



DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N Water STE 300
Wichita KS 67202

ATTN: Tom Funk

WWWM 'A' #3

4-13s-32w Logan,KS

Start Date: 2014.10.02 @ 14:13:00

End Date: 2014.10.02 @ 23:33:00

Job Ticket #: 57478 DST #: 1

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

Printed: 2014.10.07 @ 16:59:44



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Murfin Drilling Co.

4-13s-32w Logan, KS

250 N Water STE 300
Wichita KS 67202

WWWM 'A' #3

Job Ticket: 57478

DST#: 1

ATTN: Tom Funk

Test Start: 2014.10.02 @ 14:13:00

GENERAL INFORMATION:

Formation: **LKC E-F**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 17:44:30

Time Test Ended: 23:33:00

Test Type: Conventional Bottom Hole (Initial)

Tester: Justin Haris

Unit No: 75

Interval: 4112.00 ft (KB) To 4145.00 ft (KB) (TVD)

Reference Elevations: 3047.00 ft (KB)

Total Depth: 4145.00 ft (KB) (TVD)

3036.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Poor

KB to GR/CF: 11.00 ft

Serial #: 8675

Inside

Press@RunDepth: 691.77 psig @ 4113.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.10.02

End Date:

2014.10.02

Last Calib.: 2014.10.02

Start Time: 14:13:15

End Time:

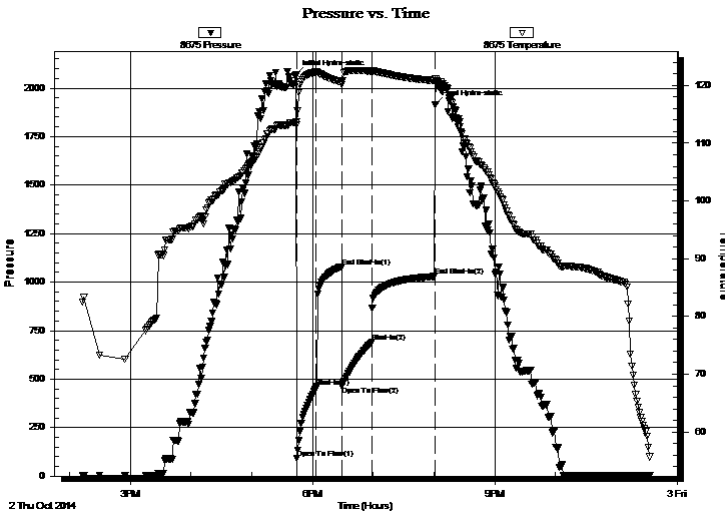
23:33:00

Time On Btm: 2014.10.02 @ 17:44:00

Time Off Btm: 2014.10.02 @ 20:01:15

TEST COMMENT: 30: B.O.B in 3 mins.
30: No Return.
30: B.O.B in 3 mins.
30: No Return.

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2067.13	113.63	Initial Hydro-static
1	92.43	113.26	Open To Flow (1)
20	458.41	122.32	Shut-In(1)
45	1079.29	120.54	End Shut-In(1)
46	465.27	120.14	Open To Flow (2)
75	691.77	122.50	Shut-In(2)
137	1029.27	120.85	End Shut-In(2)
138	1914.31	121.21	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
543.00	mcw 10% m 90%w	2.67
891.00	0w cm 1%o 49%w 50%m	12.50
2.00	clean oil	0.03

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 67202
ATTN: Tom Funk

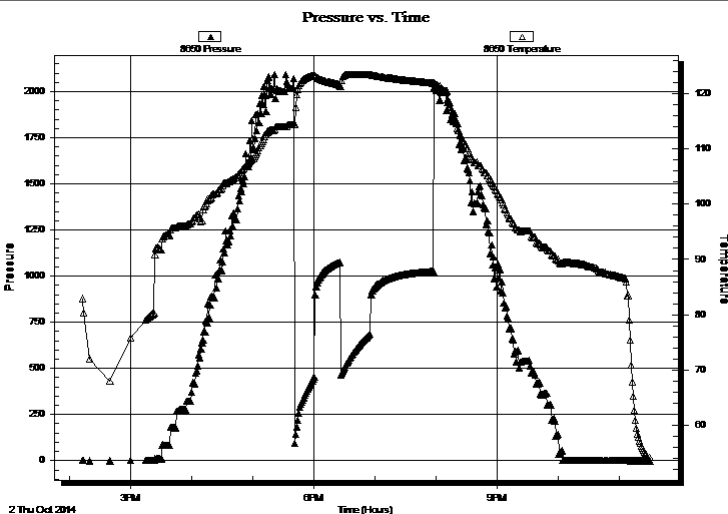
4-13s-32w Logan,KS
WWWM 'A' #3
Job Ticket: 57478 **DST#: 1**
Test Start: 2014.10.02 @ 14:13:00

GENERAL INFORMATION:

Formation:	LKC E-F		Test Type:	Conventional Bottom Hole (Initial)	
Deviated:	No	Whipstock:		Tester:	Justin Haris
		ft (KB)		Unit No:	75
Time Tool Opened:	17:44:30		Reference Elevations:	3047.00 ft (KB)	
Time Test Ended:	23:33:00			3036.00 ft (CF)	
Interval:	4112.00 ft (KB) To 4145.00 ft (KB) (TVD)		KB to GR/CF:	11.00 ft	
Total Depth:	4145.00 ft (KB) (TVD)				
Hole Diameter:	7.88 inches	Hole Condition:	Poor		

Serial #: 8650	Outside		Capacity:	8000.00 psig
Press@RunDepth:	psig @	4113.00 ft (KB)	Last Calib.:	2014.10.02
Start Date:	2014.10.02	End Date:	2014.10.02	
Start Time:	14:13:15	End Time:	23:29:15	
			Time On Btm:	
			Time Off Btm:	

TEST COMMENT:
 30: B.O.B in 3 mins.
 30: No Return.
 30: B.O.B in 3 mins.
 30: No Return.



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
543.00	mcw 10% m 90%w	2.67
891.00	0w cm 1%o 49%w 50%m	12.50
2.00	clean oil	0.03

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co.

4-13s-32w Logan,KS

250 N Water STE 300
Wichita KS 67202

WWWM 'A' #3

Job Ticket: 57478

DST#: 1

ATTN: Tom Funk

Test Start: 2014.10.02 @ 14:13:00

Tool Information

Drill Pipe:	Length: 3558.85 ft	Diameter: 3.80 inches	Volume: 49.92 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: ft	Diameter: inches	Volume: - bbl	Weight set on Packer: 30000.00 lb
Drill Collar:	Length: 543.15 ft	Diameter: 2.25 inches	Volume: 2.67 bbl	Weight to Pull Loose: 98000.00 lb
			<u>Total Volume: - bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	10.00 ft			String Weight: Initial 90000.00 lb
Depth to Top Packer:	4112.00 ft			Final 96000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	31.00 ft			
Tool Length:	51.00 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			4093.00	
Shut In Tool	5.00			4098.00	
Hydraulic tool	5.00			4103.00	
Packer	5.00			4108.00	20.00 Bottom Of Top Packer
Packer	4.00			4112.00	
Stubb	1.00			4113.00	
Recorder	0.00	8675	Inside	4113.00	
Recorder	0.00	8650	Outside	4113.00	
perforations	27.00			4140.00	
Change Over Sub	0.00			4140.00	
Drill Pipe	0.00			4140.00	
Change Over Sub	0.00			4140.00	
Bullnose	3.00			4143.00	31.00 Bottom Packers & Anchor

Total Tool Length: 51.00



**TRILOBITE
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DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co.

4-13s-32w Logan,KS

250 N Water STE 300
Wichita KS 67202

WWWM 'A' #3

Job Ticket: 57478

DST#: 1

ATTN: Tom Funk

Test Start: 2014.10.02 @ 14:13:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

20 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

20000 ppm

Viscosity: 54.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.18 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 2200.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
543.00	mcw 10% m 90%w	2.670
891.00	0w cm 1%o 49%w 50%m	12.497
2.00	clean oil	0.028

Total Length: 1436.00 ft Total Volume: 15.192 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

