave
☐ Firetubes	☐ Installation Inspection	☒ PSV
☒ Miscellaneous (Coating)	☒ Corrosion Survey	☐ Compressor Cracking Survey

SISL Technique

SISL-20

SISL-24

Technicians/Inspectors

Adam Fitzgerald

Certifications

API-510 # 39616	IPVI # 000583	CGSB UT-II # 13474
-----------------	---------------	--------------------

Technique

☐ BR	☐ CN	☐ CP	☐ ET	☐ MT	☐ PR	☐ PT	☐ RT	☐ TM	☒ UT	☒ VE	☒ VI	☐ Other
☒ UT (thickness)			☐ Holiday Detection			☐ LPI (visible post emulsifiable)			☒ Visual (external)			
☐ UT (shearwave)			☐ MPI (dry powder)			☐ LPI (visible solvent removable)			☒ Visual (internal)			
☐ UT (c-scan)			☐ MPI (wet fluorescent)			☐ LPI (fluorescent water washable)			☐ RVT			
☐ UT (TOFD)			☐ MPI (wet visible)			☐ LPI (fluorescent post emulsifiable)			☐ Hardness (microdur)			
☐ UT (phased array)			☐ LPI (visible aqueous)			☐ LPI (fluorescent solvent removable)			☐ Chemical Etching			

Equipment

Ultrasonic	Magnetic Particle
☒ DMS-2	☐ AC Yoke
☐ USN-52L	☐ DC Yoke
☐ USN-58L	☐ Permanent Yoke
☐ USN-Phaser	☐ Blacklight
☐ Westdyne Intraspec 4	☐ Tinker & Razor M1
☐ MFE 4020 MKII	Other

Consumables

Magnetic Particle	Liquid Penetrant
☐ Magnaflux 7HF (black)	☐ SKL-WP Penetrant
☐ Magnaflux WCP-2 Contrast Paint	☐ SKD-S2 Developer
☐ Magnaflux 14AM Fluorescent Bath	☒ SKC-S Cleaner
☐ Red Oxide Powder	☐ DP-51 Penetrant
☐ Grey Oxide Powder	☐ DR-62 Developer
☐ Nital Chemical Solution	☒ Devoe-142

Ultrasonic Transducers

Description	Type	Frequency	Diameter	Angle
FH2E	Dual	7.5 MHz	.380"	0 degrees
D-7905M	Dual	2.25 MHz	.375"	0 degrees

Code

Code:	ASME V
Acc. Criteria:	API-510
Calibration:	.250" - 1.000" Stepwedge
Sensitivity:	BWR @ 80% FSH

Magnetic Particle

Material:	
Surface:	
Technique:	
Lighting:	

Code

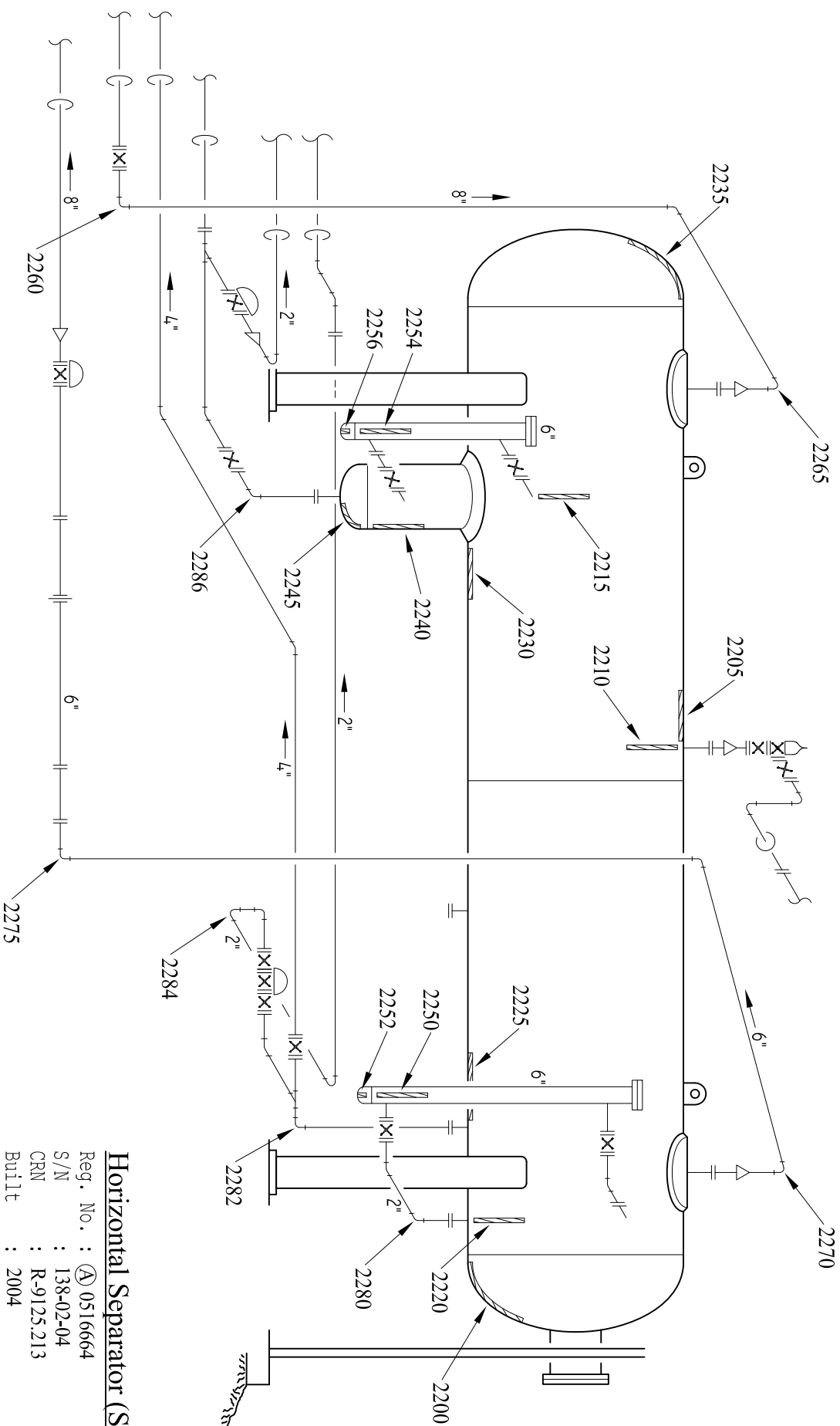
Code:	
Acc. Criteria:	
AC Yoke:	
Calibration:	

