



DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N. Water STE 300
Wichita KS 67206

ATTN: Keith Reavis

MB "A" #1-35

35-4s-31w Rawlins KS

Start Date: 2014.05.18 @ 01:47:00

End Date: 2014.05.18 @ 11:39:30

Job Ticket #: 56893 DST #: 1

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

Printed: 2014.05.23 @ 14:42:17

Murfin Drilling Co.
35-4s-31w Rawlins KS
MB "A" #1-35
DST # 1
Toronto - LKC "B"
2014.05.18



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Murfin Drilling Co.
250 N. Water STE 300
Wichita KS 67206
ATTN: Keith Reavis

35-4s-31w Rawlins KS
MB "A" #1-35
Job Ticket: 56893 **DST#: 1**
Test Start: 2014.05.18 @ 01:47:00

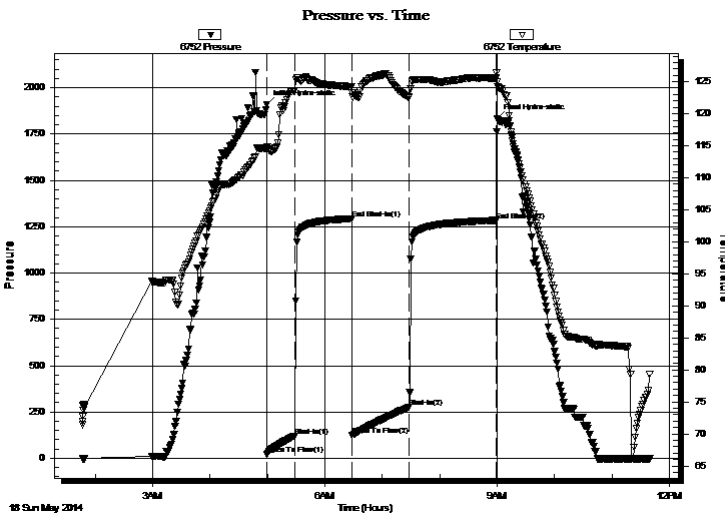
GENERAL INFORMATION:

Formation: **Toronto - LKC "B"**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 04:59:20
Time Test Ended: 11:39:30
Interval: **3870.00 ft (KB) To 3960.00 ft (KB) (TVD)**
Total Depth: 3960.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good
Test Type: Conventional Bottom Hole (Initial)
Tester: Ryan Nichols
Unit No: 58
Reference Elevations: 2906.00 ft (KB)
2901.00 ft (CF)
KB to GR/CF: 5.00 ft

Serial #: 6752 Inside
Press@RunDepth: 276.23 psig @ 3871.00 ft (KB) Capacity: 8000.00 psig
Start Date: 2014.05.18 End Date: 2014.05.18 Last Calib.: 2014.05.18
Start Time: 01:47:01 End Time: 11:39:30 Time On Btm: 2014.05.18 @ 04:59:10
Time Off Btm: 2014.05.18 @ 09:00:00

TEST COMMENT: 30 IF - 1" blow built to BoB @ 16 mins
60 ISI - No return
60 FF - Surface blow built to BoB @ 16 mins
90 FSI - No return

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1908.72	114.81	Initial Hydro-static
1	20.59	114.48	Open To Flow (1)
30	121.37	123.71	Shut-In(1)
89	1293.09	124.22	End Shut-In(1)
90	124.87	123.23	Open To Flow (2)
149	276.23	122.55	Shut-In(2)
240	1284.06	125.58	End Shut-In(2)
241	1831.86	124.93	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
5.00	OCM - 35%o - 65%M	0.02
530.00	MCW - 5%M - 95%W	6.92

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co.

35-4s-31w Rawlins KS

250 N. Water STE 300
Wichita KS 67206

MB "A" #1-35

Job Ticket: 56893

DST#: 1

ATTN: Keith Reavis

Test Start: 2014.05.18 @ 01:47:00

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: 62.00 ft	Diameter: 2.25 inches	Volume: 0.30 bbl	Weight to Pull Loose:	65000.00 lb
			<u>Total Volume: 53.62 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	20.00 ft			String Weight: Initial	58000.00 lb
Depth to Top Packer:	3870.00 ft			Final	60000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	90.00 ft				
Tool Length:	117.00 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			3844.00	
Shut In Tool	5.00			3849.00	
Hydraulic tool	5.00			3854.00	
Jars	5.00			3859.00	
Safety Joint	2.00			3861.00	
Packer	5.00			3866.00	27.00 Bottom Of Top Packer
Packer	4.00			3870.00	
Stubb	1.00			3871.00	
Recorder	0.00	6752	Inside	3871.00	
Recorder	0.00	8322	Outside	3871.00	
Perforations	21.00			3892.00	
Change Over Sub	1.00			3893.00	
Drill Pipe	63.00			3956.00	
Change Over Sub	1.00			3957.00	
Bullnose	3.00			3960.00	90.00 Bottom Packers & Anchor

Total Tool Length: 117.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co.

35-4s-31w Rawlins KS

250 N. Water STE 300
Wichita KS 67206

MB "A" #1-35

Job Ticket: 56893

DST#: 1

ATTN: Keith Reavis

Test Start: 2014.05.18 @ 01:47:00

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:

8500 ppm

Viscosity: 55.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.58 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 800.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
5.00	OCM - 35%o - 65%M	0.025
530.00	MCW - 5%M - 95%W	6.915

Total Length: 535.00 ft Total Volume: 6.940 bbl

Num Fluid Samples: 0

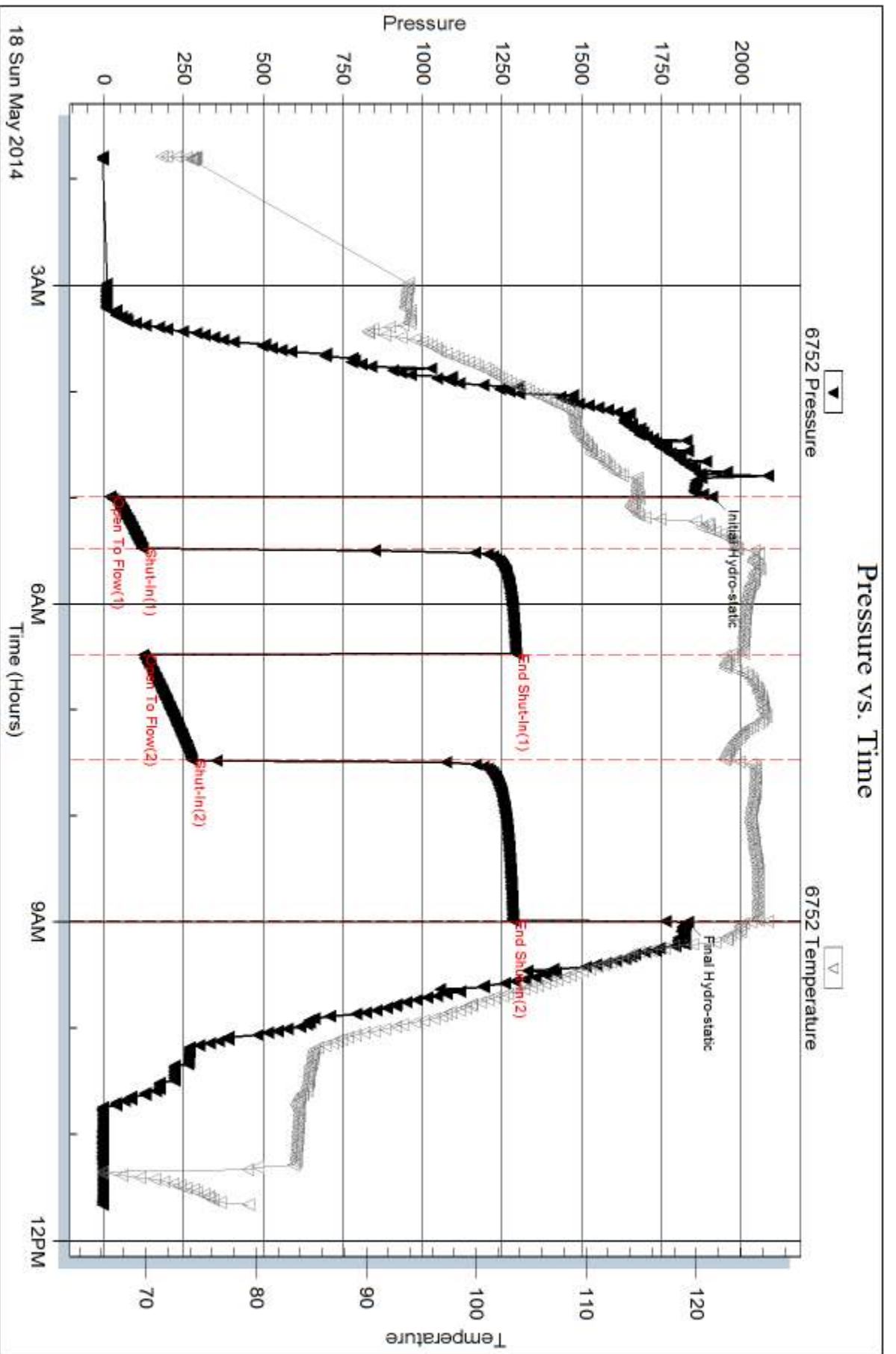
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: RW = .703 @ 71 DEG F = 8500