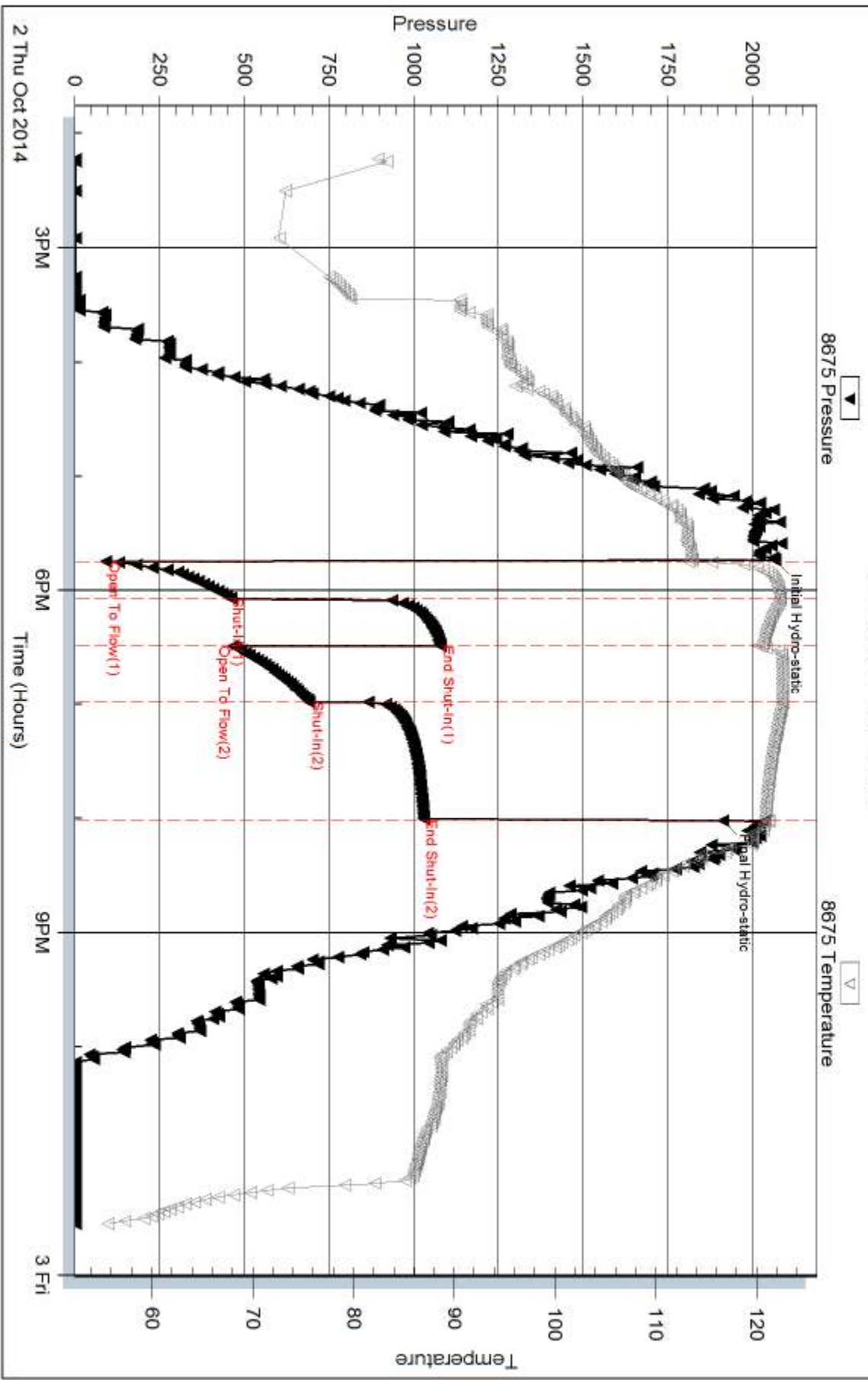
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: API RW .45 @ 48 Chlorides 20000ppm

Pressure vs. Time

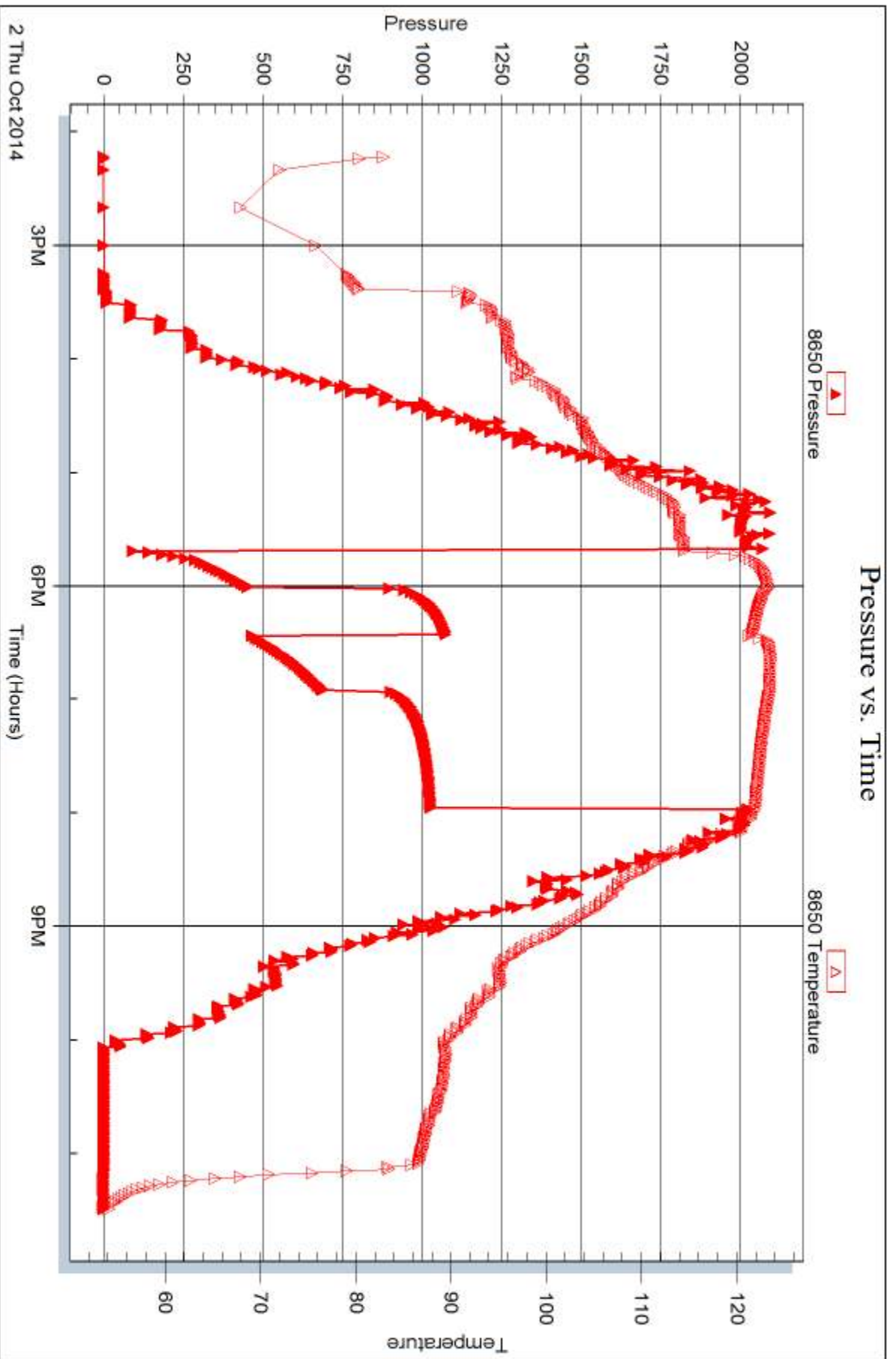


Serial #: 8650

Outside Murfin Drilling Co.

WMMMM'A #3

DST Test Number: 1



Trilobite Testing, Inc

Ref. No: 57478

Printed: 2014, 10.07 @ 16:59:45



DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N Water STE 300
Wichita KS 67202

ATTN: Tom Funk

WWWM 'A' #3

4-13s-32w Logan,KS

Start Date: 2014.10.04 @ 08:22:00

End Date: 2014.10.04 @ 16:58:15

Job Ticket #: 57278 DST #: 2

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

Printed: 2014.10.07 @ 16:52:53



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Murfin Drilling Co.

4-13s-32w Logan,KS

250 N Water STE 300
Wichita KS 67202

WWWM 'A' #3

Job Ticket: 57278

DST#: 2

ATTN: Tom Funk

Test Start: 2014.10.04 @ 08:22:00

GENERAL INFORMATION:

Formation: **Altamont 'A - C'**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 11:09:00

Time Test Ended: 16:58:15

Test Type: Conventional Bottom Hole (Reset)

Tester: Jace McKinney

Unit No: 75

Interval: 4379.00 ft (KB) To 4460.00 ft (KB) (TVD)

Reference Elevations: 3047.00 ft (KB)

Total Depth: 4460.00 ft (KB) (TVD)

3036.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Poor

KB to GR/CF: 11.00 ft

Serial #: 8675

Inside

Press@RunDepth: 34.90 psig @ 4380.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.10.04

End Date:

2014.10.04

Last Calib.: 2014.10.04

Start Time: 08:22:15

End Time:

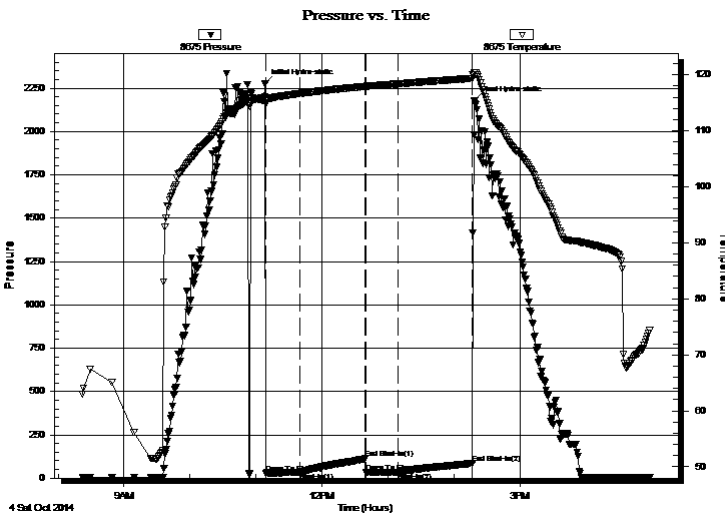
16:58:15

Time On Btm: 2014.10.04 @ 11:08:15

Time Off Btm: 2014.10.04 @ 14:18:45

TEST COMMENT: Surface blow
No return blow
No blow
No return blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2276.97	116.02	Initial Hydro-static
1	29.28	114.78	Open To Flow (1)
32	32.27	116.68	Shut-In(1)
92	112.01	117.94	End Shut-In(1)
92	33.82	117.91	Open To Flow (2)
122	34.90	118.40	Shut-In(2)
189	85.81	119.36	End Shut-In(2)
191	2176.63	120.43	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
10.00	100% Mud	0.05

Gas Rates

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

* Recovery from multiple tests



TRILOBITE
TESTING, INC

DRILL STEM TEST REPORT

Murfin Drilling Co.