Comments:

An internal and external visual inspection, as well as UT corrosion survey were performed on the vessel. Please see report for further detail.

Signature: Adam Fitzgerald
Adam Fitzgerald

Date: October 31, 2012



Horizontal Separator (Surplus)

Reg. No. : ① 0516664
S/N : 138-02-04
CRN : R-9125.213
Built : 2004
MWP : 740 PSI @ 100°F
Dia. : 60" OD / 20"
C.A. : 0.125"
J.E. : RT-1 / 100%
Shell : 1.374" SA 516-70N
Head : 1.311" SA 516-70N
Built By : Mar-Quinn Industries Ltd.

Husky Energy
Minehead Field
08-13-049-19 W5M

SUMMIT Inspection Services Ltd.

Sketched: AF	Date: 10/2012
AutoCad: DD/RR	Revised:
Dwg: 22	Items: 2200 — 2286

Client: Husky Energy

Facility: Minehead Field

DATA PAGE

Index: 22	Horizontal Separator (surplus)											
Component: (a)	Vessel											
Band: 2200	Bottom East Head											
Registration: A 0516664												
CRN: R-9125.213												
						Product:			JE: 100%			
						Drawing: 22			Dia: 1524 (mm) OD			
						MfgDate: Jan 2004			CA: 3.17 (mm)			
						Material: SA 516-70 N			Nominal: 33.27 (mm)			
						MWP: 5102 kpa @			Critical: 30.10 (mm)			
									38 °C			

Inspection Dates	1	2	3	4	5	6	7	8	9	10	11	12	Total Loss	Loss Rate	Condition Indicator
Temperature °C	Sep 2012												(mm)	(mm/yr)	
Top	1	35.19													
	2	35.29													
	3	35.34													
	4	35.52													
	5	35.65													
	6	35.29													
	7	35.95													
	8	35.65													
	9	35.67													
	10	36.13													
	11	36.13													
Bottom	12	36.97													
Comments:															

Scan Minimum (mm)	35.19
Avg Thickness (mm)	35.73
Avg Loss	
Avg Loss Rate	
Max Loss Rate	
Avg.Condition Indicator	
Min.Condition Indicator	

Client: Husky Energy

Facility: Minehead Field

DATA PAGE

Index: 22	Horizontal Separator (surplus)	Product:	JE: 100%
Component: (a)	Vessel	Drawing: 22	Dia: 1524 (mm) OD
Band: 2205	Top Shell (west of center)	MfgDate: Jan 2004	CA: 3.17 (mm)
Registration: A 0516664		Material: SA 516-70 N	Nominal: 34.92 (mm)
CRN: R-9125.213		MWP: 5102 kpa @	Critical: 31.75 (mm)
			38 °C

[illegible]

Scan Minimum (mm)	35.82
-------------------	-------

Avg Thickness (mm)	36.03
Avg Loss	
Avg Loss Rate	
Max Loss Rate	
Avg Condition Indicator	
Min Condition Indicator	

