



DRILL STEM TEST REPORT

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

250 N Water STE
Wichita KS 67202

ATTN: Larry Nicholson

Vanava #3 5

5-13s-32w Logan,KS

Start Date: 2014.09.28 @ 05:42:15

End Date: 2014.09.28 @ 13:25:00

Job Ticket #: 59157 DST #: 1

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

Printed: 2014.10.03 @ 16:45:19

Murfin Drilling Co. Inc. 5-13s-32w Logan,KS Vanava #3 5 DST # 1 LKC A-D 2014.09.28



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Murfin Drilling Co. Inc.

5-13s-32w Logan,KS

250 N Water STE
Wichita KS 67202

Vanava #3 5

Job Ticket: 59157

DST#: 1

ATTN: Larry Nicholson

Test Start: 2014.09.28 @ 05:42:15

GENERAL INFORMATION:

Formation: **LKC A-D**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 07:36:15

Time Test Ended: 13:25:00

Test Type: Conventional Bottom Hole (Initial)

Tester: Mike Roberts

Unit No: 65

Interval: 4043.00 ft (KB) To 4118.00 ft (KB) (TVD)

Reference Elevations: 3056.00 ft (KB)

Total Depth: 4118.00 ft (KB) (TVD)

3046.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 10.00 ft

Serial #: 8737

Outside

Press@RunDepth: 485.90 psig @ 4047.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.09.28

End Date:

2014.09.28

Last Calib.:

2014.09.28

Start Time:

05:42:15

End Time:

13:25:00

Time On Btm:

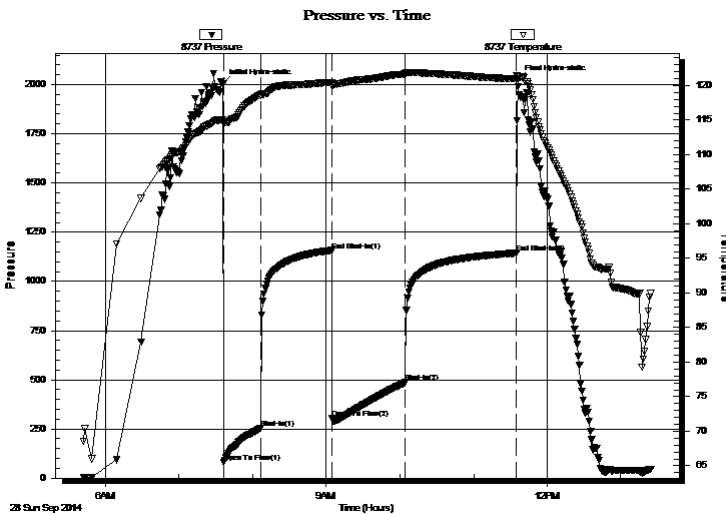
2014.09.28 @ 07:35:45

Time Off Btm:

2014.09.28 @ 11:36:00

TEST COMMENT: IF: Built to 2" blow then died down to 1" blow
IS: No return blow
FF: BOB in 39 min.
FS: No return blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2003.56	115.10	Initial Hydro-static
1	80.98	114.45	Open To Flow (1)
31	253.45	118.63	Shut-In(1)
89	1157.53	120.49	End Shut-In(1)
89	305.96	119.90	Open To Flow (2)
149	485.90	121.66	Shut-In(2)
240	1144.04	120.96	End Shut-In(2)
241	2026.13	121.31	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
308.00	mcw 40%m 60%w	1.51
744.00	w cm 50%w 50%m	10.44
62.00	w cm 50%w 50%m trace of oil on top	0.87

Gas Rates

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



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co. Inc.

5-13s-32w Logan, KS

250 N Water STE
Wichita KS 67202

Vanava #3 5

Job Ticket: 59157

DST#: 1

ATTN: Larry Nicholson

Test Start: 2014.09.28 @ 05:42:15

GENERAL INFORMATION:

Formation: **LKC A-D**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 07:36:15
 Time Test Ended: 13:25:00
 Interval: **4043.00 ft (KB) To 4118.00 ft (KB) (TVD)**
 Total Depth: 4118.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair

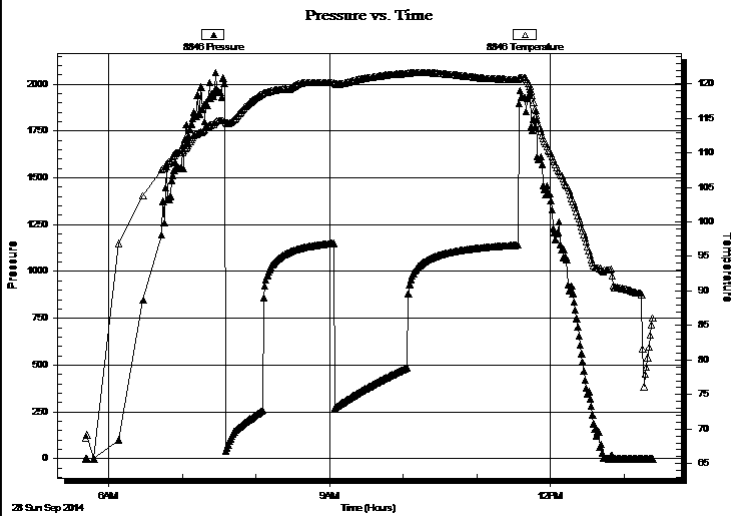
Test Type: Conventional Bottom Hole (Initial)
 Tester: Mike Roberts
 Unit No: 65
 Reference Elevations: 3056.00 ft (KB)
 3046.00 ft (CF)
 KB to GR/CF: 10.00 ft

Serial #: 8846

Inside

Press@RunDepth: psig @ 4047.00 ft (KB)
 Start Date: 2014.09.28 End Date: 2014.09.28
 Start Time: 05:41:15 End Time: 13:24:00
 Capacity: 8000.00 psig
 Last Calib.: 2014.09.28
 Time On Btm:
 Time Off Btm:

TEST COMMENT: IF: Built to 2" blow then died down to 1" blow
 IS: No return blow
 FF: BOB in 39 min.
 FS: No return blow



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
308.00	mcw 40%m 60%w	1.51
744.00	w cm 50%w 50%m	10.44
62.00	w cm 50%w 50%m trace of oil on top	0.87

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co. Inc.

5-13s-32w Logan,KS

250 N Water STE
Wichita KS 67202

Vanava #3 5

Job Ticket: 59157

DST#: 1

ATTN: Larry Nicholson

Test Start: 2014.09.28 @ 05:42:15

Tool Information

Drill Pipe:	Length: 3734.00 ft	Diameter: 3.80 inches	Volume: 52.38 bbl	Tool Weight: 1500.00 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: 308.00 ft	Diameter: 2.25 inches	Volume: 1.51 bbl	Weight to Pull Loose: 90000.00 lb
			<u>Total Volume: 53.89 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	23.00 ft			String Weight: Initial 72000.00 lb
Depth to Top Packer:	4043.00 ft			Final 78000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	75.00 ft			
Tool Length:	99.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4020.00	
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	24.00 Bottom Of Top Packer
Packer - Shale	0.00			4043.00	
Stubb	1.00			4044.00	
Perforations	3.00			4047.00	
Recorder	0.00	8846	Inside	4047.00	
Recorder	0.00	8737	Outside	4047.00	
Change Over Sub	1.00			4048.00	
Blank Spacing	64.00			4112.00	
Change Over Sub	1.00			4113.00	
Bullnose	5.00			4118.00	75.00 Anchor Tool

Total Tool Length: 99.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co. Inc.

