



DRILL STEM TEST REPORT

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

250 N. Water STE 300
Wichita, KS 67202

ATTN: Keath Reavis

Morgan #1-17

17-4s-33w Rawlins,KS

Start Date: 2014.10.16 @ 22:32:00

End Date: 2014.10.17 @ 06:26:30

Job Ticket #: 60150 DST #: 1

Trilobite Testing, Inc
1515 Commerce Parkway Hays, KS 67601
ph: 785-625-4778 fax: 785-625-5620

Printed: 2014.10.22 @ 16:08:09



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

17-4s-33w Rawlins,KS

250 N. Water STE 300
Wichita, KS 67202

Morgan #1-17

Job Ticket: 60150

DST#: 1

ATTN: Keath Reavis

Test Start: 2014.10.16 @ 22:32:00

GENERAL INFORMATION:

Formation: **Toronto/Lansing**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 01:01:30

Time Test Ended: 06:26:30

Test Type: Conventional Bottom Hole (Initial)

Tester: Donovan Baumann

Unit No: 49

Interval: 3950.00 ft (KB) To 4010.00 ft (KB) (TVD)

Reference Elevations: 3049.00 ft (KB)

Total Depth: 4010.00 ft (KB) (TVD)

3044.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 5.00 ft

Serial #: 8959 Outside

Press@RunDepth: 1267.15 psig @ 3951.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.10.16

End Date:

2014.10.17

Last Calib.: 2014.10.17

Start Time: 22:32:05

End Time:

06:26:29

Time On Btm: 2014.10.17 @ 01:01:00

Time Off Btm: 2014.10.17 @ 04:08:30

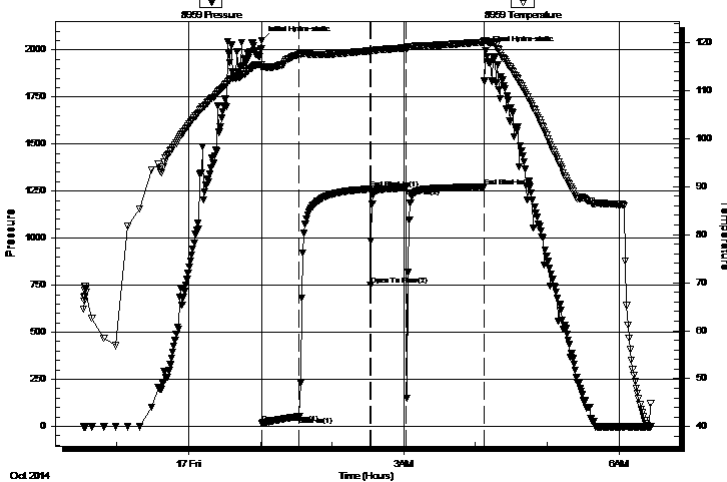
TEST COMMENT: 30 - IF - Weak surface blow built to 3" in 30 min.

60 - ISI - No return

30 - FF - No surface blow

60 - FSI - No return

Pressure vs. Time



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2050.79	115.39	Initial Hydro-static
1	16.49	114.75	Open To Flow (1)
32	53.58	117.47	Shut-In(1)
91	1261.05	118.25	End Shut-In(1)
91	749.81	117.94	Open To Flow (2)
121	1267.15	118.88	Shut-In(2)
186	1272.02	120.07	End Shut-In(2)
188	1996.42	120.43	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
73.00	Mud - 100M	0.36

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co., Inc.

17-4s-33w Rawlins,KS

250 N. Water STE 300
Wichita, KS 67202

Morgan #1-17

Job Ticket: 60150

DST#: 1

ATTN: Keath Reavis

Test Start: 2014.10.16 @ 22:32:00

Tool Information

Drill Pipe:	Length: 3769.00 ft	Diameter: 3.80 inches	Volume: 52.87 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 187.00 ft	Diameter: 2.25 inches	Volume: 0.92 bbl	Weight to Pull Loose: 72000.00 lb
			<u>Total Volume: 53.79 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	33.00 ft			String Weight: Initial 60000.00 lb
Depth to Top Packer:	3950.00 ft			Final 62000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	60.00 ft			
Tool Length:	87.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Shut In Tool	5.00			3928.00	
Hydraulic tool	5.00			3933.00	
Jars	5.00			3938.00	
Safety Joint	3.00			3941.00	
Packer	5.00			3946.00	27.00 Bottom Of Top Packer
Packer	4.00			3950.00	
Stubb	1.00			3951.00	
Recorder	0.00	8521	Inside	3951.00	
Recorder	0.00	8959	Outside	3951.00	
Perforations	23.00			3974.00	
Change Over Sub	1.00			3975.00	
Drill Pipe	31.00			4006.00	
Change Over Sub	1.00			4007.00	
Bullnose	3.00			4010.00	60.00 Bottom Packers & Anchor

Total Tool Length: 87.00



**TRILOBITE
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DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc.

17-4s-33w Rawlins,KS

250 N. Water STE 300
Wichita, KS 67202

Morgan #1-17

Job Ticket: 60150

DST#: 1

ATTN: Keath Reavis

Test Start: 2014.10.16 @ 22:32:00

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: 58.00 sec/qt

Cushion Volume:

bbf

Water Loss: 7.57 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 2100.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbf
73.00	Mud - 100M	0.359