250 N Water STE 300
Wichita KS 67202

ATTN: Tom Funk

4-13s-32w Logan,KS

WWWM 'A' #3

Job Ticket: 57278

DST#: 2

Test Start: 2014.10.04 @ 08:22:00

GENERAL INFORMATION:

Formation: **Altamont 'A - C'**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 11:09:00

Time Test Ended: 16:58:15

Test Type: Conventional Bottom Hole (Reset)

Tester: Jace McKinney

Unit No: 75

Interval: **4379.00 ft (KB) To 4460.00 ft (KB) (TVD)**

Total Depth: 4460.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Poor

Reference Elevations: 3047.00 ft (KB)

3036.00 ft (CF)

KB to GR/CF: 11.00 ft

Serial #: **8650** Outside

Press@RunDepth: psig @ 4380.00 ft (KB)

Start Date: 2014.10.04

End Date:

2014.10.04

Start Time: 08:22:15

End Time:

16:58:00

Capacity: 8000.00 psig

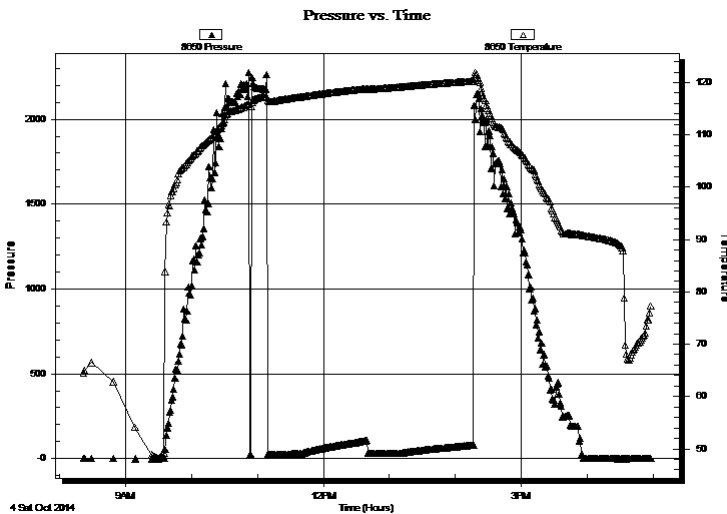
Last Calib.: 1899.12.30

Time On Btm:

Time Off Btm:

TEST COMMENT: Surface blow
No return blow
No blow
No return blow

PRESSURE SUMMARY



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

Recovery

Length (ft)	Description	Volume (bbl)
10.00	100% Mud	0.05

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.

4-13s-32w Logan,KS

250 N Water STE 300
Wichita KS 67202

WWWM 'A' #3

Job Ticket: 57278

DST#: 2

ATTN: Tom Funk

Test Start: 2014.10.04 @ 08:22:00

Tool Information

Drill Pipe:	Length: 4119.55 ft	Diameter: 3.80 inches	Volume: 57.79 bbl	Tool Weight:	2500.00 lb
Heavy Wt. Pipe:	Length: ft	Diameter: inches	Volume: - bbl	Weight set on Packer:	30000.00 lb
Drill Collar:	Length: 275.10 ft	Diameter: 2.25 inches	Volume: 1.35 bbl	Weight to Pull Loose:	110000.0 lb
			<u>Total Volume:</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	35.65 ft			String Weight: Initial	86000.00 lb
Depth to Top Packer:	4379.00 ft			Final	86000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	65.00 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			4360.00	
Shut In Tool	5.00			4365.00	
Hydraulic tool	5.00			4370.00	
Packer	5.00			4375.00	20.00 Bottom Of Top Packer
Packer	4.00			4379.00	
Stubb	1.00			4380.00	
Recorder	0.00	8675	Inside	4380.00	
Recorder	0.00	8650	Outside	4380.00	
perforations	27.00			4407.00	
Change Over Sub	1.00			4408.00	
Drill Pipe	32.00			4440.00	
Change Over Sub	1.00			4441.00	
Bullnose	3.00			4444.00	65.00 Bottom Packers & Anchor

Total Tool Length: 85.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co.

4-13s-32w Logan,KS

250 N Water STE 300
Wichita KS 67202

WWWM 'A' #3

Job Ticket: 57278

DST#: 2

ATTN: Tom Funk

Test Start: 2014.10.04 @ 08:22:00

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: 54.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.39 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 3600.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
10.00	100% Mud	0.049

Total Length: 10.00 ft Total Volume: 0.049 bbl

Num Fluid Samples: 0

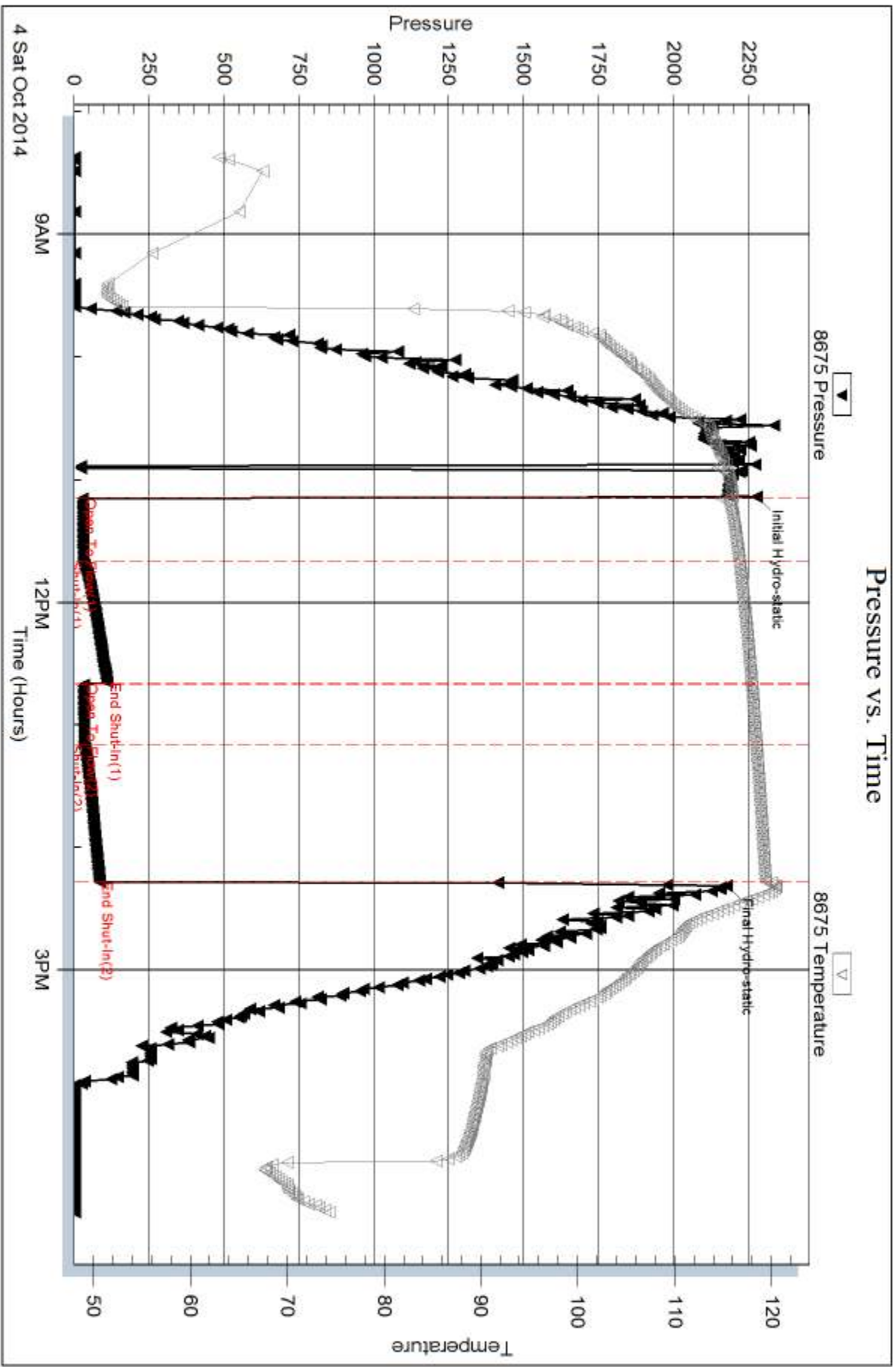
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

