

Client: L & L Oilfield/Husky Energy		Material: Carbon Steel		Date: May 29, 2019
Location: L&L Shop Lloyd AB		Codes: ASME VIII Div 1 App 6		Dispatch #: 20550
PO#: WO#81377442; AFE#: Kevin Proctor		Item(s): 20" Fire Tube Welds		Report Page #: 1 of 2
Surface Cond.: Weldment		Thickness: 0.500"	Heat Treatment: N/A	Procedure: MT-GEN-001-TQ-R3 MT2
Black Light Serial #:	Mfg:	Cal. Due Date:	Verification Per ASME V ART 7 T.777.2: N/A	
Magnetizing Equipment: Yoke	Serial #: MP 5799	Mfg: Sentinel NDT	Cal. Due Date: 2019-08-08	
White Light: 3V LED Flashlight (97 Lm)	Method of Magnetization: AC, Continuous		Lift Test Verification per ASME V Art 7 T-762: Yes	
Magnetic Particles: Wet, Black	Batch #: L180324	Mfg: SREM	Type: FLUXO-3	
Background: Yes	Batch #: L180325	Mfg: SREM	Type: FLUXO-4	

Testing Results:

As requested, a Magnetic Particle Inspection was performed on the following welds of:

Husky Energy

Marsden 1-30-44-20w3

Treater


20" OD Firetubes

Scope:

NDT#:	Serial No: 88J57 CRN# AD 777.3 20" OD Firetube Weld Description:	Results:
MT-1	Tube to Tube sheet welds (non-Pressure side)	Accept
MT-2	Tube to Tube sheet welds (Pressure side)	Accept
MT-3	20" Circ weld	Accept
MT-4	20" Miter weld	Accept
MT-5	20" Miter weld	Accept
MT-6	20" Miter weld	Accept
MT-7	20" Miter weld	Accept
MT-8	20" Circ weld	Accept
MT-9	Tube to Tube sheet welds (Pressure side)	Accept
MT-10	Tube to Tube sheet welds (non-Pressure side)	Accept

Conclusion: The areas noted above are acceptable to the criteria given by ASME Section VIII Division 1 Mandatory Appendix 6.

Note: Battery powered 3V white light verified per ASME V ART 7 T.777.1

Testing Limitations: No			Continuance Report: PDF Attachment(s)		
Unit #: 9	KMs n/a	Consumables (Item x Qty)	Interpreter: Steve Garvey (Sign):  SG — APPLIED ON 2019-05-29 CGSB #: 17594 CGSB Level: 2 SNT-TC-1A Level: 2 I am in full agreement with the contents and charges applicable to this report.		
Reg: 4.00	OT1: 0.00	1.0 cans x Fluxo4; 1.0 cans x Fluxo3;			
OT2: 0.00	Shift: 0.00				
LOA: No					
Personnel: Chris Ericson, Steve Garvey			Client (Print): Client (Sign): Date: May 29, 2019		

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PO#: WO#81377442; AFE#: Kevin Proctor		Item(s): 20" Fire Tube Welds		Report Page #: 2 of 2
Surface Cond.: Weldment		Thickness: 0.500"	Heat Treatment: N/A	Procedure: MT-GEN-001-TQ-R3 MT2
Black Light Serial #:	Mfg:	Cal. Due Date:	Verification Per ASME V ART 7 T.777.2: N/A	
Magnetizing Equipment: Yoke	Serial #: MP 5799	Mfg: Sentinel NDT	Cal. Due Date: 2019-08-08	
White Light: 3V LED Flashlight (97 Lm)	Method of Magnetization: AC, Continuous		Lift Test Verification per ASME V Art 7 T-762: Yes	
Magnetic Particles: Wet, Black	Batch #: L180324	Mfg: SREM	Type: FLUXO-3	
Background: Yes	Batch #: L180325	Mfg: SREM	Type: FLUXO-4	

Testing Results:

As requested, a Magnetic Particle Inspection was performed on the following welds of:

Husky Energy

Marsden 1-30-44-20w3

Treater


20" OD Firetubes

Scope:

