



DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co., Inc**

250 N. Water STE 300
Wichita, KS 67202

ATTN: Paul Gunzelman

CWA 'E' #1-17

17-3s-35w Rawlins,KS

Start Date: 2017.09.16 @ 01:00:00

End Date: 2017.09.16 @ 09:25:15

Job Ticket #: 63306 DST #: 1

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

ph: 785-625-4778 fax: 785-625-5620

Printed: 2017.09.21 @ 08:50:38

Murfin Drilling Co., Inc
17-3s-35w Rawlins,KS
CWA 'E' #1-17
DST # 1
LKC "A"
2017.09.16



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc
 250 N. Water STE 300
 Wichita, KS 67202
 ATTN: Paul Gunzelman

17-3s-35w Rawlins, KS
CWA 'E' #1-17
 Job Ticket: 63306 **DST#: 1**
 Test Start: 2017.09.16 @ 01:00:00

GENERAL INFORMATION:

Formation: **LKC "A"**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 03:05:00
 Time Test Ended: 09:25:15
 Interval: **4118.00 ft (KB) To 4188.00 ft (KB) (TVD)**
 Total Depth: 4188.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Initial)
 Tester: James Winder
 Unit No: 83
 Reference Elevations: 3258.00 ft (KB)
 3253.00 ft (CF)
 KB to GR/CF: 5.00 ft

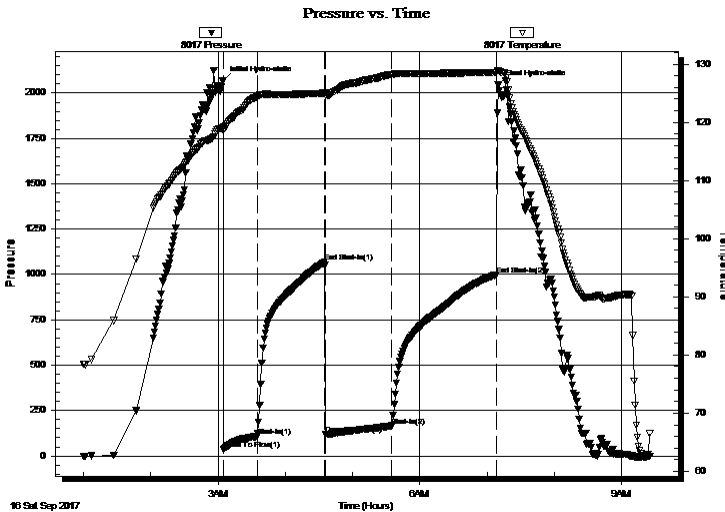
Serial #: 8017

Outside

Press@RunDepth: 164.61 psig @ 4119.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2017.09.16 End Date: 2017.09.16 Last Calib.: 2017.09.16
 Start Time: 01:00:05 End Time: 09:25:14 Time On Btm: 2017.09.16 @ 03:04:45
 Time Off Btm: 2017.09.16 @ 07:10:00

TEST COMMENT: 30 - IF: Blow built to BOB (11") at 13 3/4 min.
 60 - IS: Blow back built to 3"
 60 - FF: Blow built to BOB at 16 1/4 min.
 90 - FS: Blow back built to 6 1/2"

PRESSURE SUMMARY



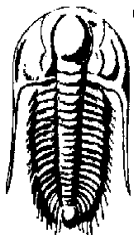
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2068.57	119.25	Initial Hydro-static
1	34.11	118.55	Open To Flow (1)
31	107.17	124.40	Shut-In(1)
91	1067.67	125.00	End Shut-In(1)
91	119.03	124.66	Open To Flow (2)
151	164.61	128.20	Shut-In(2)
244	999.97	128.61	End Shut-In(2)
246	2046.83	128.85	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
176.00	GOCM 57%o, 24%g, 19%g	0.87
60.00	SMCGO 86%o, 10%g, 4%m	0.58
159.00	CGO 71%o, 28%g, 1%m	2.23
0.00	GIP = 470'	0.00

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc
250 N. Water STE 300
Wichita, KS 67202
ATTN: Paul Gunzelman

17-3s-35w Rawlins,KS
CWA 'E' #1-17
Job Ticket: 63306 **DST#: 1**
Test Start: 2017.09.16 @ 01:00:00

GENERAL INFORMATION:

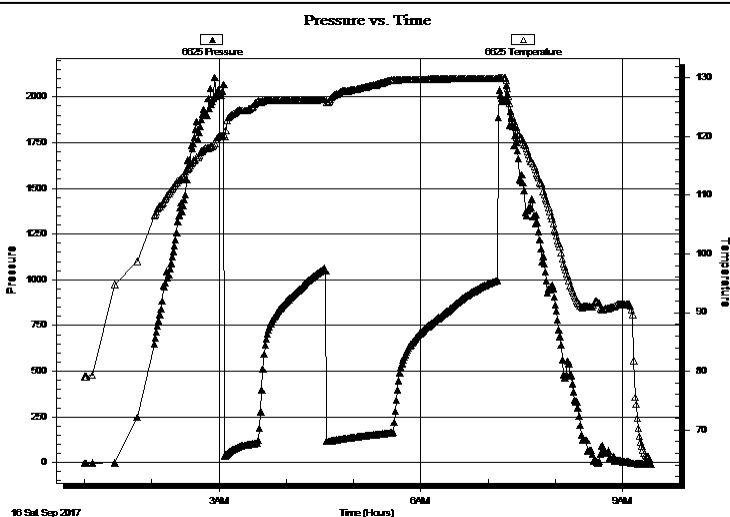
Formation: **LKC "A"**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 03:05:00
 Time Test Ended: 09:25:15
 Interval: **4118.00 ft (KB) To 4188.00 ft (KB) (TVD)**
 Total Depth: 4188.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Initial)
 Tester: James Winder
 Unit No: 83
 Reference Elevations: 3258.00 ft (KB)
 3253.00 ft (CF)
 KB to GR/CF: 5.00 ft

Serial #: 6625

Inside

Press@RunDepth: psig @ 4119.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2017.09.16 End Date: 2017.09.16 Last Calib.: 2017.09.16
 Start Time: 01:00:05 End Time: 09:25:44 Time On Btm:
 Time Off Btm:

TEST COMMENT: 30 - IF: Blow built to BOB (11") at 13 3/4 min.
 60 - IS: Blow back built to 3"
 60 - FF: Blow built to BOB at 16 1/4 min.
 90 - FS: Blow back built to 6 1/2"



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation

Recovery

Length (ft)	Description	Volume (bbl)
176.00	GOCM 57%m, 24%o, 19%g	0.87
60.00	SMCGO 86%o, 10%g, 4%m	0.58
159.00	CGO 71%o, 28%g, 1%m	2.23
0.00	GIP = 470'	0.00

Gas Rates

Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co., Inc

17-3s-35w Rawlins,KS

250 N. Water STE 300
Wichita, KS 67202

CWA 'E' #1-17

Job Ticket: 63306

DST#: 1

ATTN: Paul Gunzelman

Test Start: 2017.09.16 @ 01:00:00

Tool Information

Drill Pipe:	Length: 3899.00 ft	Diameter: 3.80 inches	Volume: 54.69 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer: 20000.00 lb
Drill Collar:	Length: 205.00 ft	Diameter: 2.25 inches	Volume: 1.01 bbl	Weight to Pull Loose: 60000.00 lb
			<u>Total Volume: 55.70 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	15.00 ft			String Weight: Initial 56000.00 lb
Depth to Top Packer:	4118.00 ft			Final 58000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	70.00 ft			
Tool Length:	99.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4090.00	
Shut In Tool	5.00			4095.00	
Hydraulic tool	5.00			4100.00	
Jars	5.00			4105.00	
Safety Joint	3.00			4108.00	
Packer	5.00			4113.00	29.00 Bottom Of Top Packer
Packer	5.00			4118.00	
Stubb	1.00			4119.00	
Recorder	0.00	6625	Inside	4119.00	
Recorder	0.00	8017	Outside	4119.00	
Perforations	29.00			4148.00	
Blank Spacing	33.00			4181.00	
Perforations	4.00			4185.00	
Bullnose	3.00			4188.00	70.00 Bottom Packers & Anchor

Total Tool Length: 99.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc

17-3s-35w Rawlins,KS

250 N. Water STE 300
Wichita, KS 67202

CWA 'E' #1-17

Job Ticket: 63306

DST#: 1

ATTN: Paul Gunzelman

Test Start: 2017.09.16 @ 01:00:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

31.8 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 75.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.57 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 2400.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
176.00	GOCM 57% <i>m</i> , 24% <i>o</i> , 19% <i>g</i>	0.866
60.00	SMCGO 86% <i>o</i> , 10% <i>g</i> , 4% <i>m</i>	0.577
159.00	CGO 71% <i>o</i> , 28% <i>g</i> , 1% <i>m</i>	2.230
0.00	GIP = 470'	0.000