Client: Husky Energy

Facility: Minehead Field

DATA PAGE

Index: 22	Horizontal Separator (surplus)												JE: 100%
Component: (a)	Vessel												Dia: 1524 (mm) OD
Band: 2210	Upper South Shell (west of center)												CA: 3.17 (mm)
Registration: A 0516664	MfgDate: Jan 2004												Nominal: 34.92 (mm)
CRN: R-9125.213	Material: SA 516-70 N												Critical: 31.75 (mm)
	MWP: 5102 kpa @ 38 °C												

Inspection Dates	1	2	3	4	5	6	7	8	9	10	11	12	Total Loss	Loss Rate	Condition Indicator
Temperature °C	Sep 2012												(mm)	(mm/yr)	
Top	1	2	3	4	5	6	7	8	9	10	11	12			
	35.98														
	2	36.15													
	3	36.18													
	4	36.13													
	5	36.05													
	6	36.10													
	7	36.05													
	8	36.03													
	9	36.05													
	10	36.05													
	11	36.03													
Bottom	12	36.05													
Comments:															

Scan Minimum (mm)	35.98
Avg Thickness (mm)	36.07
Avg Loss	
Avg Loss Rate	
Max Loss Rate	
Avg.Condition Indicator	
Min.Condition Indicator	

DATA PAGE

Index: 22	Horizontal Separator (surplus)											
Component: (a)	Vessel											
Band: 2215	Lower South Shell (west of center)											
Registration: A 0516664												
CRN: R-9125.213												
				Product:				JE: 100%				
				Drawing: 22				Dia: 1524 (mm) OD				
				MfgDate: Jan 2004				CA: 3.17 (mm)				
				Material: SA 516-70 N				Nominal: 34.92 (mm)				
				MWP: 5102 kpa @				Critical: 31.75 (mm)				
								38 °C				

Inspection Dates	1	2	3	4	5	6	7	8	9	10	11	12	Total Loss	Loss Rate	Condition Indicator
Temperature °C	Sep 2012												(mm)	(mm/yr)	

Top	1	35.98
	2	35.95
	3	35.98
	4	35.95
	5	35.95
	6	35.95
	7	35.93
	8	35.90
	9	35.93
	10	35.95
	11	35.93
Bottom	12	35.88

Comments:

Scan Minimum (mm)	35.88
Avg Thickness (mm)	35.94
Avg Loss	
Avg Loss Rate	
Max Loss Rate	
Avg.Condition Indicator	
Min.Condition Indicator	



Client: Husky Energy

Facility: Minehead Field

DATA PAGE

Index: 22	Horizontal Separator (surplus)											
Component: (a)	Vessel											
Band: 2220	Lower South Shell (east end)											
Registration: A 0516664												
CRN: R-9125.213												
				Product:				JE: 100%				
				Drawing: 22				Dia: 1524 (mm) OD				
				MfgDate: Jan 2004				CA: 3.17 (mm)				
				Material: SA 516-70 N				Nominal: 34.92 (mm)				
				MWP: 5102 kpa @				Critical: 31.75 (mm)				
				38 °C								

Inspection Dates	1	2	3	4	5	6	7	8	9	10	11	12	Total Loss	Loss Rate	Condition Indicator
Temperature °C	Sep 2012												(mm)	(mm/yr)	
Top	1	2	3	4	5	6	7	8	9	10	11	12			
	35.93														
	2	36.05													
	3	35.90													
	4	35.90													
	5	35.90													
	6	35.90													
	7	35.93													
	8	35.90													
	9	35.88													
	10	35.90													
	11	35.90													
Bottom	12	35.54													
Comments:															

Scan Minimum (mm)	35.54
Avg Thickness (mm)	35.89
Avg Loss	
Avg Loss Rate	
Max Loss Rate	
Avg.Condition Indicator	
Min.Condition Indicator	

Client: Husky Energy

Facility: Minehead Field

DATA PAGE

Index: 22	Horizontal Separator (surplus)											
Component: (a)	Vessel											
Band: 2225	Bottom Shell (east end)											
Registration: A 0516664												
CRN: R-9125.213												
				Product:				JE: 100%				
				Drawing: 22				Dia: 1524 (mm) OD				
				MfgDate: Jan 2004				CA: 3.17 (mm)				
				Material: SA 516-70 N				Nominal: 34.92 (mm)				
				MWP: 5102 kpa @				Critical: 31.75 (mm)				

Inspection Dates	1	2	3	4	5	6	7	8	9	10	11	12	Total Loss (mm)	Loss Rate (mm/yr)	Condition Indicator
2012															
16															
Temperature °C															
East	1	2	3	4	5	6	7	8	9	10	11	12			
	35.65	35.80	35.88	35.85	35.85	35.85	35.88	35.88	35.88	35.88	35.88	35.88			
	35.85	35.85	35.85	35.85	35.85	35.85	35.88	35.88	35.88	35.88	35.88	35.88			
	35.85	35.85	35.85	35.85	35.85	35.85	35.88	35.88	35.88	35.88	35.88	35.88			
	35.88	35.88	35.88	35.88	35.88	35.88	35.88	35.88	35.88	35.88	35.88	35.88			
	35.88	35.88	35.88	35.88	35.88	35.88	35.88	35.88	35.88	35.88	35.88	35.88			
	35.88	35.88	35.88	35.88	35.88	35.88	35.88	35.88	35.88	35.88	35.88	35.88			
West	12	35.88													
Comments:															