NDT#:	Serial No: 88J57 CRN# AO 777.3 20" OD Firetube Weld Description:	Results:
MT-11	Tube to Tube sheet welds (non-Pressure side)	Accept
MT-12	Tube to Tube sheet welds (Pressure side)	Accept
MT-13	20" Circ weld	Accept
MT-14	20" Circ weld	Accept
MT-15	20" Miter weld	Accept
MT-16	20" Miter weld	Accept
MT-17	20" Miter weld	Accept
MT-18	20" Miter weld	Accept
MT-19	20" Circ weld	Accept
MT-20	Tube to Tube sheet welds (Pressure side)	Accept
MT-21	Tube to Tube sheet welds (non-Pressure side)	Accept

Conclusion: The areas noted above are acceptable to the criteria given by ASME Section VIII Division 1 Mandatory Appendix 6.

Note: Battery powered 3V white light verified per ASME V ART 7 T.777.1

Testing Limitations: No		Continuance Report: PDF Attachment(s)	
See page 1 for billing information	Interpreter: Steve Garvey (Sign): 		
	SG — APPLIED ON 2019-05-29		
	CGSB #: 17594	CGSB Level: 2	SNT-TC-1A Level: 2
	I am in full agreement with the contents and charges applicable to this report.		
Personnel: Chris Ericson, Steve Garvey	Client (Print):		Date: May 29, 2019
	Client (Sign):		

A photograph showing several large, horizontal industrial pipes, likely for a water treatment plant. The pipes are made of metal and have large circular openings at one end. They are resting on a metal support structure. In the background, there are other construction materials, a pickup truck, and a clear blue sky.





CRN# AO 777.3



Client: L & L Oilfield / Husky Energy				Material: Carbon Steel				Date: May 29, 2019			
Location: L&L Oilfield Lloydminster AB				Codes: ASME VIII Div 1 App 6				Dispatch #: 20580			
Job#: 81377442; AFE#: Kevin Proctor				Item(s): 20" Fire Tube Miters				Report Page #: 1 of 1			
Method: Thickness			Surface Cond.: As Forged			Thickness: 0.500"		Procedure: UT-MUT-UTT-006-TQ-R1			
Equipment: GE			Model: DMS2			Serial #: 0259RY			Cal. Due Date: 2019-09-27		
Cal. Block(s): #12-2511: 5-Step Wedge Steel;						Cable Type: Coaxial			Length: 3'		
						Couplant: Sonogel			Batch #: 63-001 11163D		
Ultrasonic Transducers						Calibration Settings					
Test Angle	Type	Frequency (MHz)	Serial #	Diameter	Reference Reflector	Reference		Scan Sensitivity	Transfer Loss Value	Range	
						dB	% FSH				
0°	Dual	7.5	SCA0078	0.38"	1st BW	67	80	N/A	N/A	1"	

Testing Results:

As requested an ultrasonic inspection was performed on the following:

Husky Energy

S/N: 88J57

CRN#: AD 777.3

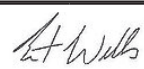
Marsden 1-30-44-20W3

20" OD Firetube

Scope:

Ultrasonic thickness inspection of the fire tube miters on the interior of the bend. Lowest readings are recorded in the table below, location of readings are marked on the fire tube.

NDT #:	Nominal:	Lowest Reading:
UT1	0.500"	0.465"
UT2	0.500"	0.425"
UT3	0.500"	0.389"
UT4	0.500"	0.417"
UT5	0.500"	0.445"
UT6	0.500"	0.478"
UT7	0.500"	0.508"

Testing Limitations: No				Continuance Report: No			
Unit #: 9	KMs n/a	Consumables (Item x Qty)		Interpreter: Bret Wells (Sign): 			
Reg: 2.00	OT1: 0.00			BW — APPLIED ON 2019-05-29			
OT2: 0.00	Shift: 2.00			CGSB #: 20594	CGSB Level: 1	SNT-TC-1A Level: 1	
LOA: No				I am in full agreement with the contents and charges applicable to this report.			
Personnel: Bret Wells				Client (Print):		Date: May 29, 2019	
				Client (Sign):			