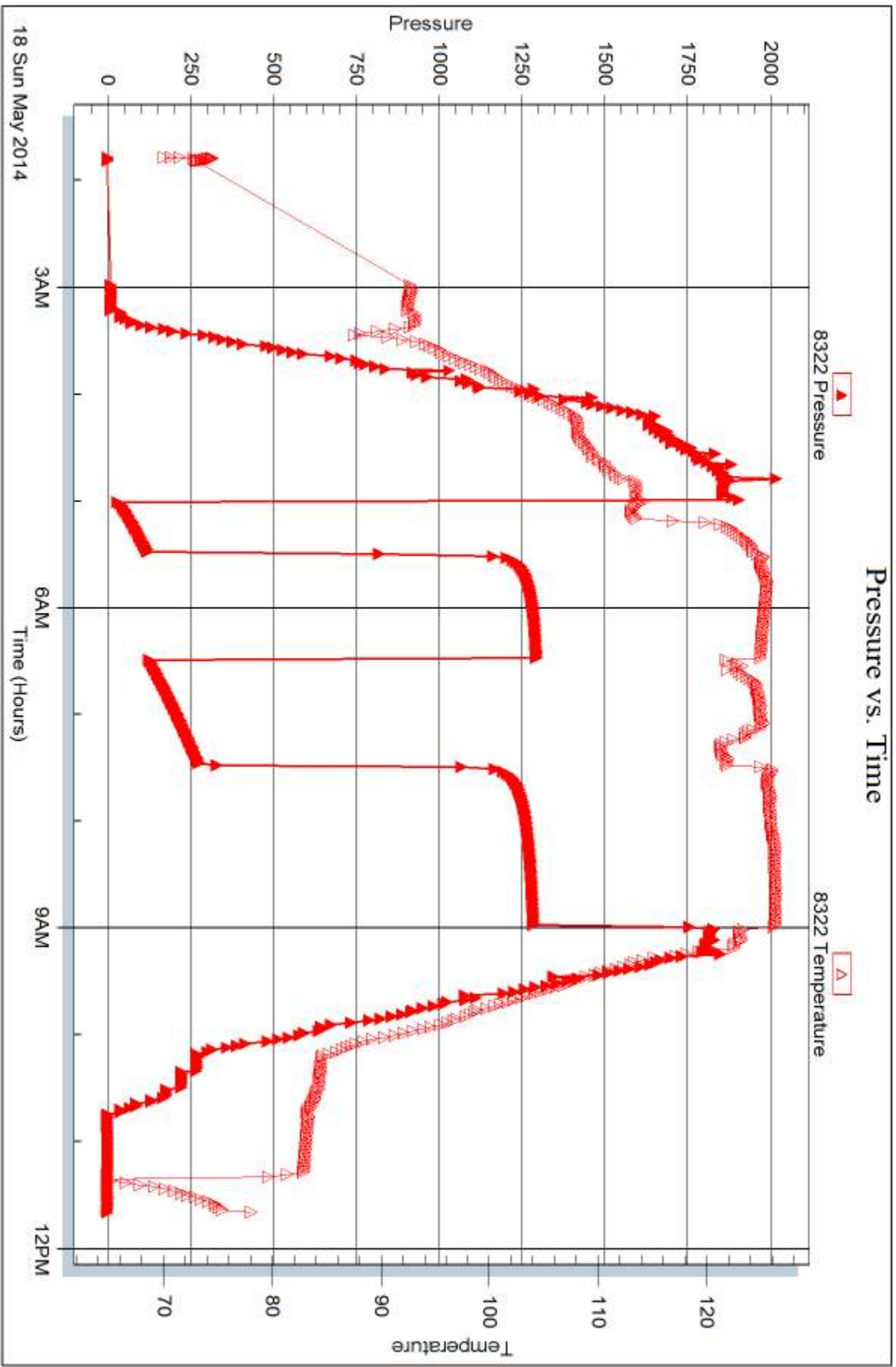


Serial #: 8322

Outside Murfin Drilling Co.

MB "A" #1-35

DST Test Number: 1



Trilobite Testing, Inc

Ref. No: 56893

Printed: 2014.05.23 @ 14:42:18



DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N. Water STE 300
Wichita KS 67206

ATTN: Keith Reavis

MB "A" #1-35

35-4s-31w Rawlins KS

Start Date: 2014.05.18 @ 22:51:00

End Date: 2014.05.19 @ 09:50:40

Job Ticket #: 56894 DST #: 2

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

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

Printed: 2014.05.23 @ 14:41:57

Murfin Drilling Co.
35-4s-31w Rawlins KS
MB "A" #1-35
DST # 2
LKC "D - G"
2014.05.18



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Murfin Drilling Co.
 250 N. Water STE 300
 Wichita KS 67206
 ATTN: Keith Reavis

35-4s-31w Rawlins KS
MB "A" #1-35
 Job Ticket: 56894 **DST#: 2**
 Test Start: 2014.05.18 @ 22:51:00

GENERAL INFORMATION:

Formation: **LKC "D - G"**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 04:07:20
 Time Test Ended: 09:50:40
 Interval: **3981.00 ft (KB) To 4018.00 ft (KB) (TVD)**
 Total Depth: 4018.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Good
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Ryan Nichols
 Unit No: 58
 Reference Elevations: 2906.00 ft (KB)
 2901.00 ft (CF)
 KB to GR/CF: 5.00 ft

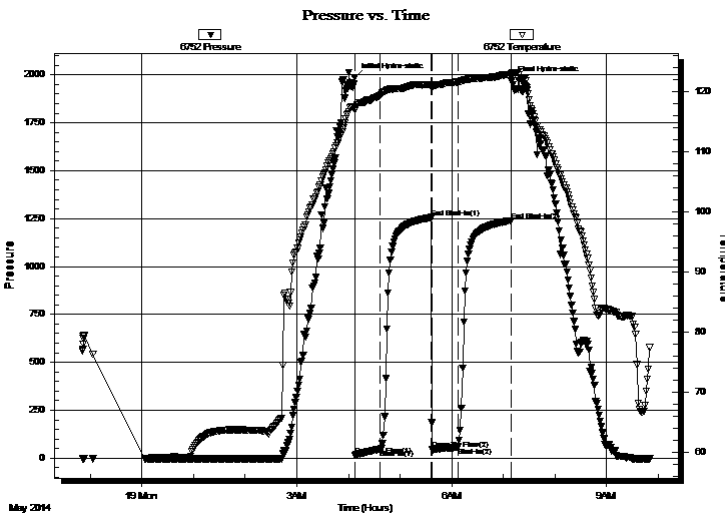
Serial #: 6752

Inside

Press@RunDepth: 56.34 psig @ 3982.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2014.05.18 End Date: 2014.05.19 Last Calib.: 2014.05.19
 Start Time: 22:51:01 End Time: 09:50:40 Time On Btm: 2014.05.19 @ 04:07:00
 Time Off Btm: 2014.05.19 @ 07:09:30

TEST COMMENT: 30 IF - Surface blow built to 3"
 60 ISI - No return
 30 FF - Surface blow built to 2 1/4"
 60 FSI - No return

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1984.07	117.48	Initial Hydro-static
1	14.76	116.87	Open To Flow (1)
30	46.49	119.31	Shut-In(1)
90	1255.89	121.10	End Shut-In(1)
90	47.56	120.88	Open To Flow (2)
120	56.34	121.52	Shut-In(2)
182	1239.67	122.79	End Shut-In(2)
183	1969.27	122.96	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
62.00	OCM - 10%o - 90%M	0.30
33.00	OCM - 20%o - 80%M	0.46

* 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.

35-4s-31w Rawlins KS

250 N. Water STE 300
Wichita KS 67206

MB "A" #1-35

Job Ticket: 56894

DST#: 2

ATTN: Keith Reavis

Test Start: 2014.05.18 @ 22:51:00

Tool Information

Drill Pipe:	Length: 3925.00 ft	Diameter: 3.80 inches	Volume: 55.06 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: 62.00 ft	Diameter: 2.25 inches	Volume: 0.30 bbl	Weight to Pull Loose:	64000.00 lb
			<u>Total Volume: 55.36 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	33.00 ft			String Weight: Initial	58000.00 lb
Depth to Top Packer:	3981.00 ft			Final	58000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	37.00 ft				
Tool Length:	64.00 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			3955.00	
Shut In Tool	5.00			3960.00	
Hydraulic tool	5.00			3965.00	
Jars	5.00			3970.00	
Safety Joint	2.00			3972.00	
Packer	5.00			3977.00	27.00 Bottom Of Top Packer
Packer	4.00			3981.00	
Stubb	1.00			3982.00	
Recorder	0.00	6752	Inside	3982.00	
Recorder	0.00	8322	Outside	3982.00	
Perforations	33.00			4015.00	
Bullnose	3.00			4018.00	37.00 Bottom Packers & Anchor

Total Tool Length: 64.00



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DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co.

35-4s-31w Rawlins KS

250 N. Water STE 300
Wichita KS 67206

MB "A" #1-35

Job Ticket: 56894

DST#: 2

ATTN: Keith Reavis

Test Start: 2014.05.18 @ 22:51:00

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: 50.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.38 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1200.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
62.00	OCM - 10%o - 90%M	0.305
33.00	OCM - 20%o - 80%M	0.463