Scan Minimum (mm)	35.65
Avg Thickness (mm)	35.84
Avg Loss	
Avg Loss Rate	
Max Loss Rate	
Avg.Condition Indicator	
Min.Condition Indicator	

DATA PAGE

Index: 22	Horizontal Separator (surplus)											
Component: (a)	Vessel											
Band: 2230	Bottom Shell (west of center)											
Registration: A 0516664												
CRN: R-9125.213												
				Product:				JE: 100%				
				Drawing: 22				Dia: 1524 (mm) OD				
				MfgDate: Jan 2004				CA: 3.17 (mm)				
				Material: SA 516-70 N				Nominal: 34.92 (mm)				
				MWP: 5102 kpa @				Critical: 31.75 (mm)				
								38 °C				

Inspection Dates	1	2	3	4	5	6	7	8	9	10	11	12	Total Loss (mm)	Loss Rate (mm/yr)	Condition Indicator
Temperature °C	Sep 2012														
	16														
East	1	2	3	4	5	6	7	8	9	10	11	12			
	35.90	35.90	35.88	35.93	35.88	35.88	35.88	35.88	35.90	35.90	35.88	35.80			
West	12														
	35.80														
Comments:															

Scan Minimum (mm)	35.80
Avg Thickness (mm)	35.88
Avg Loss	
Avg Loss Rate	
Max Loss Rate	
Avg.Condition Indicator	
Min.Condition Indicator	

Client: Husky Energy

Facility: Minehead Field

DATA PAGE

Index: 22	Horizontal Separator (surplus)											
Component: (a)	Vessel											
Band: 2235	Top West Head											
Registration: A 0516664												
CRN: R-9125.213												
				Product:				JE: 100%				
				Drawing: 22				Dia: 1524 (mm) OD				
				MfgDate: Jan 2004				CA: 3.17 (mm)				
				Material: SA 516-70 N				Nominal: 33.27 (mm)				
				MWP: 5102 kpa @				Critical: 30.10 (mm)				
								38 °C				

Inspection Dates	1	2	3	4	5	6	7	8	9	10	11	12	Total Loss	Loss Rate	Condition Indicator
Temperature °C	Sep 2012												(mm)	(mm/yr)	

Top	1	2	3	4	5	6	7	8	9	10	11	12
	36.92	36.79	36.13	36.13	36.23	36.10	36.03	35.93	35.80	35.65	35.60	35.44
Bottom	12											

Comments:

Scan Minimum (mm)	35.44
Avg Thickness (mm)	36.06
Avg Loss	
Avg Loss Rate	
Max Loss Rate	
Avg Condition Indicator	
Min.Condition Indicator	

Client: Husky Energy

Facility: Minehead Field

DATA PAGE

Index: 22	Horizontal Separator (surplus)											
Component: (b)	Drain Boot											
Band: 2240	Bottom East Shell of Boot											
Registration:												
CRN:												
				Product:				JE:				100%
				Drawing: 22				Dia:				508 (mm)
				MfgDate: Jan 2004				CA:				3.17 (mm)
				Material:				Nominal:				22.22 (mm)
				MWP: 5102 kpa @				Critical:				19.05 (mm)

Inspection Dates	1	2	3	4	5	6	7	8	9	10	11	12	Total Loss	Loss Rate	Condition Indicator
	Sep 2012												(mm)	(mm/yr)	
Temperature °C	16														

Top	1	22.76
	2	22.78
	3	22.70
	4	22.78
	5	22.78
	6	22.78
	7	22.73
	8	22.73
	9	22.78
	10	22.81
	11	22.78
Bottom	12	22.73

Comments:

Sep 2012 Band: Nominal thickness is assumed to be 22.22 mm and should be confirmed.

Scan Minimum (mm) 22.70

Avg Thickness (mm) 22.76

Avg Loss

Avg Loss Rate

Max Loss Rate

Avg.Condition Indicator

Min.Condition Indicator



Loss rate term: Mid Term 3
Data printed in: Metric units.