Total Length: 395.00 ft Total Volume: 3.673 bbl

Num Fluid Samples: 0

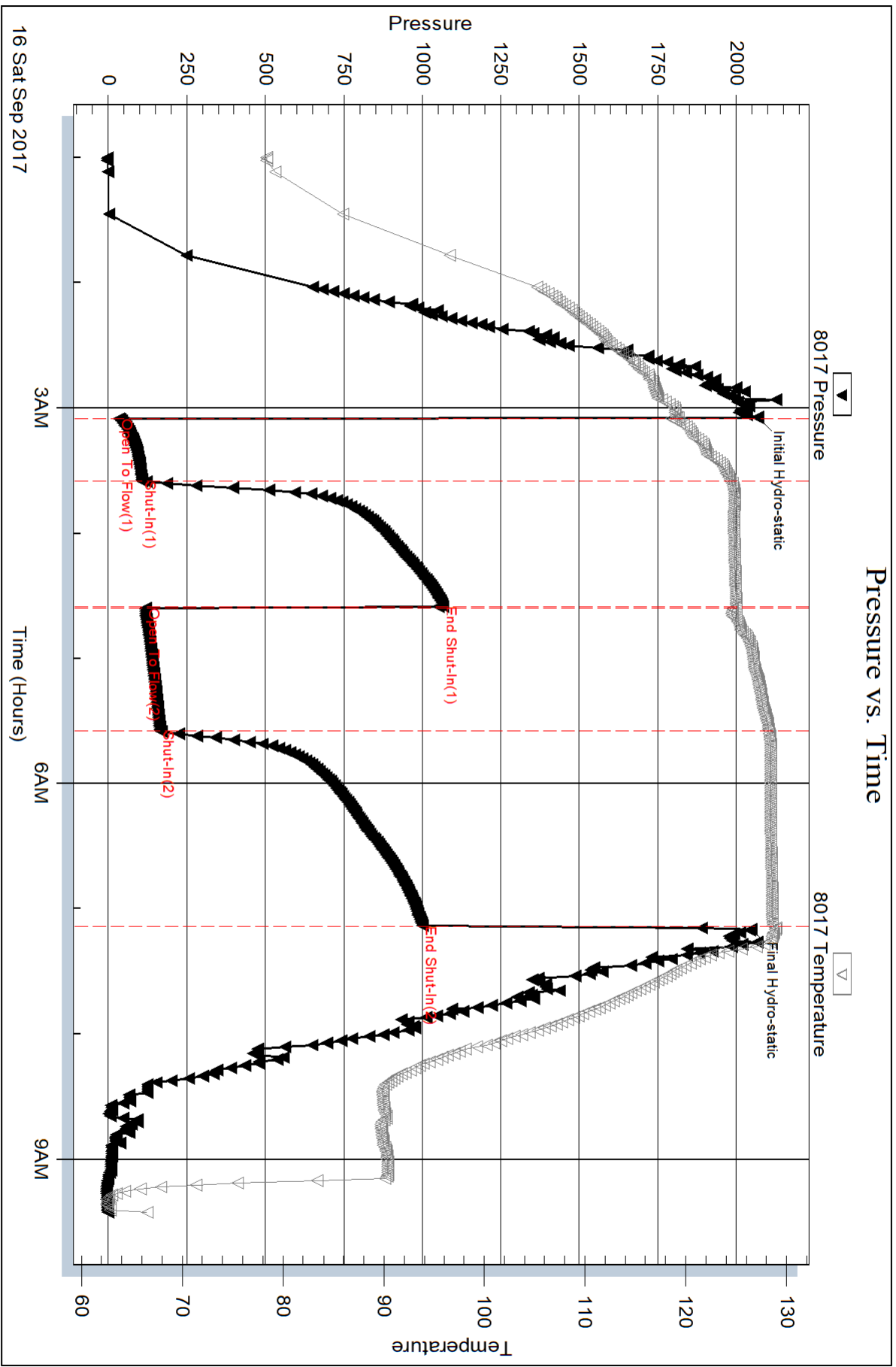
Num Gas Bombs: 0

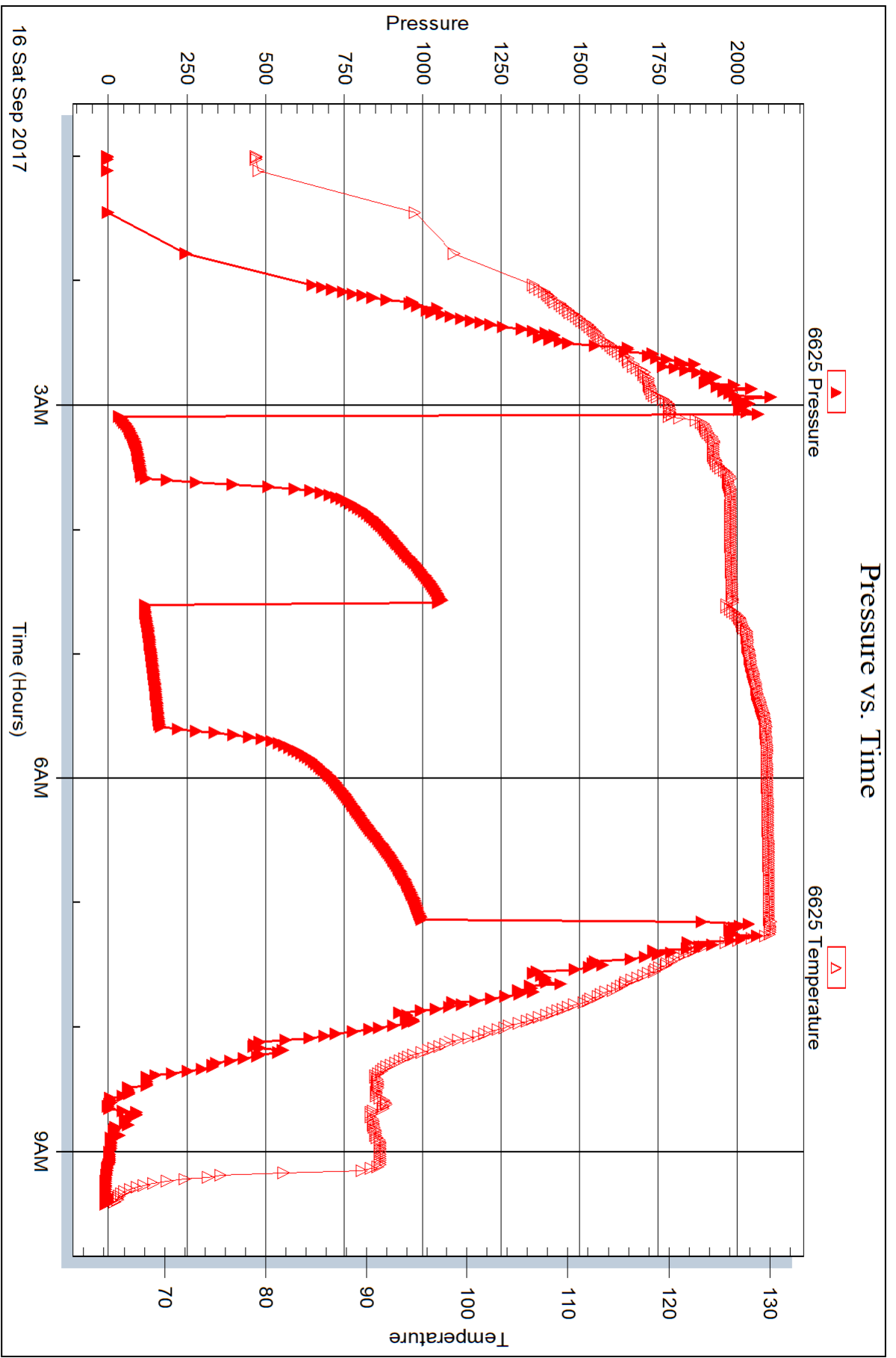
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: Gravity = 32 api @ 62 deg F
Corrected Gravity = 31.8 api







DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co., Inc**

250 N. Water STE 300
Wichita, KS 67202

ATTN: Paul Gunzelman

CWA 'E' #1-17

17-3s-35w Rawlins,KS

Start Date: 2017.09.17 @ 00:10:00

End Date: 2017.09.17 @ 08:49:00

Job Ticket #: 63307 DST #: 2

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

ph: 785-625-4778 fax: 785-625-5620

Printed: 2017.09.21 @ 08:50:11



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc
 250 N. Water STE 300
 Wichita, KS 67202
 ATTN: Paul Gunzelman

17-3s-35w Rawlins, KS
CWA 'E' #1-17
 Job Ticket: 63307 **DST#: 2**
 Test Start: 2017.09.17 @ 00:10:00

GENERAL INFORMATION:

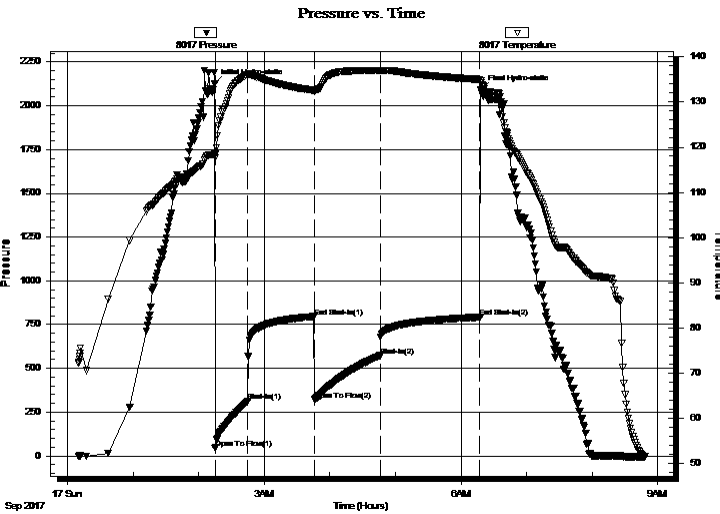
Formation: **LKC "G"**
 Deviated: No Whipstock: ft (KB)
 Test Type: Conventional Bottom Hole (Reset)
 Time Tool Opened: 02:15:00 Tester: James Winder
 Time Test Ended: 08:49:00 Unit No: 83
Interval: 4240.00 ft (KB) To 4296.00 ft (KB) (TVD)
 Reference Elevations: 3258.00 ft (KB)
 Total Depth: 4296.00 ft (KB) (TVD) 3253.00 ft (CF)
 Hole Diameter: 7.88 inches Hole Condition: Fair KB to GR/CF: 5.00 ft

Serial #: 8017

Outside

Press@RunDepth: 572.47 psig @ 4241.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2017.09.17 End Date: 2017.09.17 Last Calib.: 2017.09.17
 Start Time: 00:10:05 End Time: 08:49:00 Time On Btm: 2017.09.17 @ 02:14:45
 Time Off Btm: 2017.09.17 @ 06:18:30

TEST COMMENT: 30 - IF: Blow built to BOB (11") at 5 1/4 min.
 60 - IS: No blow back
 60 - FF: Blow built to BOB at 7 1/2 min.
 90 - FS: No blow back



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2125.07	118.66	Initial Hydro-static
1	41.82	117.67	Open To Flow (1)
31	311.98	135.93	Shut-In(1)
91	795.65	132.55	End Shut-In(1)
92	319.88	132.39	Open To Flow (2)
152	572.47	136.90	Shut-In(2)
243	791.81	134.98	End Shut-In(2)
244	2093.05	134.25	Final Hydro-static

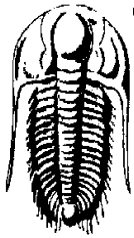
Recovery

Length (ft)	Description	Volume (bbl)
860.00	SMCW 95%w, 5%m	10.20
380.00	MW 54%w, 46%m	5.33

* Recovery from multiple tests

Gas Rates

Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc
250 N. Water STE 300
Wichita, KS 67202
ATTN: Paul Gunzelman

17-3s-35w Rawlins,KS
CWA 'E' #1-17
Job Ticket: 63307 **DST#: 2**
Test Start: 2017.09.17 @ 00:10:00

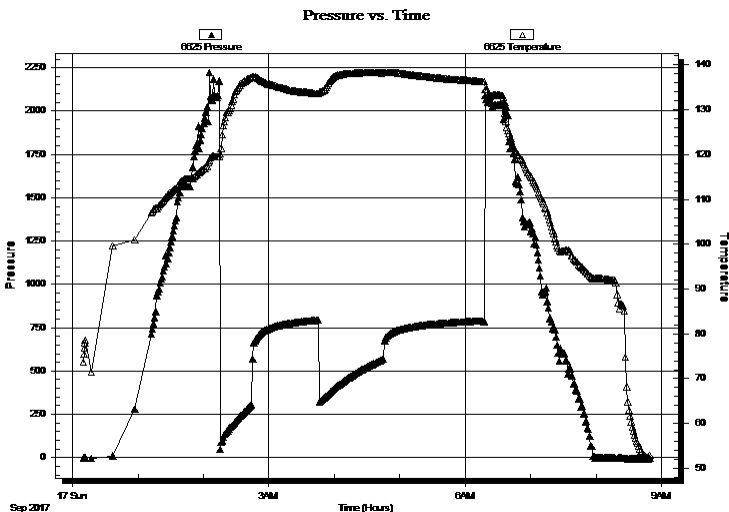
GENERAL INFORMATION:

Formation: **LKC "G"**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 02:15:00
Time Test Ended: 08:49:00
Interval: **4240.00 ft (KB) To 4296.00 ft (KB) (TVD)**
Total Depth: 4296.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair
Test Type: Conventional Bottom Hole (Reset)
Tester: James Winder
Unit No: 83
Reference Elevations: 3258.00 ft (KB)
3253.00 ft (CF)
KB to GR/CF: 5.00 ft

Serial #: 6625 Inside
Press@RunDepth: psig @ 4241.00 ft (KB) Capacity: 8000.00 psig
Start Date: 2017.09.17 End Date: 2017.09.17 Last Calib.: 2017.09.17
Start Time: 00:10:05 End Time: 08:49:15 Time On Btm:
Time Off Btm:

TEST COMMENT: 30 - IF: Blow built to BOB (11") at 5 1/4 min.
60 - IS: No blow back
60 - FF: Blow built to BOB at 7 1/2 min.
90 - FS: No blow back

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation

Recovery

Length (ft)	Description	Volume (bbl)
860.00	SMCW 95%w, 5%m	10.20
380.00	MW 54%w, 46%m	5.33

* Recovery from multiple tests

Gas Rates

Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co., Inc

17-3s-35w Rawlins,KS

250 N. Water STE 300
Wichita, KS 67202

CWA 'E' #1-17

Job Ticket: 63307

DST#: 2

ATTN: Paul Gunzelman

Test Start: 2017.09.17 @ 00:10:00

Tool Information

Drill Pipe:	Length: 4025.00 ft	Diameter: 3.80 inches	Volume: 56.46 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 205.00 ft	Diameter: 2.25 inches	Volume: 1.01 bbl	Weight to Pull Loose: 70000.00 lb
			<u>Total Volume: 57.47 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	19.00 ft			String Weight: Initial 58000.00 lb
Depth to Top Packer:	4240.00 ft			Final 62000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	56.00 ft			
Tool Length:	85.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4212.00	
Shut In Tool	5.00			4217.00	
Hydraulic tool	5.00			4222.00	
Jars	5.00			4227.00	
Safety Joint	3.00			4230.00	
Packer	5.00			4235.00	29.00 Bottom Of Top Packer
Packer	5.00			4240.00	
Stubb	1.00			4241.00	
Recorder	0.00	6625	Inside	4241.00	
Recorder	0.00	8017	Outside	4241.00	
Perforations	15.00			4256.00	
Blank Spacing	33.00			4289.00	
Perforations	4.00			4293.00	
Bullnose	3.00			4296.00	56.00 Bottom Packers & Anchor

Total Tool Length: 85.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc

17-3s-35w Rawlins,KS

250 N. Water STE 300
Wichita, KS 67202

CWA 'E' #1-17

Job Ticket: 63307

DST#: 2

ATTN: Paul Gunzelman

Test Start: 2017.09.17 @ 00:10:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

13000 ppm

Viscosity: 770.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.98 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 2900.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
860.00	SMCW 95%w , 5%m	10.196
380.00	MW 54%w , 46%m	5.330

Total Length: 1240.00 ft Total Volume: 15.526 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