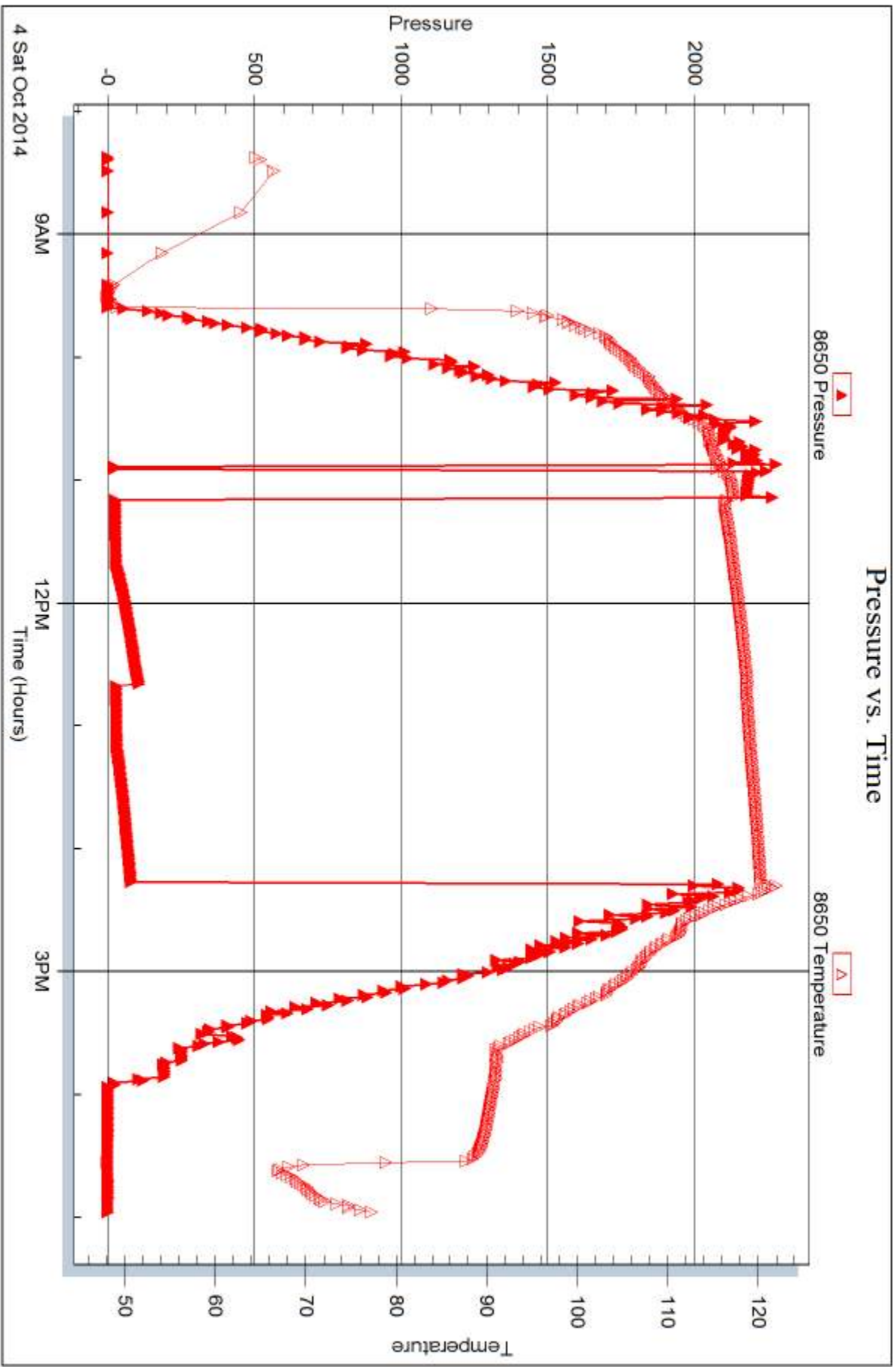


Serial #: 8650

Outside Murfin Drilling Co.

WMMMM'A #3

DST Test Number: 2



Trilobite Testing, Inc

Ref. No: 57278

Printed: 2014, 10.07 @ 16:52:55



DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N Water STE 300
Wichita KS 67202

ATTN: Tom Funk

WWWM 'A' #3

4-13s-32w Logan,KS

Start Date: 2014.10.05 @ 07:52:00

End Date: 2014.10.05 @ 17:53:30

Job Ticket #: 57279 DST #: 3

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

Printed: 2014.10.07 @ 16:52:33



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Murfin Drilling Co.

4-13s-32w Logan, KS

250 N Water STE 300
Wichita KS 67202

WWWM 'A' #3

Job Ticket: 57279

DST#: 3

ATTN: Tom Funk

Test Start: 2014.10.05 @ 07:52:00

GENERAL INFORMATION:

Formation: **Pawnee - Fort Scott**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 10:10:45

Time Test Ended: 17:53:30

Test Type: Conventional Bottom Hole (Reset)

Tester: Jace McKinney

Unit No: 75

Interval: 4460.00 ft (KB) To 4555.00 ft (KB) (TVD)

Reference Elevations: 3047.00 ft (KB)

Total Depth: 4555.00 ft (KB) (TVD)

3036.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Poor

KB to GR/CF: 11.00 ft

Serial #: 8675

Inside

Press@RunDepth: 275.13 psig @ 4461.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.10.05

End Date:

2014.10.05

Last Calib.:

2014.10.05

Start Time:

07:52:15

End Time:

17:53:30

Time On Btm:

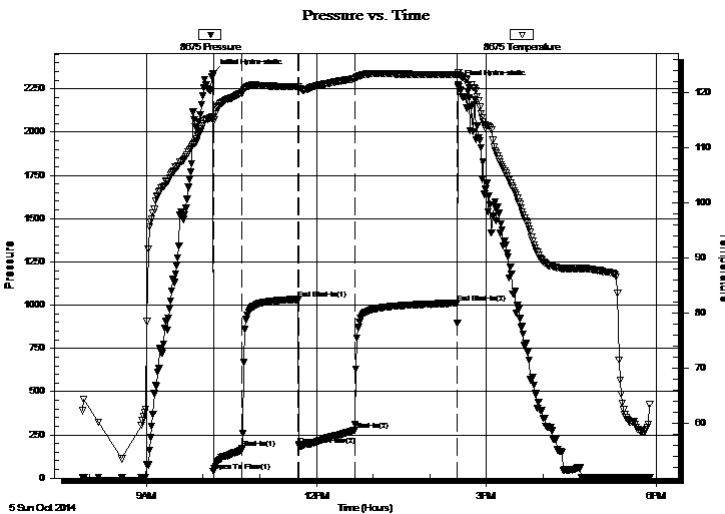
2014.10.05 @ 10:10:30

Time Off Btm:

2014.10.05 @ 14:30:15

TEST COMMENT: B.O.B. in 7 1/2 min.
Bled off for 5 min. Built to 9 1/2" return blow
B.O.B. in 1 1/2 min.
Bled off for 5 min. Built to 10" return blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2339.57	115.66	Initial Hydro-static
1	41.04	114.79	Open To Flow (1)
31	170.60	119.91	Shut-In(1)
91	1032.58	121.08	End Shut-In(1)
91	192.63	120.69	Open To Flow (2)
150	275.13	122.53	Shut-In(2)
259	1011.00	123.24	End Shut-In(2)
260	2272.30	123.68	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
182.00	gw ocm 5%W 10%O 20%G 65%M	0.90
188.00	vgmo 15%M 15%O 70%G	1.79
250.00	gco 30%G 70%O	3.51
0.00	2120 Feet Gas In Pipe	0.00

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Murfin Drilling Co.
250 N Water STE 300
Wichita KS 67202
ATTN: Tom Funk

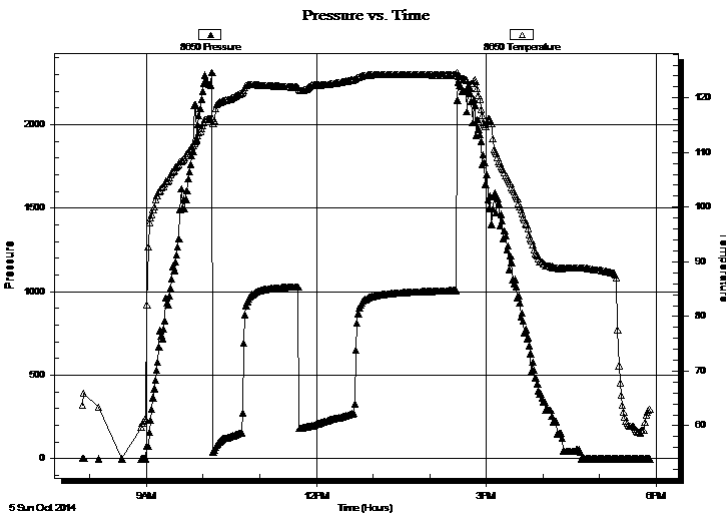
4-13s-32w Logan,KS
WWWM 'A' #3
Job Ticket: 57279 **DST#: 3**
Test Start: 2014.10.05 @ 07:52:00

GENERAL INFORMATION:

Formation: **Pawnee - Fort Scott**
Deviated: No Whipstock: ft (KB) Test Type: Conventional Bottom Hole (Reset)
Time Tool Opened: 10:10:45 Tester: Jace McKinney
Time Test Ended: 17:53:30 Unit No: 75
Interval: 4460.00 ft (KB) To 4555.00 ft (KB) (TVD) Reference Elevations: 3047.00 ft (KB)
Total Depth: 4555.00 ft (KB) (TVD) 3036.00 ft (CF)
Hole Diameter: 7.88 inches Hole Condition: Poor KB to GR/CF: 11.00 ft

Serial #: 8650 Outside
Press@RunDepth: psig @ 4461.00 ft (KB) Capacity: 8000.00 psig
Start Date: 2014.10.05 End Date: 2014.10.05 Last Calib.: 2014.10.05
Start Time: 07:52:15 End Time: 17:53:15 Time On Btm:
Time Off Btm:

TEST COMMENT: B.O.B. in 7 1/2 min.
Bled off for 5 min. Built to 9 1/2" return blow
B.O.B. in 1 1/2 min.
Bled off for 5 min. Built to 10" return blow



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
182.00	gw ocm 5%W 10%O 20%G 65%M	0.90
188.00	vgmo 15%M 15%O 70%G	1.79
250.00	gco 30%G 70%O	3.51
0.00	2120 Feet Gas In Pipe	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.