Total Length: 95.00 ft Total Volume: 0.768 bbl

Num Fluid Samples: 0

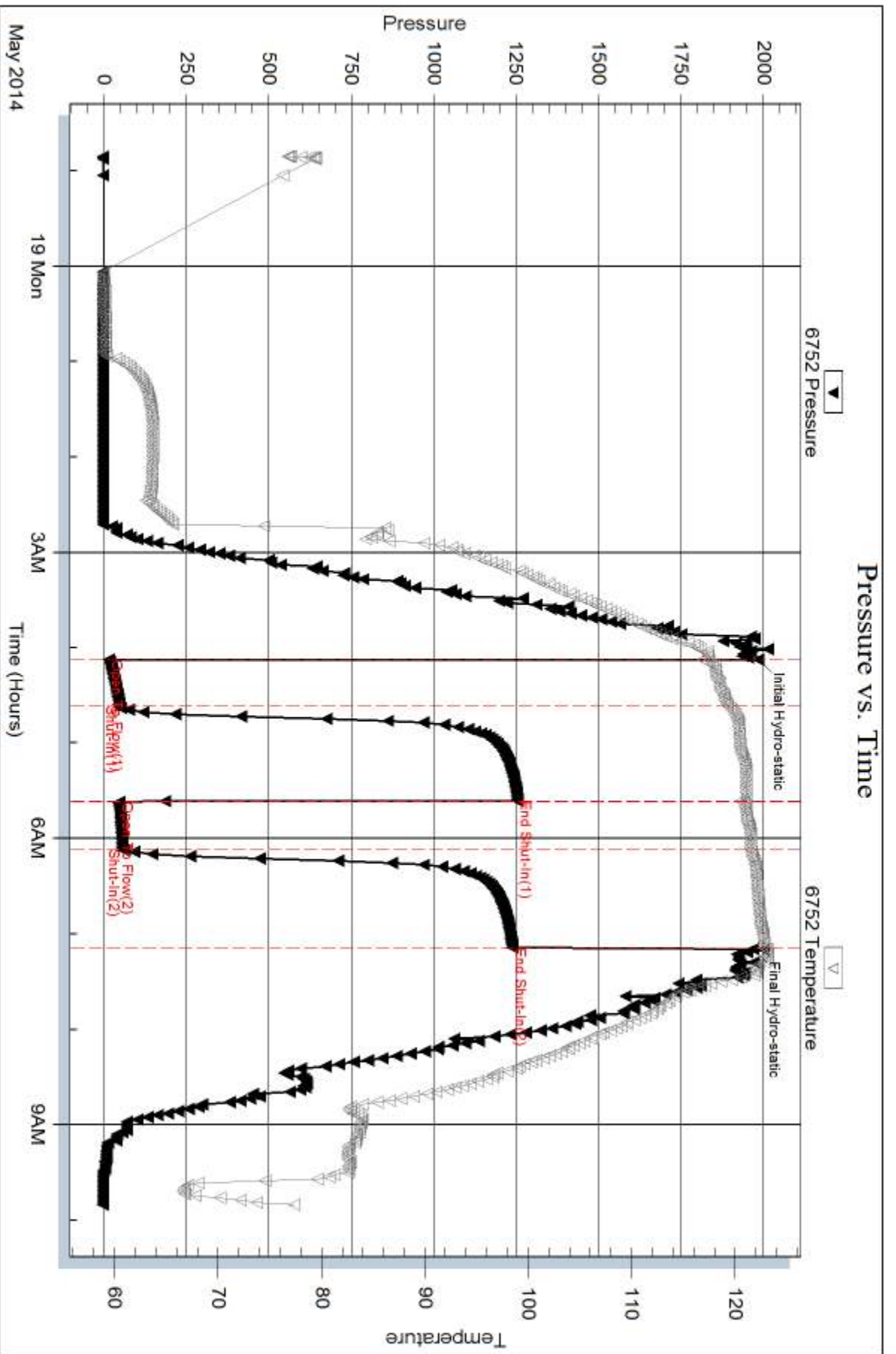
Num Gas Bombs: 0

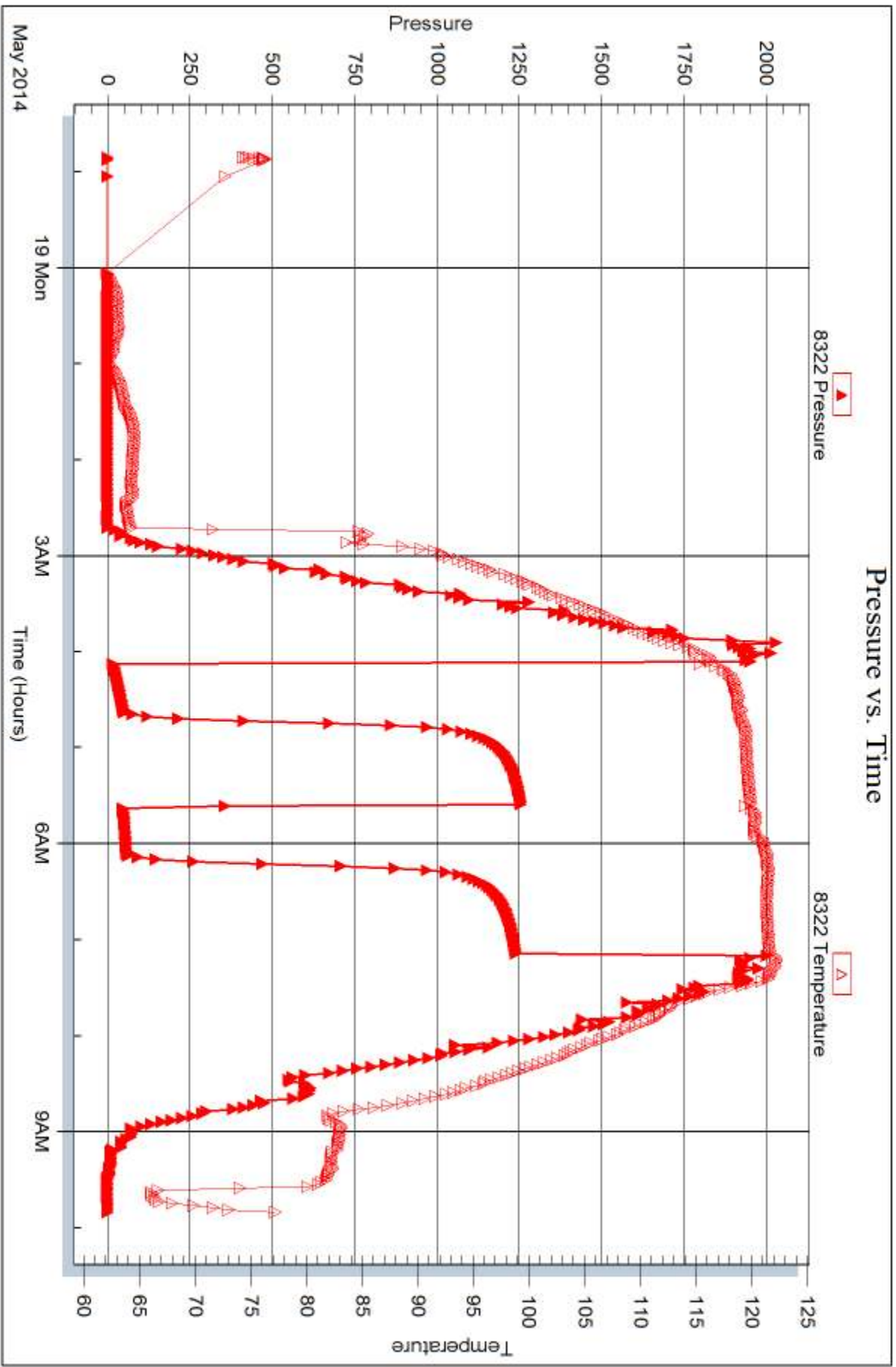
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:







DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N. Water STE 300
Wichita KS 67206

ATTN: Keith Reavis

MB "A" #1-35

35-4s-31w Rawlins KS

Start Date: 2014.05.19 @ 22:24:00

End Date: 2014.05.20 @ 06:36:20

Job Ticket #: 56895 DST #: 3

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

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

Printed: 2014.05.23 @ 14:41:34



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Murfin Drilling Co.
 250 N. Water STE 300
 Wichita KS 67206
 ATTN: Keith Reavis

35-4s-31w Rawlins KS
MB "A" #1-35
 Job Ticket: 56895 **DST#: 3**
 Test Start: 2014.05.19 @ 22:24:00

GENERAL INFORMATION:

Formation: **LKC "H - J"**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 01:16:00
 Time Test Ended: 06:36:20
 Interval: **4027.00 ft (KB) To 4100.00 ft (KB) (TVD)**
 Total Depth: 4100.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Good
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Ryan Nichols
 Unit No: 58
 Reference Elevations: 2906.00 ft (KB)
 2901.00 ft (CF)
 KB to GR/CF: 5.00 ft

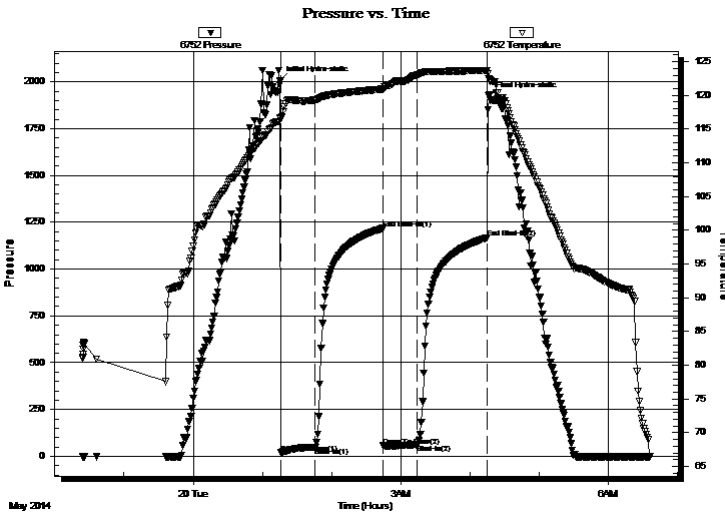
Serial #: 6752

Inside

Press@RunDepth: 62.30 psig @ 4028.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2014.05.19 End Date: 2014.05.20 Last Calib.: 2014.05.20
 Start Time: 22:24:01 End Time: 06:36:20 Time On Btm: 2014.05.20 @ 01:15:30
 Time Off Btm: 2014.05.20 @ 04:16:30

TEST COMMENT: 30 IF - 1/2" blow built to 3 1/2"
 60 ISI - No return
 30 FF - Surface blow started @ 5 mins built to 3"
 60 FSI - No return

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2009.03	116.67	Initial Hydro-static
1	17.97	116.53	Open To Flow (1)
30	49.13	119.32	Shut-In(1)
89	1213.23	120.93	End Shut-In(1)
90	55.03	120.92	Open To Flow (2)
119	62.30	123.04	Shut-In(2)
180	1167.60	123.70	End Shut-In(2)
181	1924.08	122.48	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
62.00	OCM - 25%o - 75%M	0.30
10.00	MCO - 70%o - 30%M	0.14

* 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.

35-4s-31w Rawlins KS

250 N. Water STE 300
Wichita KS 67206

MB "A" #1-35

Job Ticket: 56895

DST#: 3

ATTN: Keith Reavis

Test Start: 2014.05.19 @ 22:24:00

Tool Information

Drill Pipe:	Length: 3955.00 ft	Diameter: 3.80 inches	Volume: 55.48 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: 62.00 ft	Diameter: 2.25 inches	Volume: 0.30 bbl	Weight to Pull Loose: 63000.00 lb
			<u>Total Volume: 55.78 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	17.00 ft			String Weight: Initial 60000.00 lb
Depth to Top Packer:	4027.00 ft			Final 60000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	73.00 ft			
Tool Length:	100.00 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			4001.00	
Shut In Tool	5.00			4006.00	
Hydraulic tool	5.00			4011.00	
Jars	5.00			4016.00	
Safety Joint	2.00			4018.00	
Packer	5.00			4023.00	27.00 Bottom Of Top Packer
Packer	4.00			4027.00	
Stubb	1.00			4028.00	
Recorder	0.00	6752	Inside	4028.00	
Recorder	0.00	8322	Outside	4028.00	
Perforations	36.00			4064.00	
Change Over Sub	1.00			4065.00	
Drill Pipe	31.00			4096.00	
Change Over Sub	1.00			4097.00	
Bullnose	3.00			4100.00	73.00 Bottom Packers & Anchor

Total Tool Length: 100.00



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DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co.