Total Length: 73.00 ft Total Volume: 0.359 bbf

Num Fluid Samples: 0

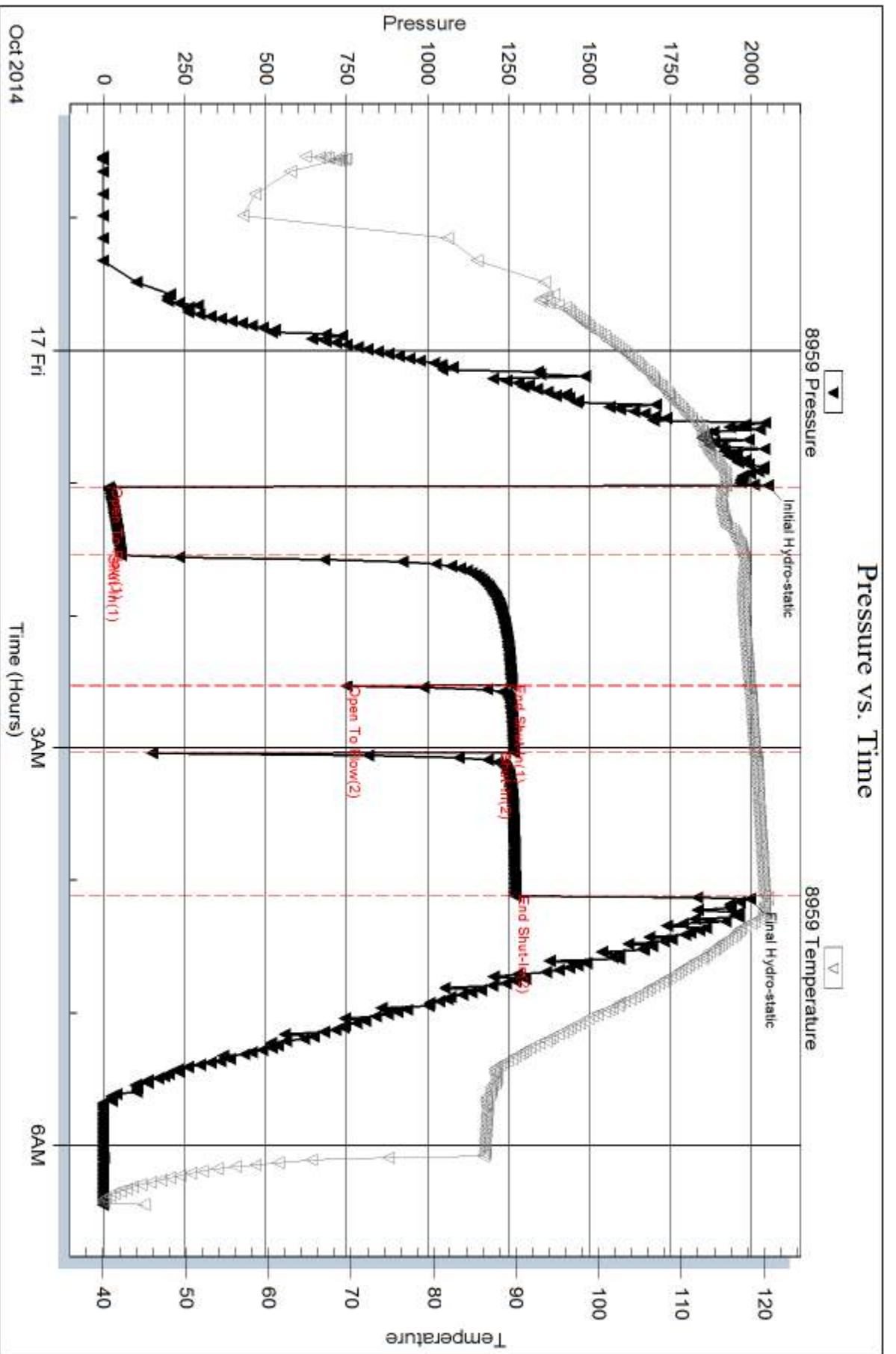
Num Gas Bombs: 0

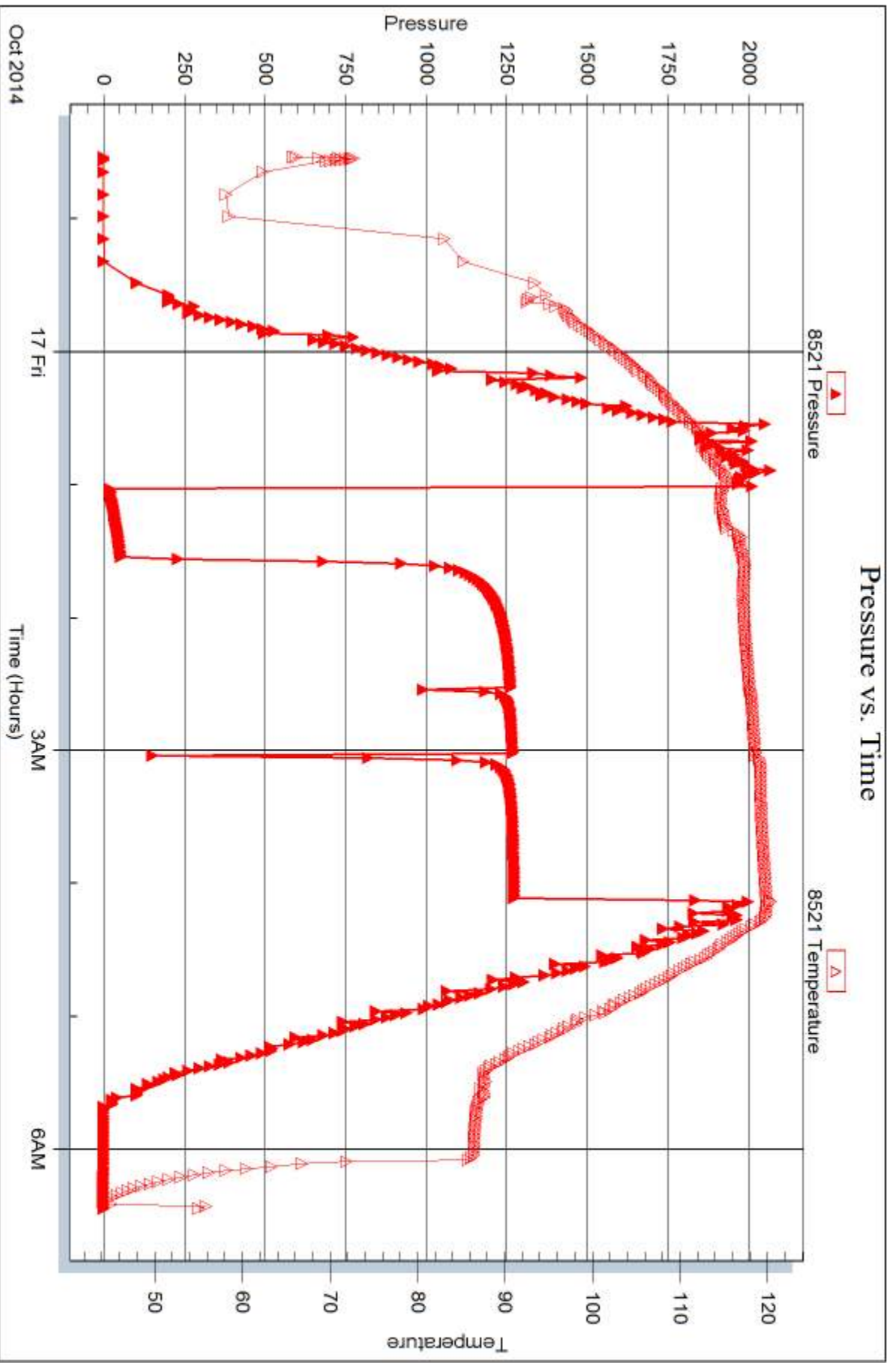
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:







DRILL STEM TEST REPORT

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

250 N. Water STE 300
Wichita, KS 67202

ATTN: Keath Reavis

Morgan #1-17

17-4s-33w Rawlins,KS

Start Date: 2014.10.17 @ 15:50:00

End Date: 2014.10.17 @ 23:21:30

Job Ticket #: 60851 DST #: 2

Trilobite Testing, Inc
1515 Commerce Parkway Hays, KS 67601
ph: 785-625-4778 fax: 785-625-5620

Printed: 2014.10.22 @ 16:07:40



**TRILOBITE
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DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

17-4s-33w Rawlins,KS

250 N. Water STE 300
Wichita, KS 67202

Morgan #1-17

Job Ticket: 60851

DST#: 2

ATTN: Keath Reavis

Test Start: 2014.10.17 @ 15:50:00

GENERAL INFORMATION:

Formation: **LKC "B&D"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 18:14:00

Time Test Ended: 23:21:30

Test Type: Conventional Bottom Hole (Initial)

Tester: Donovan Baumann

Unit No: 49

Interval: 4008.00 ft (KB) To 4054.00 ft (KB) (TVD)

Reference Elevations: 3049.00 ft (KB)

Total Depth: 4054.00 ft (KB) (TVD)

3044.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 5.00 ft

Serial #: 8959 Outside

Press@RunDepth: 17.18 psig @ 4009.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.10.17

End Date:

2014.10.17

Last Calib.:

2014.10.17

Start Time: 15:50:05

End Time:

23:21:29

Time On Btm:

2014.10.17 @ 18:13:30

Time Off Btm:

2014.10.17 @ 21:15:30

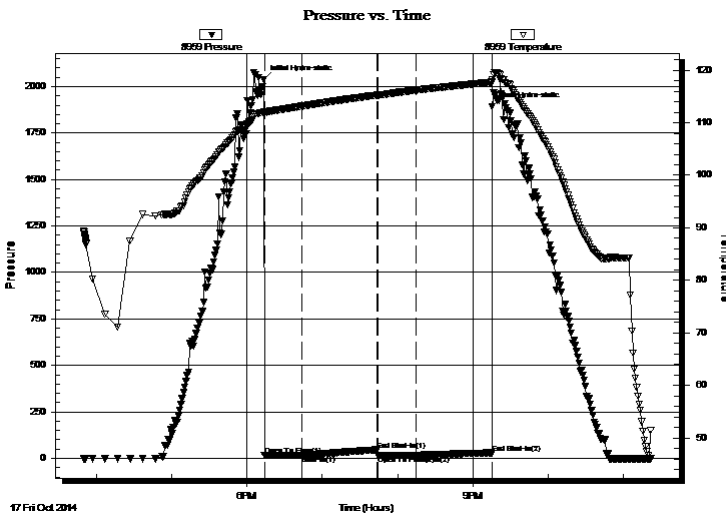
TEST COMMENT: 30 - IF - Weak surface blow built to 1/4" in 10 min and stayed there for the rest of the time

60 - ISI - No return

30 - FF - No surface blow

60 - FSI - No return

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2037.35	112.17	Initial Hydro-static
1	15.80	111.77	Open To Flow (1)
31	16.47	113.17	Shut-In(1)
90	46.15	115.26	End Shut-In(1)
91	16.78	115.28	Open To Flow (2)
121	17.18	116.20	Shut-In(2)
182	26.29	117.73	End Shut-In(2)
182	1891.11	118.26	Final Hydro-static

Recovery

Gas Rates

Length (ft)	Description	Volume (bbl)
3.00	Mud - 100M	0.01

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



**TRILOBITE
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DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co., Inc.

17-4s-33w Rawlins,KS

250 N. Water STE 300
Wichita, KS 67202

Morgan #1-17

Job Ticket: 60851

DST#: 2

ATTN: Keath Reavis

Test Start: 2014.10.17 @ 15:50:00

Tool Information

Drill Pipe:	Length: 3801.00 ft	Diameter: 3.80 inches	Volume: 53.32 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 187.00 ft	Diameter: 2.25 inches	Volume: 0.92 bbl	Weight to Pull Loose: 70000.00 lb
			<u>Total Volume: 54.24 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	7.00 ft			String Weight: Initial 60000.00 lb
Depth to Top Packer:	4008.00 ft			Final 61000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	46.00 ft			
Tool Length:	73.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Shut In Tool	5.00			3986.00	
Hydraulic tool	5.00			3991.00	
Jars	5.00			3996.00	
Safety Joint	3.00			3999.00	
Packer	5.00			4004.00	27.00 Bottom Of Top Packer
Packer	4.00			4008.00	
Stubb	1.00			4009.00	
Recorder	0.00	8521	Inside	4009.00	
Recorder	0.00	8959	Outside	4009.00	
Perforations	9.00			4018.00	
Change Over Sub	1.00			4019.00	
Drill Pipe	31.00			4050.00	
Change Over Sub	1.00			4051.00	
Bullnose	3.00			4054.00	46.00 Bottom Packers & Anchor

Total Tool Length: 73.00



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DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc.