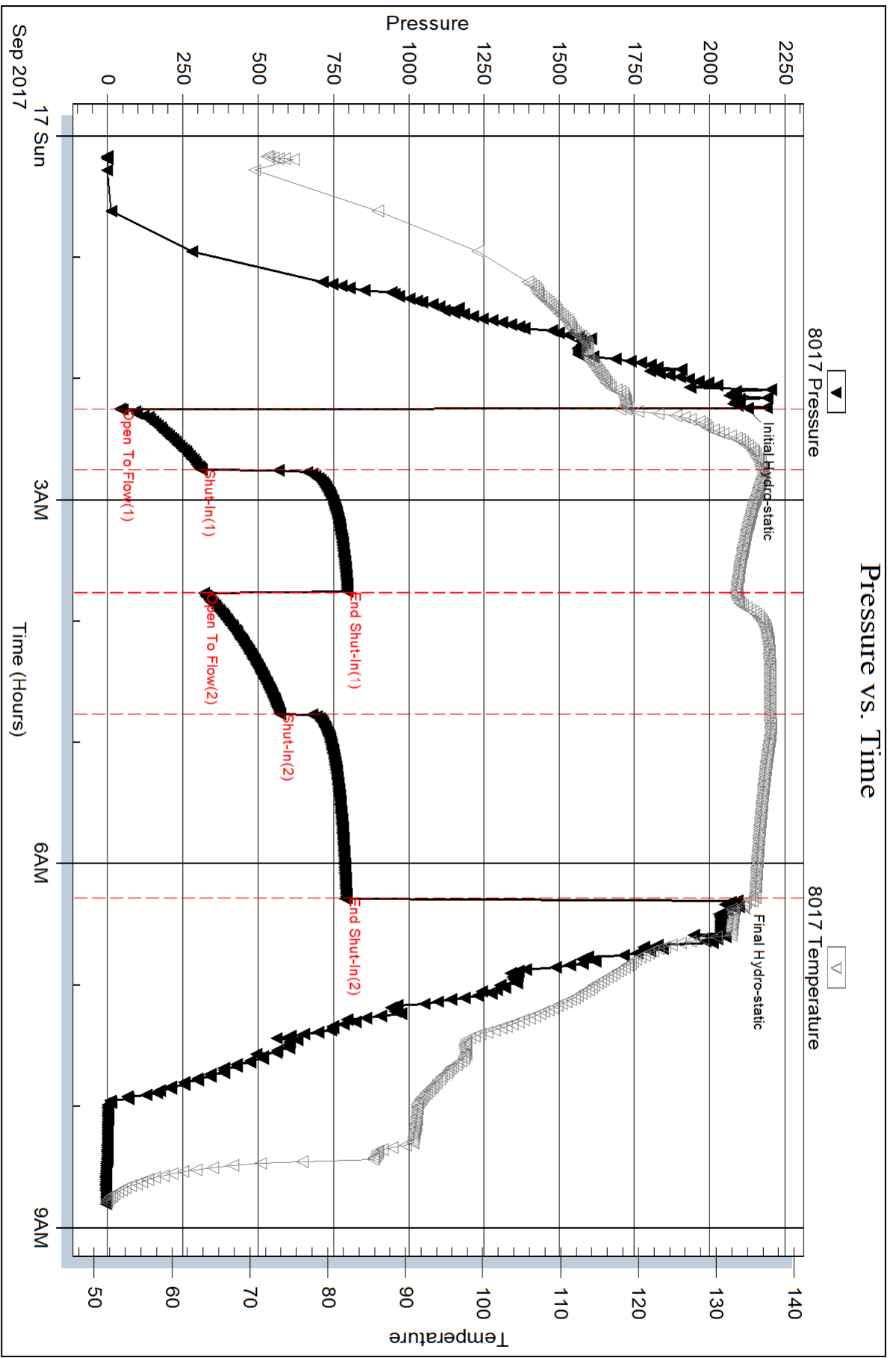
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: RW = .704 ohms @ 50.2 deg F

Chlorides = 13,000 ppm



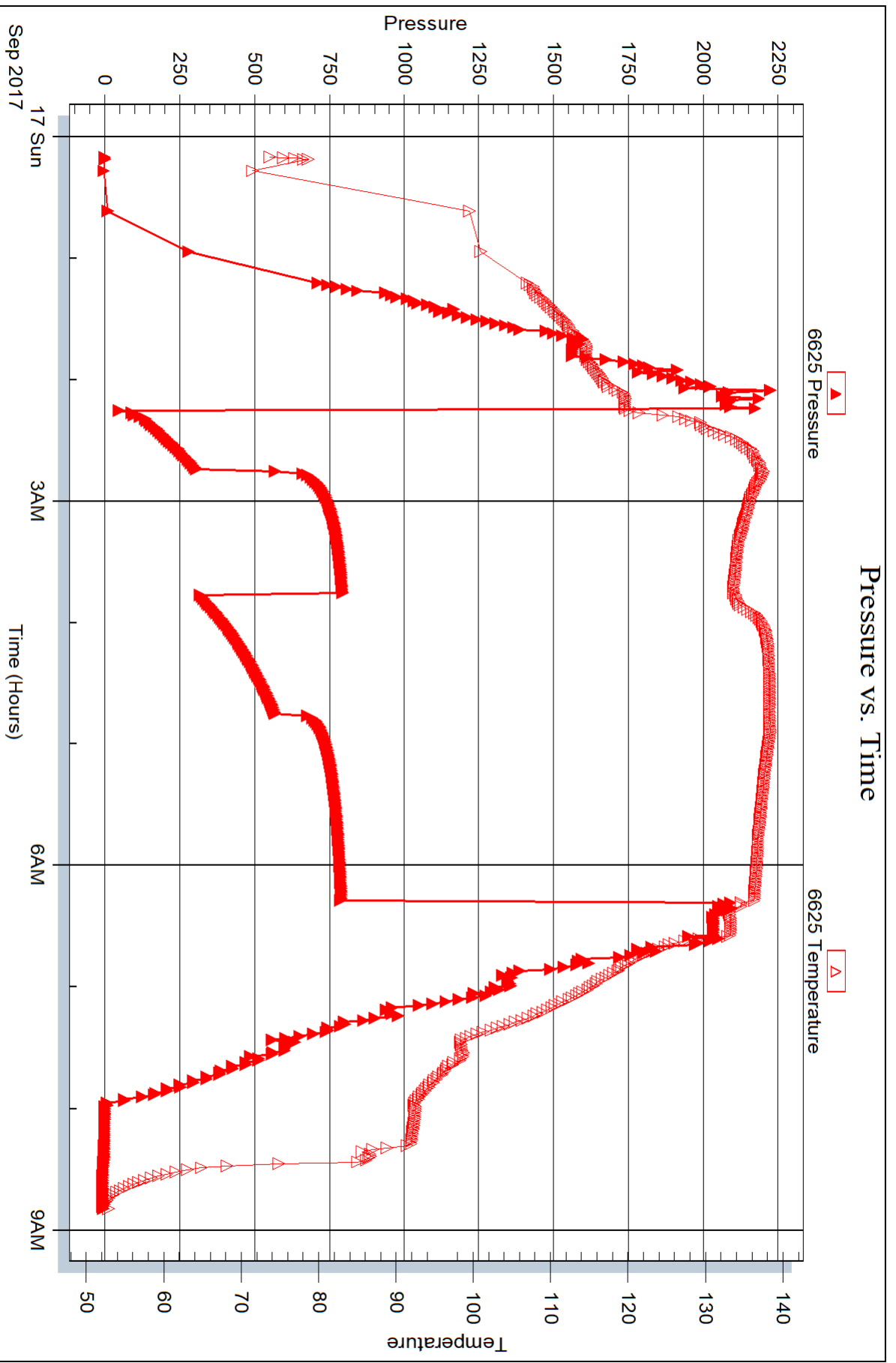
Serial #: 6625

Inside

Murfin Drilling Co., Inc

CWA E#1-17

DST Test Number: 2





DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co., Inc**

250 N. Water STE 300
Wichita, KS 67202

ATTN: Paul Gunzelman

CWA 'E' #1-17

17-3s-35w Rawlins,KS

Start Date: 2017.09.17 @ 20:48:00

End Date: 2017.09.18 @ 05:39:30

Job Ticket #: 63308 DST #: 3

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

ph: 785-625-4778 fax: 785-625-5620

Printed: 2017.09.21 @ 08:49:48



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc
 250 N. Water STE 300
 Wichita, KS 67202
 ATTN: Paul Gunzelman

17-3s-35w Rawlins, KS
CWA 'E' #1-17
 Job Ticket: 63308 **DST#: 3**
 Test Start: 2017.09.17 @ 20:48:00

GENERAL INFORMATION:

Formation: **LKC "J"**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 22:54:00
 Time Test Ended: 05:39:30
 Interval: **4326.00 ft (KB) To 4378.00 ft (KB) (TVD)**
 Total Depth: 4378.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Reset)
 Tester: James Winder
 Unit No: 83
 Reference Elevations: 3258.00 ft (KB)
 3253.00 ft (CF)
 KB to GR/CF: 5.00 ft

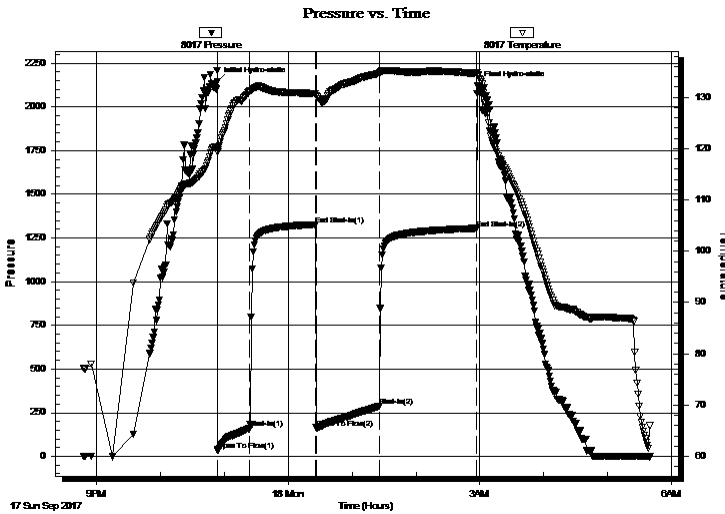
Serial #: 8017

Outside

Press@RunDepth: 286.29 psig @ 4327.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2017.09.17 End Date: 2017.09.18 Last Calib.: 2017.09.18
 Start Time: 20:48:05 End Time: 05:39:30 Time On Btm: 2017.09.17 @ 22:53:45
 Time Off Btm: 2017.09.18 @ 02:58:00