PHOTOS**GENERAL**

Inspection Date	May 29, 2019	Inspected By	Luke Newport	Equipment #	62065240
Plant	HOG	Op Unit	SW Marsden	LSD	1-30-44-26w3

PHOTOS*Firetube Inspection*

North Tube – burner side hot spot at 1 o'clock position, stack side of burner is warped, UT was completed on miters and found to be outside of corrosion allowance. Minor corrosion on gasket sealing surface. Both the burner and stack side will be completely replaced 2' away from the tube sheet including the miters.

South Tube – no concerns with the firetube, tube sheet has between 1/32" and 1/16" deflection but assumed to be from construction

PHOTOS

GENERAL

Inspection Date	May 29, 2019	Inspected By	Luke Newport	Equipment #	62065240
Plant	HOG	Op Unit	SW Marsden	LSD	1-30-44-26w3

PHOTOS



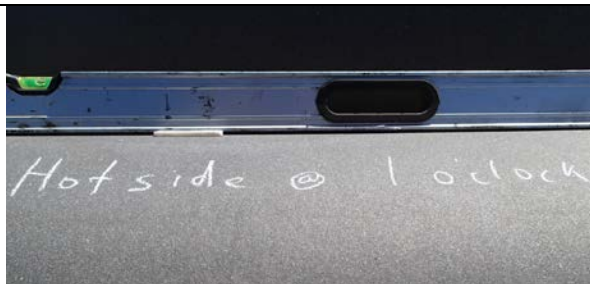
North firetube



General overview of firetube.



Close up of deflection on hot side.



Hot side deflection.

PHOTOS

GENERAL

Inspection Date	May 29, 2019	Inspected By	Luke Newport	Equipment #	62065240
Plant	HOG	Op Unit	SW Marsden	LSD	1-30-44-26w3

PHOTOS



Deflection on stack side.



Stack side deflection.



The hot spot internally on the hot side.



Tube sheet minor corrosion occurring.

PHOTOS

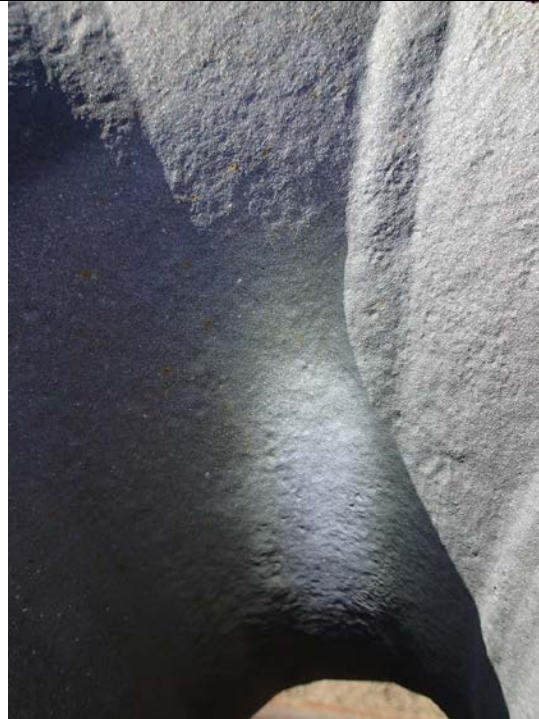
GENERAL

Inspection Date	May 29, 2019	Inspected By	Luke Newport	Equipment #	62065240
Plant	HOG	Op Unit	SW Marsden	LSD	1-30-44-26w3

PHOTOS



Bottom of the tube sheet on the north tube.



North miter which is thin.



South firetube.



General overview of south firetube.

PHOTOS

GENERAL					
Inspection Date	May 29, 2019	Inspected By	Luke Newport	Equipment #	62065240
Plant	HOG	Op Unit	SW Marsden	LSD	1-30-44-26w3

PHOTOS	
 <p>Minor deflection on south firetube tubesheet.</p>	