35-4s-31w Rawlins KS

250 N. Water STE 300
Wichita KS 67206

MB "A" #1-35

Job Ticket: 56895

DST#: 3

ATTN: Keith Reavis

Test Start: 2014.05.19 @ 22:24:00

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: 46.00 sec/qt

Cushion Volume:

bbf

Water Loss: 6.78 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1600.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbf
62.00	OCM - 25%o - 75%M	0.305
10.00	MCO - 70%o - 30%M	0.140

Total Length: 72.00 ft Total Volume: 0.445 bbf

Num Fluid Samples: 0

Num Gas Bombs: 0

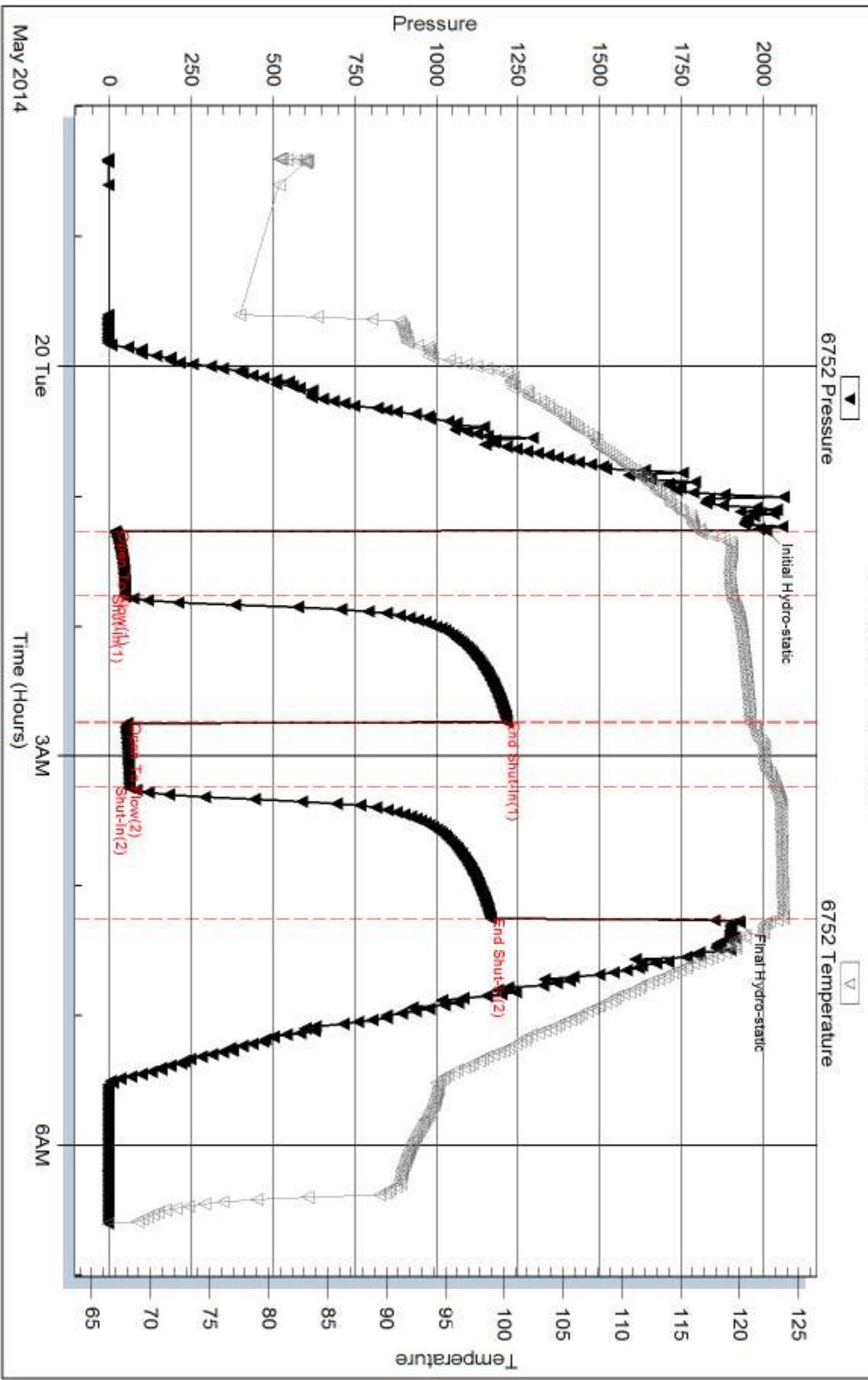
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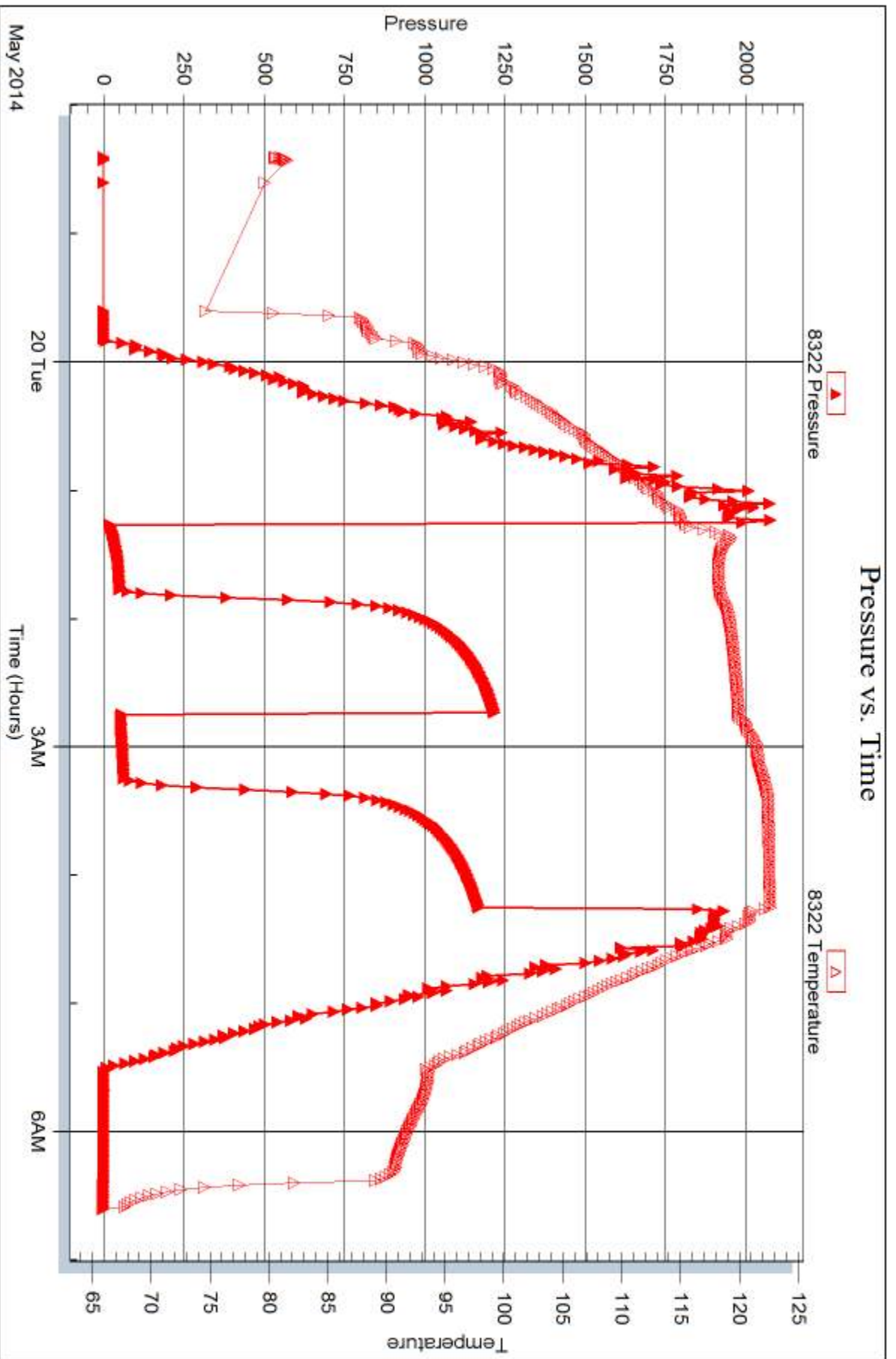
Laboratory Name:

Laboratory Location:

Recovery Comments:

Pressure vs. Time







DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N. Water STE 300
Wichita KS 67206

ATTN: Keith Reavis

MB "A" #1-35

35-4s-31w Rawlins KS

Start Date: 2014.05.20 @ 16:13:00

End Date: 2014.05.21 @ 00:23:30

Job Ticket #: 56896 DST #: 4

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

Printed: 2014.05.23 @ 14:41:03

Murfin Drilling Co. 35-4s-31w Rawlins KS MB "A" #1-35 DST # 4 LKC " K " 2014.05.20



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Murfin Drilling Co.
250 N. Water STE 300
Wichita KS 67206
ATTN: Keith Reavis

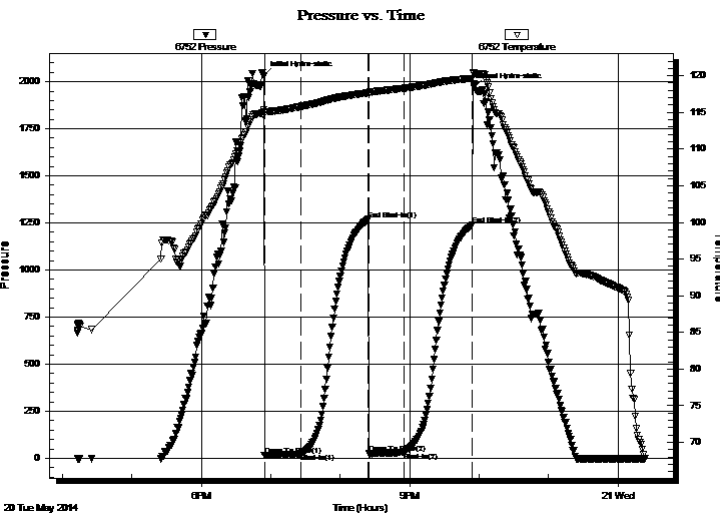
35-4s-31w Rawlins KS
MB "A" #1-35
Job Ticket: 56896 **DST#: 4**
Test Start: 2014.05.20 @ 16:13:00