Material correction: ON

Minimum readings before ignoring nominal 3
Critical thickness: Nominal less Corrosion Allowance

Calibration correction: ON

Temperature Correction: ON

Item: 2240

Client: Husky Energy

Facility: Minehead Field

DATA PAGE

Index: 22	Horizontal Separator (surplus)												JE: 100%
Component: (b)	Drain Boot												Dia: 508 (mm)
Band: 2245	Bottom East Head of Boot												CA: 3.17 (mm)
Registration:	MfgDate: Jan 2004												Nominal: 20.62 (mm)
CRN:	Material: MWP: 5102 kpa @ 38 °C												Critical: 17.45 (mm)

Inspection Dates	1	2	3	4	5	6	7	8	9	10	11	12	Total Loss	Loss Rate	Condition Indicator
Temperature °C	Sep 2012												(mm)	(mm/yr)	
Top	1	22.70													
	2	20.85													
	3	21.38													
	4	21.18													
	5	21.51													
	6	21.51													
	7	21.66													
Bottom	8	21.48													
Comments:															
Sep 2012	Band: Nominal thickness is assumed to be 20.62 mm and should be confirmed.														
Scan Minimum (mm)	20.85														

Avg Thickness (mm) 21.54

Avg Loss

Avg Loss Rate

Max Loss Rate

Avg Condition Indicator

Min.Condition Indicator

Client: Husky Energy

Facility: Minehead Field

DATA PAGE

Index: 22	Horizontal Separator (surplus)			JE:	100%
Component: (c)	Level Column			Dia:	168 (mm) OD
Band: 2250	Bottom South Shell of Level Column			CA:	1.60 (mm)
Registration:				Nominal:	10.97 (mm)
CRN:				Critical:	8.00 (mm)
Product: Drawing: 22					
MfgDate: Jan 2004					
Material: SA 106 B					
MWP: 5102 kpa @ 38 °C					

Inspection Dates	1	2	3	4	5	6	7	8	9	10	11	12	Total Loss	Loss Rate	Condition Indicator
Temperature °C	Sep 2012												(mm)	(mm/yr)	
Top	1	2	3	4	5	6	7	8	9	10	11	12			
	11.06	11.01	11.03	11.03	10.73	10.93	11.01	10.96	11.01	11.11	11.14	11.24	0.24	0.03	97.2
													0.04	0.00	100+
													0.01	0.00	100+
Bottom	1	2	3	4	5	6	7	8	9	10	11	12			
	11.06	11.01	11.03	11.03	10.73	10.93	11.01	10.96	11.01	11.11	11.14	11.24			
Comments:															

Scan Minimum (mm)	10.73
Avg Thickness (mm)	11.02
Avg Loss	
Avg Loss Rate	0.03
Max Loss Rate	
Avg Condition Indicator	
Min.Condition Indicator	97.3

DATA PAGE

Index: 22	Horizontal Separator (surplus)												JE: 100%
Component: (c)	Level Column												Dia: 168 (mm) OD
Band: 2252	Bottom South Head of Level Column												CA: 1.60 (mm)
Registration:													Nominal: 10.97 (mm)
CRN:													Critical: 8.00 (mm)
Product: Drawing: 22													
MfgDate: Jan 2004													
Material: SA 234 WPB													
MWP: 5102 kpa @ 38 °C													

Inspection Dates	1	2	3	4	5	6	7	8	9	10	11	12	Total Loss	Loss Rate	Condition Indicator
Temperature °C													(mm)	(mm/yr)	
Top	1	12.38													
	2	10.60											0.37	0.04	60.9
	3	11.03													
Bottom	4	11.09													

Comments: Sep 2012 Band: Nominal thickness is assumed to be 10.97 mm and should be confirmed.

Scan Minimum (mm)	10.60
Avg Thickness (mm)	11.28
Avg Loss	
Avg Loss Rate	
Max Loss Rate	0.04
Avg Condition Indicator	
Min.Condition Indicator	60.9

Client: Husky Energy

Facility: Minehead Field

DATA PAGE

Index: 22	Horizontal Separator (surplus)			JE:	100%
Component: (d)	Level Column			Dia:	168 (mm) OD
Band: 2254	Bottom Southeast Shell of Level Column			CA:	1.60 (mm)
Registration:				Nominal:	10.97 (mm)
CRN:				Critical:	8.00 (mm)
Product: Drawing: 22					
MfgDate: Jan 2004					
Material: SA 106 B					
MWP: 5102 kpa @ 38 °C					

Inspection Dates	1	2	3	4	5	6	7	8	9	10	11	12	Total Loss	Loss Rate	Condition Indicator
Temperature °C	Sep 2012												(mm)	(mm/yr)	
Top	1	2	3	4	5	6	7	8	9	10	11	12	0.27	0.03	87.2
	2	3	4	5	6	7	8	9	10	11	12	13	0.22	0.03	100+
	3	4	5	6	7	8	9	10	11	12	13	14	0.24	0.03	97.2
	4	5	6	7	8	9	10	11	12	13	14	15	0.27	0.03	87.2
	5	6	7	8	9	10	11	12	13	14	15	16	0.17	0.02	100+
	6	7	8	9	10	11	12	13	14	15	16	17	0.17	0.02	100+
	7	8	9	10	11	12	13	14	15	16	17	18	0.19	0.02	100+
	8	9	10	11	12	13	14	15	16	17	18	19	0.32	0.04	71.9
	9	10	11	12	13	14	15	16	17	18	19	20	0.29	0.03	78.9
	10	11	12	13	14	15	16	17	18	19	20	21	0.42	0.05	52.5
	11	12	13	14	15	16	17	18	19	20	21	22	0.42	0.05	52.5
	12	13	14	15	16	17	18	19	20	21	22	23	0.40	0.05	56.4
Bottom															
Comments:															