17-4s-33w Rawlins,KS

250 N. Water STE 300
Wichita, KS 67202

Morgan #1-17

Job Ticket: 60851

DST#: 2

ATTN: Keath Reavis

Test Start: 2014.10.17 @ 15:50:00

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: 62.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.57 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 2600.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
3.00	Mud - 100M	0.015

Total Length: 3.00 ft Total Volume: 0.015 bbl

Num Fluid Samples: 0

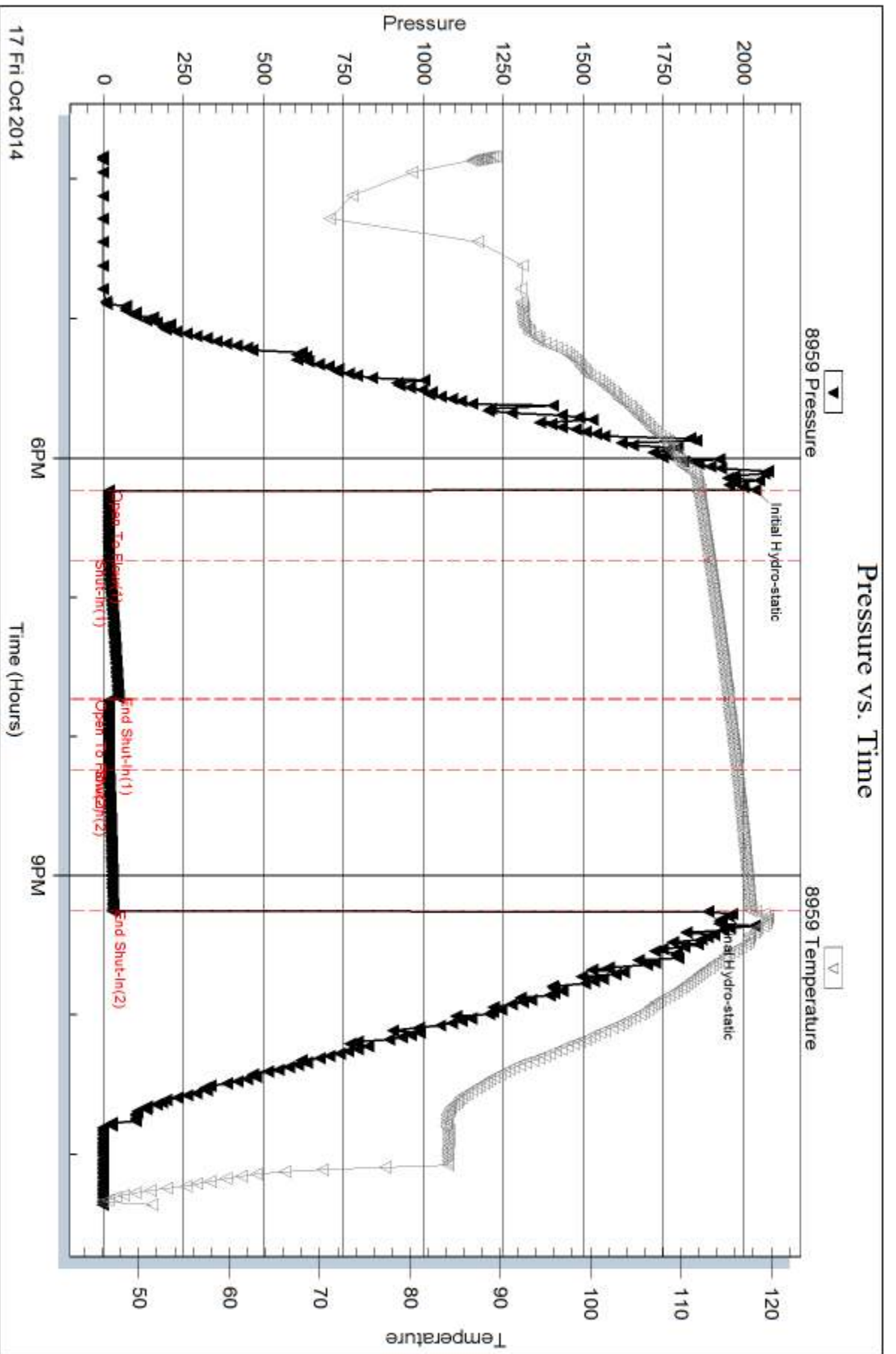
Num Gas Bombs: 0

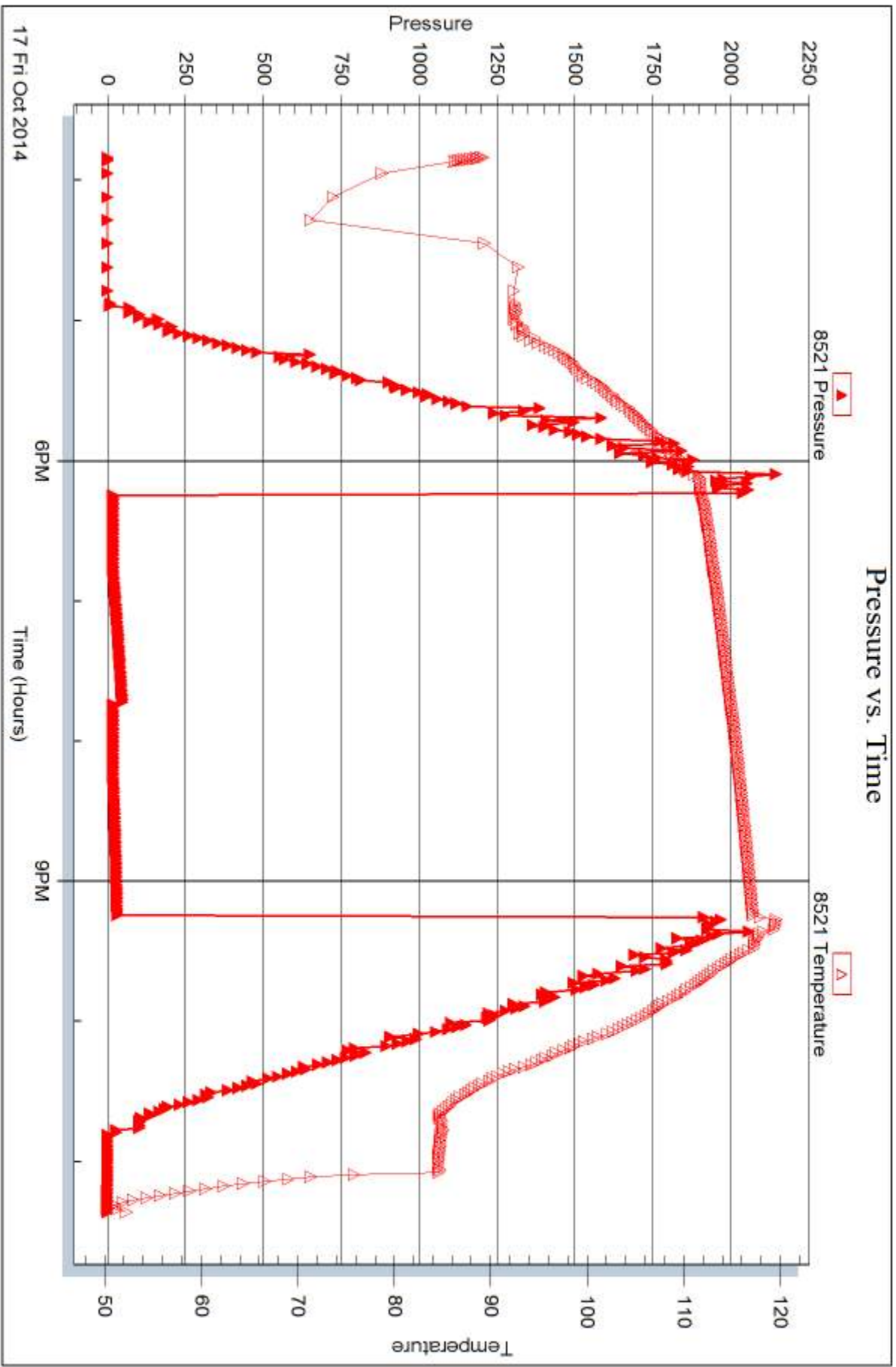
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:







DRILL STEM TEST REPORT

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

250 N. Water STE 300
Wichita, KS 67202

ATTN: Keath Reavis

Morgan #1-17

17-4s-33w Rawlins,KS

Start Date: 2014.10.18 @ 08:16:00

End Date: 2014.10.18 @ 15:39:30

Job Ticket #: 60852 DST #: 3

Trilobite Testing, Inc
1515 Commerce Parkway Hays, KS 67601
ph: 785-625-4778 fax: 785-625-5620

Printed: 2014.10.22 @ 16:07:19

Murfin Drilling Co., Inc.
17-4s-33w Rawlins,KS
Morgan #1-17
DST # 3
LKC" F&G"
2014.10.18



**TRILOBITE
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DRILL STEM TEST REPORT

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

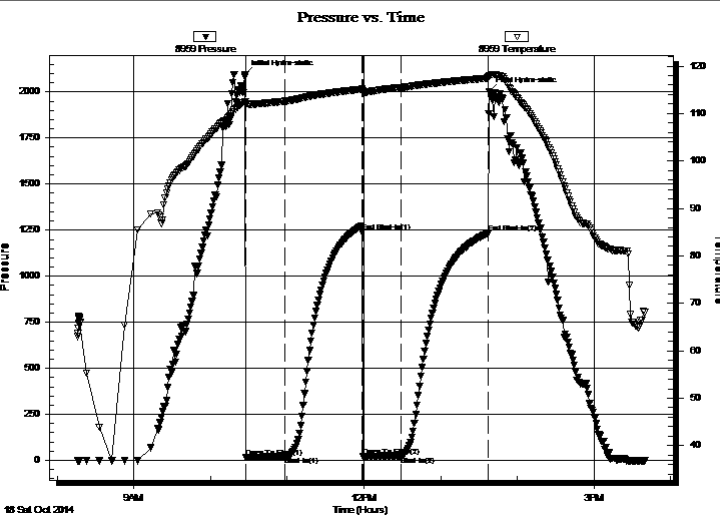
17-4s-33w Rawlins, KS
Morgan #1-17
Job Ticket: 60852 **DST#: 3**
Test Start: 2014.10.18 @ 08:16:00

GENERAL INFORMATION:

Formation: **LKC"F&G"**
Deviated: No Whipstock: ft (KB) Test Type: Conventional Bottom Hole (Initial)
Time Tool Opened: 10:27:30 Tester: Donovan Baumann
Time Test Ended: 15:39:30 Unit No: 49
Interval: 4047.00 ft (KB) To 4085.00 ft (KB) (TVD) Reference Elevations: 3049.00 ft (KB)
Total Depth: 4085.00 ft (KB) (TVD) 3044.00 ft (CF)
Hole Diameter: 7.88 inches Hole Condition: Good KB to GR/CF: 5.00 ft

Serial #: 8959 Outside
Press@RunDepth: 24.64 psig @ 4048.00 ft (KB) Capacity: 8000.00 psig
Start Date: 2014.10.18 End Date: 2014.10.18 Last Calib.: 2014.10.18
Start Time: 08:16:05 End Time: 15:39:29 Time On Btm: 2014.10.18 @ 10:27:00
Time Off Btm: 2014.10.18 @ 13:38:00

TEST COMMENT: 30 - IF - Weak surface blow built to 3/4" in 30 min
60 - ISI - No return
30 - FF - No surface blow
60 - FSI - No return



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2093.89	112.38	Initial Hydro-static
1	16.59	111.96	Open To Flow (1)
31	20.75	112.59	Shut-In(1)
92	1241.98	115.14	End Shut-In(1)
92	22.64	114.80	Open To Flow (2)
122	24.64	115.51	Shut-In(2)
190	1233.01	117.47	End Shut-In(2)
191	1999.82	117.85	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
15.00	OSM - 100M - oil spots	0.07

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co., Inc.