4-13s-32w Logan,KS

250 N Water STE 300
Wichita KS 67202

WWWM 'A' #3

Job Ticket: 57279

DST#: 3

ATTN: Tom Funk

Test Start: 2014.10.05 @ 07:52:00

Tool Information

Drill Pipe:	Length: 4183.00 ft	Diameter: 3.80 inches	Volume: 58.68 bbl	Tool Weight:	2500.00 lb
Heavy Wt. Pipe:	Length: ft	Diameter: inches	Volume: - bbl	Weight set on Packer:	30000.00 lb
Drill Collar:	Length: 275.10 ft	Diameter: 2.25 inches	Volume: 1.35 bbl	Weight to Pull Loose:	102000.0 lb
			<u>Total Volume:</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	18.10 ft			String Weight: Initial	78000.00 lb
Depth to Top Packer:	4460.00 ft			Final	82000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	95.00 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
Change Over Sub	1.00			4441.00	
Shut In Tool	5.00			4446.00	
Hydraulic tool	5.00			4451.00	
Packer	5.00			4456.00	20.00 Bottom Of Top Packer
Packer	4.00			4460.00	
Stubb	1.00			4461.00	
Recorder	0.00	8675	Inside	4461.00	
Recorder	0.00	8650	Outside	4461.00	
perforations	26.00			4487.00	
Change Over Sub	1.00			4488.00	
Drill Pipe	63.00			4551.00	
Change Over Sub	1.00			4552.00	
Bullnose	3.00			4555.00	95.00 Bottom Packers & Anchor

Total Tool Length: 115.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co.

4-13s-32w Logan,KS

250 N Water STE 300
Wichita KS 67202

WWWM 'A' #3

Job Ticket: 57279

DST#: 3

ATTN: Tom Funk

Test Start: 2014.10.05 @ 07:52:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

30 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 66.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.39 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 3000.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
182.00	gw ocm 5%W 10%O 20%G 65%M	0.895
188.00	vgmo 15%M 15%O 70%G	1.789
250.00	gco 30%G 70%O	3.507
0.00	2120 Feet Gas In Pipe	0.000