GENERAL INFORMATION:

Formation: **LKC " K "**
Deviated: No Whipstock: ft (KB) Test Type: Conventional Bottom Hole (Reset)
Time Tool Opened: 18:54:30 Tester: Ryan Nichols
Time Test Ended: 00:23:30 Unit No: 58
Interval: 4092.00 ft (KB) To 4136.00 ft (KB) (TVD) Reference Elevations: 2906.00 ft (KB)
Total Depth: 4136.00 ft (KB) (TVD) 2901.00 ft (CF)
Hole Diameter: 7.88 inches Hole Condition: Good KB to GR/CF: 5.00 ft

Serial #: 6752 Inside
Press@RunDepth: 34.34 psig @ 4093.00 ft (KB) Capacity: 8000.00 psig
Start Date: 2014.05.20 End Date: 2014.05.21 Last Calib.: 2014.05.21
Start Time: 16:13:01 End Time: 00:23:30 Time On Btm: 2014.05.20 @ 18:54:00
Time Off Btm: 2014.05.20 @ 21:55:30

TEST COMMENT: 30 IF - Surface blow built to 1"
60 ISI - No return
30 FF - Surface blow built to 1 1/4"
60 ISI - No return



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2030.14	115.38	Initial Hydro-static
1	15.15	115.13	Open To Flow (1)
32	25.70	115.80	Shut-In(1)
90	1268.53	117.68	End Shut-In(1)
91	26.20	117.50	Open To Flow (2)
121	34.34	118.30	Shut-In(2)
180	1238.88	119.66	End Shut-In(2)
182	1970.49	120.32	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
30.00	OCM - 20%o - 80%M	0.15

* 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.

35-4s-31w Rawlins KS

250 N. Water STE 300
Wichita KS 67206

MB "A" #1-35

Job Ticket: 56896

DST#: 4

ATTN: Keith Reavis

Test Start: 2014.05.20 @ 16:13:00

Tool Information

Drill Pipe:	Length: 4020.00 ft	Diameter: 3.80 inches	Volume: 56.39 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: 62.00 ft	Diameter: 2.25 inches	Volume: 0.30 bbl	Weight to Pull Loose:	63000.00 lb
			<u>Total Volume: 56.69 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	17.00 ft			String Weight: Initial	60000.00 lb
Depth to Top Packer:	4092.00 ft			Final	60000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	44.00 ft				
Tool Length:	71.00 ft				
Number of Packers:	2	Diameter: 6.75 inches			

Tool Comments:

Tool Description

Length (ft) Serial No. Position Depth (ft) Accum. Lengths

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4066.00	
Shut In Tool	5.00			4071.00	
Hydraulic tool	5.00			4076.00	
Jars	5.00			4081.00	
Safety Joint	2.00			4083.00	
Packer	5.00			4088.00	27.00 Bottom Of Top Packer
Packer	4.00			4092.00	
Stubb	1.00			4093.00	
Recorder	0.00	6752	Inside	4093.00	
Recorder	0.00	8322	Outside	4093.00	
Perforations	6.00			4099.00	
Change Over Sub	1.00			4100.00	
Drill Pipe	32.00			4132.00	
Change Over Sub	1.00			4133.00	
Bullnose	3.00			4136.00	44.00 Bottom Packers & Anchor

Total Tool Length: 71.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co.

35-4s-31w Rawlins KS

250 N. Water STE 300
Wichita KS 67206

MB "A" #1-35

Job Ticket: 56896

DST#: 4

ATTN: Keith Reavis

Test Start: 2014.05.20 @ 16:13:00

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: 45.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.79 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1600.00 ppm

Filter Cake: 5.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
30.00	OCM - 20%o - 80%M	0.148

Total Length: 30.00 ft Total Volume: 0.148 bbl

Num Fluid Samples: 0

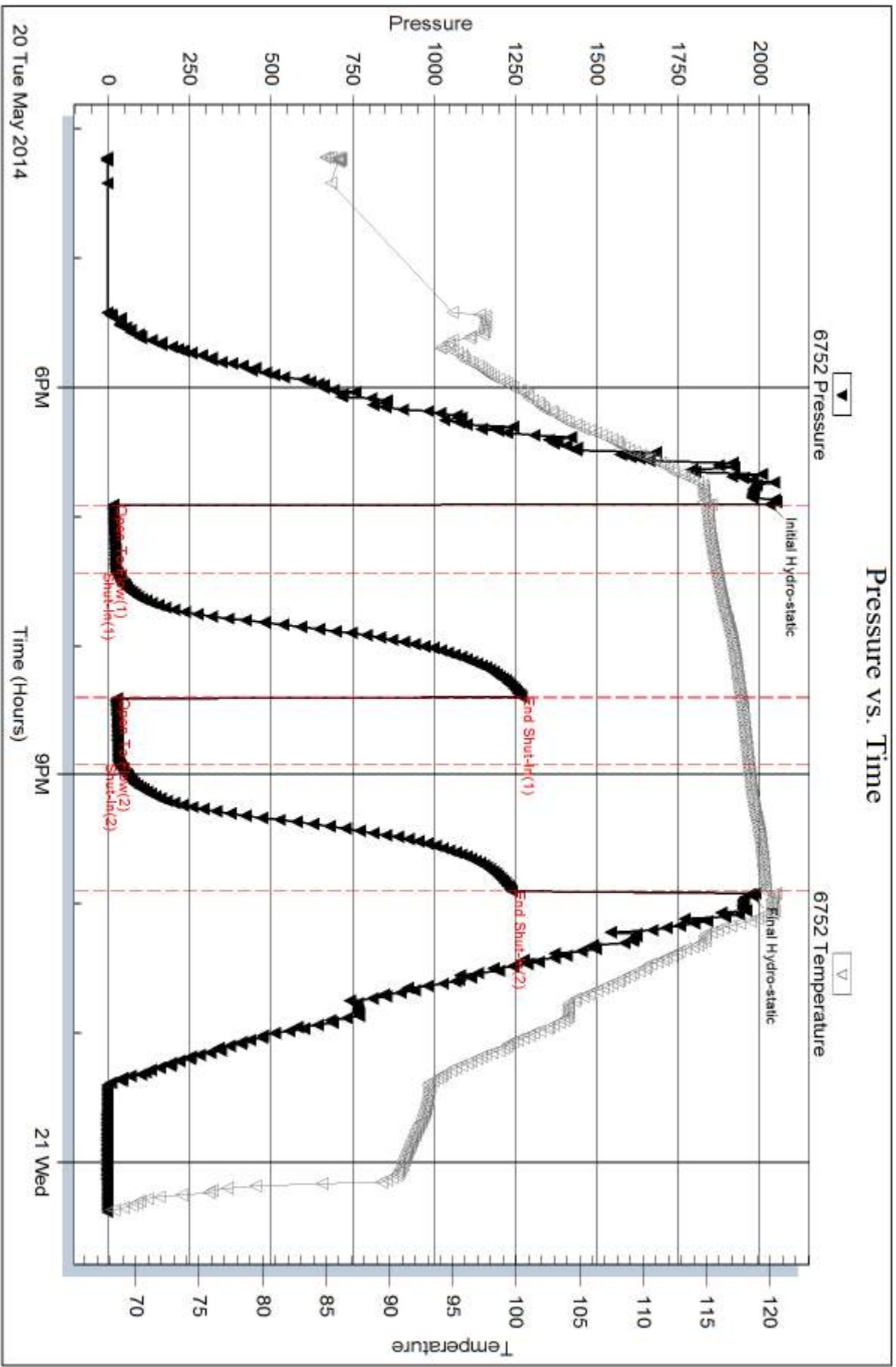
Num Gas Bombs: 0

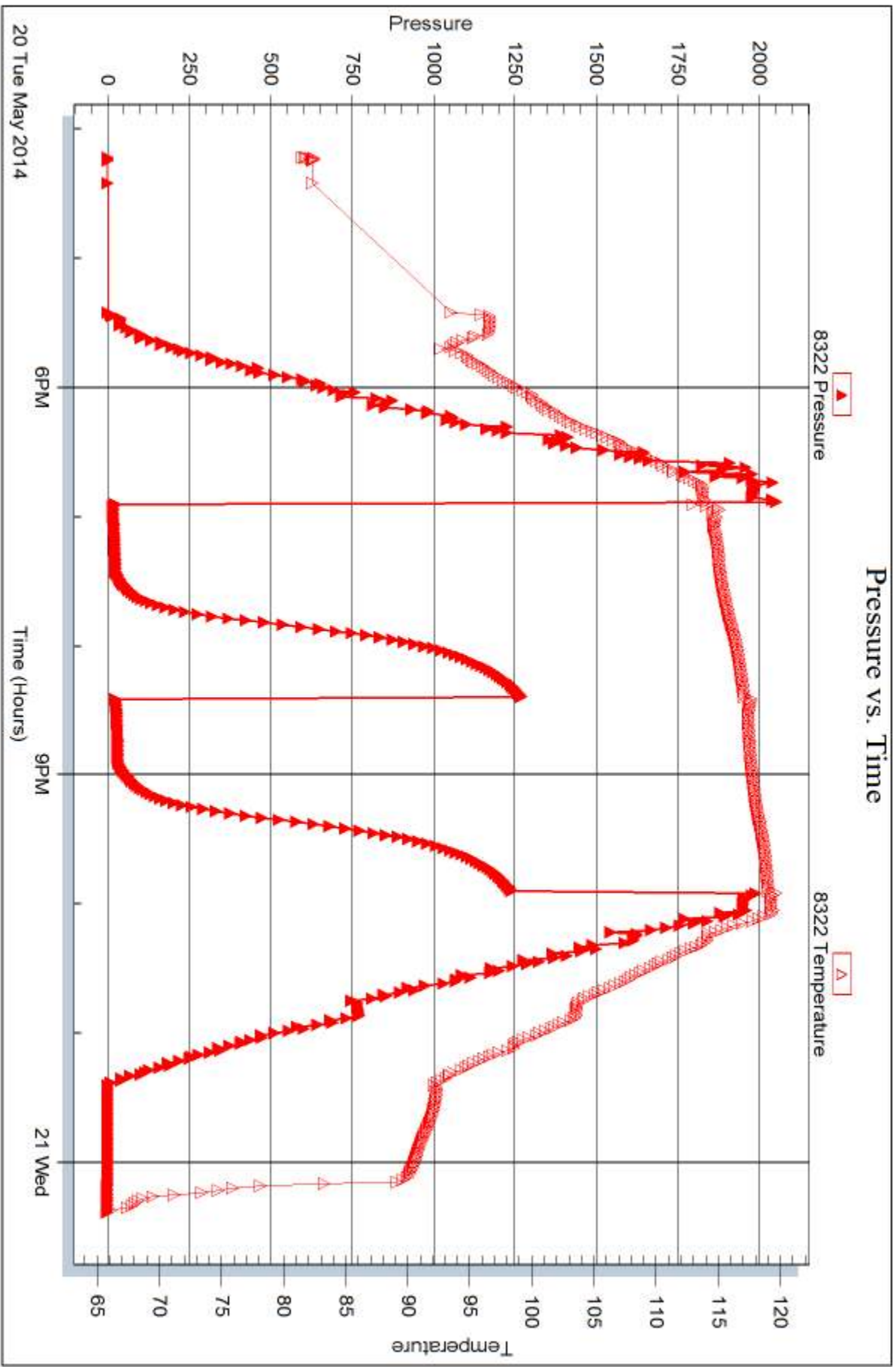
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:







DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N. Water STE 300
Wichita KS 67206

ATTN: Keith Reavis

MB "A" #1-35

35-4s-31w Rawlins KS

Start Date: 2014.05.22 @ 06:30:00

End Date: 2014.05.22 @ 14:07:30

Job Ticket #: 56987 DST #: 5

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

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

Printed: 2014.05.23 @ 14:40:25



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Murfin Drilling Co.
250 N. Water STE 300
Wichita KS 67206
ATTN: Keith Reavis

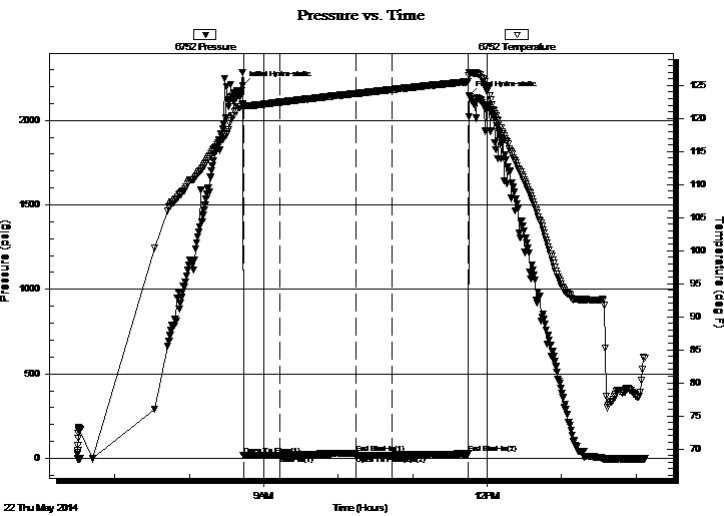
35-4s-31w Rawlins KS
MB "A" #1-35
Job Ticket: 56987 **DST#: 5**
Test Start: 2014.05.22 @ 06:30:00

GENERAL INFORMATION:

Formation: **Cherokee**
Deviated: No Whipstock: ft (KB) Test Type: Conventional Bottom Hole (Reset)
Time Tool Opened: 08:43:30 Tester: Ryan Nichols
Time Test Ended: 14:07:30 Unit No: 58
Interval: 4338.00 ft (KB) To 4364.00 ft (KB) (TVD) Reference Elevations: 2906.00 ft (KB)
Total Depth: 4364.00 ft (KB) (TVD) 2901.00 ft (CF)
Hole Diameter: 7.88 inches Hole Condition: Good KB to GR/CF: 5.00 ft

Serial #: 6752 Inside
Press@RunDepth: 18.93 psig @ 4339.00 ft (KB) Capacity: 8000.00 psig
Start Date: 2014.05.22 End Date: 2014.05.22 Last Calib.: 2014.05.22
Start Time: 06:30:01 End Time: 14:07:30 Time On Btm: 2014.05.22 @ 08:43:00
Time Off Btm: 2014.05.22 @ 11:45:30

TEST COMMENT: 30 IF - Surface blow built to 1/4"
60 ISI - No return
30 FF - No blow
60 FSI - No return



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2204.80	122.17	Initial Hydro-static
1	16.73	121.90	Open To Flow (1)
30	18.73	122.46	Shut-In(1)
92	31.06	123.79	End Shut-In(1)
92	18.78	123.78	Open To Flow (2)
121	18.93	124.38	Shut-In(2)
182	26.87	125.57	End Shut-In(2)
183	2148.61	126.94	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
5.00	Mud 100%M	0.02

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Murfin Drilling Co.
250 N. Water STE 300
Wichita KS 67206
ATTN: Keith Reavis

35-4s-31w Rawlins KS
MB "A" #1-35
Job Ticket: 56987 **DST#: 5**
Test Start: 2014.05.22 @ 06:30:00

GENERAL INFORMATION:

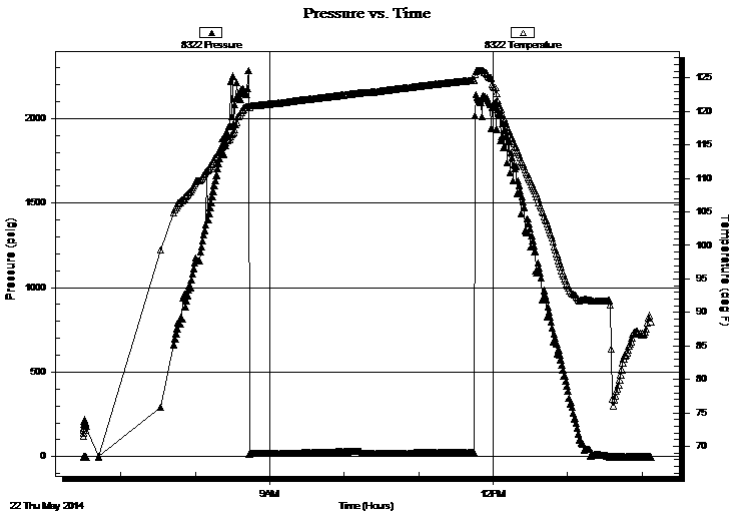
Formation: Cherokee		
Deviated: No Whipstock:	ft (KB)	Test Type: Conventional Bottom Hole (Reset)
Time Tool Opened: 08:43:30		Tester: Ryan Nichols
Time Test Ended: 14:07:30		Unit No: 58
Interval: 4338.00 ft (KB) To 4364.00 ft (KB) (TVD)		Reference Elevations: 2906.00 ft (KB)
Total Depth: 4364.00 ft (KB) (TVD)		2901.00 ft (CF)
Hole Diameter: 7.88 inches	Hole Condition: Good	KB to GR/CF: 5.00 ft

Serial #: 8322 Outside

Press@RunDepth: psig @ 4339.00 ft (KB)	Capacity: 8000.00 psig
Start Date: 2014.05.22	End Date: 2014.05.22
Start Time: 06:30:01	End Time: 14:07:30
	Last Calib.: 2014.05.22
	Time On Btm:
	Time Off Btm:

TEST COMMENT: 30 IF - Surface blow built to 1/4"
60 ISI - No return
30 FF - No blow
60 FSI - No return

PRESSURE SUMMARY



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

Recovery

Length (ft)	Description	Volume (bbl)
5.00	Mud 100%M	0.02

* 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.

35-4s-31w Rawlins KS

250 N. Water STE 300
Wichita KS 67206

MB "A" #1-35

Job Ticket: 56987

DST#: 5

ATTN: Keith Reavis

Test Start: 2014.05.22 @ 06:30:00

Tool Information

Drill Pipe:	Length: 4273.00 ft	Diameter: 3.80 inches	Volume: 59.94 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: 62.00 ft	Diameter: 2.25 inches	Volume: 0.30 bbl	Weight to Pull Loose: 70000.00 lb
			<u>Total Volume: 60.24 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	24.00 ft			String Weight: Initial 62000.00 lb
Depth to Top Packer:	4338.00 ft			Final 62000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	26.00 ft			
Tool Length:	53.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
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Change Over Sub	1.00			4312.00	
Shut In Tool	5.00			4317.00	
Hydraulic tool	5.00			4322.00	
Jars	5.00			4327.00	
Safety Joint	2.00			4329.00	
Packer	5.00			4334.00	27.00 Bottom Of Top Packer
Packer	4.00			4338.00	
Stubb	1.00			4339.00	
Recorder	0.00	6752	Inside	4339.00	
Recorder	0.00	8322	Outside	4339.00	
Perforations	22.00			4361.00	
Bullnose	3.00			4364.00	26.00 Bottom Packers & Anchor

Total Tool Length: 53.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co.