Scan Minimum (mm)	10.55
Avg Thickness (mm)	10.69
Avg Loss	0.28
Avg Loss Rate	0.03
Max Loss Rate	0.05
Avg Condition Indicator	78.6
Min.Condition Indicator	52.5

DATA PAGE

Index: 22	Horizontal Separator (surplus)											
Component: (d)	Level Column											
Band: 2256	Bottom South Head of Level Column											
Registration:												
CRN:												
Product:						JE: 100%						
Drawing: 22						Dia: 168 (mm) OD						
MfgDate: Jan 2004						CA: 1.60 (mm)						
Material: SA 234 WPB						Nominal: 10.97 (mm)						
MWP: 5102 kpa @						Critical: 8.00 (mm)						
38 °C												

Inspection Dates	1	2	3	4	5	6	7	8	9	10	11	12	Total Loss (mm)	Loss Rate (mm/yr)	Condition Indicator
Sep 2012															
Temperature °C	16														
Top	1	2	3	4	5	6	7	8	9	10	11	12	0.14	0.02	100+
	2	3	4	5	6	7	8	9	10	11	12				
	3	4	5	6	7	8	9	10	11	12			0.29	0.03	78.9
Bottom	4	5	6	7	8	9	10	11	12						
	1	2	3	4	5	6	7	8	9	10	11	12			
	2	3	4	5	6	7	8	9	10	11	12				
	3	4	5	6	7	8	9	10	11	12					
	4	5	6	7	8	9	10	11	12						

Comments:

Sep 2012 Band: Nominal thickness is assumed to be 10.97 mm and should be confirmed.

Scan Minimum (mm)	10.68
Avg Thickness (mm)	11.34
Avg Loss	
Avg Loss Rate	
Max Loss Rate	0.03
Avg Condition Indicator	
Min.Condition Indicator	79.0

Client: Husky Energy

Facility: Minehead Field

DATA PAGE

Index: 22	Horizontal Separator (surplus)												JE: 100%
Component: (e)	Inlet Piping												Dia: 219 (mm) OD
Band: 2260	8" Inlet Elbow												CA: 1.59 (mm)
Registration:													Nominal: 12.70 (mm)
CRN:													Critical: 9.52 (mm)
Product: Drawing: 22													
MfgDate: Jan 2004													
Material: SA 234 WPB													
MWP: 5102 kpa @ 38 °C													

Inspection Dates	1	2	3	4	5	6	7	8	9	10	11	12	Total Loss	Loss Rate	Condition Indicator
Temperature °C	16												(mm)	(mm/yr)	
Top	1	2	3	4	5	6	7	8	9	10	11	12	0.93	0.11	21.0
	2	3	4	5	6	7	8	9	10	11	12		1.26	0.15	13.2
	3	4	5	6	7	8	9	10	11	12			1.54	0.18	9.2
	4	5	6	7	8	9	10	11	12				1.28	0.15	12.8
	5	6	7	8	9	10	11	12					1.33	0.15	11.9
	6	7	8	9	10	11	12						1.33	0.15	11.9
	7	8	9	10	11	12							1.46	0.17	10.2
	8	9	10	11	12								1.23	0.14	13.6
	9	10	11	12									1.56	0.18	8.9
	10	11	12										1.59	0.18	8.7
	11	12											1.56	0.18	8.9
Bottom	12												1.61	0.19	8.4

Comments:

Sep 2012 Band: Possible indications of internal corrosion may be present to a low of .436". Nominal thickness is .500". This elbow also may have been manufactured thin which could account for the low readings.

Scan Minimum (mm)	11.09
Avg Thickness (mm)	11.31
Avg Loss	1.39
Avg Loss Rate	0.16
Max Loss Rate	0.19
Avg Condition Indicator	9.7
Min.Condition Indicator	8.4



Client: Husky Energy

Facility: Minehead Field

DATA PAGE

Index: 22	Horizontal Separator (surplus)												JE: 100%
Component: (e)	Inlet Piping												Dia: 219 (mm) OD
Band: 2265	8" Inlet Elbow												CA: 1.59 (mm)
Registration:													Nominal: 12.70 (mm)
CRN:													Critical: 9.52 (mm)
Product: Drawing: 22													
MfgDate: Jan 2004													
Material: SA 234 WPB													
MWP: 5102 kpa @ 38 °C													