TEST COMMENT: 30 - IF: Blow built to BOB at 10 min.
 60 - IS: Blow back built to 2"
 60 - FF: Blow built to BOB at 11 1/2 min.
 90 - FS: Blow back built to 5 1/2"

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2145.51	120.30	Initial Hydro-static
1	33.83	119.33	Open To Flow (1)
31	160.13	131.18	Shut-In(1)
92	1326.02	130.69	End Shut-In(1)
93	163.23	130.32	Open To Flow (2)
152	286.29	134.64	Shut-In(2)
243	1304.67	134.63	End Shut-In(2)
245	2120.85	134.43	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
118.00	GWMCO 45%o, 24%m, 16%w, 15%g	0.58
462.00	GMCO 62%o, 21%g, 17%m	5.69
140.00	CGO 88%o, 11%g, 1%m	1.96
0.00	GIP = 450'	0.00

* Recovery from multiple tests

Gas Rates

Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co., Inc

17-3s-35w Rawlins,KS

250 N. Water STE 300
Wichita, KS 67202

CWA 'E' #1-17

Job Ticket: 63308

DST#: 3

ATTN: Paul Gunzelman

Test Start: 2017.09.17 @ 20:48:00

Tool Information

Drill Pipe:	Length: 4118.00 ft	Diameter: 3.80 inches	Volume: 57.76 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 205.00 ft	Diameter: 2.25 inches	Volume: 1.01 bbl	Weight to Pull Loose: 62000.00 lb
			<u>Total Volume: 58.77 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	26.00 ft			String Weight: Initial 58000.00 lb
Depth to Top Packer:	4326.00 ft			Final 60000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	52.00 ft			
Tool Length:	81.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4298.00	
Shut In Tool	5.00			4303.00	
Hydraulic tool	5.00			4308.00	
Jars	5.00			4313.00	
Safety Joint	3.00			4316.00	
Packer	5.00			4321.00	29.00 Bottom Of Top Packer
Packer	5.00			4326.00	
Stubb	1.00			4327.00	
Recorder	0.00	6625	Inside	4327.00	
Recorder	0.00	8017	Outside	4327.00	
Perforations	15.00			4342.00	
Blank Spacing	33.00			4375.00	
Bullnose	3.00			4378.00	52.00 Bottom Packers & Anchor

Total Tool Length: 81.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc

17-3s-35w Rawlins,KS

250 N. Water STE 300
Wichita, KS 67202

CWA 'E' #1-17

Job Ticket: 63308

DST#: 3

ATTN: Paul Gunzelman

Test Start: 2017.09.17 @ 20:48:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

35.2 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 75.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.99 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 3200.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
118.00	GWMCO 45%o, 24%m, 16%w, 15%g	0.580
462.00	GMCO 62%o, 21%g, 17%m	5.688
140.00	CGO 88%o, 11%g, 1%m	1.964
0.00	GIP = 450'	0.000

Total Length: 720.00 ft Total Volume: 8.232 bbl

Num Fluid Samples: 0

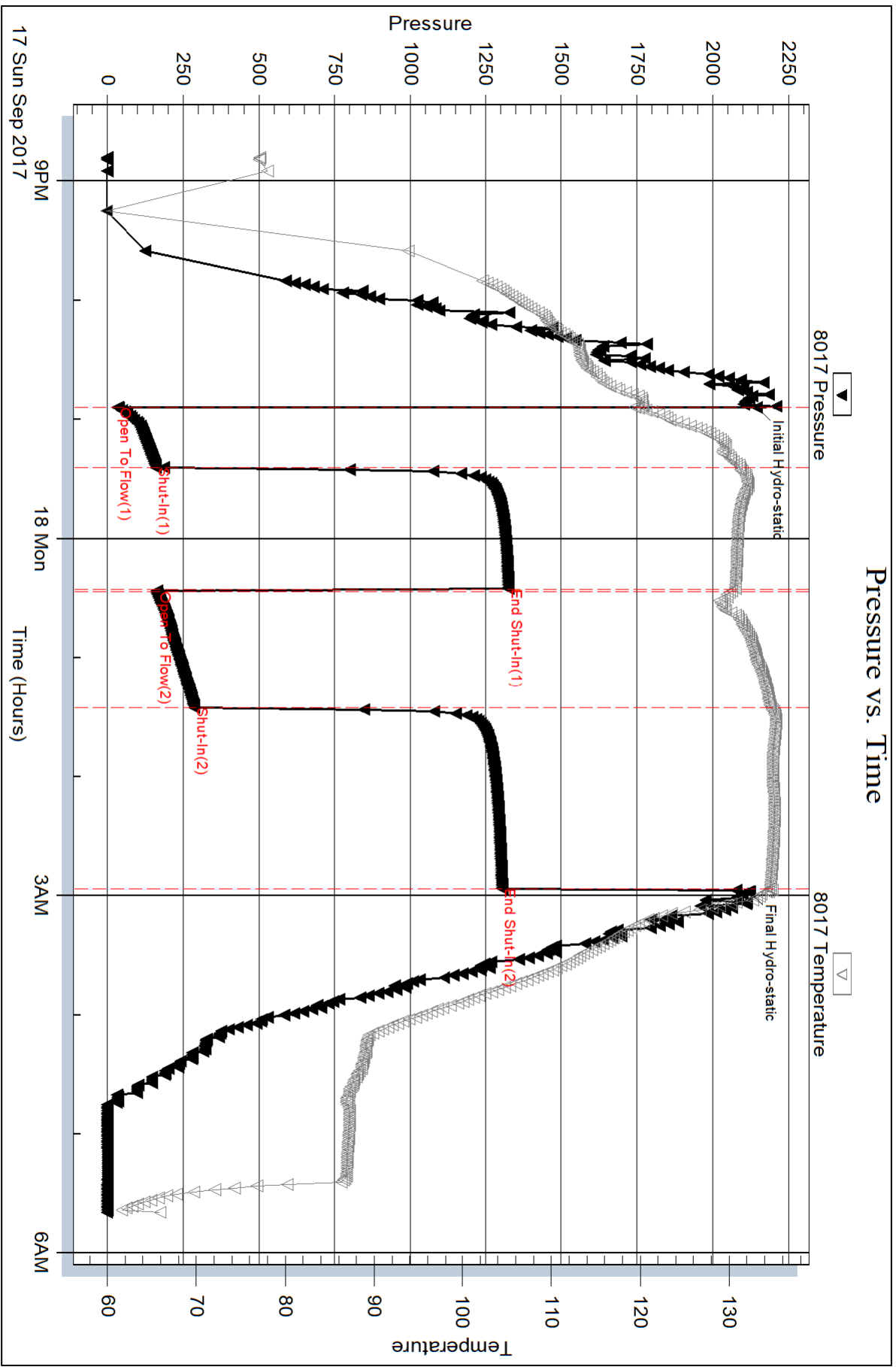
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: Gravity = 35.4 api @ 62 Deg F
Corrected Gravity = 35.2 api