35-4s-31w Rawlins KS

250 N. Water STE 300
Wichita KS 67206

MB "A" #1-35

Job Ticket: 56987

DST#: 5

ATTN: Keith Reavis

Test Start: 2014.05.22 @ 06:30:00

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: 56.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.39 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1600.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
5.00	Mud 100%M	0.025

Total Length: 5.00 ft Total Volume: 0.025 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

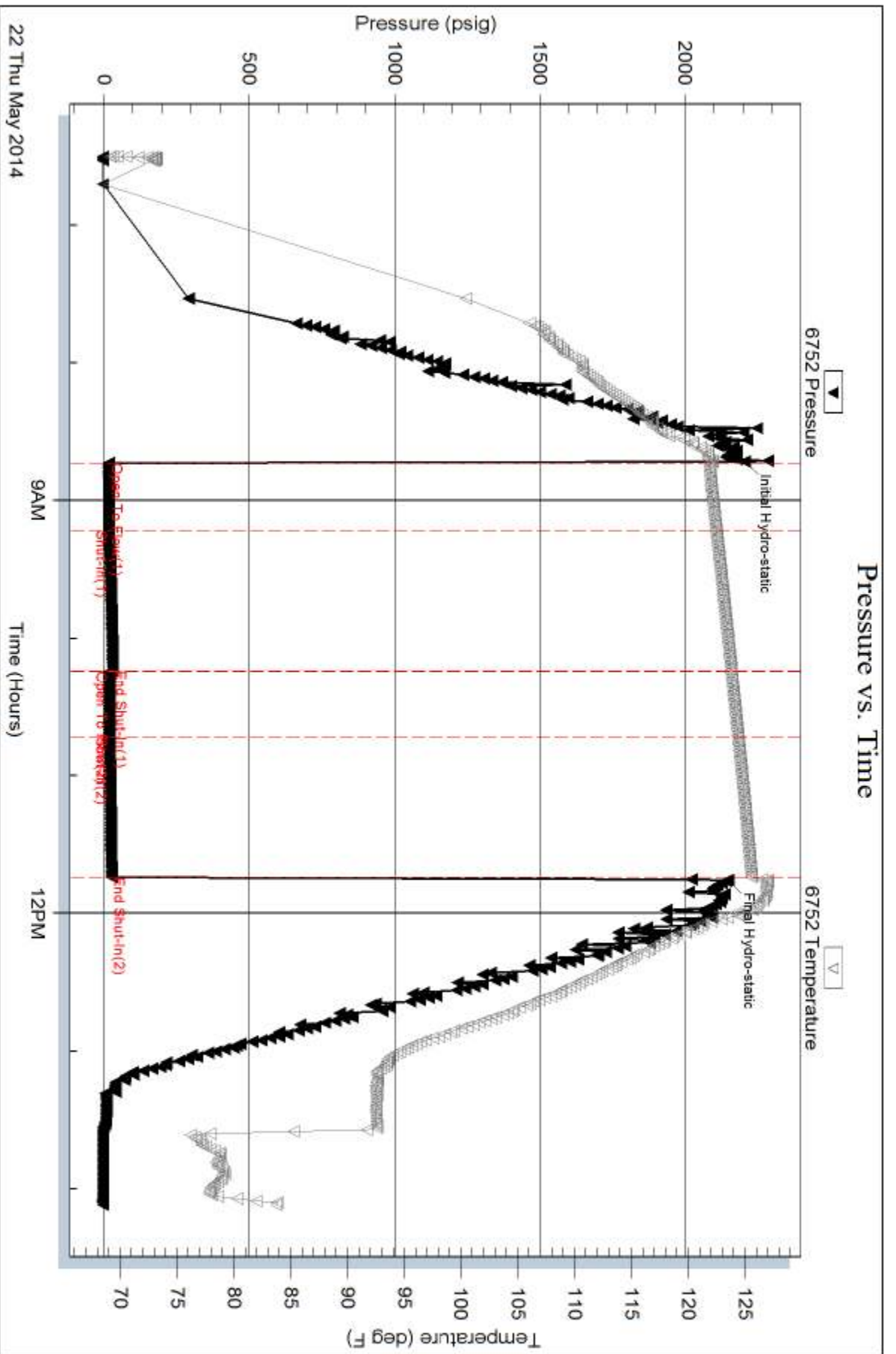
Serial #: 6752

Inside

Murfin Drilling Co.

MB "A" #1-35

DST Test Number: 5



Tribble Testing, Inc

Ref. No: 56987

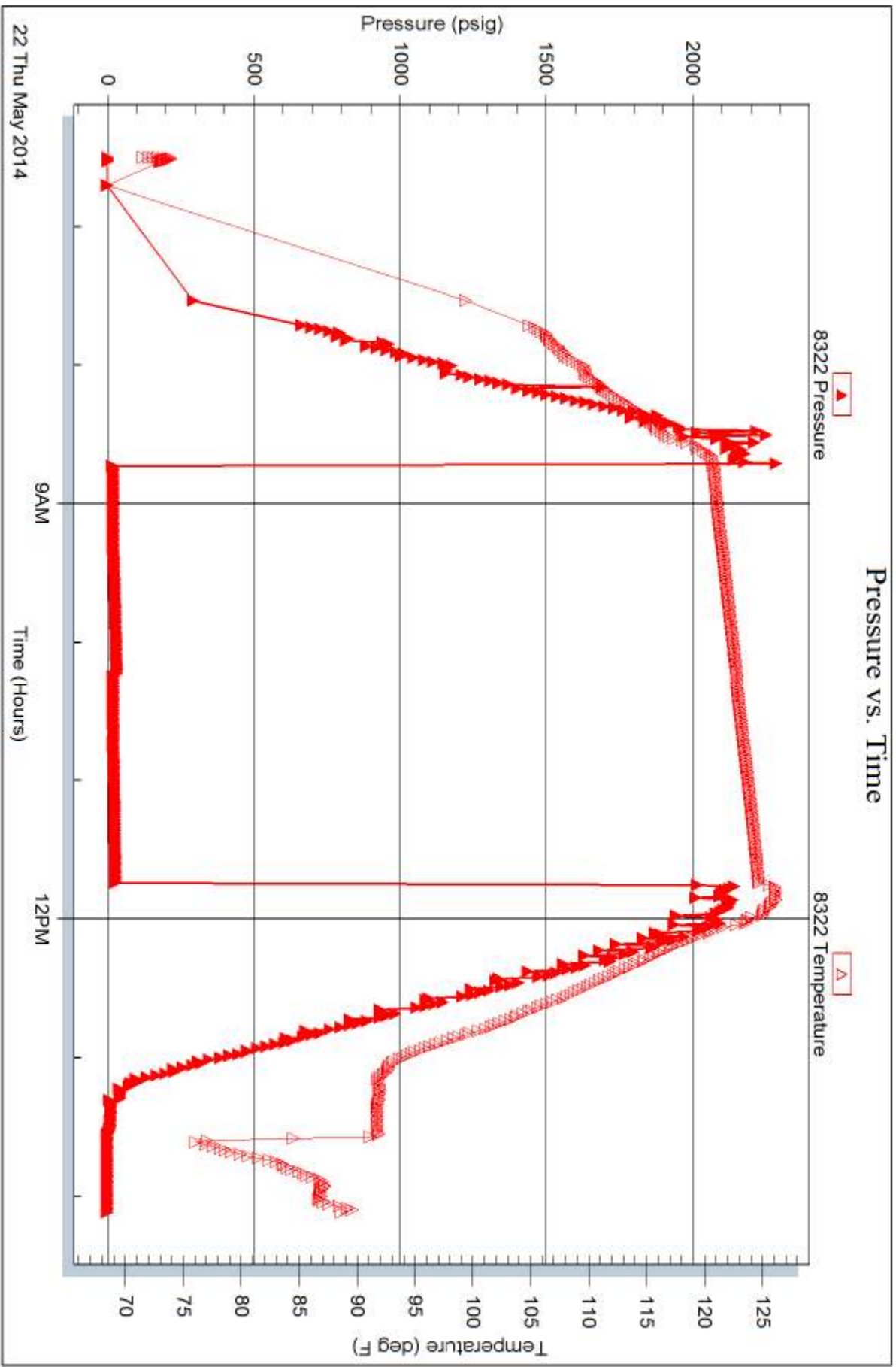
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Serial #: 8322

Outside Murfin Drilling Co.

MB "A" #1-35

DST Test Number: 5



Trilobite Testing, Inc

Ref. No: 56987

Printed: 2014.05.23 @ 14:40:27



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 56893

Well Name & No. MB "A" # 1-35 Test No. 1 Date 5/18/14
 Company Murfin Drilling Company Elevation 2906 KB 2901 GL
 Address 250 N. Water STE 300 Wichita KS 67206
 Co. Rep / Geo. Keith Reavis Rig Murfin # 7
 Location: Sec. 35 Twp. 4S Rge. 31W Co. Rawlins State KS

Interval Tested 3870 - 3960 Zone Tested Toronto - LKC "A-B"
 Anchor Length 90' Drill Pipe Run ~~3802~~ 3802 Mud Wt. 8.9
 Top Packer Depth 3865 Drill Collars Run 62' Vis 55
 Bottom Packer Depth 3870 Wt. Pipe Run 0' WL 5.6
 Total Depth 3960 Chlorides 800 ppm System LCM 4
 Blow Description IF - 1" blow built to BoB @ 16 mins
ISI - No return
FF - Surface blow built to BoB @ 16 mins
FSI - No return

Rec	Feet of	%gas	%oil	%water	%mud
<u>5'</u>	<u>OCM</u>	<u>35</u>		<u>65</u>	
<u>530</u>	<u>MCW</u>		<u>95</u>	<u>5</u>	

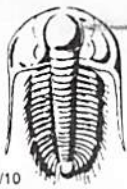
Rec Total 535' BHT 126° Gravity — API RW 703 @ 71 °F Chlorides 8500 ppm

(A) Initial Hydrostatic <u>1909</u>	<input checked="" type="checkbox"/> Test <u>1150</u>	T-On Location <u>01:00</u>
(B) First Initial Flow <u>21</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>01:47</u>
(C) First Final Flow <u>121</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>04:58</u>
(D) Initial Shut-In <u>1293</u>	<input checked="" type="checkbox"/> Circ Sub <u>NC</u>	T-Pulled <u>08:58</u>
(E) Second Initial Flow <u>125</u>	<input type="checkbox"/> Hourly Standby	T-Out
(F) Second Final Flow <u>276</u>	<input checked="" type="checkbox"/> Mileage <u>54 RT</u> 83.70	Comments
(G) Final Shut-In <u>1284</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>1832</u>	<input type="checkbox"/> Straddle	<input type="checkbox"/> Ruined Shale Packer
	<input type="checkbox"/> Shale Packer	<input type="checkbox"/> Ruined Packer
Initial Open <u>30</u>	<input type="checkbox"/> Extra Packer	<input type="checkbox"/> Extra Copies
Initial Shut-In <u>60</u>	<input type="checkbox"/> Extra Recorder	Sub Total <u>0</u>
Final Flow <u>60</u>	<input type="checkbox"/> Day Standby	Total <u>1558.70</u>
Final Shut-In <u>90</u>	<input type="checkbox"/> Accessibility	MP/DST Disc't
	Sub Total <u>1558.70</u>	