17-4s-33w Rawlins,KS

250 N. Water STE 300
Wichita, KS 67202

Morgan #1-17

Job Ticket: 60852

DST#: 3

ATTN: Keath Reavis

Test Start: 2014.10.18 @ 08:16:00

Tool Information

Drill Pipe:	Length: 3864.00 ft	Diameter: 3.80 inches	Volume: 54.20 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 187.00 ft	Diameter: 2.25 inches	Volume: 0.92 bbl	Weight to Pull Loose: 70000.00 lb
			<u>Total Volume: 55.12 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	31.00 ft			String Weight: Initial 62000.00 lb
Depth to Top Packer:	4047.00 ft			Final 62000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	38.00 ft			
Tool Length:	65.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Shut In Tool	5.00			4025.00	
Hydraulic tool	5.00			4030.00	
Jars	5.00			4035.00	
Safety Joint	3.00			4038.00	
Packer	5.00			4043.00	27.00 Bottom Of Top Packer
Packer	4.00			4047.00	
Stubb	1.00			4048.00	
Recorder	0.00	8521	Inside	4048.00	
Recorder	0.00	8959	Outside	4048.00	
Perforations	34.00			4082.00	
Change Over Sub	0.00			4082.00	
Drill Pipe	0.00			4082.00	
Change Over Sub	0.00			4082.00	
Bullnose	3.00			4085.00	38.00 Bottom Packers & Anchor

Total Tool Length: 65.00



**TRILOBITE
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DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc.

17-4s-33w Rawlins,KS

250 N. Water STE 300
Wichita, KS 67202

Morgan #1-17

Job Ticket: 60852

DST#: 3

ATTN: Keath Reavis

Test Start: 2014.10.18 @ 08:16:00

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: 62.00 sec/qt

Cushion Volume:

bbf

Water Loss: 7.57 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 2600.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbf
15.00	OSM - 100M - oil spots	0.074

Total Length: 15.00 ft Total Volume: 0.074 bbf

Num Fluid Samples: 0

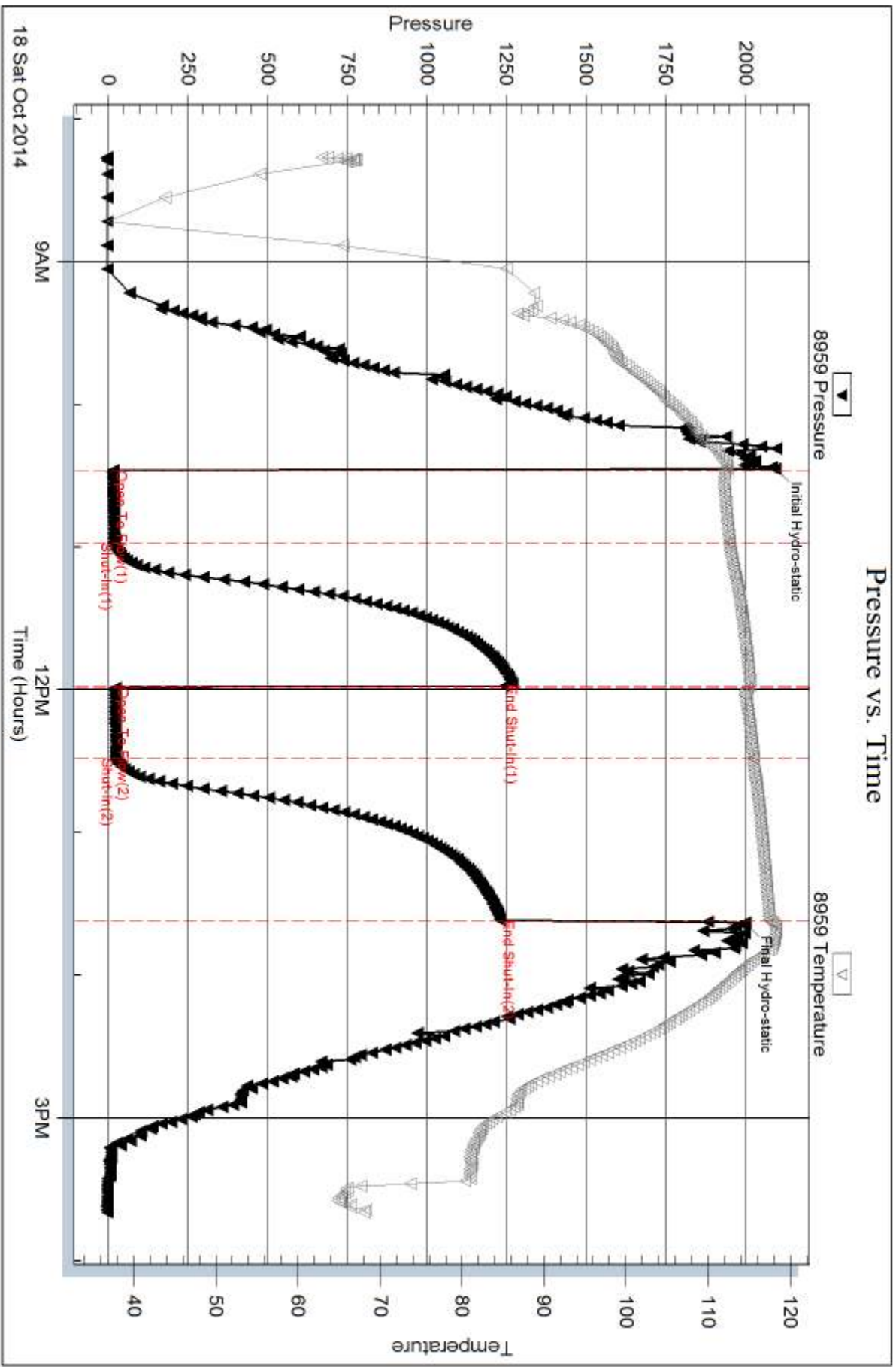
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



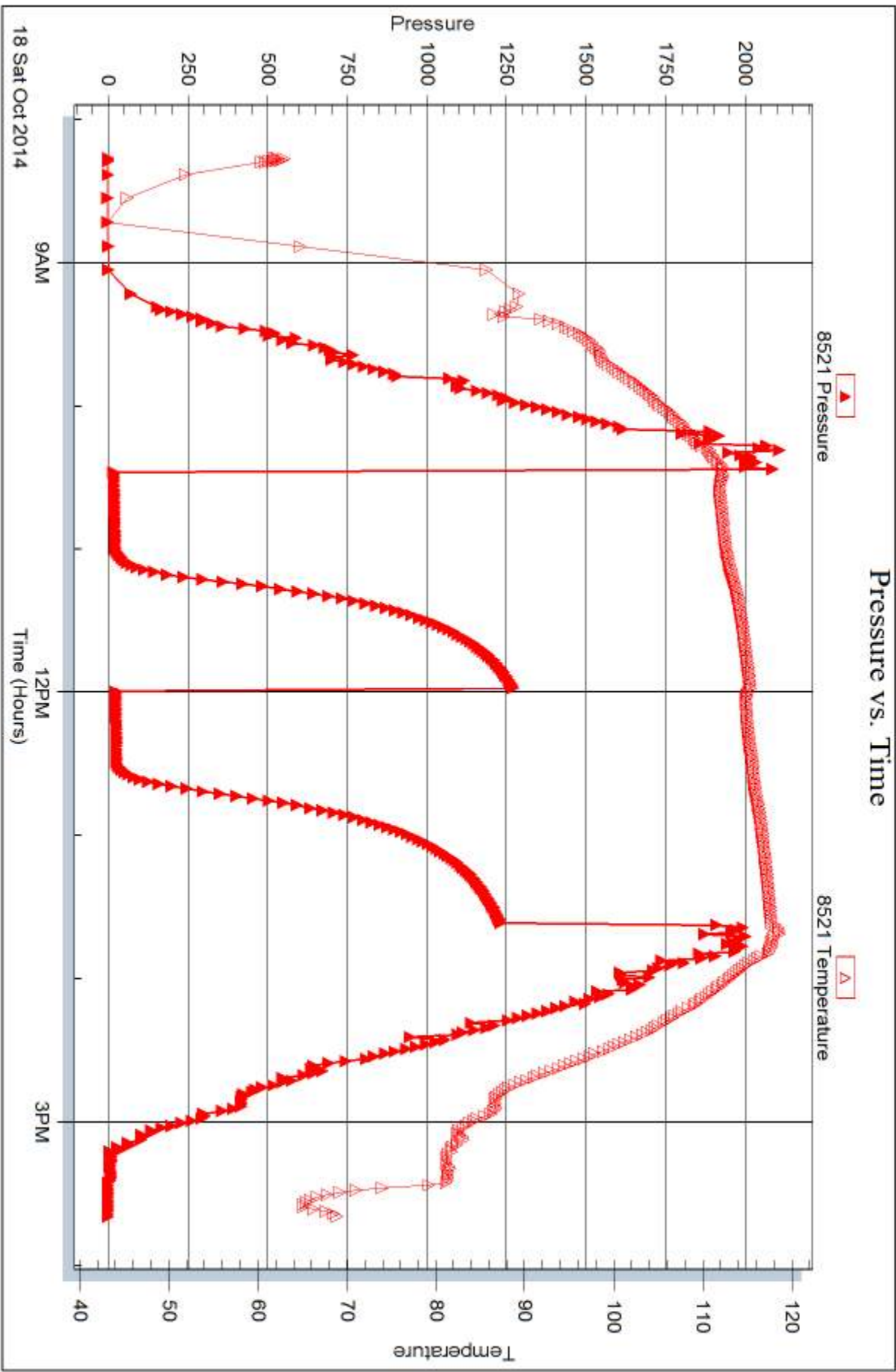
Serial #: 8521

Inside

Murfin Drilling Co., Inc.