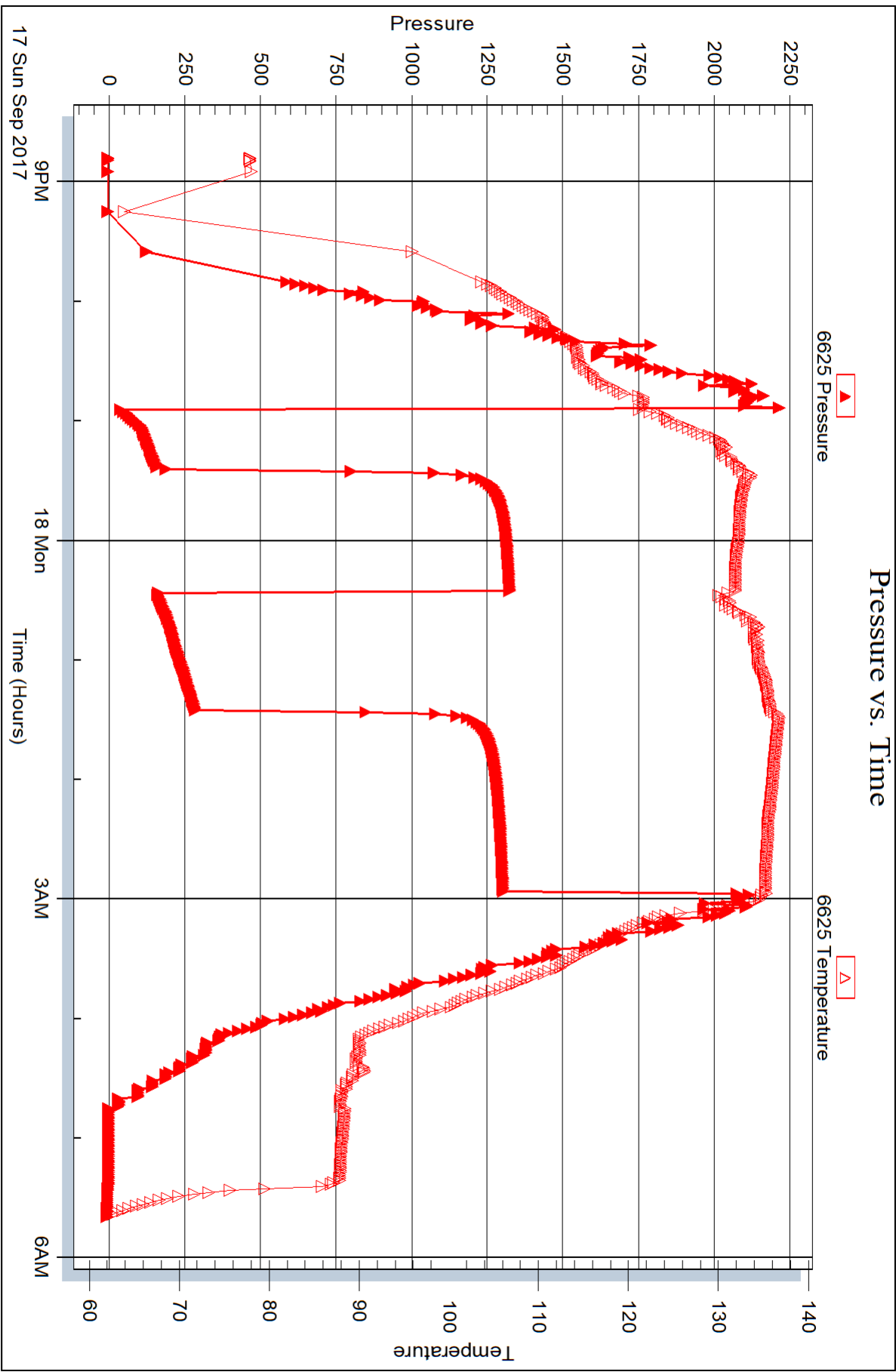
Serial #: 6625

Inside

Murfin Drilling Co., Inc

CWA E#1-17

DST Test Number: 3





DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co., Inc**

250 N. Water STE 300
Wichita, KS 67202

ATTN: Paul Gunzelman

CWA 'E' #1-17

17-3s-35w Rawlins,KS

Start Date: 2017.09.19 @ 06:40:00

End Date: 2017.09.19 @ 13:53:00

Job Ticket #: 63309 DST #: 4

Trilobite Testing, Inc
PO Box 362 Hays, KS 67601
ph: 785-625-4778 fax: 785-625-5620

Printed: 2017.09.21 @ 08:49:08



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc
250 N. Water STE 300
Wichita, KS 67202
ATTN: Paul Gunzelman

17-3s-35w Rawlins, KS

CWA 'E' #1-17

Job Ticket: 63309

DST#: 4

Test Start: 2017.09.19 @ 06:40:00

GENERAL INFORMATION:

Formation: **Ft. Scott - Lower Ft**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 08:18:30

Time Test Ended: 13:53:00

Test Type: Conventional Bottom Hole (Reset)

Tester: James Winder

Unit No: 83

Interval: 4534.00 ft (KB) To 4600.00 ft (KB) (TVD)

Reference Elevations: 3258.00 ft (KB)

Total Depth: 4600.00 ft (KB) (TVD)

3253.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 8017 Outside

Press@RunDepth: 29.19 psig @ 4535.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2017.09.19

End Date:

2017.09.19

Last Calib.:

2017.09.19

Start Time: 06:40:05

End Time:

13:52:59

Time On Btm:

2017.09.19 @ 08:18:15

Time Off Btm:

2017.09.19 @ 11:21:30

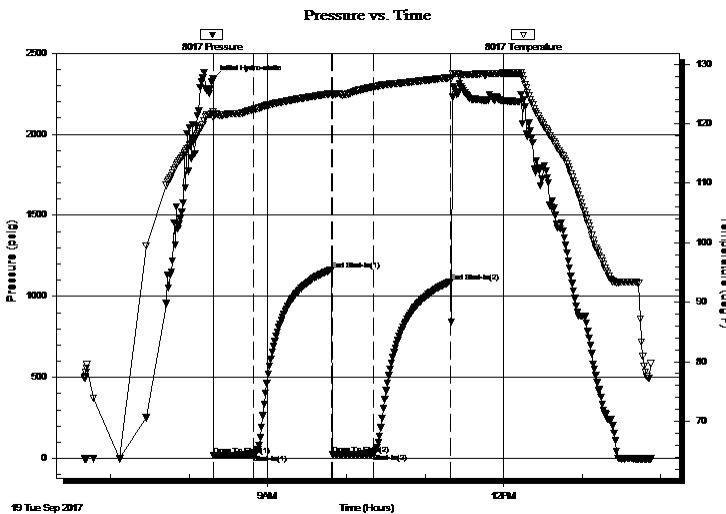
TEST COMMENT: 30 - IF: Blow built to 1"

60 - IS: No blow back

30 - FF: No blow

60 - FS: No blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2341.09	122.06	Initial Hydro-static
1	17.68	121.03	Open To Flow (1)
31	22.61	122.40	Shut-In(1)
91	1165.45	125.08	End Shut-In(1)
91	25.43	124.73	Open To Flow (2)
122	29.19	126.14	Shut-In(2)
182	1091.66	127.75	End Shut-In(2)
184	2294.56	128.39	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
45.00	Mud w /Oil spots 98%m, 2%o	0.22

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)

* Recovery from multiple tests



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co., Inc

17-3s-35w Rawlins,KS

250 N. Water STE 300
Wichita, KS 67202

CWA 'E' #1-17

Job Ticket: 63309

DST#: 4

ATTN: Paul Gunzelman

Test Start: 2017.09.19 @ 06:40:00

Tool Information

Drill Pipe:	Length: 4305.00 ft	Diameter: 3.80 inches	Volume: 60.39 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 205.00 ft	Diameter: 2.25 inches	Volume: 1.01 bbl	Weight to Pull Loose: 65000.00 lb
			<u>Total Volume: 61.40 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	5.00 ft			String Weight: Initial 62000.00 lb
Depth to Top Packer:	4534.00 ft			Final 62000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	66.00 ft			
Tool Length:	95.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4506.00	
Shut In Tool	5.00			4511.00	
Hydraulic tool	5.00			4516.00	
Jars	5.00			4521.00	
Safety Joint	3.00			4524.00	
Packer	5.00			4529.00	29.00 Bottom Of Top Packer
Packer	5.00			4534.00	
Stubb	1.00			4535.00	
Recorder	0.00	6625	Inside	4535.00	
Recorder	0.00	8017	Outside	4535.00	
Perforations	25.00			4560.00	
Blank Spacing	33.00			4593.00	
Perforations	4.00			4597.00	
Bullnose	3.00			4600.00	66.00 Bottom Packers & Anchor

Total Tool Length: 95.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc

17-3s-35w Rawlins,KS

250 N. Water STE 300
Wichita, KS 67202

CWA 'E' #1-17

Job Ticket: 63309

DST#: 4

ATTN: Paul Gunzelman

Test Start: 2017.09.19 @ 06:40:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 64.00 sec/qt

Cushion Volume:

bbf

Water Loss: 5.99 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 3400.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbf
45.00	Mud w /Oil spots 98% _m , 2% _o	0.221