5-13s-32w Logan,KS

250 N Water STE
Wichita KS 67202

Vanava #3 5

Job Ticket: 59157

DST#: 1

ATTN: Larry Nicholson

Test Start: 2014.09.28 @ 05:42:15

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

0 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

12000 ppm

Viscosity: 50.00 sec/qt

Cushion Volume:

bbf

Water Loss: 6.31 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 2400.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbf
308.00	mcw 40%m 60%w	1.515
744.00	w cm 50%w 50%m	10.436
62.00	w cm 50%w 50%m trace of oil on top	0.870

Total Length: 1114.00 ft Total Volume: 12.821 bbl

Num Fluid Samples: 0

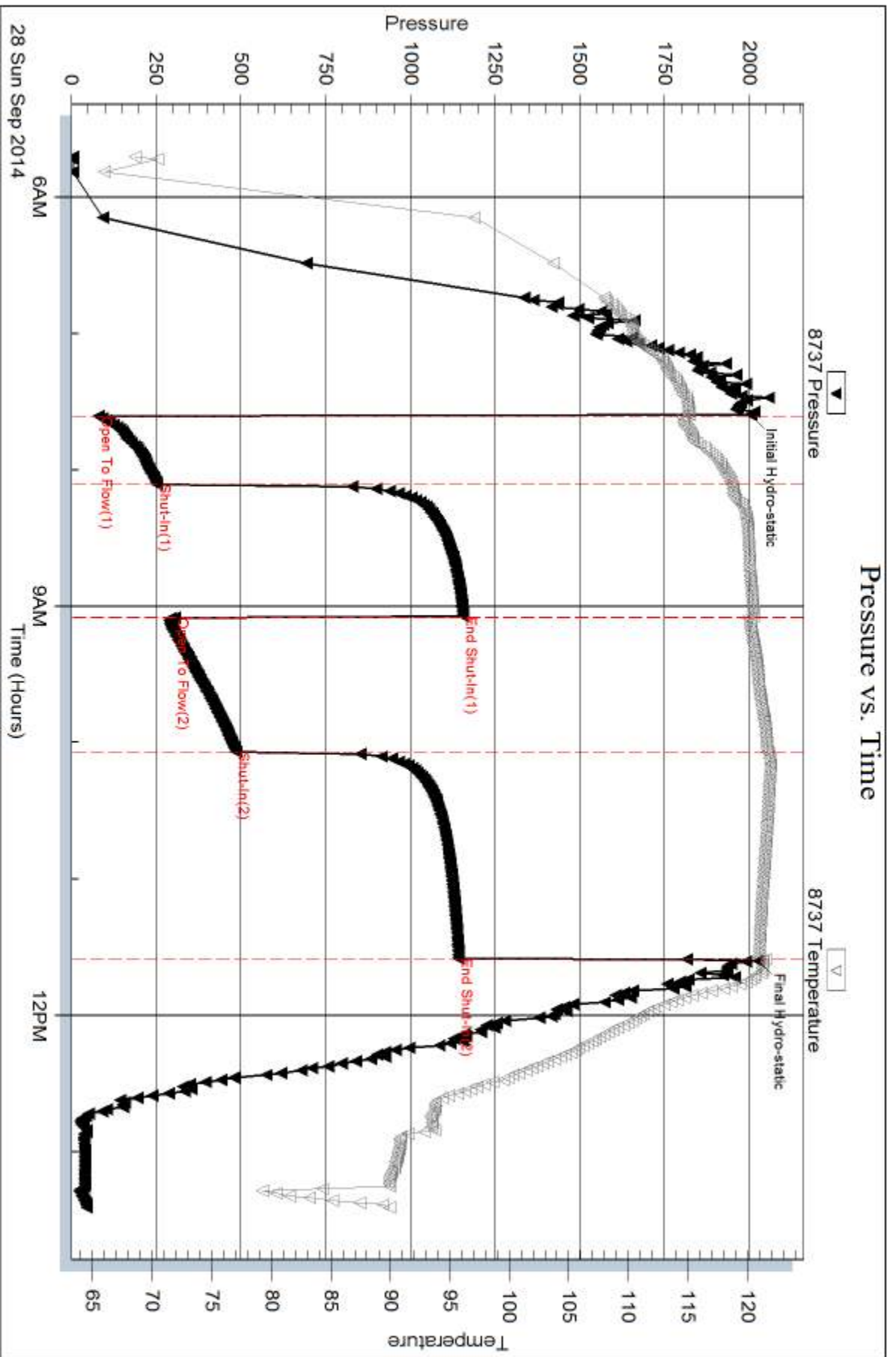
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: RW= .547@ 82.3*=12,000 PPM



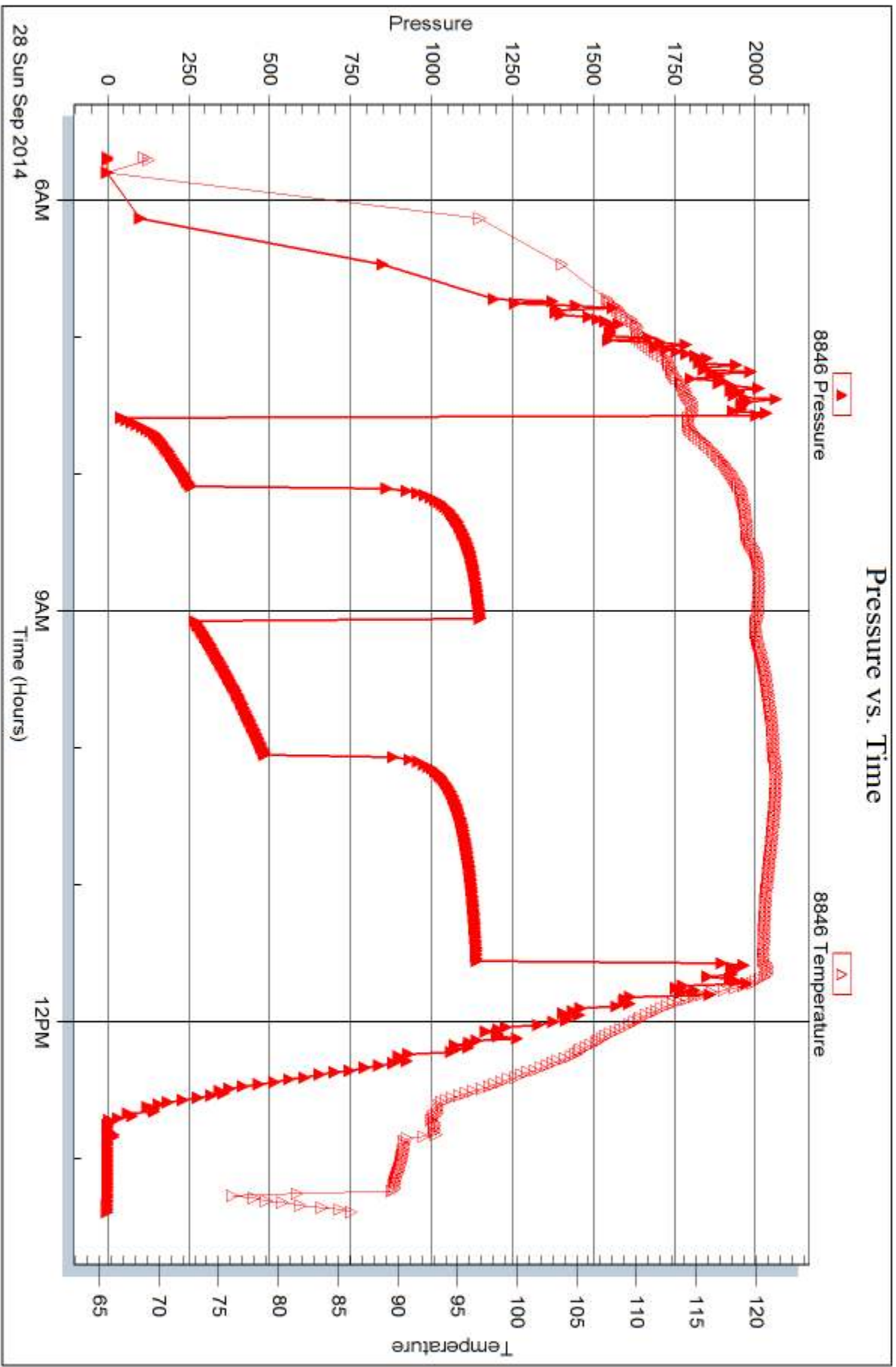
Serial #: 8846

Inside

Murfin Drilling Co. Inc.

Vanava #3 5

DST Test Number: 1





DRILL STEM TEST REPORT

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

250 N Water STE
Wichita KS 67202

ATTN: Larry Nicholson

Vanava #3 5

5-13s-32w Logan,KS

Start Date: 2014.09.28 @ 20:17:15

End Date: 2014.09.29 @ 05:07:45

Job Ticket #: 59158 DST #: 2

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

Printed: 2014.10.03 @ 16:41:00



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co. Inc.