Morgan #1-17

DST Test Number: 3



Trilobite Testing, Inc

Ref. No: 60852

Printed: 2014, 10, 22 @ 16:07:20



DRILL STEM TEST REPORT

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

250 N. Water STE 300
Wichita, KS 67202

ATTN: Keath Reavis

Morgan #1-17

17-4s-33w Rawlins,KS

Start Date: 2014.10.19 @ 05:34:00

End Date: 2014.10.19 @ 13:12:30

Job Ticket #: 60853 DST #: 4

Trilobite Testing, Inc
1515 Commerce Parkway Hays, KS 67601
ph: 785-625-4778 fax: 785-625-5620

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**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

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

17-4s-33w Rawlins, KS
Morgan #1-17
Job Ticket: 60853 **DST#: 4**
Test Start: 2014.10.19 @ 05:34:00

GENERAL INFORMATION:

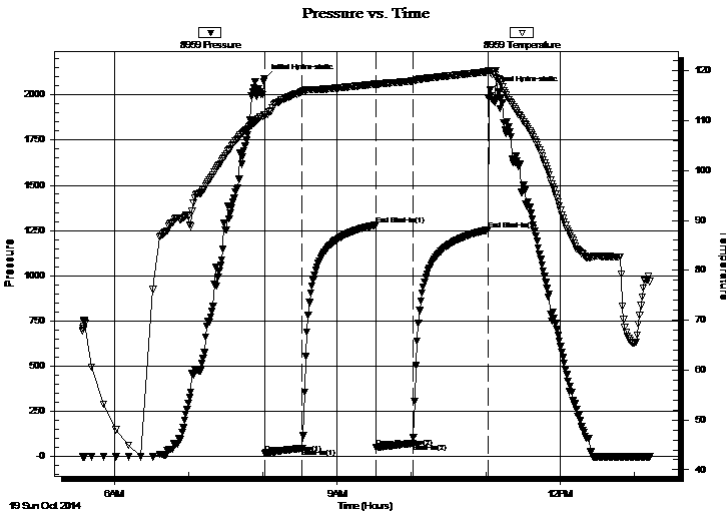
Formation: **LKC "H-J"**
Deviated: No Whipstock: ft (KB) Test Type: Conventional Bottom Hole (Initial)
Time Tool Opened: 08:01:30 Tester: Donovan Baumann
Time Test Ended: 13:12:30 Unit No: 49
Interval: 4102.00 ft (KB) To 4180.00 ft (KB) (TVD) Reference Elevations: 3049.00 ft (KB)
Total Depth: 4180.00 ft (KB) (TVD) 3044.00 ft (CF)
Hole Diameter: 7.88 inches Hole Condition: Good KB to GR/CF: 5.00 ft

Serial #: 8959 Outside

Press@RunDepth: 72.29 psig @ 4103.00 ft (KB) Capacity: 8000.00 psig
Start Date: 2014.10.19 End Date: 2014.10.19 Last Calib.: 2014.10.19
Start Time: 05:34:05 End Time: 13:12:29 Time On Btm: 2014.10.19 @ 08:01:00
Time Off Btm: 2014.10.19 @ 11:03:30

TEST COMMENT: 30 - IF - Weak surface blow built to 3" in 30 min.
60 - ISI - No return
30 - FF - Weak surface blow built to 1" in 30 min.
60 - FSI - No return

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2090.75	111.10	Initial Hydro-static
1	18.10	110.80	Open To Flow (1)
31	44.98	115.86	Shut-In(1)
90	1280.21	117.33	End Shut-In(1)
91	48.69	117.03	Open To Flow (2)
120	72.29	117.94	Shut-In(2)
181	1253.45	119.80	End Shut-In(2)
183	2026.30	120.08	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
94.00	Mud - 100M	0.46

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co., Inc.

17-4s-33w Rawlins,KS

250 N. Water STE 300
Wichita, KS 67202

Morgan #1-17

Job Ticket: 60853

DST#: 4

ATTN: Keath Reavis

Test Start: 2014.10.19 @ 05:34:00

Tool Information

Drill Pipe:	Length: 3896.00 ft	Diameter: 3.80 inches	Volume: 54.65 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 187.00 ft	Diameter: 2.25 inches	Volume: 0.92 bbl	Weight to Pull Loose: 78000.00 lb
			<u>Total Volume: 55.57 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	8.00 ft			String Weight: Initial 64000.00 lb
Depth to Top Packer:	4102.00 ft			Final 65000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	78.00 ft			
Tool Length:	105.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Shut In Tool	5.00			4080.00	
Hydraulic tool	5.00			4085.00	
Jars	5.00			4090.00	
Safety Joint	3.00			4093.00	
Packer	5.00			4098.00	27.00 Bottom Of Top Packer
Packer	4.00			4102.00	
Stubb	1.00			4103.00	
Recorder	0.00	8521	Inside	4103.00	
Recorder	0.00	8959	Outside	4103.00	
Perforations	9.00			4112.00	
Change Over Sub	1.00			4113.00	
Drill Pipe	63.00			4176.00	
Change Over Sub	1.00			4177.00	
Bullnose	3.00			4180.00	78.00 Bottom Packers & Anchor

Total Tool Length: 105.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc.

17-4s-33w Rawlins,KS

250 N. Water STE 300
Wichita, KS 67202

Morgan #1-17

Job Ticket: 60853

DST#: 4

ATTN: Keath Reavis

Test Start: 2014.10.19 @ 05:34:00

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: 62.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.58 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 2800.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
94.00	Mud - 100M	0.462

Total Length: 94.00 ft Total Volume: 0.462 bbl

Num Fluid Samples: 0

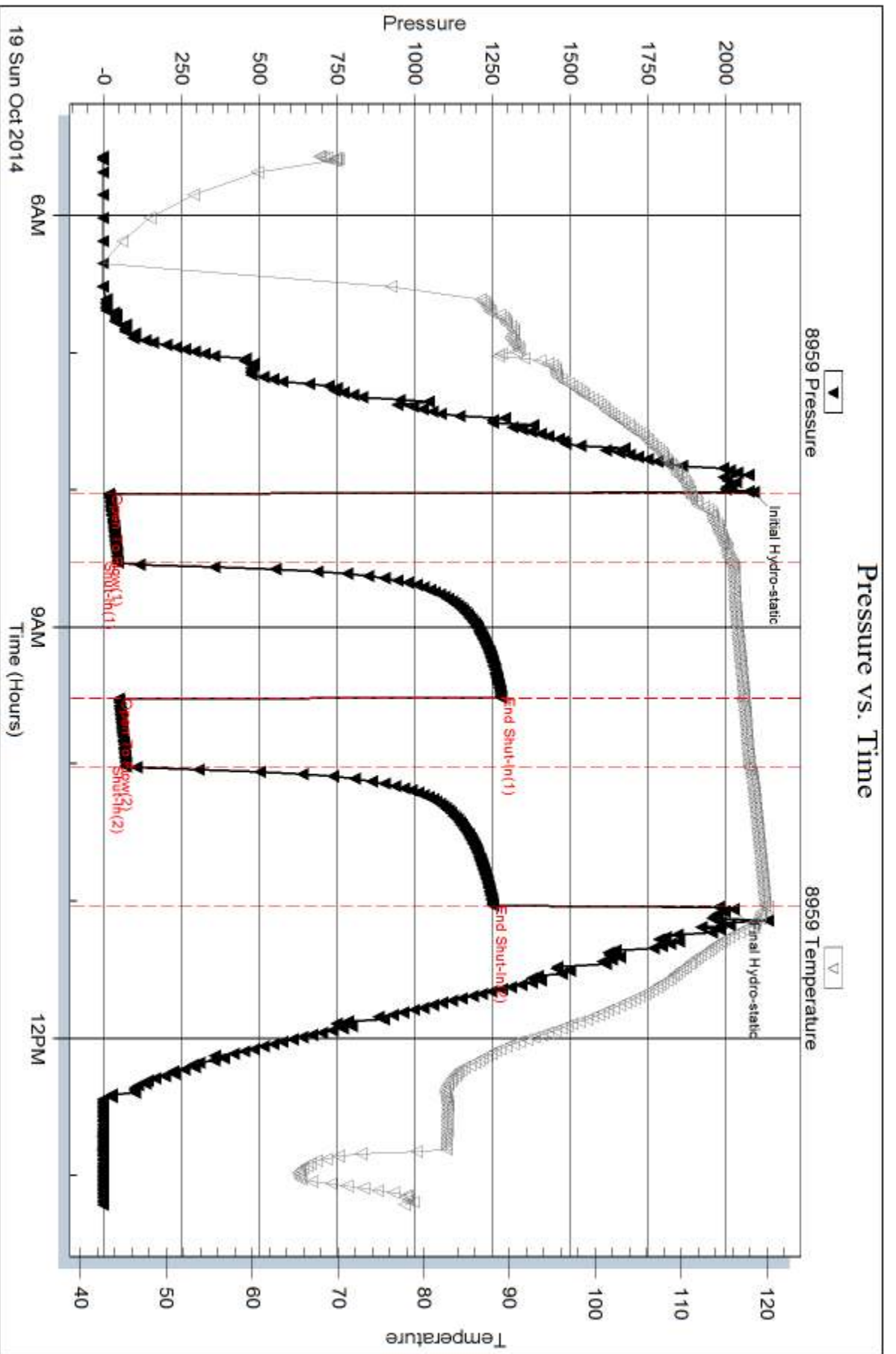
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