Total Length: 45.00 ft Total Volume: 0.221 bbf

Num Fluid Samples: 0

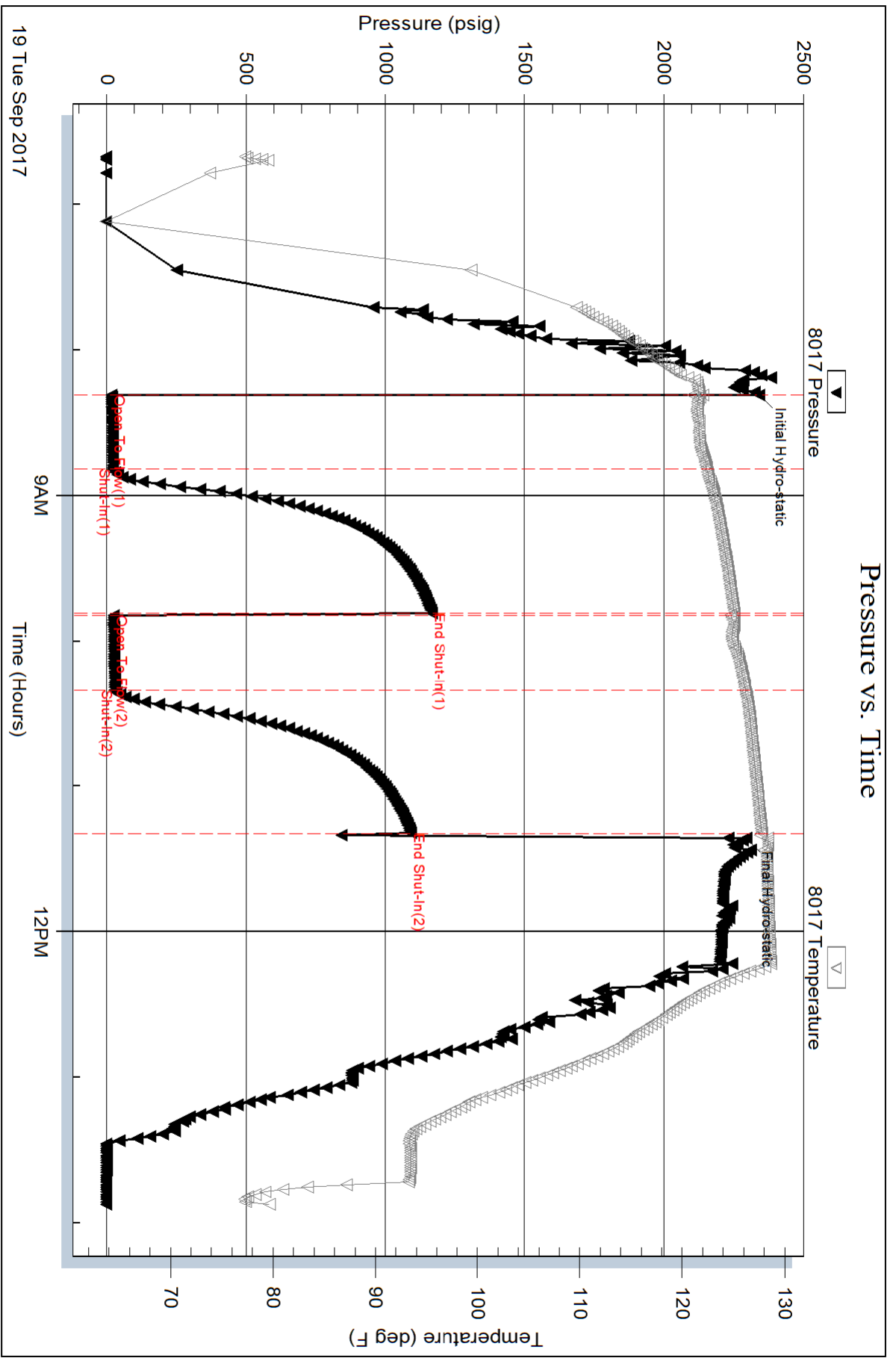
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



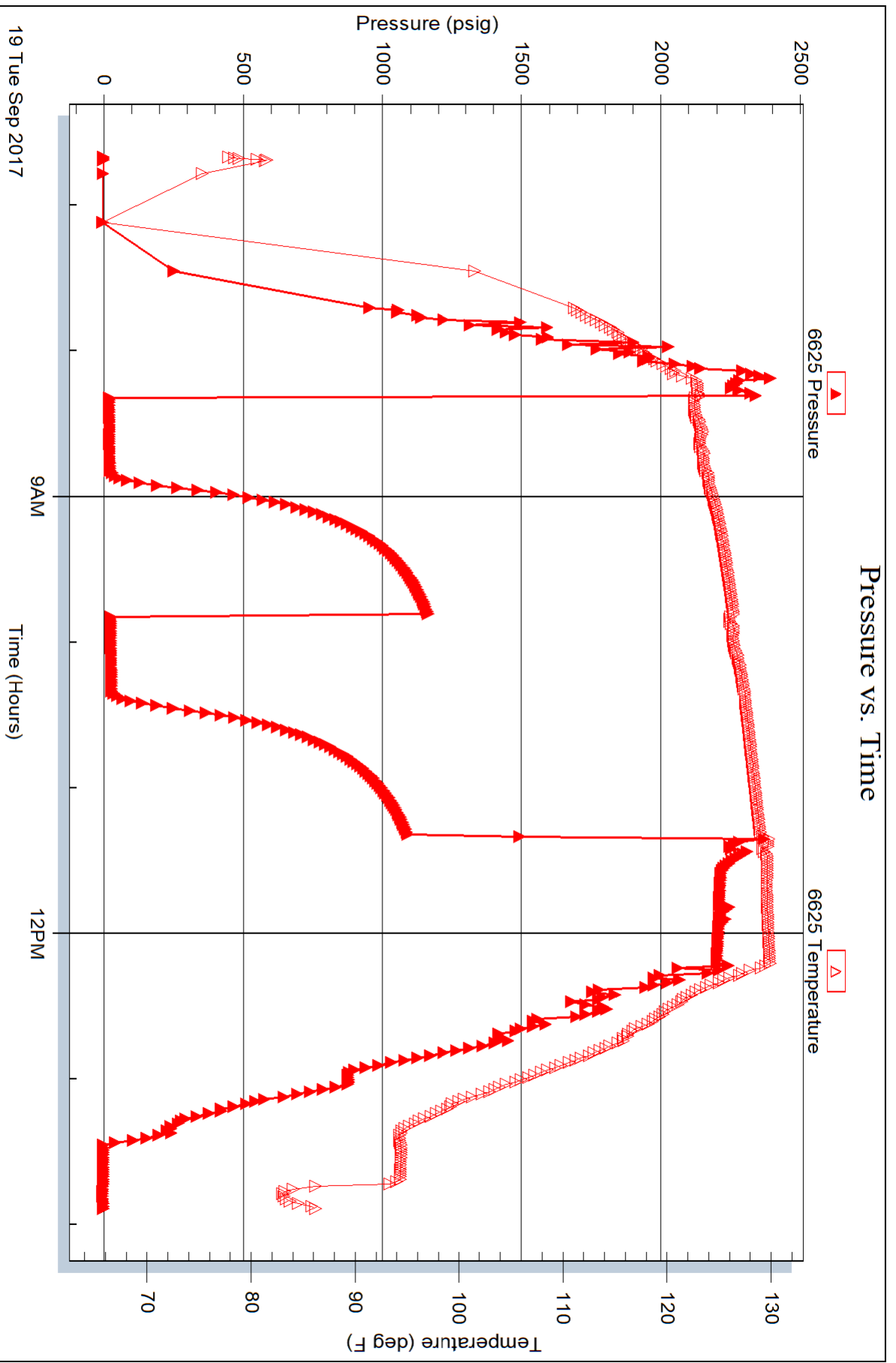
Serial #: 6625

Inside

Murfin Drilling Co., Inc

CWA E#1-17

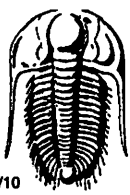
DST Test Number: 4



Trilobite Testing, Inc

Ref. No: 63309

Printed: 2017.09.21 @ 08:49:09



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 63306

Well Name & No. CWA 'E' #1-17 Test No. 1 Date 9-16-17
 Company Murfin Drilling Co Inc Elevation 3258 KB 3253 GL
 Address 250 N. Water STE 300 Wichita, KS 67202
 Co. Rep / Geo. Paul Gunzelman Rig Murfin #24
 Location: Sec. 17 Twp. 3s Rge. 35w Co. Rawlins State KS

Interval Tested 4118 - 4188 Zone Tested Lans. "A"
 Anchor Length 70 Drill Pipe Run ~~3899~~ 3899 Mud Wt. 8.9
 Top Packer Depth 4113 Drill Collars Run ~~205~~ 205 Vis 75
 Bottom Packer Depth 4118 Wt. Pipe Run - WL 5.6
 Total Depth 4188 Chlorides 2400 ppm System LCM 4

Blow Description IF: Blow built to BOB (11") at 13 3/4 min.
ISI: Blowback built to 3"
FF: Blow built to BOB at 16 1/4 min.
FSI: Blowback built to 6 1/2"

Rec	Feet of	%gas	%oil	%water	%mud
<u>159</u>	<u>CGO</u>	<u>28</u>	<u>71</u>	<u>-</u>	<u>1</u>
<u>60</u>	<u>SMCSO</u>	<u>10</u>	<u>86</u>	<u>-</u>	<u>4</u>
<u>176</u>	<u>60cm</u>	<u>19</u>	<u>24</u>	<u>-</u>	<u>57</u>
<u> </u>	<u>GIP = 470'</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>

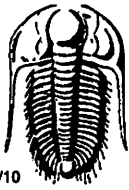
Rec Total 395 BHT 129 Gravity 31.8 API RW @ °F Chlorides ppm

(A) Initial Hydrostatic 2069 Test 1150 T-On Location 23:25 9/15
 (B) First Initial Flow 34 Jars 250 T-Started 1:00
 (C) First Final Flow 107 Safety Joint 75 T-Open 3:05
 (D) Initial Shut-In 1068 Circ Sub T-Pulled 7:08
 (E) Second Initial Flow 119 Hourly Standby T-Out 9:25 9/16
 (F) Second Final Flow 165 Mileage 84RT 63 Comments
 (G) Final Shut-In 1000 Sampler
 (H) Final Hydrostatic 2047 Straddle
 Shale Packer
 Extra Packer
 Extra Recorder
 Day Standby
 Accessibility

Initial Open 30
 Initial Shut-In 60
 Final Flow 60
 Final Shut-In 90
 Sub Total 1538
 Total 1538
 MP/DST Disc't

Approved By Our Representative James Winder

Trilobite Testing Inc. shall not be liable for damaged of any kind of the property or personnel of the one for whom a test is made, or for any loss suffered or sustained, directly or indirectly, through the use of its equipment, or its statements or opinion concerning the results of any test, tools lost or damaged in the hole shall be paid for at cost by the party for whom the test is made.