5-13s-32w Logan, KS

250 N Water STE
Wichita KS 67202

Vanava #3 5

Job Ticket: 59158

DST#: 2

ATTN: Larry Nicholson

Test Start: 2014.09.28 @ 20:17:15

GENERAL INFORMATION:

Formation: **LKC E-F**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 22:32:00

Time Test Ended: 05:07:45

Test Type: Conventional Bottom Hole (Reset)

Tester: Mike Roberts

Unit No: 65

Interval: 4116.00 ft (KB) To 4151.00 ft (KB) (TVD)

Reference Elevations: 3056.00 ft (KB)

Total Depth: 4151.00 ft (KB) (TVD)

3046.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 10.00 ft

Serial #: 8846

Inside

Press@RunDepth: 565.37 psig @ 4120.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.09.28

End Date:

2014.09.29

Last Calib.:

2014.09.29

Start Time: 20:17:15

End Time:

05:07:45

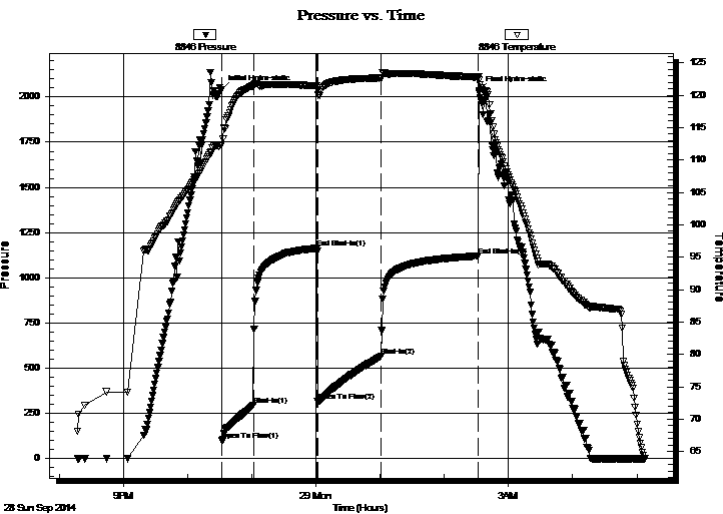
Time On Btm:

2014.09.28 @ 22:31:30

Time Off Btm:

2014.09.29 @ 02:32:30

TEST COMMENT: IF: Built to 3" blow
IS: No return blow
FF: BOB in 32 min.
FS: No return blow



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2039.94	112.38	Initial Hydro-static
1	99.62	112.30	Open To Flow (1)
31	296.14	121.44	Shut-In(1)
90	1163.18	121.42	End Shut-In(1)
90	317.58	120.87	Open To Flow (2)
150	565.37	122.67	Shut-In(2)
240	1121.06	122.74	End Shut-In(2)
241	2035.43	122.31	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
308.00	ocmw 10%o 10%m 80%w	1.51
372.00	ocgw m 10%o 20%g 30%w 40%m	5.22
310.00	gcmo 5%g 15%m 80%o	4.35
310.00	gcmo 5%g 10%m 85%o	4.35
0.00	GIP=186 feet	0.00

* Recovery from multiple tests

Gas Rates

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



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Murfin Drilling Co. Inc.

5-13s-32w Logan,KS

250 N Water STE
Wichita KS 67202

Vanava #3 5

Job Ticket: 59158

DST#: 2

ATTN: Larry Nicholson

Test Start: 2014.09.28 @ 20:17:15

GENERAL INFORMATION:

Formation: **LKC E-F**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 22:32:00

Time Test Ended: 05:07:45

Test Type: Conventional Bottom Hole (Reset)

Tester: Mike Roberts

Unit No: 65

Interval: 4116.00 ft (KB) To 4151.00 ft (KB) (TVD)

Reference Elevations: 3056.00 ft (KB)

Total Depth: 4151.00 ft (KB) (TVD)

3046.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 10.00 ft

Serial #: 8737 Outside

Press@RunDepth: psig @ 4120.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.09.28

End Date:

2014.09.29

Last Calib.:

2014.09.29

Start Time: 20:17:15

End Time:

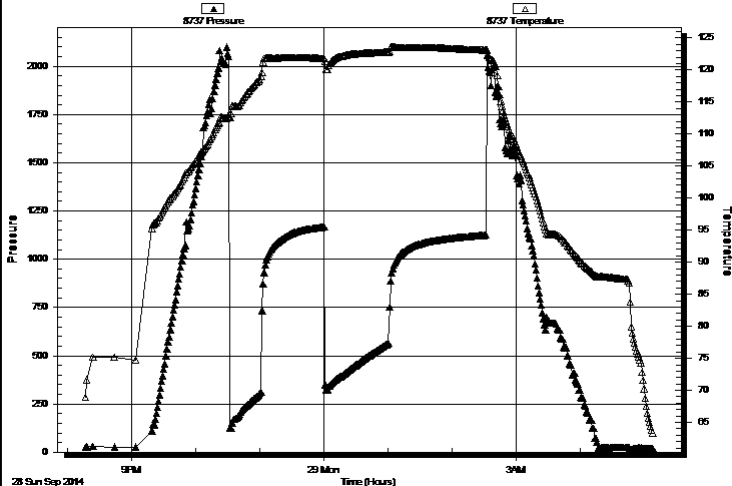
05:07:30

Time On Btm:

Time Off Btm:

TEST COMMENT: IF: Built to 3" blow
IS: No return blow
FF: BOB in 32 min.
FS: No return blow

Pressure vs. Time



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
308.00	ocmw 10%o 10%m 80%w	1.51
372.00	ocgw m 10%o 20%g 30%w 40%m	5.22
310.00	gcmo 5%g 15%m 80%o	4.35
310.00	gcmo 5%g 10%m 85%o	4.35
0.00	GIP=186 feet	0.00

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co. Inc.

5-13s-32w Logan,KS

250 N Water STE
Wichita KS 67202

Vanava #3 5

Job Ticket: 59158

DST#: 2

ATTN: Larry Nicholson

Test Start: 2014.09.28 @ 20:17:15

Tool Information

Drill Pipe:	Length: 3800.00 ft	Diameter: 3.80 inches	Volume: 53.30 bbl	Tool Weight: 1500.00 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: 308.00 ft	Diameter: 2.25 inches	Volume: 1.51 bbl	Weight to Pull Loose: 90000.00 lb
			<u>Total Volume: 54.81 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	16.00 ft			String Weight: Initial 72000.00 lb
Depth to Top Packer:	4116.00 ft			Final 78000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	75.00 ft			
Tool Length:	99.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4093.00	
Shut In Tool	5.00			4098.00	
Hydraulic tool	5.00			4103.00	
Jars	5.00			4108.00	
Safety Joint	3.00			4111.00	
Packer	5.00			4116.00	24.00 Bottom Of Top Packer
Packer - Shale	0.00			4116.00	
Stubb	1.00			4117.00	
Perforations	3.00			4120.00	
Recorder	0.00	8846	Inside	4120.00	
Recorder	0.00	8737	Outside	4120.00	
Change Over Sub	1.00			4121.00	
Blank Spacing	64.00			4185.00	
Change Over Sub	1.00			4186.00	
Bullnose	5.00			4191.00	75.00 Anchor Tool

Total Tool Length: 99.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co. Inc.