Total Length: 620.00 ft

Total Volume: 6.191 bbl

Num Fluid Samples: 0

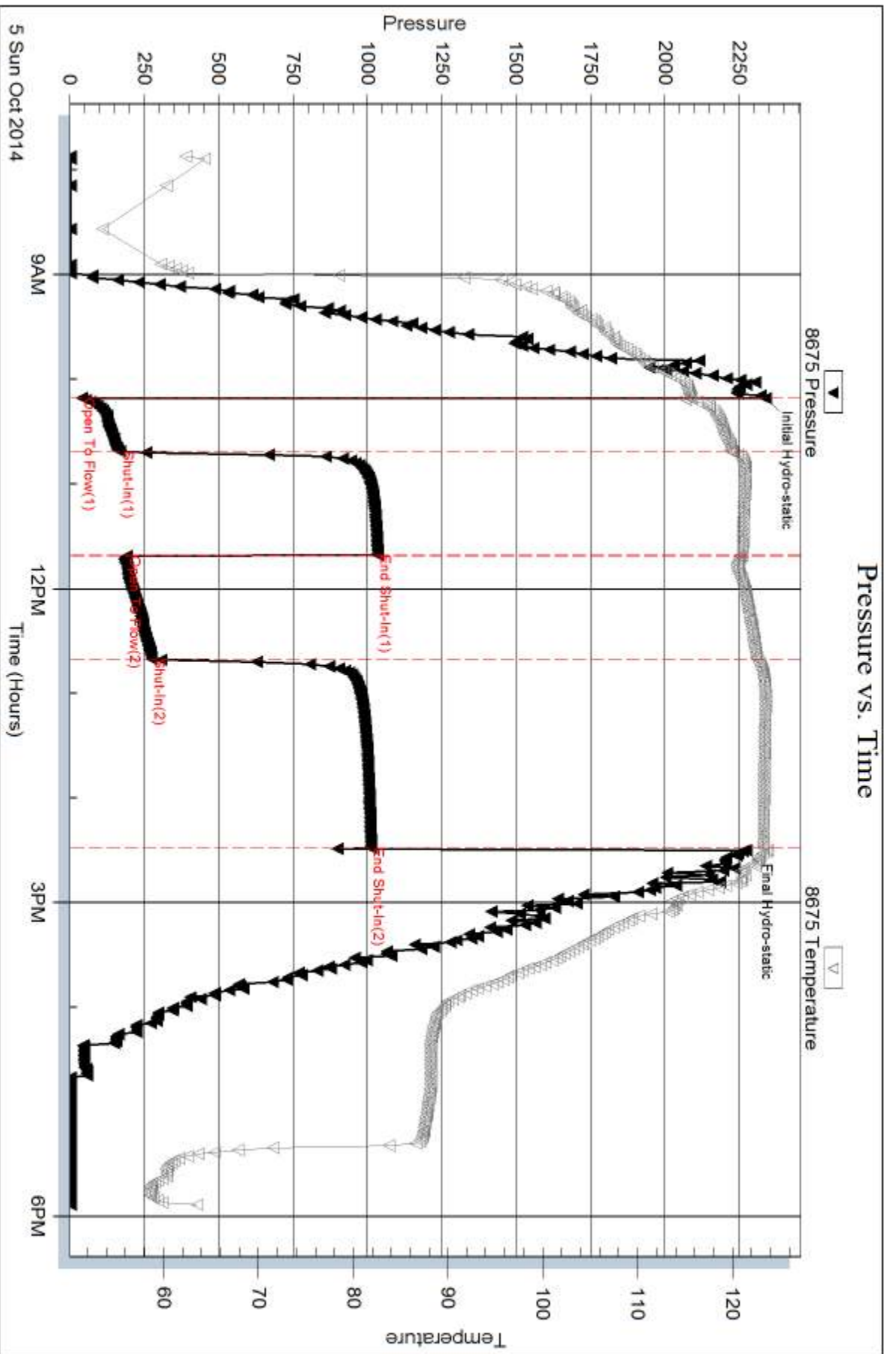
Num Gas Bombs: 0

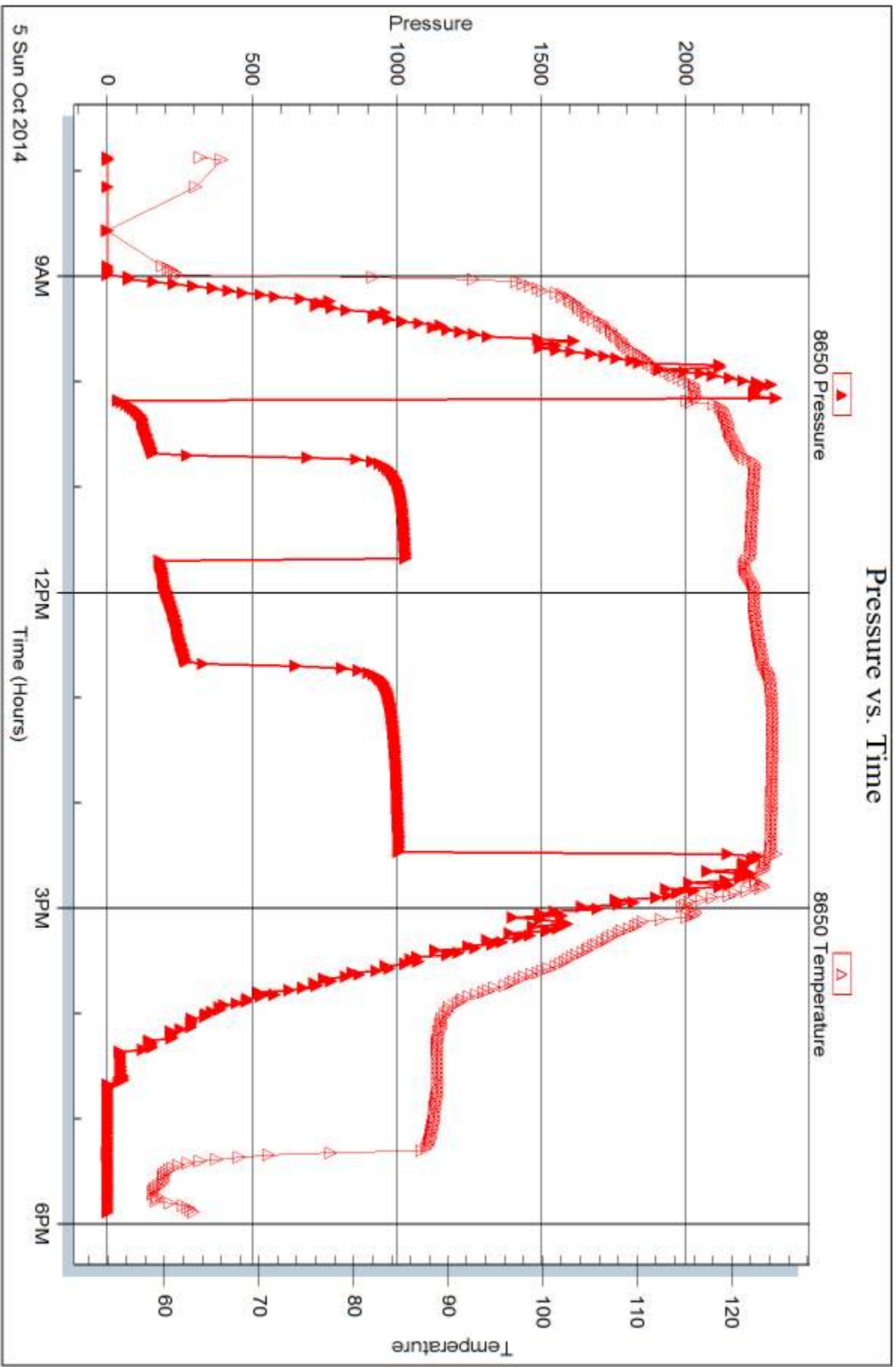
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: API: 29 @ 50 F = 30







DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N Water STE 300
Wichita KS 67202

ATTN: Tom Funk

WWWM 'A' #3

4-13s-32w Logan,KS

Start Date: 2014.10.06 @ 09:40:00

End Date: 2014.10.06 @ 19:07:30

Job Ticket #: 57280 DST #: 4

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

Printed: 2014.10.07 @ 16:51:42



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Murfin Drilling Co.

4-13s-32w Logan, KS

250 N Water STE 300
Wichita KS 67202

WWWM 'A' #3

Job Ticket: 57280

DST#: 4

ATTN: Tom Funk

Test Start: 2014.10.06 @ 09:40:00

GENERAL INFORMATION:

Formation: **Johnson Zone**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 12:08:45

Time Test Ended: 19:07:30

Test Type: Conventional Bottom Hole (Reset)

Tester: Jace McKinney

Unit No: 75

Interval: 4570.00 ft (KB) To 4620.00 ft (KB) (TVD)

Reference Elevations: 3047.00 ft (KB)

Total Depth: 4620.00 ft (KB) (TVD)

3036.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Poor

KB to GR/CF: 11.00 ft

Serial #: 8675

Inside

Press@RunDepth: 499.33 psig @ 4571.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.10.06

End Date:

2014.10.06

Last Calib.: 2014.10.06

Start Time: 09:40:15

End Time:

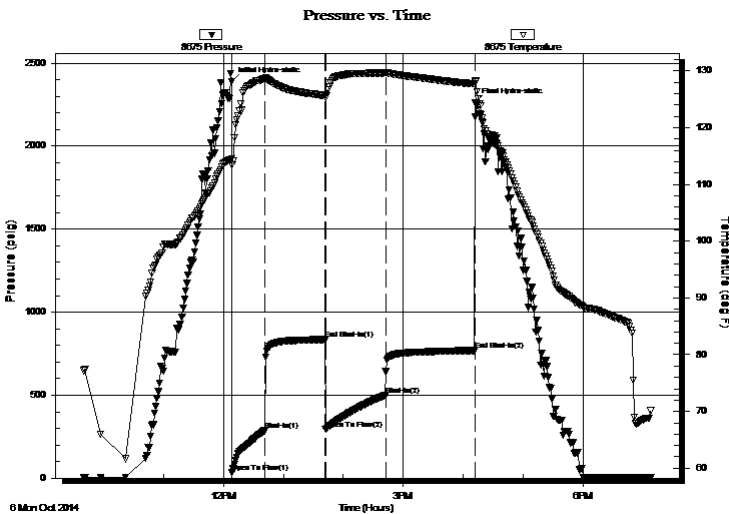
19:07:30

Time On Btm: 2014.10.06 @ 12:08:30

Time Off Btm: 2014.10.06 @ 16:12:00

TEST COMMENT: B.O.B. in 8 1/2 min.
Bled off for 5 min. Weak surface return blow
B.O.B. in 12 min.
Bled off for 5 min. Surface return blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2389.33	114.49	Initial Hydro-static
1	35.28	113.43	Open To Flow (1)
33	286.52	128.63	Shut-In(1)
94	835.06	125.66	End Shut-In(1)
94	295.44	125.25	Open To Flow (2)
154	499.33	129.67	Shut-In(2)
243	769.37	127.73	End Shut-In(2)
244	2260.59	128.33	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
275.00	100% Water	1.35
475.00	mcw 20%M 80%W	6.66
300.00	w cm 30%W 70%M	4.21

Gas Rates

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

* Recovery from multiple tests



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Murfin Drilling Co.
 250 N Water STE 300
 Wichita KS 67202
 ATTN: Tom Funk

4-13s-32w Logan,KS
WWWM 'A' #3
 Job Ticket: 57280 **DST#: 4**
 Test Start: 2014.10.06 @ 09:40:00

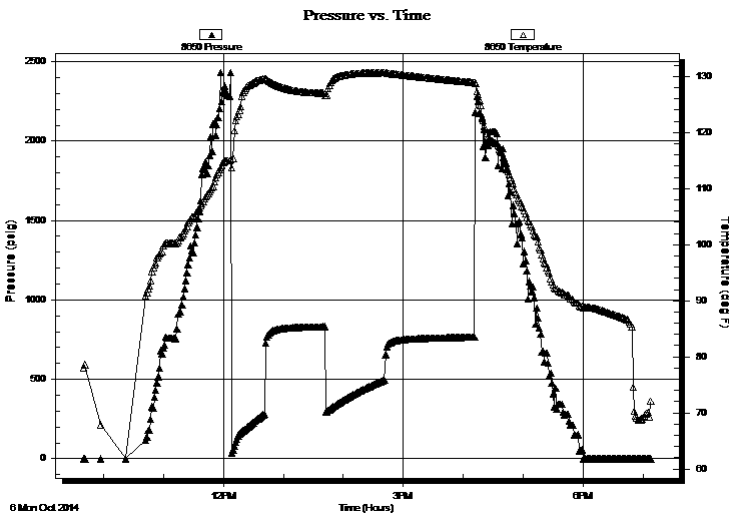
GENERAL INFORMATION:

Formation: **Johnson Zone**
 Deviated: No Whipstock: ft (KB) Test Type: Conventional Bottom Hole (Reset)
 Time Tool Opened: 12:08:45 Tester: Jace McKinney
 Time Test Ended: 19:07:30 Unit No: 75
 Interval: **4570.00 ft (KB) To 4620.00 ft (KB) (TVD)** Reference Elevations: 3047.00 ft (KB)
 Total Depth: 4620.00 ft (KB) (TVD) 3036.00 ft (CF)
 Hole Diameter: 7.88 inches Hole Condition: Poor KB to GR/CF: 11.00 ft

Serial #: 8650 Outside

Press@RunDepth: psig @ 4571.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2014.10.06 End Date: 2014.10.06 Last Calib.: 2014.10.06
 Start Time: 09:40:15 End Time: 19:07:15 Time On Btm:
 Time Off Btm:

TEST COMMENT: B.O.B. in 8 1/2 min.
 Bled off for 5 min. Weak surface return blow
 B.O.B. in 12 min.
 Bled off for 5 min. Surface return blow



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
275.00	100% Water	1.35
475.00	mcw 20%M 80%W	6.66
300.00	w cm 30%W 70%M	4.21

* 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.

4-13s-32w Logan,KS

250 N Water STE 300
Wichita KS 67202

WWWM 'A' #3

Job Ticket: 57280

DST#: 4

ATTN: Tom Funk

Test Start: 2014.10.06 @ 09:40:00

Tool Information

Drill Pipe:	Length: 4278.24 ft	Diameter: 3.80 inches	Volume: 60.01 bbl	Tool Weight:	2500.00 lb
Heavy Wt. Pipe:	Length: ft	Diameter: inches	Volume: - bbl	Weight set on Packer:	30000.00 lb
Drill Collar:	Length: 275.10 ft	Diameter: 2.25 inches	Volume: 1.35 bbl	Weight to Pull Loose:	104000.0 lb
			<u>Total Volume:</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	3.34 ft			String Weight: Initial	80000.00 lb
Depth to Top Packer:	4570.00 ft			Final	84000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	50.00 ft				
Tool Length:	70.00 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			4551.00	
Shut In Tool	5.00			4556.00	
Hydraulic tool	5.00			4561.00	
Packer	5.00			4566.00	20.00 Bottom Of Top Packer
Packer	4.00			4570.00	
Stubb	1.00			4571.00	
Recorder	0.00	8675	Inside	4571.00	
Recorder	0.00	8650	Outside	4571.00	
perforations	13.00			4584.00	
Change Over Sub	1.00			4585.00	
Drill Pipe	31.00			4616.00	
Change Over Sub	1.00			4617.00	
Bullnose	3.00			4620.00	50.00 Bottom Packers & Anchor

Total Tool Length: 70.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co.