Inspection Dates	1	2	3	4	5	6	7	8	9	10	11	12	Total Loss	Loss Rate	Condition Indicator
2012													(mm)	(mm/yr)	
Temperature °C	16														
Top	1	2	3	4	5	6	7	8	9	10	11	12	0.93	0.11	21.0
	2	3	4	5	6	7	8	9	10	11	12		0.93	0.11	21.0
	3	4	5	6	7	8	9	10	11	12			0.85	0.10	23.6
	4	5	6	7	8	9	10	11	12				0.88	0.10	22.7
	5	6	7	8	9	10	11	12					0.80	0.09	25.7
	6	7	8	9	10	11	12						0.75	0.09	28.0
	7	8	9	10	11	12							0.70	0.08	30.7
	8	9	10	11	12								0.75	0.09	28.0
	9	10	11	12									0.42	0.05	56.9
	10	11	12										0.50	0.06	46.8
	11	12											0.42	0.05	56.9
Bottom	12												0.39	0.05	61.2
Comments:															

Scan Minimum (mm)	11.77														
Avg Thickness (mm)	12.01														
Avg Loss	0.69														
Avg Loss Rate	0.08														
Max Loss Rate	0.11														
Avg Condition Indicator	28.1														
Min.Condition Indicator	21.0														

Client: Husky Energy

Facility: Minehead Field

DATA PAGE

Index: 22	Horizontal Separator (surplus)												JE: 100%
Component: (f)	Outlet Piping												Dia: 168 (mm) OD
Band: 2270	6" Outlet Elbow												CA: 1.59 (mm)
Registration:													Nominal: 10.97 (mm)
CRN:													Critical: 8.01 (mm)
Product: Drawing: 22													
MfgDate: Jan 2004													
Material: SA 234 WPB													
MWP: 5102 kpa @ 38 °C													

Inspection Dates	1	2	3	4	5	6	7	8	9	10	11	12	Total Loss	Loss Rate	Condition Indicator
2012													(mm)	(mm/yr)	
Temperature °C	16														
Top	1	2	3	4	5	6	7	8	9	10	11	12			
	10.98												0.29	0.03	78.5
	2	10.68											0.34	0.04	65.7
	3	10.63											0.34	0.04	65.7
	4	10.63											0.32	0.04	71.6
	5	10.65											0.65	0.07	30.8
	6	10.32											0.50	0.06	42.9
	7	10.48											0.34	0.04	65.7
	8	10.63											0.29	0.03	78.5
	9	10.68											0.22	0.03	100+
	10	10.75											0.19	0.02	100+
	11	10.78											0.14	0.02	100+
	12	10.83											0.04	0.00	100+
	13	10.93													
	14	11.06													
Bottom															
Comments:															

Scan Minimum (mm)	10.32														
Avg Thickness (mm)	10.72														
Avg Loss	0.26														
Avg Loss Rate	0.03														
Max Loss Rate	0.07														
Avg.Condition Indicator	78.2														
Min.Condition Indicator	30.8														

DATA PAGE

Index: 22	Horizontal Separator (surplus)												JE: 100%
Component: (f)	Outlet Piping												Dia: 168 (mm) OD
Band: 2275	6" Outlet Elbow												CA: 1.59 (mm)
Registration:													Nominal: 10.97 (mm)
CRN:													Critical: 8.01 (mm)
Product: Drawing: 22													
MfgDate: Jan 2004													
Material: SA 234 WPB													
MWP: 5102 kpa @ 38 °C													

Inspection Dates	1	2	3	4	5	6	7	8	9	10	11	12	Total Loss	Loss Rate	Condition Indicator
Temperature °C	16												(mm)	(mm/yr)	
Top	1	2	3	4	5	6	7	8	9	10	11	12	0.62	0.07	32.4
	2	3	4	5	6	7	8	9	10	11	12		1.16	0.13	13.5
	3	4	5	6	7	8	9	10	11	12			1.44	0.17	9.2
	4	5	6	7	8	9	10	11	12				1.57	0.18	7.7
	5	6	7	8	9	10	11	12					2.02	0.23	4.0
	6	7	8	9	10	11	12						1.97	0.23	4.3
	7	8	9	10	11	12							2.12	0.25	3.4
	8	9	10	11	12								1.26	0.15	11.7
	9	10	11	12									1.57	0.18	7.7
	10	11	12										1.95	0.22	4.5
	11	12											1.72	0.20	6.3
	12												1.21	0.14	12.5
	13												1.13	0.13	14.0
Bottom	14												1.03	0.12	16.2

Comments: Band: Possible indications of internal corrosion may be present to a low of .348". Nominal thickness is .432". This elbow also may have been manufactured thin which could account for the low readings.