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 63307

Well Name & No. CWA 'E' #1-17 Test No. 2 Date 9-17-17
 Company Murfin Drilling Co Inc Elevation 3258 KB 3253 GL
 Address 250 N. Water STE 300 Wichita, KS 67202
 Co. Rep / Geo. Paul Gunzelman Rig Murfin #24
 Location: Sec. 17 Twp. 3s Rge. 35w Co. Rawlins State KS

Interval Tested 4240 - 4296 Zone Tested LKC "6"
 Anchor Length 56 Drill Pipe Run 4025 Mud Wt. 8.9
 Top Packer Depth 4235 Drill Collars Run 205 Vis 70
 Bottom Packer Depth 4240 Wt. Pipe Run - WL 6.0
 Total Depth 4296 Chlorides 2900 ppm System LCM 4

Blow Description IF: Blow built to BOB (11") at 5 1/4 min.
ISI: No blowback
FF: Blow built to BOB at 7 1/2 min.
FSI: No blowback

Rec	Feet of	%gas	%oil	%water	%mud
<u>380</u>	<u>MW</u>		<u>54</u>	<u>46</u>	
<u>860</u>	<u>SMCW</u>		<u>95</u>	<u>5</u>	

Rec Total 1240 BHT 135 Gravity _____ API RW .704 @ 50.2 °F Chlorides 13,000 ppm

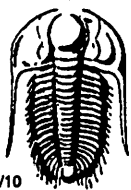
(A) Initial Hydrostatic 2125 Test 1150 T-On Location 23:25 9/16
 (B) First Initial Flow 42 Jars 250 T-Started 00:10
 (C) First Final Flow 312 Safety Joint 75 T-Open 2:15
 (D) Initial Shut-In 796 Circ Sub _____ T-Pulled 6:17
 (E) Second Initial Flow 320 Hourly Standby _____ T-Out 8:35 9/17
 (F) Second Final Flow 572 Mileage 84RT 63 Comments _____
 (G) Final Shut-In 792 Sampler _____
 (H) Final Hydrostatic 2093 Straddle _____
 Shale Packer _____
 Extra Packer _____
 Extra Recorder _____
 Day Standby _____
 Accessibility _____
 Sub Total 1538

Initial Open 30
 Initial Shut-In 60
 Final Flow 60
 Final Shut-In 90

Sub Total 1538 Total 1538 MP/DST Disc't _____

Approved By _____ Our Representative James Wanda

Trilobite Testing Inc. shall not be liable for damaged of any kind of the property or personnel of the one for whom a test is made, or for any loss suffered or sustained, directly or indirectly, through the use of its equipment, or its statements or opinion concerning the results of any test, tools lost or damaged in the hole shall be paid for at cost by the party for whom the test is made.



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 63308

Well Name & No. CWA 'E' #1-17 Test No. 3 Date 9-17-17
 Company Murfin Drilling Co. Inc Elevation 3258 KB 3253 GL
 Address 250 N. Water STE 300 Wichita, KS 67202
 Co. Rep / Geo. Paul Gunzelman Rig Murfin #24
 Location: Sec. 17 Twp. 3S Rge. 35W Co. Rawlins State KS

Interval Tested 4326-4378 Zone Tested Lans. "J"
 Anchor Length 52 Drill Pipe Run 4118 Mud Wt. 8.9
 Top Packer Depth 4321 Drill Collars Run 205 Vis 75
 Bottom Packer Depth 4326 Wt. Pipe Run - WL 6.0
 Total Depth 4378 Chlorides 3200 ppm System LCM 3*

Blow Description IF: Blow built to BOB (11") at 10 min.
ISI: Blowback built to 2"
FF: Blow built to BOB at 11 1/2 min.
FSI: Blowback built to 5 1/2"

Rec	Feet of	%gas	%oil	%water	%mud
<u>140</u>	<u>C60</u>	<u>11</u>	<u>88</u>	<u>-</u>	<u>1</u>
<u>462</u>	<u>GMCO</u>	<u>21</u>	<u>62</u>	<u>-</u>	<u>17</u>
<u>118</u>	<u>6Wmco</u>	<u>15</u>	<u>45</u>	<u>16</u>	<u>24</u>
<u>Rec</u>	<u>Feet of</u>	<u>%gas</u>	<u>%oil</u>	<u>%water</u>	<u>%mud</u>
<u>Rec</u>	<u>Feet of</u>	<u>%gas</u>	<u>%oil</u>	<u>%water</u>	<u>%mud</u>

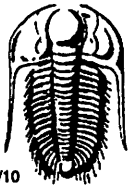
Rec Total 720 BHT 135 Gravity 35.2 API RW @ °F Chlorides ppm

(A) Initial Hydrostatic 2146 Test 1150 T-On Location 19:45 9/17
 (B) First Initial Flow 34 Jars 250 T-Started 20:48
 (C) First Final Flow 160 Safety Joint 75 T-Open 22:54
 (D) Initial Shut-In 1326 Circ Sub _____ T-Pulled 2:56
 (E) Second Initial Flow 163 Hourly Standby _____ T-Out 5:30 9/18
 (F) Second Final Flow 286 Mileage 84RT 63 Comments _____
 (G) Final Shut-In 1305 Sampler _____
 (H) Final Hydrostatic 2121 Straddle _____
 Shale Packer _____
 Ruined Shale Packer _____
 Ruined Packer _____
 Extra Packer _____
 Extra Copies _____

Initial Open 30
 Initial Shut-In 60
 Final Flow 60
 Final Shut-In 90
 Sub Total 1538
 Total 1538
 MP/DST Disc't _____

Approved By _____ Our Representative James Wink

TriLOBITE Testing Inc. shall not be liable for damaged of any kind of the property or personnel of the one for whom a test is made, or for any loss suffered or sustained, directly or indirectly, through the use of its equipment, or its statements or opinion concerning the results of any test, tools lost or damaged in the hole shall be paid for at cost by the party for whom the test is made.



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 63309

Well Name & No. CWA 'E' #1-17 Test No. 4 Date 9-19-17
 Company Murfin Drilling Co Inc Elevation 3258 KB 3253 GL
 Address 250 N Water STE 300 Wichita, KS 67202
 Co. Rep / Geo. Paul Gunzelman Rig Murfin #24
 Location: Sec. 17 Twp. 3s Rge. 35w Co. Rawlins State K.S

Interval Tested 4534-4600 Zone Tested Ft Scott - Lower Ft Scott
 Anchor Length 66 Drill Pipe Run 4305 Mud Wt. 9.2
 Top Packer Depth 4529 Drill Collars Run 205 Vis 64
 Bottom Packer Depth 4534 Wt. Pipe Run - WL 6.0
 Total Depth 4600 Chlorides 3400 ppm System LCM 4
 Blow Description IF: Blow built to 1"
ISI: No blowback
FF: No blow
FSI: No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>45</u>	<u>Mud w/oil spots</u>	<u>-</u>	<u>2</u>	<u>-</u>	<u>98</u>
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 45 BHT 128 Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic 2341 Test 1150 T-On Location 5:45
 (B) First Initial Flow 18 Jars 250 T-Started 6:40
 (C) First Final Flow 23 Safety Joint 75 T-Open 8:18
 (D) Initial Shut-In 1165 Circ Sub _____ T-Pulled 11:19
 (E) Second Initial Flow 25 Hourly Standby _____ T-Out 13:50
 (F) Second Final Flow 29 Mileage 84RT 63 Comments _____
 (G) Final Shut-In 1092 Sampler _____
 (H) Final Hydrostatic 2295 Straddle _____
 Shale Packer _____
 Ruined Shale Packer _____
 Ruined Packer _____
 Extra Copies _____
 Initial Open 30 Extra Recorder _____
 Initial Shut-In 60 Day Standby _____
 Final Flow 30 Accessibility _____
 Final Shut-In 60 Sub Total 0
 Sub Total 1538 Total 1538 MP/DST Disc't _____

Approved By _____ Our Representative James Winder

Trilobite Testing Inc. shall not be liable for damaged of any kind of the property or personnel of the one for whom a test is made, or for any loss suffered or sustained, directly or indirectly, through the use of its equipment, or its statements or opinion concerning the results of any test, tools lost or damaged in the hole shall be paid for at cost by the party for whom the test is made.