4-13s-32w Logan,KS

250 N Water STE 300
Wichita KS 67202

WWWM 'A' #3

Job Ticket: 57280

DST#: 4

ATTN: Tom Funk

Test Start: 2014.10.06 @ 09:40:00

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: 61.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.19 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 3300.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
275.00	100% Water	1.352
475.00	mcw 20%M 80%W	6.662
300.00	w cm 30%W 70%M	4.208

Total Length: 1050.00 ft Total Volume: 12.222 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

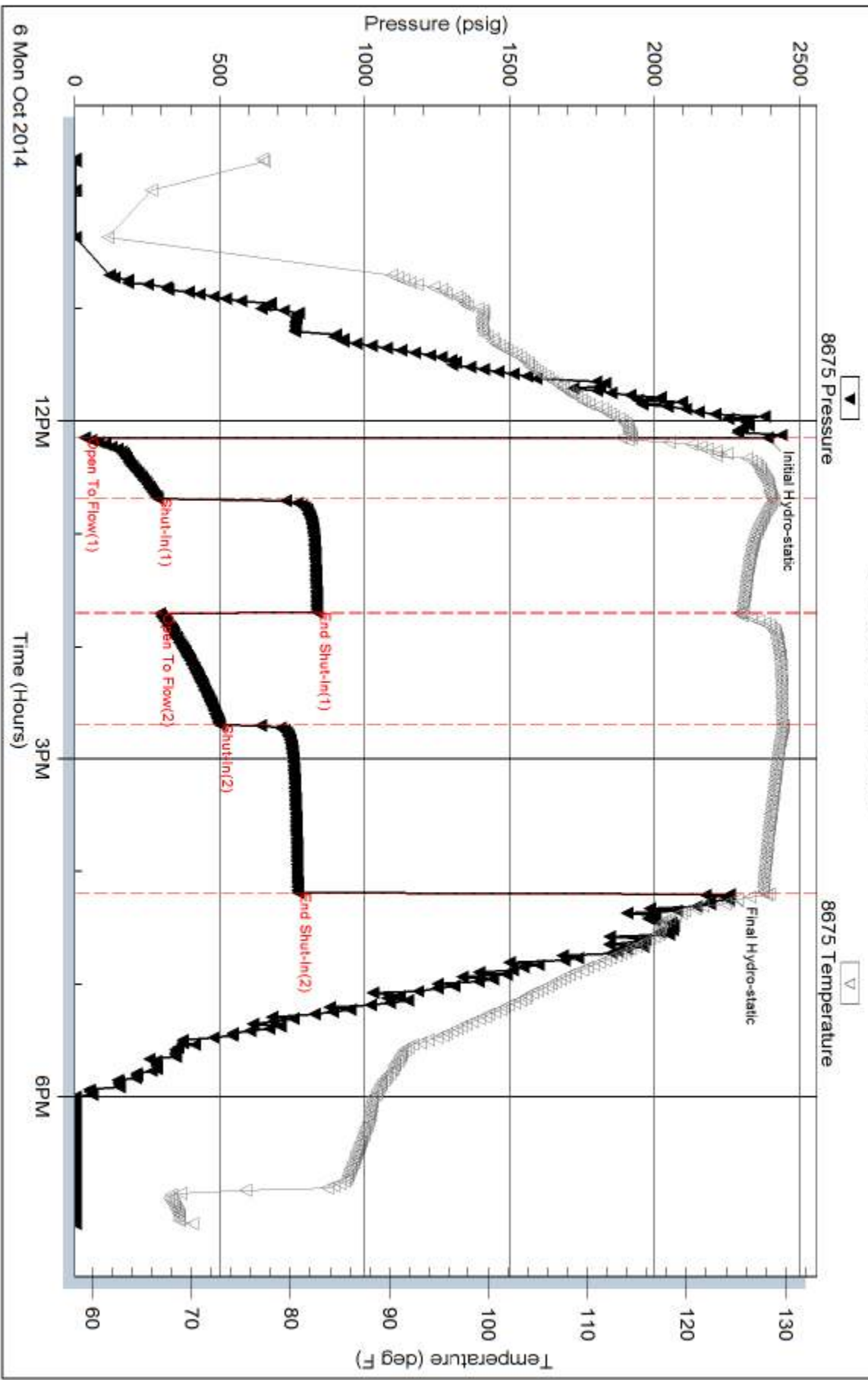
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: RW: .15 @ 80 F = 40,000

Pressure vs. Time

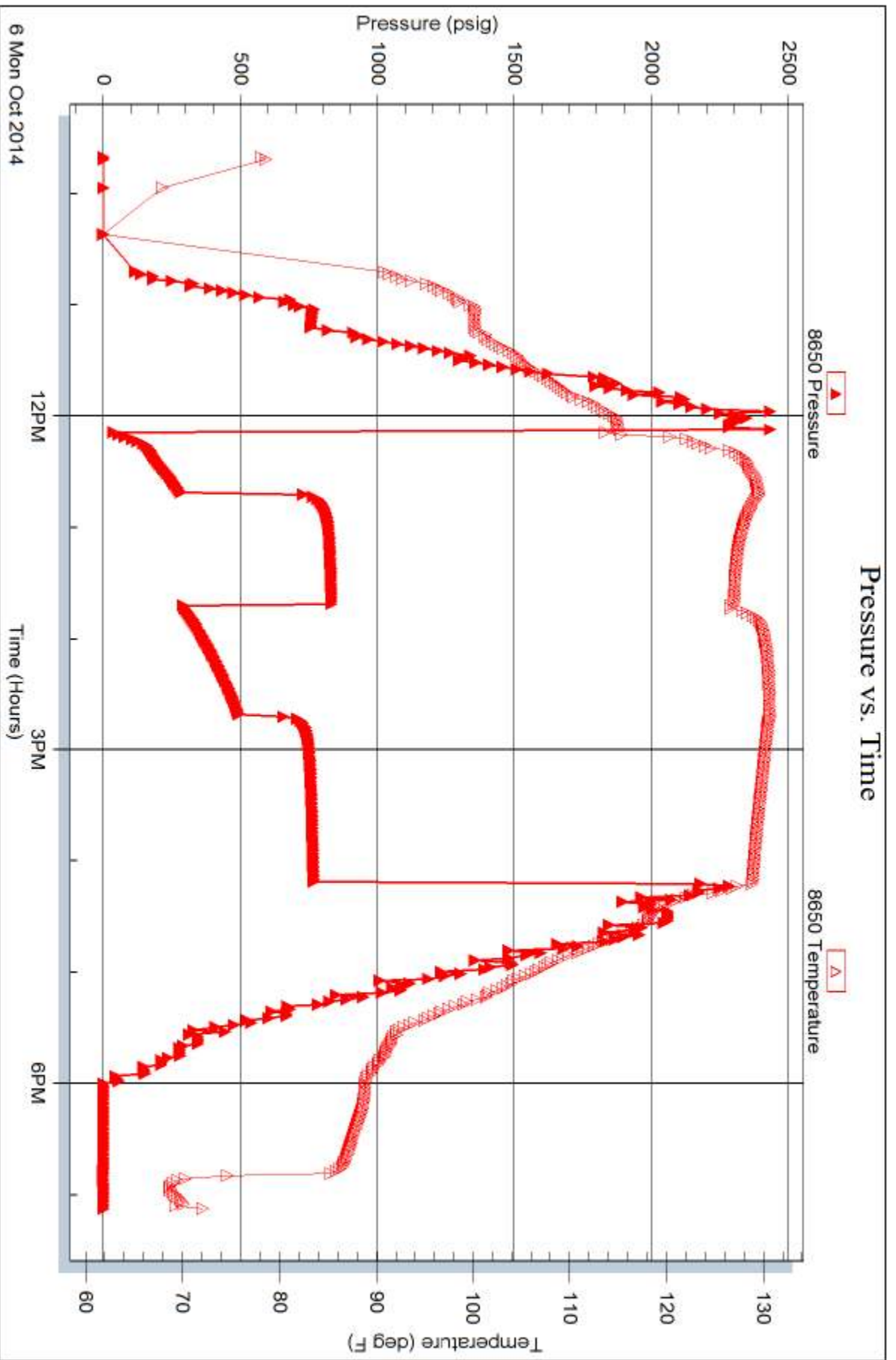


Serial #: 8650

Outside Murfin Drilling Co.