5-13s-32w Logan,KS

250 N Water STE
Wichita KS 67202

Vanava #3 5

Job Ticket: 59158

DST#: 2

ATTN: Larry Nicholson

Test Start: 2014.09.28 @ 20:17:15

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

31 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

12000 ppm

Viscosity: 74.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.34 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 1900.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
308.00	ocmw 10%o 10%m 80%w	1.515
372.00	ocgw m 10%o 20%g 30%w 40%m	5.218
310.00	gcmo 5%g 15%m 80%o	4.348
310.00	gcmo 5%g 10%m 85%o	4.348
0.00	GIP=186 feet	0.000

Total Length: 1300.00 ft Total Volume: 15.429 bbl

Num Fluid Samples: 0

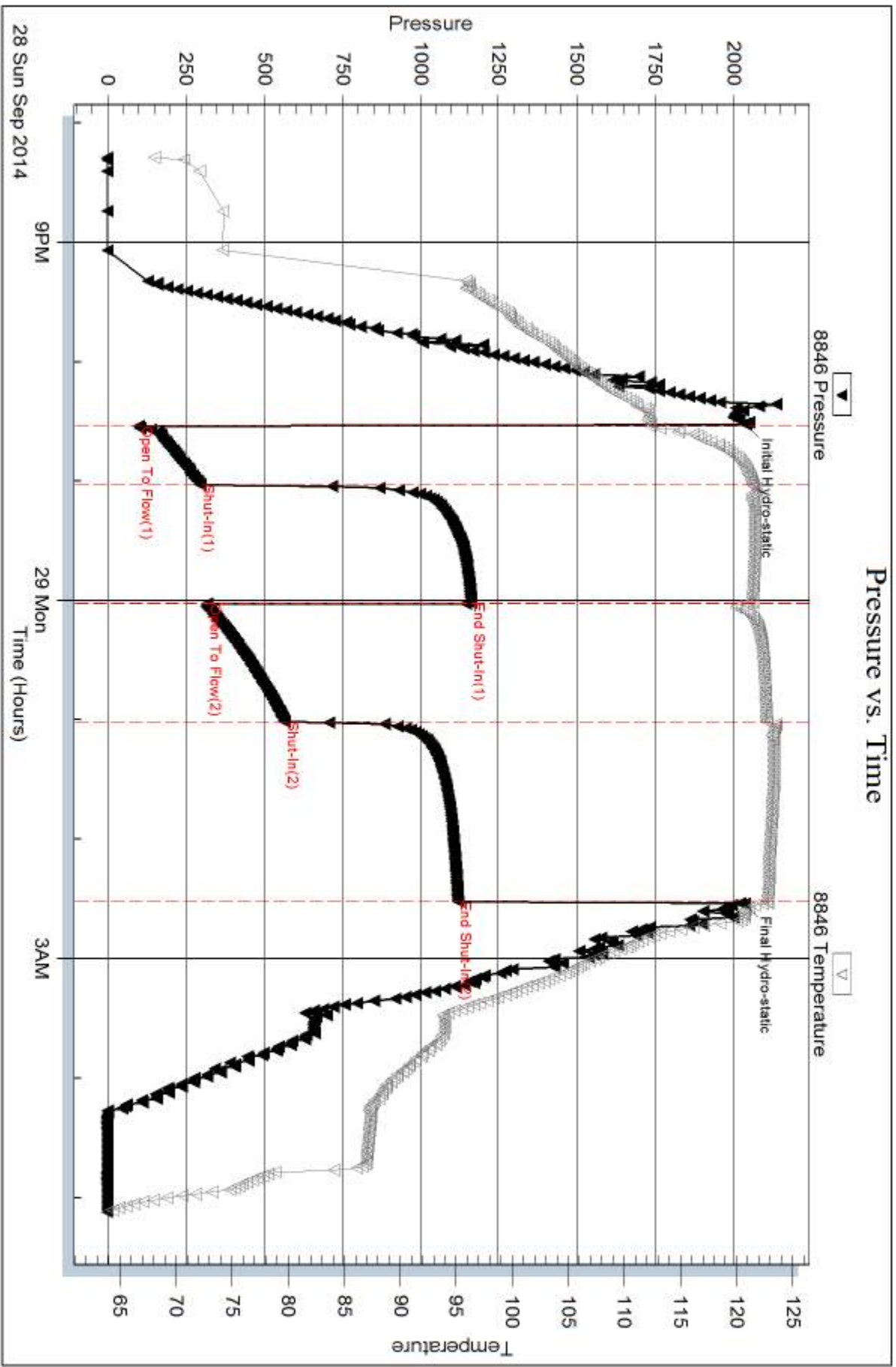
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: RW=.532@ 79.6*= 12,000 ppm

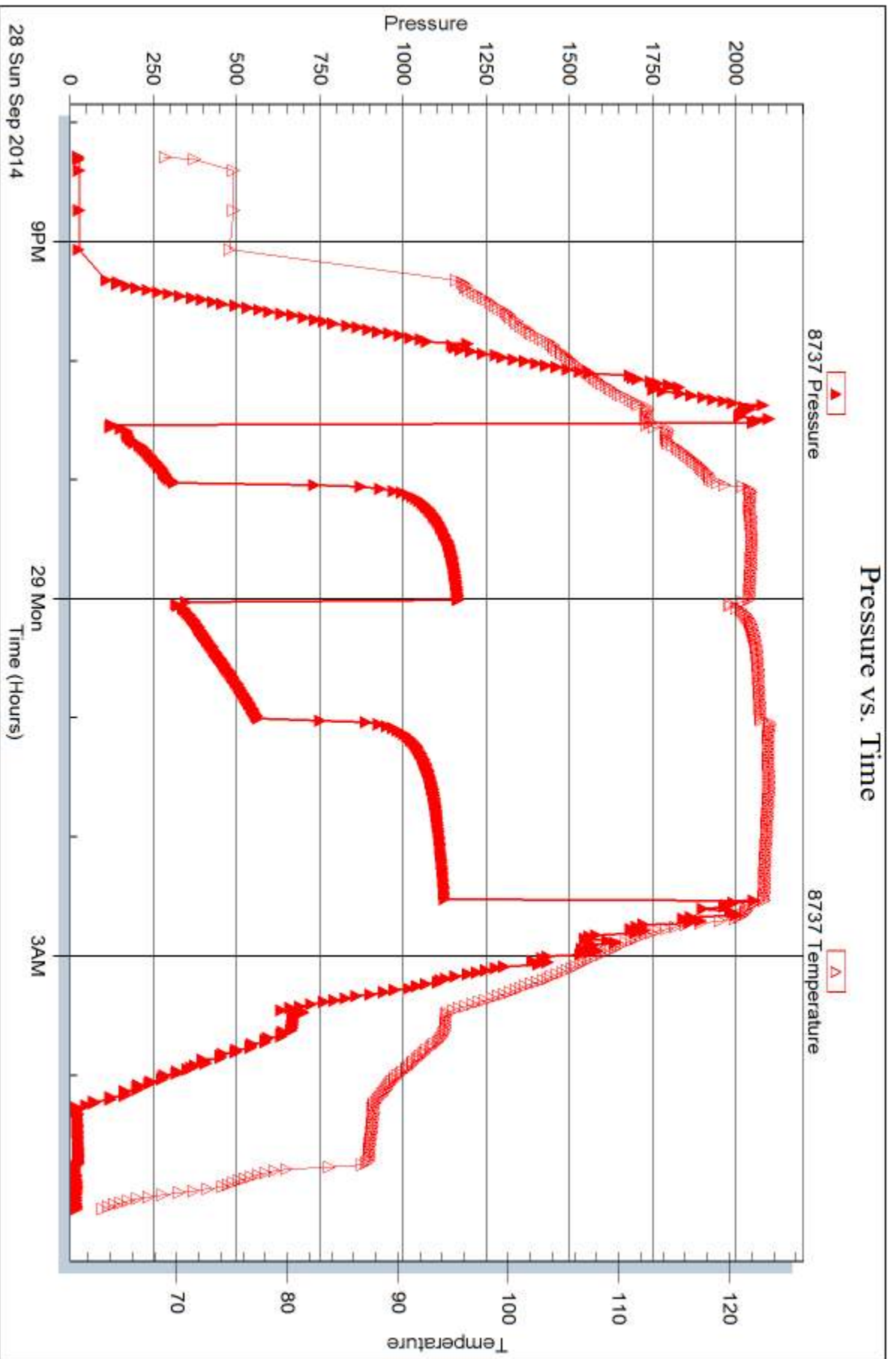


Serial #: 8737

Outside Murfin Drilling Co. Inc.

Vanava #3 5

DST Test Number: 2



Trilobite Testing, Inc

Ref. No: 59158

Printed: 2014, 10:03 @ 16:41:01



DRILL STEM TEST REPORT

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

250 N Water STE
Wichita KS 67202

ATTN: Larry Nicholson

Vanava #3 5

5-13s-32w Logan,KS

Start Date: 2014.09.29 @ 18:18:00

End Date: 2014.09.30 @ 02:42:30

Job Ticket #: 59159 DST #: 3

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

Printed: 2014.10.03 @ 16:40:35



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Murfin Drilling Co. Inc.