Approved By _____

Our Representative [Signature]

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 56894

Well Name & No. MB "A" #1-35 Test No. 2 Date 5/18/14
 Company Martin Drilling Co. Elevation 2906 KB 2901 GL
 Address 250 N. Water STE 300 Wichita KS 67206
 Co. Rep / Geo. Keith Keavis Rig Martin #7
 Location: Sec. 35 Twp. 4S Rge. 31W Co. Rawlins State KS

Interval Tested 3981-4018 Zone Tested LKC "D-G"
 Anchor Length ~~300~~ 37' Drill Pipe Run 3925' Mud Wt. 9.1
 Top Packer Depth 3976' Drill Collars Run 62' Vis 50
 Bottom Packer Depth 3981' Wt. Pipe Run 0' WL 6.4
 Total Depth 4018' Chlorides 1200 ppm System LCM 4

Blow Description TF - Surface blow built to 3"
ISI - No return
FF - Surface blow built to 2 1/4"
FSL - No return

Rec	Feet of	%gas	%oil	%water	%mud
<u>33'</u>	<u>OCM</u>	<u>20</u>		<u>80</u>	
<u>62'</u>	<u>OCM</u>	<u>10</u>		<u>90</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 95' BHT 123' Gravity — API RW — @ — F Chlorides — ppm

(A) Initial Hydrostatic 1984 Test 1250 T-On Location 22:15
 (B) First Initial Flow 15 Jars 250 T-Started 22:51
 (C) First Final Flow 46 Safety Joint 75 T-Open 04:07
 (D) Initial Shut-In 1256 Circ Sub NC T-Pulled 07:07
 (E) Second Initial Flow 48 Hourly Standby X 2 1h 100 T-Out 09:50
 (F) Second Final Flow 56 Mileage 52 RT 80.60 Comments _____
 (G) Final Shut-In 1240 Sampler _____
 (H) Final Hydrostatic 1969 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 1755.60
 Final Flow 30 Accessibility _____ MP/DST Disc't _____
 Final Shut-In 60 Sub Total 1755.60

Approved By _____ Our Representative [Signature]

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 56895

4/10

Well Name & No. MB "A" # 1-35 Test No. 3 Date 5/19/14
 Company Murfin Drilling Company Elevation 2906 KB 201 GL
 Address 250 N. Water STE 300 Wichita KS 67206
 Co. Rep / Geo. Keith Keavis Rig Murfin # 7
 Location: Sec. _____ Twp. _____ Rge. _____ Co. Rawlins State KS

Interval Tested 4027-4100 Zone Tested LKC "H-T"
 Anchor Length 73' Drill Pipe Run 3955' Mud Wt. 9.3
 Top Packer Depth 4022 Drill Collars Run 62' Vis 46
 Bottom Packer Depth 4027 Wt. Pipe Run 0' WL 6.8
 Total Depth 4100 Chlorides 1600 ppm System LCM 4
 Blow Description IF - 1/2 blow built to 3 1/2"
ISI - No return
FF - Surface blow started @ 5 mins built to 3"
ISI - No return

Rec	Feet of	%gas	%oil	%water	%mud
<u>10</u>	<u>MCO</u>	<u>70</u>		<u>30</u>	
<u>62</u>	<u>OCM</u>	<u>25</u>		<u>75</u>	
Rec _____	Feet of _____	%gas _____	%oil _____	%water _____	%mud _____
Rec _____	Feet of _____	%gas _____	%oil _____	%water _____	%mud _____
Rec _____	Feet of _____	%gas _____	%oil _____	%water _____	%mud _____

Rec Total 72' BHT 124° Gravity _____ API RW _____ @ _____ ° F Chlorides _____ ppm

(A) Initial Hydrostatic <u>2009</u>	<input checked="" type="checkbox"/> Test <u>1250</u>	T-On Location <u>22:00</u>
(B) First Initial Flow <u>18</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>22:24</u>
(C) First Final Flow <u>49</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>01:16</u>
(D) Initial Shut-In <u>1213</u>	<input checked="" type="checkbox"/> Circ Sub <u>NC</u>	T-Pulled <u>04:16</u>
(E) Second Initial Flow <u>55</u>	<input type="checkbox"/> Hourly Standby _____	T-Out <u>06:36</u>
(F) Second Final Flow <u>62</u>	<input checked="" type="checkbox"/> Mileage <u>52 RT</u> 80.60	Comments _____
(G) Final Shut-In <u>1168</u>	<input type="checkbox"/> Sampler _____	
(H) Final Hydrostatic <u>1924</u>	<input type="checkbox"/> Straddle _____	<input type="checkbox"/> Ruined Shale Packer _____
Initial Open <u>30</u>	<input type="checkbox"/> Shale Packer _____	<input type="checkbox"/> Ruined Packer _____
Initial Shut-In <u>60</u>	<input type="checkbox"/> Extra Packer _____	<input type="checkbox"/> Extra Copies _____
Final Flow <u>30</u>	<input type="checkbox"/> Extra Recorder _____	Sub Total <u>0</u>
Final Shut-In <u>60</u>	<input type="checkbox"/> Day Standby _____	Total <u>1655.60</u>
	<input type="checkbox"/> Accessibility _____	MP/DST Disc't _____
	Sub Total <u>1655.60</u>	

Approved By _____ Our Representative [Signature]
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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 56896

4/10

Well Name & No. MB "A" #1-35 Test No. 4 Date 5/30/14
 Company Murfin Drilling Co. Elevation 2906 KB 2901 GL
 Address 250 N. Water STE 300 Wichita KS 67206
 Co. Rep / Geo. Keith Reavis Rig Murfin # 7
 Location: Sec. 35 Twp. 4S Rge. 31W Co. Rawlins State KS

Interval Tested 4092 - 4136 Zone Tested LKC "K"
 Anchor Length 44' Drill Pipe Run 4020 Mud Wt. 9.0
 Top Packer Depth 4087 Drill Collars Run 62' Vis 45
 Bottom Packer Depth 4092 Wt. Pipe Run 0' WL 6.8
 Total Depth 4136 Chlorides 1600 ppm System LCM 5
 Blow Description IF - Surface blow built to 1"
ISI - No return
FF - Surface blow built to 1 1/4"
FSI - No return

Rec	Feet of	%gas	%oil	%water	%mud
<u>30'</u>	<u>OCM</u>	<u>20</u>		<u>80</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 20' BHT 1200 Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic <u>2030</u>	<input checked="" type="checkbox"/> Test <u>1250</u>	T-On Location <u>03:45</u>
(B) First Initial Flow <u>15</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>04:13</u>
(C) First Final Flow <u>26</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>18:55</u>
(D) Initial Shut-In <u>1269</u>	<input checked="" type="checkbox"/> Circ Sub <u>NC</u>	T-Pulled <u>21:55</u>
(E) Second Initial Flow <u>26</u>	<input type="checkbox"/> Hourly Standby _____	T-Out <u>00:23</u>
(F) Second Final Flow <u>34</u>	<input checked="" type="checkbox"/> Mileage <u>52 RT</u> 80.60	Comments _____
(G) Final Shut-In <u>1239</u>	<input type="checkbox"/> Sampler _____	
(H) Final Hydrostatic <u>1970</u>	<input type="checkbox"/> Straddle _____	<input type="checkbox"/> Ruined Shale Packer _____
Initial Open <u>30</u>	<input type="checkbox"/> Shale Packer _____	<input type="checkbox"/> Ruined Packer _____
Initial Shut-In <u>60</u>	<input type="checkbox"/> Extra Packer _____	<input type="checkbox"/> Extra Copies _____
Final Flow <u>30</u>	<input type="checkbox"/> Extra Recorder _____	Sub Total <u>0</u>
Final Shut-In <u>60</u>	<input type="checkbox"/> Day Standby _____	Total <u>1655.60</u>
	<input type="checkbox"/> Accessibility _____	MP/DST Disc't _____
	Sub Total <u>1655.60</u>	

Approved By _____ Our Representative [Signature]

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 56897

4/10

Well Name & No. MB "A" 1-35 Test No. 5 Date 5/22/14
 Company Murfin Drilling Co. Elevation ~~2906~~ 2901 KB 2901 GL
 Address 250 N. Water STE 300 Wichita KS 67206
 Co. Rep / Geo. Keith Keavis Rig Murfin # 7
 Location: Sec. 35 Twp. 4S Rge. 31W Co. Rawlins State KS

Interval Tested 4338 - 4364 Zone Tested Cherokee
 Anchor Length 26' Drill Pipe Run 4273' Mud Wt. 9.0
 Top Packer Depth 4333 Drill Collars Run 62' Vis 5.6
 Bottom Packer Depth 4338 Wt. Pipe Run 0' WL 6.4
 Total Depth 4364 Chlorides 1600 ppm System LCM 4
 Blow Description IF - Surface blow built to 1/4"
ISI - No return
FF - No blow
FBI - No return

Rec	Feet of	%gas	%oil	%water	%mud
5'	Mud			100	

Rec Total 5' BHT 126° Gravity _____ API RW _____ @ _____ ° F Chlorides _____ ppm

(A) Initial Hydrostatic 2205 Test 1250 T-On Location 06:00
 (B) First Initial Flow 17 Jars 250 T-Started 06:30
 (C) First Final Flow 19 Safety Joint 75 T-Open 08:44
 (D) Initial Shut-In 31 Circ Sub NC T-Pulled 11:44
 (E) Second Initial Flow 19 Hourly Standby _____ T-Out 14:07
 (F) Second Final Flow 19 Mileage 52 RT 80.60 Comments _____
 (G) Final Shut-In 27 Sampler _____
 (H) Final Hydrostatic 2149 Straddle _____ Ruined Shale Packer _____
 Shale Packer _____ Ruined Packer _____
 Extra Packer _____ Extra Copies _____
 Extra Recorder _____ Sub Total 0
 Day Standby _____ Total 1655.60
 Accessibility _____ MP/DST Disc't _____
 Sub Total 1655.60

Approved By _____ Our Representative [Signature]

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