WMMMA #3

DST Test Number: 4



Trilobite Testing, Inc

Ref. No: 57280

Printed: 2014, 10, 07 @ 16:51:43



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 57478

4/10

Well Name & No. #3 WWWW 'A' Test No. 1 Date 10-2-14
 Company Murfin Drilling CO. Elevation 3047 KB 3036 GL
 Address 250 N Water STE 300 Wichita ks 67202
 Co. Rep / Geo. Tom Funk Rig Murfin #4
 Location: Sec. 4 Twp. 13s Rge. 32w Co. Logan State ks

Interval Tested 4112 4145 Zone Tested losing E-F
 Anchor Length 33 Drill Pipe Run 3579.5 Mud Wt. 9.0
 Top Packer Depth 4108 Drill Collars Run 543.5 Vis 54
 Bottom Packer Depth 4112 Wt. Pipe Run Ø WL 7.2
 Total Depth 4145 Chlorides 2200 ppm System LCM 6

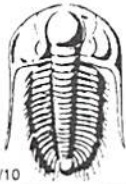
Blow Description 15 B.O.B in 3 min
30 No Return.
30 B.O.B in 3 min
60 No Return

Rec	Feet of	%gas	%oil	%water	%mud
<u>2</u>	<u>clean oil</u>		<u>99</u>		
<u>891</u>	<u>Ø wcm</u>		<u>1</u>	<u>49</u>	<u>50</u>
<u>543</u>	<u>mew</u>			<u>90</u>	<u>10</u>

Rec Total ~~1436~~ 1436 BHT 121 Gravity 20.8 API RW .45 @ 48 °F Chlorides 20000 ppm
 (A) Initial Hydrostatic 2067 Test 1250 T-On Location 13:30
 (B) First Initial Flow 92 Jars _____ T-Started 14:13
 (C) First Final Flow 468 Safety Joint _____ T-Open 17:43
 (D) Initial Shut-In 1079 Circ Sub 50 T-Pulled 19:58
 (E) Second Initial Flow 465 Hourly Standby _____ T-Out 23:33
 (F) Second Final Flow 692 Mileage 76 RT 117.80 Comments _____
 (G) Final Shut-In 1029 Sampler _____
 (H) Final Hydrostatic 1914 Straddle _____ Ruined Shale Packer _____
 Shale Packer _____ Ruined Packer _____
 Extra Packer _____ Extra Copies _____
 Extra Recorder _____ Sub Total 0
 Day Standby _____ Total 1417.80
 Accessibility _____ MP/DST Disc't _____
 Sub Total 1417.80

Initial Open 15
 Initial Shut-In 30
 Final Flow 30
 Final Shut-In 60
 Approved By [Signature] Our Representative [Signature]

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 57278

4/10

Well Name & No. #3 WLOWM "A" Test No. 2 Date 10/4/14
 Company Murkin Drilling Company Elevation 3047 KB 3036 GL
 Address 250 N Water STE 300, Wichita KS, 67202
 Co. Rep / Geo. Tom Funk Rig Murkin Rig 4
 Location: Sec. 4 Twp. 13s Rge. 30w Co. Logan County State KS

Interval Tested 4379-4460 Zone Tested Altamont 'A, B, C'
 Anchor Length 81 Drill Pipe Run 4119. ~~4119~~ Mud Wt. 9.00
 Top Packer Depth 4375 Drill Collars Run 275.10 ~~275.10~~ Vis 54
 Bottom Packer Depth 4379 Wt. Pipe Run WL 60.4
 Total Depth 4460 Chlorides 3,600 ppm System LCM 7 #

Blow Description Surface below
no return below
no below
no return below

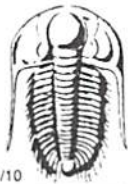
Rec	Feet of	%gas	%oil	%water	%mud
<u>10</u>	<u>Mud</u>			<u>100</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 10 BHT 119 Gravity API RW @ F Chlorides ppm
 Test 1250 T-On Location 08:22
 Jars T-Started 08:22
 Safety Joint T-Open 11:09
 Circ Sub w/c T-Pulled 14:09
 Hourly Standby +9 hours T-Out 16:58
 Mileage 76 BT 117.80 Comments
 Sampler
 Straddle Ruined Shale Packer
 Shale Packer Ruined Packer
 Extra Packer Extra Copies
 Extra Recorder Sub Total 291.67
 Day Standby 1d 8.75h Total 1659.47
 Accessibility MP/DST Disc't

Initial Open 30
 Initial Shut-In 60
 Final Flow 30
 Final Shut-In 60
 Sub Total 1367.80

Approved By _____ Our Representative [Signature]

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 57279

Well Name & No. #3 WWWW 'A' Test No. 3 Date 10/15/14
 Company Martin Drilling Company Elevation 3047 KB 3036 GL
 Address 250 N Water STE 300, Wichita KS 67202
 Co. Rep / Geo. Tom Funk Rig Martin Rig 4
 Location: Sec. H Twp. 13s Rge. 32w Co. Logan County State KS

Interval Tested 4460-4555 Zone Tested Pawnee - Fort Scott
 Anchor Length 95 Drill Pipe Run 4183.00 Mud Wt. 9.3
 Top Packer Depth 4456 Drill Collars Run 276.10 Vis 66
 Bottom Packer Depth 4460 Wt. Pipe Run _____ WL 604
 Total Depth 4555 Chlorides 3,000 ppm System LCM 8#

Blow Description B.O.B. in 7 1/2 min.
Bled off for 5 min. Built to 9 1/2" return below
B.O.B. in 1 1/2 min.

Bled off for 5 min. Built to 10" return below

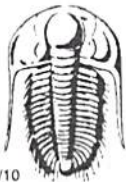
Rec	Feet of	%gas	%oil	%water	%mud
<u>250</u>	<u>2120 Feet Gas In Pipe</u>				
<u>188</u>	<u>600</u>	<u>30</u>	<u>70</u>		
<u>188</u>	<u>MCOG</u>	<u>70</u>	<u>15</u>		<u>15</u>
<u>182</u>	<u>WCOGM</u>	<u>20</u>	<u>10</u>	<u>5</u>	<u>65</u>
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 6220 BHT 123 Gravity 30 API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic 2,340 Test 1250 T-On Location 07:30
 (B) First Initial Flow 41 Jars T-Started 07:52
 (C) First Final Flow 171 Safety Joint T-Open 10:10
 (D) Initial Shut-In 1,033 Circ Sub N/C T-Pulled 14:10
 (E) Second Initial Flow 193 Hourly Standby 1/2 hour standby T-Out 17:53
 (F) Second Final Flow 275 Mileage 76RT 117.80 Comments _____
 (G) Final Shut-In 1,011 Sampler _____
 (H) Final Hydrostatic 2,273 Straddle _____ Ruined Shale Packer _____
 Shale Packer _____ Ruined Packer _____
 Extra Packer _____ Extra Copies _____
 Extra Recorder _____ Sub Total 0
 Day Standby _____ Total 1367.80
 Accessibility _____ MP/DST Disc't _____
 Sub Total 1367.80

Approved By _____ Our Representative [Signature]

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 57280

4/10

Well Name & No. #3 wowwm 'A' Test No. 4 Date 10/10/14
 Company Martin Drilling Company Elevation 3047 KB 3036 GL
 Address 250 N Water STE 300, Wichita KS, 67202
 Co. Rep / Geo. Tom Frank Rig Martin Rig 4
 Location: Sec. 4 Twp. 13s Rge. 32w Co. Logan County State KS

Interval Tested 4570-4620 Zone Tested Johnson Zone
 Anchor Length 50 Drill Pipe Run 4278.24 Mud Wt. 9.4
 Top Packer Depth 4566 Drill Collars Run 275.10 Vis 60
 Bottom Packer Depth 4570 Wt. Pipe Run _____ WL 7.2
 Total Depth 4620 Chlorides 3,300 ppm System LCM 8#

Blow Description B.O.B. in 8 1/2 min
Bled off for 5 min. weak return below

B.O.B. in 12 min
Bled off for 5 min. surface return below

Rec	Feet of	%gas	%oil	%water	%mud
<u>300</u>	<u>wcm</u>		<u>30</u>	<u>70</u>	
<u>475</u>	<u>MCO</u>		<u>80</u>	<u>20</u>	
<u>275</u>	<u>water</u>		<u>100</u>		
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 1060 BHT 128 Gravity _____ API RW .15 @ 80 ° F Chlorides 40,000 ppm
 (A) Initial Hydrostatic 2,389 Test 1250 T-On Location 08:35
 (B) First Initial Flow 35 Jars _____ T-Started 09:40
 (C) First Final Flow 287 Safety Joint _____ T-Open 12:08
 (D) Initial Shut-In 835 Circ Sub N/C T-Pulled 16:08
 (E) Second Initial Flow 295 Hourly Standby 1/2 hour standby T-Out 19:07
 (F) Second Final Flow 499 Mileage 76 RT 235.60 Comments _____
 (G) Final Shut-In 969 Sampler _____ loaded tools 10/7 am
 (H) Final Hydrostatic 2,261 Straddle _____ Ruined Shale Packer _____
 Shale Packer _____ Ruined Packer _____
 Extra Packer _____ Extra Copies _____
 Extra Recorder _____ Sub Total 0
 Day Standby _____ Total 1485.60
 Accessibility _____ MP/DST Disc't _____
 Sub Total 1485.60

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

Approved By _____ Our Representative [Signature]

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