5-13s-32w Logan,KS

250 N Water STE
Wichita KS 67202

Vanava #3 5

Job Ticket: 59159

DST#: 3

ATTN: Larry Nicholson

Test Start: 2014.09.29 @ 18:18:00

GENERAL INFORMATION:

Formation: **LKC J**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 20:24:45

Time Test Ended: 02:42:30

Test Type: Conventional Bottom Hole (Reset)

Tester: Mike Roberts

Unit No: 65

Interval: 4246.00 ft (KB) To 4276.00 ft (KB) (TVD)

Reference Elevations: 3056.00 ft (KB)

Total Depth: 4118.00 ft (KB) (TVD)

3046.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 10.00 ft

Serial #: 8846

Inside

Press@RunDepth: 481.40 psig @ 4271.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.09.29

End Date: 2014.09.30

Last Calib.: 2014.09.30

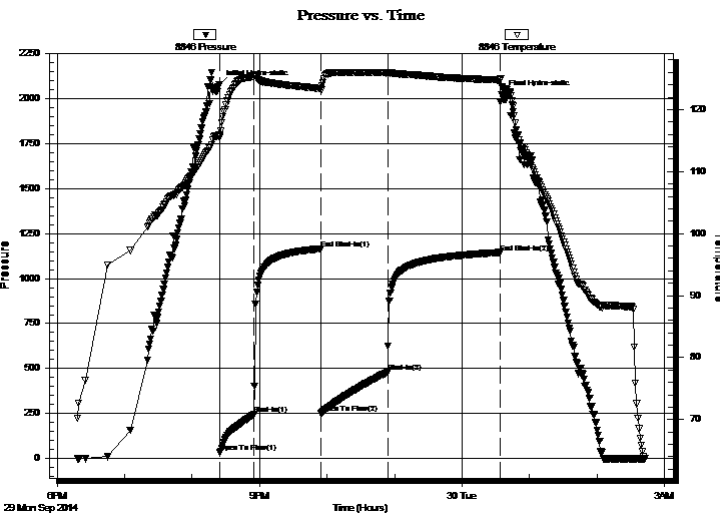
Start Time: 18:18:15

End Time: 02:42:30

Time On Btm: 2014.09.29 @ 20:24:15

Time Off Btm: 2014.09.30 @ 00:35:30

TEST COMMENT: IF: Built to 3" blow
IS: No return blow
FF: BOB in 40 min.
FS: No return blow



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2077.45	115.86	Initial Hydro-static
1	33.08	115.55	Open To Flow (1)
31	246.36	125.39	Shut-In(1)
90	1165.53	123.40	End Shut-In(1)
91	253.75	123.13	Open To Flow (2)
150	481.40	125.92	Shut-In(2)
250	1144.62	124.75	End Shut-In(2)
252	2022.87	123.58	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
618.00	sw 100%sw	5.86
248.00	mcw 30%m 70%sw	3.48
248.00	ocw m 5%o 15%w 80%m	3.48

* Recovery from multiple tests

Gas Rates

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



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co. Inc.

250 N Water STE
Wichita KS 67202

ATTN: Larry Nicholson

5-13s-32w Logan,KS

Vanava #3 5

Job Ticket: 59159

DST#: 3

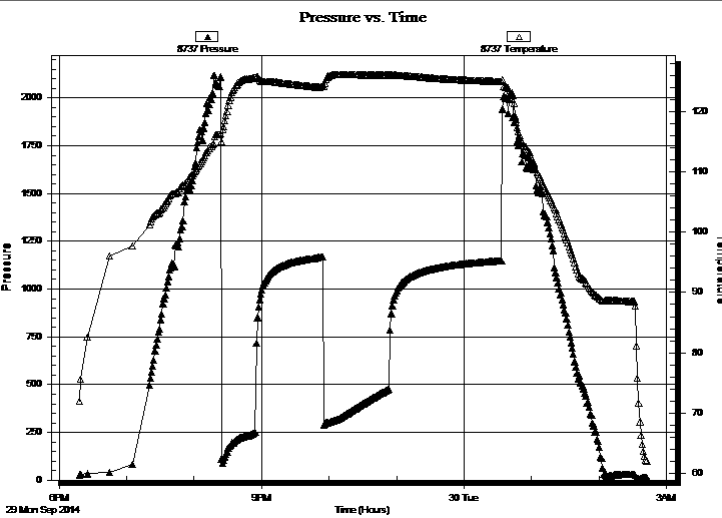
Test Start: 2014.09.29 @ 18:18:00

GENERAL INFORMATION:

Formation: LKC J	Test Type: Conventional Bottom Hole (Reset)
Deviated: No Whipstock: ft (KB)	Tester: Mike Roberts
Time Tool Opened: 20:24:45	Unit No: 65
Time Test Ended: 02:42:30	Reference Elevations: 3056.00 ft (KB)
Interval: 4246.00 ft (KB) To 4276.00 ft (KB) (TVD)	3046.00 ft (CF)
Total Depth: 4118.00 ft (KB) (TVD)	KB to GR/CF: 10.00 ft
Hole Diameter: 7.88 inches	Hole Condition: Fair

Serial #: 8737	Outside	Capacity: 8000.00 psig
Press@RunDepth: psig @ 4271.00 ft (KB)	Start Date: 2014.09.29	End Date: 2014.09.30
Start Time: 18:18:15	End Time: 02:42:15	Last Calib.: 1899.12.30
		Time On Btm:
		Time Off Btm:

TEST COMMENT: IF: Built to 3" blow
IS: No return blow
FF: BOB in 40 min.
FS: No return blow



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
618.00	sw 100%sw	5.86
248.00	mcw 30%m 70%sw	3.48
248.00	ocw m 5%o 15%w 80%m	3.48

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co. Inc.

5-13s-32w Logan,KS

250 N Water STE
Wichita KS 67202

Vanava #3 5

Job Ticket: 59159

DST#: 3

ATTN: Larry Nicholson

Test Start: 2014.09.29 @ 18:18:00

Tool Information

Drill Pipe:	Length: 3923.00 ft	Diameter: 3.80 inches	Volume: 55.03 bbl	Tool Weight: 1500.00 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: 308.00 ft	Diameter: 2.25 inches	Volume: 1.51 bbl	Weight to Pull Loose: 90000.00 lb
			<u>Total Volume: 56.54 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	9.00 ft			String Weight: Initial 70000.00 lb
Depth to Top Packer:	4246.00 ft			Final 78000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	30.00 ft			
Tool Length:	54.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
------------------	-------------	------------	----------	------------	----------------

Change Over Sub	1.00			4223.00	
Shut In Tool	5.00			4228.00	
Hydraulic tool	5.00			4233.00	
Jars	5.00			4238.00	
Safety Joint	3.00			4241.00	
Packer	5.00			4246.00	24.00 Bottom Of Top Packer
Packer - Shale	0.00			4246.00	
Stubb	1.00			4247.00	
Perforations	24.00			4271.00	
Recorder	0.00	8846	Inside	4271.00	
Recorder	0.00	8737	Outside	4271.00	
Bullnose	5.00			4276.00	30.00 Anchor Tool

Total Tool Length: 54.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co. Inc.