Scan Minimum (mm)	8.85
Avg Thickness (mm)	9.49
Avg Loss	1.48
Avg Loss Rate	0.17
Max Loss Rate	0.24
Avg Condition Indicator	4.9
Min.Condition Indicator	3.4

DATA PAGE

Index: 22	Horizontal Separator (surplus)												JE: 100%
Component: (g)	Piping												Dia: 60 (mm) OD
Band: 2280	2" Elbow												CA: 1.59 (mm)
Registration:													Nominal: 5.54 (mm)
CRN:													Critical: 3.26 (mm)
Product: Drawing: 22													
MfgDate: Jan 2004													
Material: SA 234 WPB													
MWP: 5102 kpa @ 38 °C													

Inspection Dates	1	2	3	4	5	6	7	8	9	10	11	12	Total Loss	Loss Rate	Condition Indicator
Temperature °C	16												(mm)	(mm/yr)	
Top	1	2	3	4	5	6	7	8	9	10	11	12	0.35	0.04	47.7
	2	3	4	5	6	7	8	9	10	11	12	13	0.45	0.05	35.0
	3	4	5	6	7	8	9	10	11	12	13	14	0.06	0.06	28.7
	4	5	6	7	8	9	10	11	12	13	14	15	0.48	0.06	32.7
Bottom	5	6	7	8	9	10	11	12	13	14	15	16	0.30	0.03	57.3
Comments:															

Scan Minimum (mm)	5.01
Avg Thickness (mm)	5.12
Avg Loss	0.42
Avg Loss Rate	0.05
Max Loss Rate	0.06
Avg Condition Indicator	36.0
Min Condition Indicator	28.7

Client: Husky Energy

Facility: Minehead Field

DATA PAGE

Index: 22	Horizontal Separator (surplus)												JE: 100%
Component: (h)	Drain Piping												Dia: 114 (mm) OD
Band: 2282	4" Drain Elbow												CA: 1.59 (mm)
Registration:	MfgDate: Jan 2004												Nominal: 8.56 (mm)
CRN:	Material: SA 234 WPB												Critical: 5.90 (mm)
	MWP: 5102 kpa @ 38 °C												

Inspection Dates	1	2	3	4	5	6	7	8	9	10	11	12	Total Loss	Loss Rate	Condition Indicator
Temperature °C	Sep 2012												(mm)	(mm/yr)	
Top	1												0.14	0.02	100+
	2												0.14	0.02	100+
	3												0.12	0.01	100+
	4												0.22	0.03	95.9
	5												0.19	0.02	100+
	6												0.25	0.03	85.1
	7												0.32	0.04	62.9
	8												0.37	0.04	53.1
	9												0.25	0.03	85.1
Bottom															
Comments:															

Scan Minimum (mm)	8.19
Avg Thickness (mm)	8.34
Avg Loss	0.22
Avg Loss Rate	0.03
Max Loss Rate	0.04
Avg Condition Indicator	88.8
Min Condition Indicator	53.2

DATA PAGE

Index: 22	Horizontal Separator (surplus)												JE: 100%
Component: (h)	Drain Piping												Dia: 60 (mm) OD
Band: 2284	2" Drain Elbow												CA: 1.59 (mm)
Registration:	MfgDate: Jan 2004												Nominal: 5.54 (mm)
CRN:	Material: SA 234 WPB												Critical: 3.26 (mm)
	MWP: 5102 kpa @ 38 °C												

Inspection Dates	1	2	3	4	5	6	7	8	9	10	11	12	Total Loss	Loss Rate	Condition Indicator
Temperature °C	Sep 2012												(mm)	(mm/yr)	
Top	1												0.45	0.05	35.0
	2												0.55	0.06	27.0
	3												0.35	0.04	47.7
	4												0.55	0.06	27.0
Bottom	5												0.15	0.02	100+
Comments:															

Scan Minimum (mm)	4.98
Avg Thickness (mm)	5.13
Avg Loss	0.41
Avg Loss Rate	0.05
Max Loss Rate	0.06
Avg Condition Indicator	36.4
Min Condition Indicator	27.0

Client: Husky Energy

Facility: Minehead Field

DATA PAGE

Index: 22	Horizontal Separator (surplus)												JE: 100%
Component: (i)	Drain Piping												Dia: 114 (mm) OD
Band: 2286	4" Drain Elbow												CA: 1.59 (mm)
Registration:	MfgDate: Jan 2004												Nominal: 8.56 (mm)
CRN:	Material: SA 234 WPB												Critical: 5.90 (mm)
	MWP: 5102 kpa @ 38 °C												

Inspection Dates	1	2	3	4	5	6	7	8	9	10	11	12	Total Loss	Loss Rate	Condition Indicator
Temperature °C	Sep 2012												(mm)	(mm/yr)	
Top	1												0.42	0.05	45.7
	2												0.60	0.07	29.6
	3												0.08	0.08	25.3
	4												0.60	0.07	29.6
	5												0.65	0.08	26.6
	6												0.53	0.06	35.2
	7												0.55	0.06	33.2
	8												0.30	0.03	69.0
	9												0.30	0.03	69.0
Bottom															
Comments:															

Scan Minimum (mm)	7.88
Avg Thickness (mm)	8.05
Avg Loss	0.51
Avg Loss Rate	0.06
Max Loss Rate	0.08
Avg Condition Indicator	33.4
Min Condition Indicator	25.3