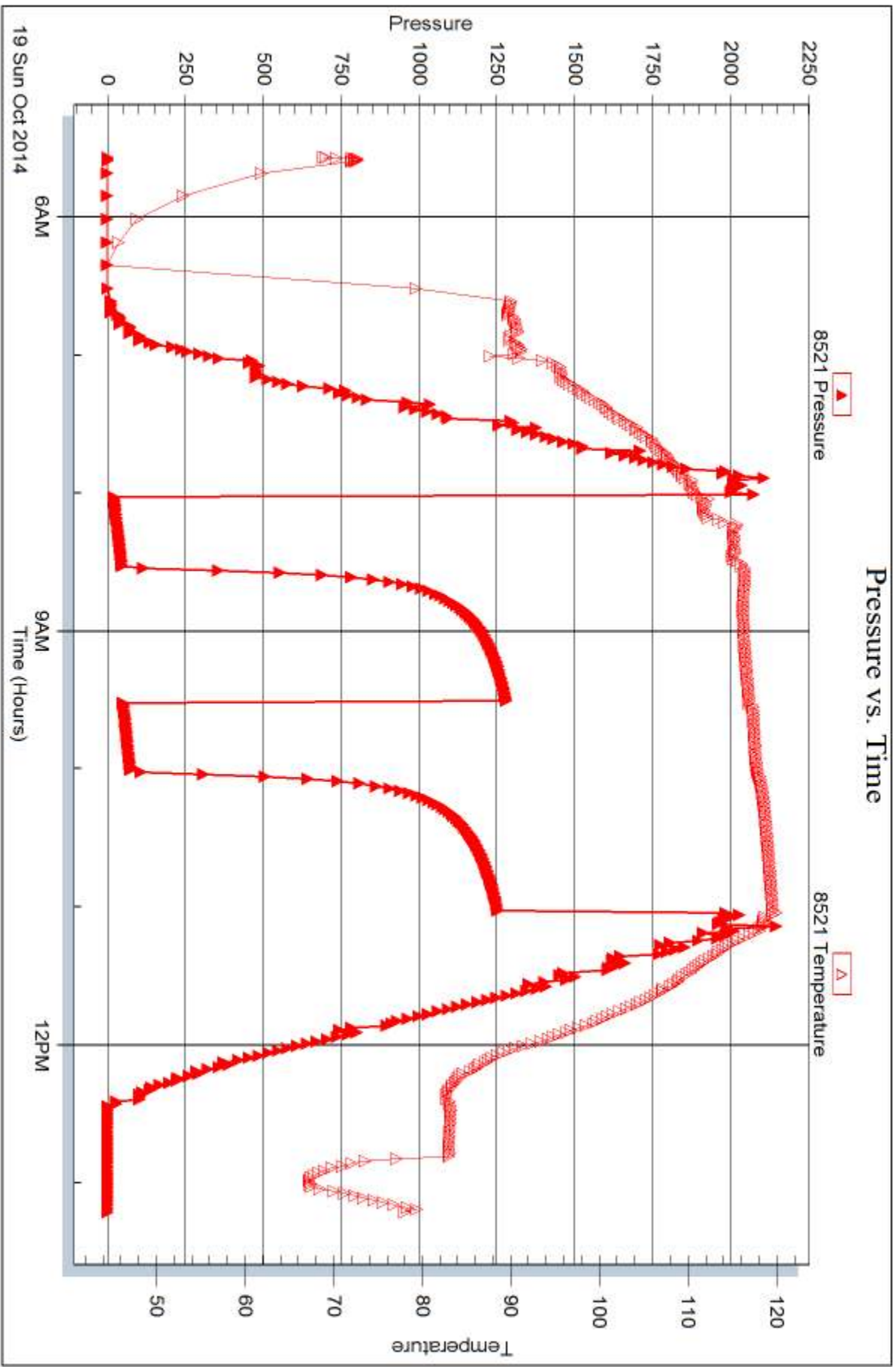
Serial #: 8521

Inside

Murfin Drilling Co., Inc.

Morgan #1-17

DST Test Number: 4



Trilobite Testing, Inc

Ref. No: 60853

Printed: 2014, 10, 22 @ 16:06:54



DRILL STEM TEST REPORT

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

250 N. Water STE 300
Wichita, KS 67202

ATTN: Keath Reavis

Morgan #1-17

17-4s-33w Rawlins,KS

Start Date: 2014.10.20 @ 16:30:00

End Date: 2014.10.20 @ 23:39:30

Job Ticket #: 59977 DST #: 5

Trilobite Testing, Inc
1515 Commerce Parkway Hays, KS 67601
ph: 785-625-4778 fax: 785-625-5620

Printed: 2014.10.22 @ 16:06:23



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

17-4s-33w Rawlins,KS

250 N. Water STE 300
Wichita, KS 67202

Morgan #1-17

Job Ticket: 59977

DST#: 5

ATTN: Keath Reavis

Test Start: 2014.10.20 @ 16:30:00

GENERAL INFORMATION:

Formation: **Pawnee & Cherokee**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 18:33:00

Time Test Ended: 23:39:30

Test Type: Conventional Bottom Hole (Initial)

Tester: Robert Zodrow

Unit No: 49

Interval: 4380.00 ft (KB) To 4468.00 ft (KB) (TVD)

Reference Elevations: 3049.00 ft (KB)

Total Depth: 4468.00 ft (KB) (TVD)

3044.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 8959 Outside

Press@RunDepth: 37.13 psig @ 4381.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.10.20 End Date: 2014.10.20

Last Calib.: 2014.10.20

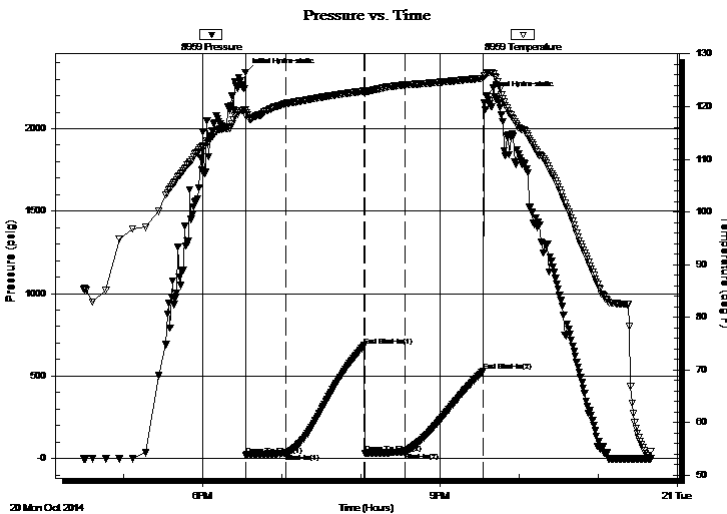
Start Time: 16:30:05 End Time: 23:39:29

Time On Btm: 2014.10.20 @ 18:32:30

Time Off Btm: 2014.10.20 @ 21:35:00

TEST COMMENT: 30-IF- Blow built to 1"
60-ISI- No return
30-FF- No blow
60-FSI- No return

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2341.42	119.43	Initial Hydro-static
1	21.24	118.28	Open To Flow (1)
31	29.81	120.63	Shut-In(1)
90	683.53	122.95	End Shut-In(1)
91	32.04	122.53	Open To Flow (2)
121	37.13	124.11	Shut-In(2)
180	528.27	125.39	End Shut-In(2)
183	2199.34	126.20	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
15.00	mud 100%M	0.07

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co., Inc.

17-4s-33w Rawlins,KS

250 N. Water STE 300
Wichita, KS 67202

Morgan #1-17

Job Ticket: 59977

DST#: 5

ATTN: Keath Reavis

Test Start: 2014.10.20 @ 16:30:00

Tool Information

Drill Pipe:	Length: 4180.00 ft	Diameter: 3.88 inches	Volume: 61.13 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 187.00 ft	Diameter: 2.25 inches	Volume: 0.92 bbl	Weight to Pull Loose: 74000.00 lb
			<u>Total Volume: 62.05 bbl</u>	Tool Chased ft
Drill Pipe Above KB:	14.00 ft			String Weight: Initial 64000.00 lb
Depth to Top Packer:	4380.00 ft			Final 64000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	88.00 ft			
Tool Length:	115.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Shut In Tool	5.00			4358.00	
Hydraulic tool	5.00			4363.00	
Jars	5.00			4368.00	
Safety Joint	3.00			4371.00	
Packer	5.00			4376.00	27.00 Bottom Of Top Packer
Packer	4.00			4380.00	
Stubb	1.00			4381.00	
Recorder	0.00	8521	Inside	4381.00	
Recorder	0.00	8959	Outside	4381.00	
Perforations	19.00			4400.00	
Change Over Sub	1.00			4401.00	
Drill Pipe	63.00			4464.00	
Change Over Sub	1.00			4465.00	
Bullnose	3.00			4468.00	88.00 Bottom Packers & Anchor

Total Tool Length: 115.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc.