5-13s-32w Logan,KS

250 N Water STE
Wichita KS 67202

Vanava #3 5

Job Ticket: 59159

DST#: 3

ATTN: Larry Nicholson

Test Start: 2014.09.29 @ 18:18:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

0 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

19000 ppm

Viscosity: 50.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.31 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 2400.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
618.00	sw 100%sw	5.863
248.00	mcw 30%m 70%sw	3.479
248.00	ocw m 5%o 15%w 80%m	3.479

Total Length: 1114.00 ft Total Volume: 12.821 bbl

Num Fluid Samples: 0

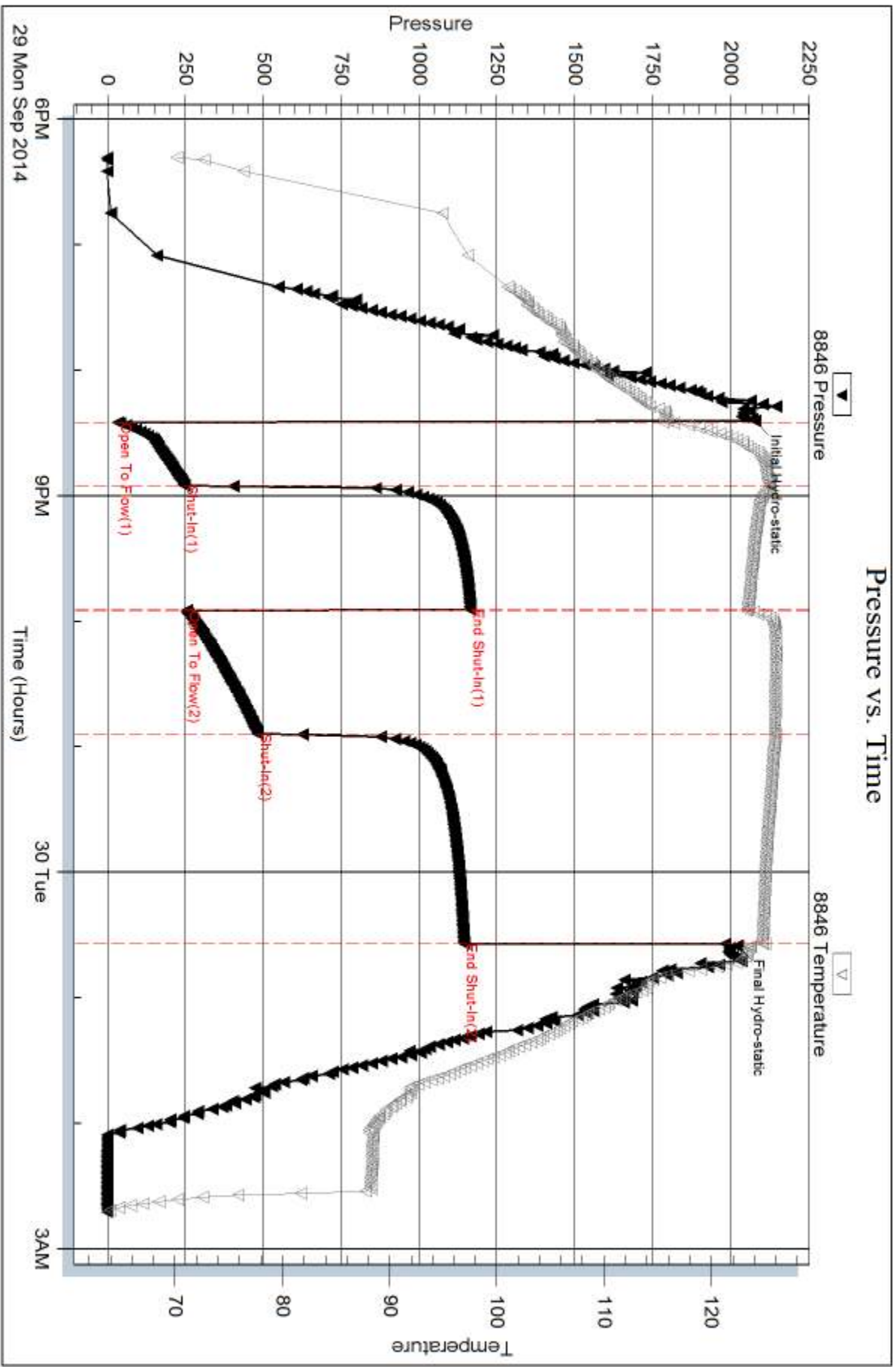
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: RW= .411@ 62.5= 19,000 ppm

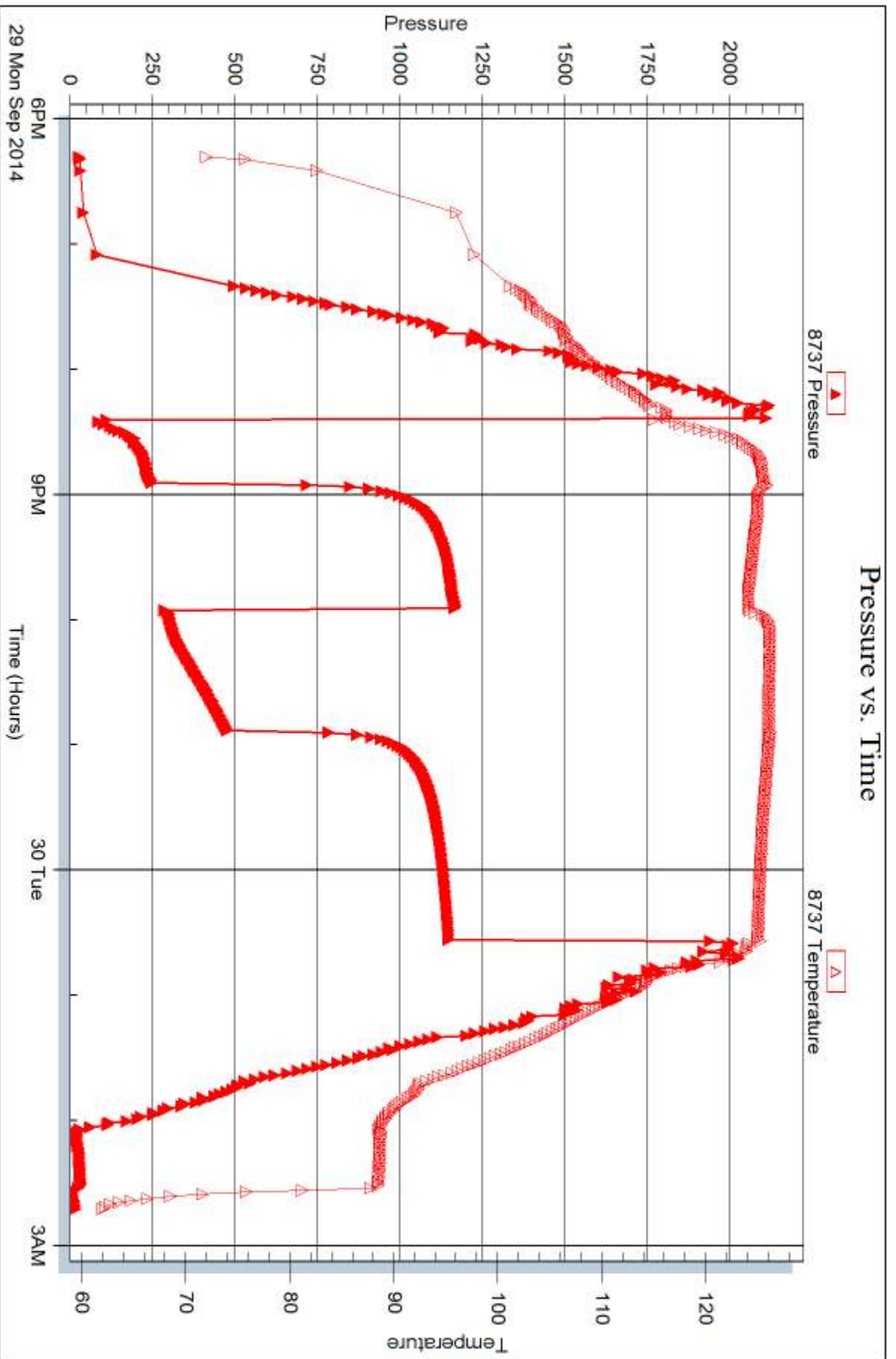


Serial #: 8737

Outside Murfin Drilling Co. Inc.

Vanava #3 5

DST Test Number: 3





DRILL STEM TEST REPORT

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

250 N Water STE
Wichita KS 67202

ATTN: Larry Nicholson

Vanava #3 5

5-13s-32w Logan,KS

Start Date: 2014.09.30 @ 20:32:15

End Date: 2014.10.01 @ 04:44:15

Job Ticket #: 59160 DST #: 4

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

Printed: 2014.10.03 @ 16:40:08



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co. Inc.