17-4s-33w Rawlins,KS

250 N. Water STE 300
Wichita, KS 67202

Morgan #1-17

Job Ticket: 59977

DST#: 5

ATTN: Keath Reavis

Test Start: 2014.10.20 @ 16:30:00

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: 69.00 sec/qt

Cushion Volume: bbl

Water Loss: 7.18 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure: psig

Salinity: 2600.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
15.00	mud 100%M	0.074

Total Length: 15.00 ft Total Volume: 0.074 bbl

Num Fluid Samples: 0

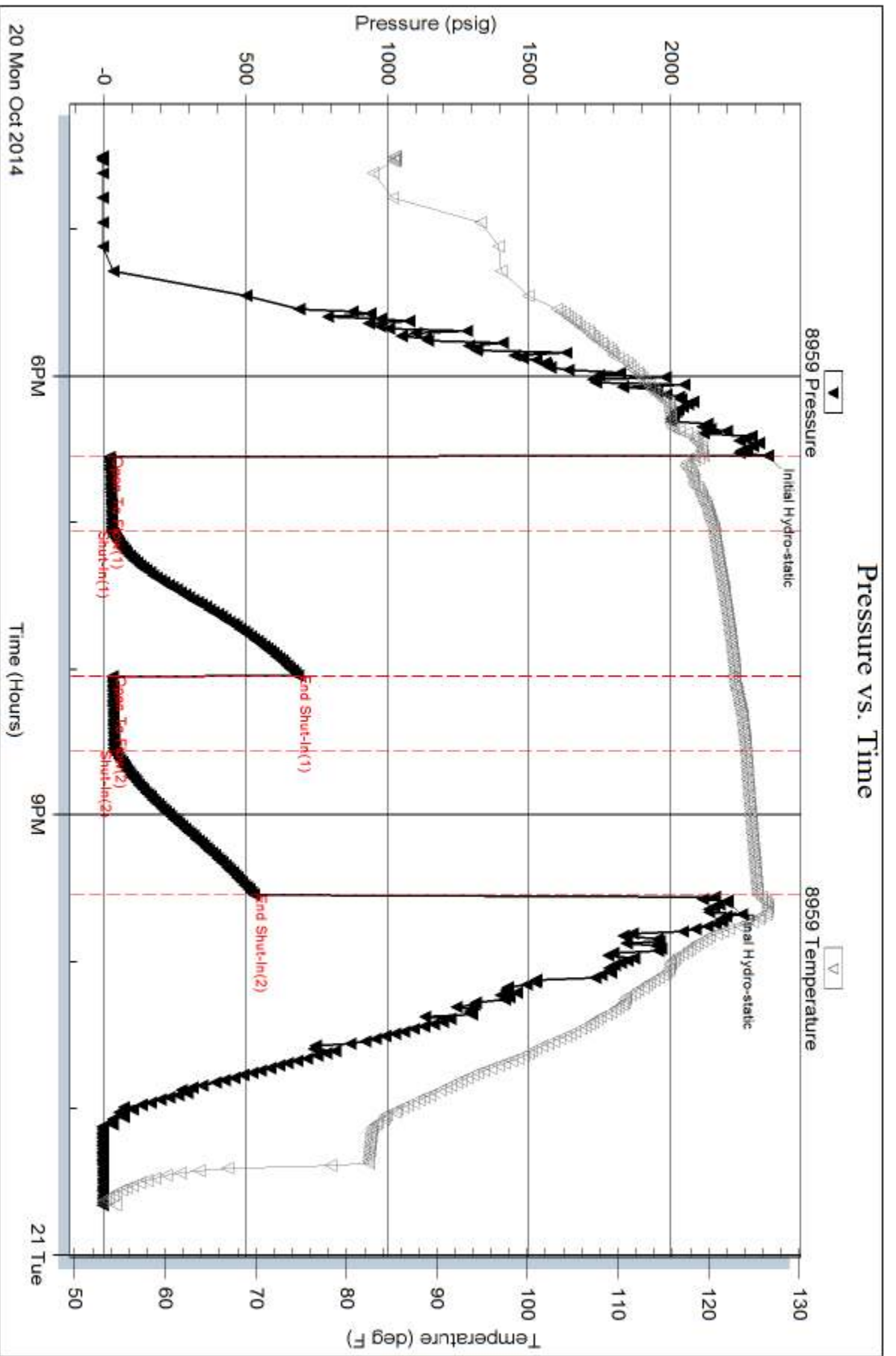
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



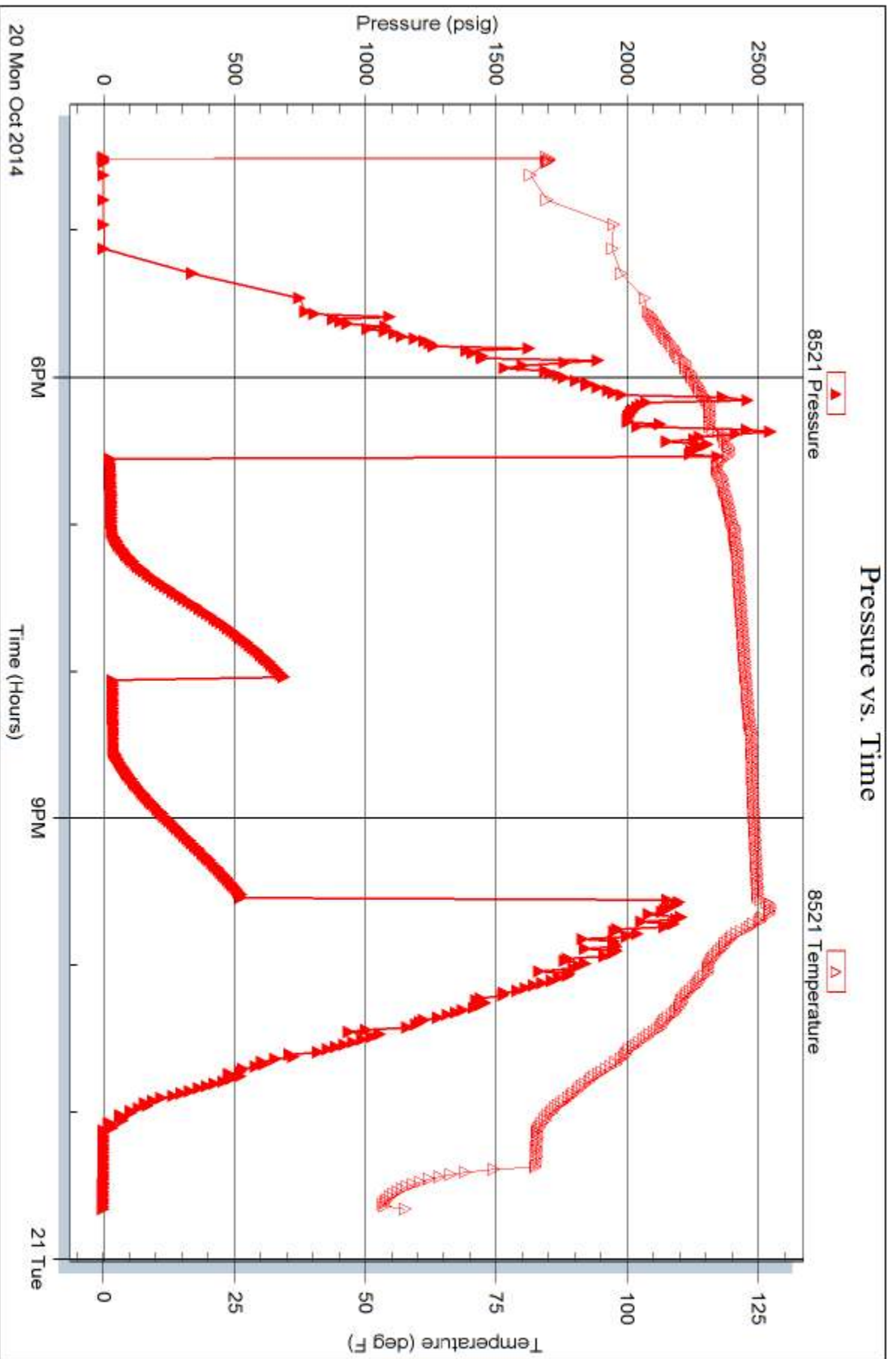
Serial #: 8521

Inside

Murfin Drilling Co., Inc.

Morgan #1-17

DST Test Number: 5





TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. **60150**

4/10

Well Name & No. Morgan 1-17 Test No. 1 Date 10-16-14
 Company Muffin Drilling Co., LAC. Elevation 3049 KB 3044 GL
 Address Muffin 250 N water STE 300 Wichita, KS, 67202
 Co. Rep / Geo. Keith Reavys Rig Martin #7
 Location: Sec. 17 Twp. 4 Rge. 33 Co. Rawlins State KS

Interval Tested 3950'-4010' Zone Tested Toronto/Lansing
 Anchor Length 60' Drill Pipe Run 3769 Mud Wt. 9
 Top Packer Depth 3945' Drill Collars Run 187 Vis 58
 Bottom Packer Depth 3950' Wt. Pipe Run 0 WL 7.6
 Total Depth 4010' Chlorides 2100 ppm System LCM #3

Blow Description FF-Weak surface blow built to 3 in. in 30 min.
ISI-NO return
FF-NO surface blow
FBI-NO return

Rec	Feet of	%gas	%oil	%water	%mud
<u>73'</u>	<u>mud</u>			<u>100</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 73' BHT 120 Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic 2051 Test 1250 T-On Location 8:05pm
 (B) First Initial Flow 16 Jars 250 T-Started 10:32pm
 (C) First Final Flow 54 Safety Joint 75 T-Open 1:02am 10-17-14
 (D) Initial Shut-In 1261 Circ Sub n/c T-Pulled 4:04am
 (E) Second Initial Flow 750 Hourly Standby _____ T-Out 6:27am
 (F) Second Final Flow 1267 Mileage 74 R/T 114.70 Comments _____
 (G) Final Shut-In 1272 Sampler _____
 (H) Final Hydrostatic 1996 Straddle _____ Ruined Shale Packer _____
 Shale Packer _____ Ruined Packer _____
 Extra Packer _____ Extra Copies _____

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

Sub Total 1689.70
 Total 1689.70
 MP/DST Disc't _____

Approved By _____ Our Representative Doncrow Barnard

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. **60851**

Well Name & No. Morgan # 1-17 Test No. 2 Date 10-17-14
 Company Martin Drilling CO, Inc. Elevation 3049 KB 3044 GL
 Address 250 N. Water STE 300 Wichita, KS, 67202
 Co. Rep / Geo. Keith Reavis Rig Murfin #7
 Location: Sec. 17 Twp. 4 Rge. 33 Co. Rawlins State KS

Interval Tested 4008' - 4054' Zone Tested LSG "B + D"
 Anchor Length 46' Drill Pipe Run 3801' Mud Wt. 9
 Top Packer Depth 4003' Drill Collars Run 187 Vis 62
 Bottom Packer Depth 4008' Wt. Pipe Run 0 WL 7.6
 Total Depth 4054' Chlorides 2600 ppm System LCM #4

Blow Description IF - weak surface blow built to 1/4 in. in 10 min & stayed for the rest of
ISI - the time
ISI - No return
FF - No surface blow
FSI - No return

Rec	Feet of	%gas	%oil	%water	%mud
<u>3</u>	<u>mud</u>			<u>100</u>	

Rec Total 3 BHT 118 Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic 2037 Test 1250 T-On Location 2:58 p.m.
 (B) First Initial Flow 16 Jars 250 T-Started 3:50pm
 (C) First Final Flow 17 Safety Joint 75 T-Open 6:14 pm
 (D) Initial Shut-In 46 Circ Sub n/c T-Pulled 9:14pm
 (E) Second Initial Flow 17 Hourly Standby _____ T-Out 11:22pm
 (F) Second Final Flow 17 Mileage 74 RT 114.70 Comments _____
 (G) Final Shut-In 26 Sampler _____
 (H) Final Hydrostatic 1891 Straddle _____ Ruined Shale Packer _____

Initial Open 30 Shale Packer _____ Ruined Packer _____
 Initial Shut-In 60 Extra Packer _____ Extra Copies _____
 Final Flow 30 Extra Recorder _____ Sub Total 0
 Final Shut-In 60 Day Standby _____ Total 1689.70
 Accessibility _____ MP/DST Disc't _____
 Sub Total 1689.70

Approved By _____ Our Representative General Management

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. **60852**

4/10

Well Name & No. morgan #1-17 Test No. 3 Date 10-18-14
 Company Murfin Drilling Co., Inc. Elevation 3049 KB 3044 GL
 Address 250 N. water STE 300 wichita, KS, 67202
 Co. Rep / Geo. Keith Reavis Rig Murfin #7
 Location: Sec. 17 Twp. 4 Rge. 33 Co. Rawlins State KS

Interval Tested 4047' - 4085' Zone Tested Lansing "F+G"
 Anchor Length 38 Drill Pipe Run 3864' Mud Wt. 9
 Top Packer Depth 4042' Drill Collars Run 187 Vis 62
 Bottom Packer Depth 4047' Wt. Pipe Run Ø WL 7.6
 Total Depth 4085' Chlorides 2600 ppm System LCM #4
 Blow Description IF - weak surface blow built to 3/4 in. in 30 min.
ISI - No return
FF - No surface blow
FSI - No return

Rec	Feet of	%gas	SPOTS %oil	%water	%mud
15	0.5M			100	

Rec Total 15 BHT _____ Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic 2094 Test 1250 T-On Location 7:30 am
 (B) First Initial Flow 17 Jars 250 T-Started 8:16 am
 (C) First Final Flow 21 Safety Joint 75 T-Open 10:28 am
 (D) Initial Shut-In 1242 Circ Sub n/c T-Pulled 1:37 pm
 (E) Second Initial Flow 23 Hourly Standby _____ T-Out 3:40 pm
 (F) Second Final Flow 25 Mileage 74 RTT 114.70 Comments _____
 (G) Final Shut-In 1233 Sampler _____
 (H) Final Hydrostatic 2000 Straddle _____ Ruined Shale Packer _____
 Shale Packer _____ Ruined Packer _____
 Extra Packer _____ Extra Copies _____
 Initial Open 30 Extra Recorder _____ Sub Total 0
 Initial Shut-In 60 Day Standby _____ Total 1689.70
 Final Flow 30 Accessibility _____ MP/DST Disc't _____
 Final Shut-In 60 Sub Total 1689.70

Approved By _____ Our Representative Donovan Reavis

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. **60853**

4/10

Well Name & No. Morgan #1-17 Test No. 4 Date 10-19-14
 Company Murfin Drilling Co., Inc. Elevation 3049 KB 3044 GL
 Address 250 N. Water STE 300 Wichita, KS, 67202
 Co. Rep / Geo. Keith Reavis Rig Murfin #7
 Location: Sec. 17 Twp. 4 Rge. 33 Co. Rawlins State KS

Interval Tested 4102' - 4180' Zone Tested Lansing "H-5"
 Anchor Length 78' Drill Pipe Run 3896 Mud Wt. 9.2
 Top Packer Depth 4097' Drill Collars Run 187 Vis 62
 Bottom Packer Depth 4102' Wt. Pipe Run Ø WL 7.6
 Total Depth 4180' Chlorides 2800 ppm System LCM #3
 Blow Description IF - weak surface blow built to 3 in. in 30 min.
ISI - NO return
FF - weak surface blow built to 1 in. in 30 min.
FSI - NO return

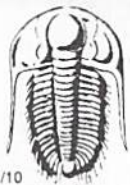
Rec	Feet of	%gas	%oil	%water	%mud
94	mud			100	

Rec Total 94 BHT 120 Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic 2091 Test 1250 T-On Location 4:50am
 (B) First Initial Flow 18 Jars 250 T-Started 5:34am
 (C) First Final Flow 45 Safety Joint 75 T-Open 8:01am
 (D) Initial Shut-In 1280 Circ Sub N/C T-Pulled 11:01am
 (E) Second Initial Flow 49 Hourly Standby _____ T-Out 1:13pm
 (F) Second Final Flow 72 Mileage 74 R/T 114.70 Comments _____
 (G) Final Shut-In 1253 Sampler _____
 (H) Final Hydrostatic 2026 Straddle _____ Ruined Shale Packer _____
 Shale Packer _____ Ruined Packer _____
 Extra Packer _____ Extra Copies _____
 Initial Open _____ Extra Recorder _____ Sub Total 1689.70
 Initial Shut-In _____ Day Standby _____ Total _____
 Final Flow _____ Accessibility _____ MP/DST Disc't _____
 Final Shut-In _____ Sub Total 1689.70

Approved By _____ Our Representative Howard R. Raymond

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. 59977

Well Name & No. Morgan #1-17 Test No. 5 Date 10-20-2014
 Company Murfin Drilling CO. Inc. Elevation 3049 KB 3044 GL
 Address 250 N Water STE 300 Wichita KS, 67202
 Co. Rep / Geo. Keith Reavis Rig Murfin #7
 Location: Sec. 17 Twp. 45 Rge. 33 Co. Rawlins State KS.

Interval Tested 4380 - 4468 Zone Tested Pawnee & Cherokee
 Anchor Length 88 Drill Pipe Run 4180 Mud Wt. 9.3
 Top Packer Depth 4376 Drill Collars Run 187 Vis 69
 Bottom Packer Depth 4380 Wt. Pipe Run 0 WL 7.2
 Total Depth 4468 Chlorides 2600 ppm System LCM 3
 Blow Description IF - Blow built to 1"

ISI - NO return
FF - NO blow
FSI - NO return

Rec	Feet of	%gas	%oil	%water	%mud
<u>15</u>	<u>mud</u>			<u>100</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 15 BHT 125 Gravity — API RW — @ — °F Chlorides — ppm

(A) Initial Hydrostatic <u>2341</u>	<input checked="" type="checkbox"/> Test <u>1250</u>	T-On Location <u>16:00 10-20</u>
(B) First Initial Flow <u>21</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>16:30 10-20</u>
(C) First Final Flow <u>29</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>18:33 10-20</u>
(D) Initial Shut-In <u>683</u>	<input type="checkbox"/> Circ Sub	T-Pulled <u>21:32 10-20</u>
(E) Second Initial Flow <u>32</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>23:24 10-20</u>
(F) Second Final Flow <u>37</u>	<input checked="" type="checkbox"/> Mileage <u>74 RT</u> 114.70	Comments
(G) Final Shut-In <u>528</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>2199</u>	<input type="checkbox"/> Straddle	<input type="checkbox"/> Ruined Shale Packer

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

Shale Packer
 Extra Packer
 Extra Recorder
 Day Standby
 Accessibility

Sub Total 1689.70

Sub Total 1689.70

Total 1689.70
 MP/DST Disc't

Approved By _____

Our Representative Robert Zedew

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