5-13s-32w Logan,KS

250 N Water STE
Wichita KS 67202

Vanava #3 5

Job Ticket: 59160

DST#: 4

ATTN: Larry Nicholson

Test Start: 2014.09.30 @ 20:32:15

GENERAL INFORMATION:

Formation: **Marmaton**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 22:27:30

Time Test Ended: 04:44:15

Test Type: Conventional Bottom Hole (Reset)

Tester: Mike Roberts

Unit No: 65

Interval: 4387.00 ft (KB) To 4477.00 ft (KB) (TVD)

Reference Elevations: 3056.00 ft (KB)

Total Depth: 4477.00 ft (KB) (TVD)

3046.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 10.00 ft

Serial #: 8846

Inside

Press@RunDepth: 214.84 psig @ 4391.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.09.30

End Date:

2014.10.01

Last Calib.: 2014.10.01

Start Time: 20:32:15

End Time:

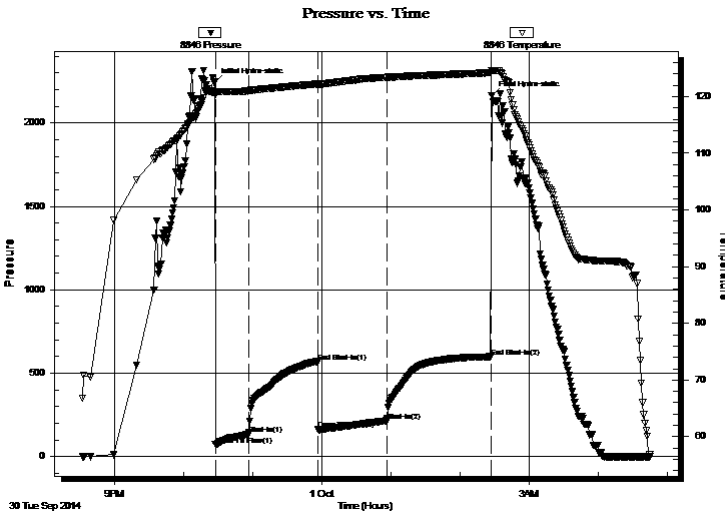
04:44:15

Time On Btm: 2014.09.30 @ 22:26:30

Time Off Btm: 2014.10.01 @ 02:27:15

TEST COMMENT: IF: Built to 3" blow
IS: Weak surface blow that died in 20 min.
FF: BOB in 28 min.
FS: No return blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2241.83	120.71	Initial Hydro-static
1	70.97	120.57	Open To Flow (1)
30	133.57	121.02	Shut-In(1)
90	569.57	122.21	End Shut-In(1)
90	163.30	122.03	Open To Flow (2)
150	214.84	123.39	Shut-In(2)
240	598.99	124.20	End Shut-In(2)
241	2163.80	124.54	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
126.00	gcom 5%g 10%o 85%m	0.62
184.00	gcmo 20%g 40%o 40%m	0.92
248.00	gco 20%g 80%o	3.48
0.00	GIP= 806 ft	0.00

Gas Rates

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

* Recovery from multiple tests



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Murfin Drilling Co. Inc.

5-13s-32w Logan,KS

250 N Water STE
Wichita KS 67202

Vanava #3 5

Job Ticket: 59160

DST#: 4

ATTN: Larry Nicholson

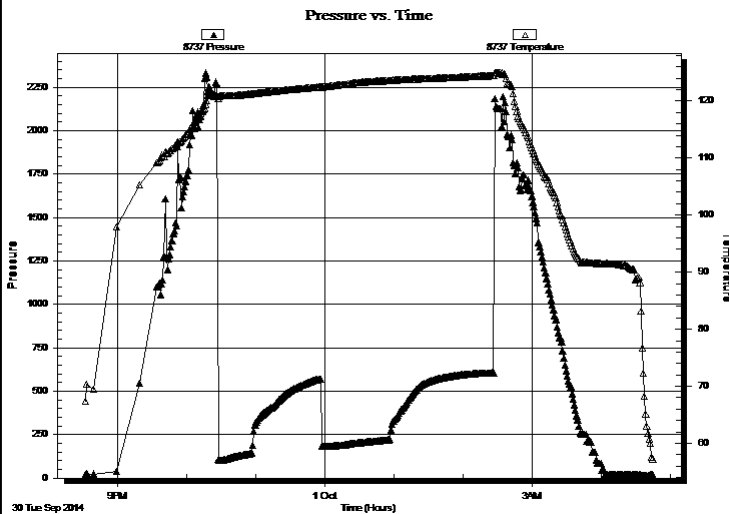
Test Start: 2014.09.30 @ 20:32:15

GENERAL INFORMATION:

Formation: **Marmaton**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 22:27:30
 Time Test Ended: 04:44:15
 Interval: **4387.00 ft (KB) To 4477.00 ft (KB) (TVD)**
 Total Depth: 4477.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Mike Roberts
 Unit No: 65
 Reference Elevations: 3056.00 ft (KB)
 3046.00 ft (CF)
 KB to GR/CF: 10.00 ft

Serial #: 8737 Outside
 Press@RunDepth: psig @ 4391.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2014.09.30 End Date: 2014.10.01 Last Calib.: 2014.10.01
 Start Time: 20:32:15 End Time: 04:44:15 Time On Btm:
 Time Off Btm:

TEST COMMENT: IF: Built to 3" blow
 IS: Weak surface blow that died in 20 min.
 FF: BOB in 28 min.
 FS: No return blow



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
126.00	gcom 5%g 10%o 85%m	0.62
184.00	gcmo 20%g 40%o 40%m	0.92
248.00	gco 20%g 80%o	3.48
0.00	GIP= 806 ft	0.00

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co. Inc.

5-13s-32w Logan,KS

250 N Water STE
Wichita KS 67202

Vanava #3 5

Job Ticket: 59160

DST#: 4

ATTN: Larry Nicholson

Test Start: 2014.09.30 @ 20:32:15

Tool Information

Drill Pipe:	Length: 4082.00 ft	Diameter: 3.80 inches	Volume: 57.26 bbl	Tool Weight: 1500.00 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: 308.00 ft	Diameter: 2.25 inches	Volume: 1.51 bbl	Weight to Pull Loose: 90000.00 lb
			<u>Total Volume: 58.77 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	27.00 ft			String Weight: Initial 74000.00 lb
Depth to Top Packer:	4387.00 ft			Final 76000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	90.00 ft			
Tool Length:	114.00 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			4364.00	
Shut In Tool	5.00			4369.00	
Hydraulic tool	5.00			4374.00	
Jars	5.00			4379.00	
Safety Joint	3.00			4382.00	
Packer	5.00			4387.00	24.00 Bottom Of Top Packer
Packer - Shale	0.00			4387.00	
Stubb	1.00			4388.00	
Perforations	3.00			4391.00	
Recorder	0.00	8846	Inside	4391.00	
Recorder	0.00	8737	Outside	4391.00	
Change Over Sub	1.00			4392.00	
Blank Spacing	64.00			4456.00	
Change Over Sub	1.00			4457.00	
Perforations	15.00			4472.00	
Bullnose	5.00			4477.00	90.00 Anchor Tool
Total Tool Length:	114.00				



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co. Inc.

5-13s-32w Logan,KS

250 N Water STE
Wichita KS 67202

Vanava #3 5

Job Ticket: 59160

DST#: 4

ATTN: Larry Nicholson

Test Start: 2014.09.30 @ 20:32:15

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

29 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

0 ppm

Viscosity: 49.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.95 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 2900.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
126.00	gcom 5%g 10%o 85%m	0.620
184.00	gcmo 20%g 40%o 40%m	0.923
248.00	gco 20%g 80%o	3.479
0.00	GIP= 806 ft	0.000

Total Length: 558.00 ft

Total Volume: 5.022 bbl

Num Fluid Samples: 0

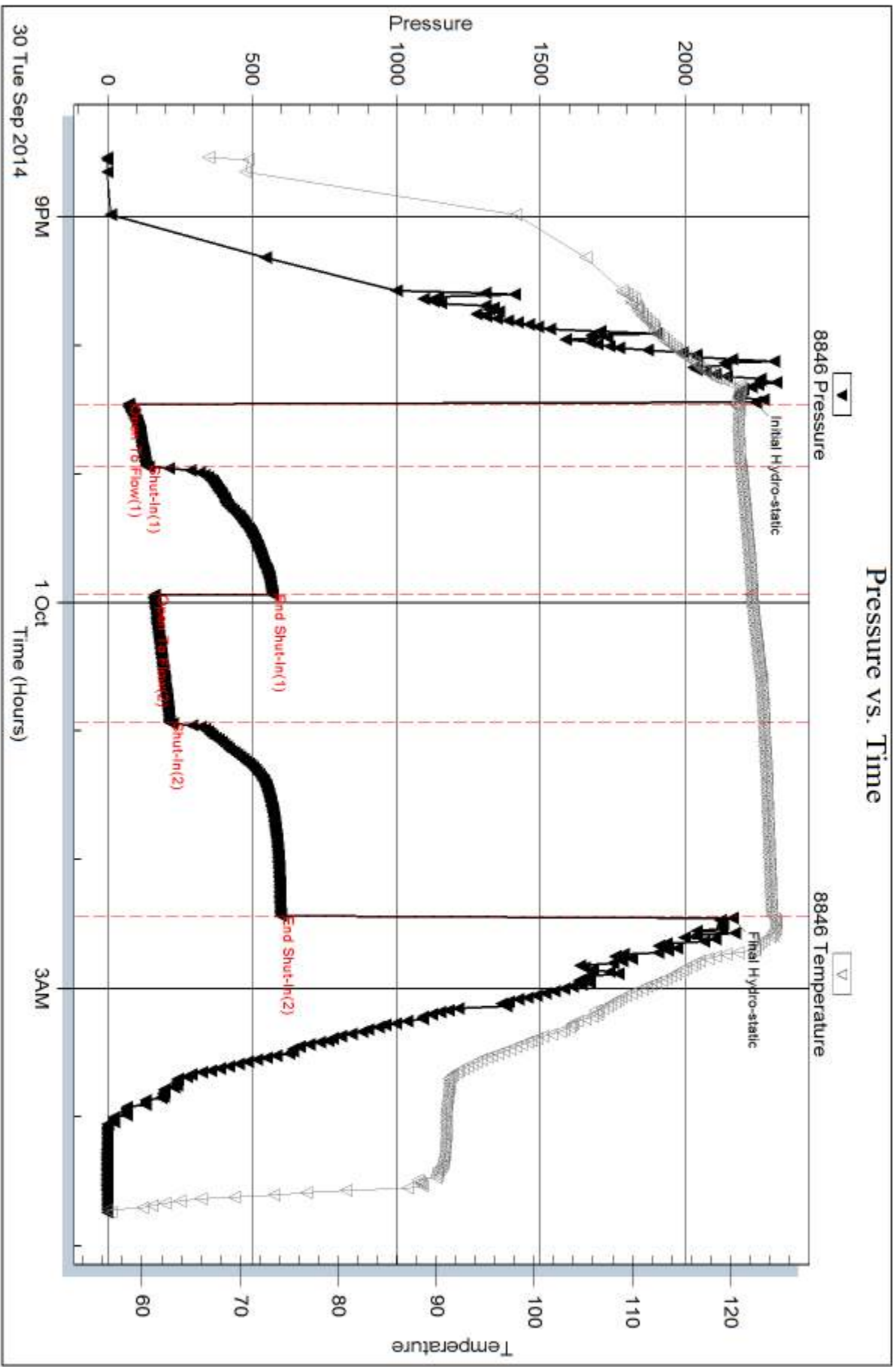
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: API 29@60

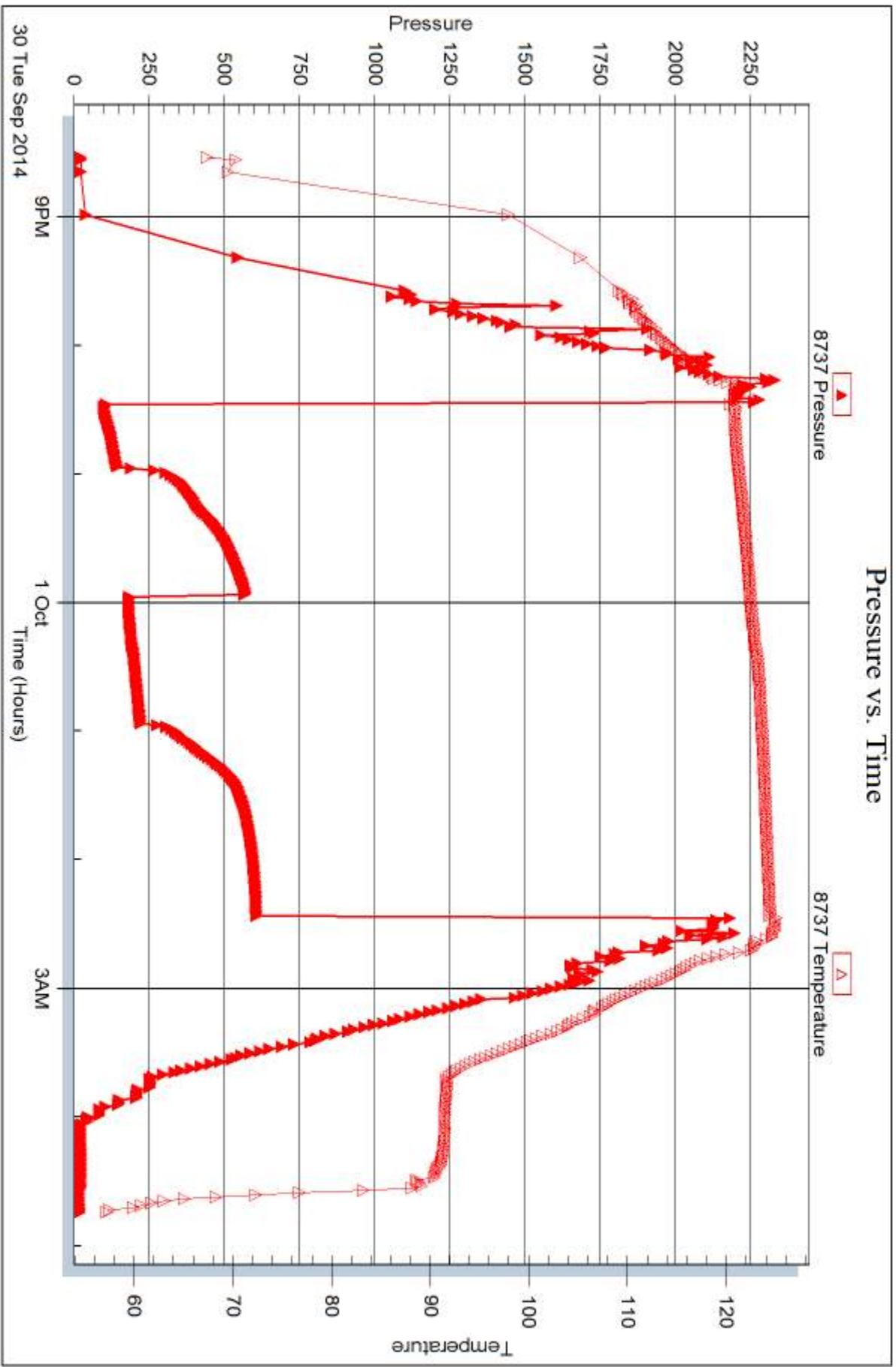


Serial #: 8737

Outside Murfin Drilling Co. Inc.

Vanava #3 5

DST Test Number: 4



Trilobite Testing, Inc

Ref. No: 59160

Printed: 2014, 10:03 @ 16:40:09



DRILL STEM TEST REPORT

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

250 N Water STE
Wichita KS 67202

ATTN: Larry Nicholson

Vanava #3 5

5-13s-32w Logan,KS

Start Date: 2014.10.01 @ 15:06:15

End Date: 2014.10.01 @ 23:38:45

Job Ticket #: 59161 DST #: 5

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

Printed: 2014.10.03 @ 16:39:42



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Murfin Drilling Co. Inc.

5-13s-32w Logan, KS

250 N Water STE
Wichita KS 67202

Vanava #3 5

Job Ticket: 59161

DST#: 5

ATTN: Larry Nicholson

Test Start: 2014.10.01 @ 15:06:15

GENERAL INFORMATION:

Formation: **Pawnee-Ft.Scott**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 17:11:30

Time Test Ended: 23:38:45

Test Type: Conventional Bottom Hole (Reset)

Tester: Mike Roberts

Unit No: 65

Interval: 4474.00 ft (KB) To 4556.00 ft (KB) (TVD)

Reference Elevations: 3056.00 ft (KB)

Total Depth: 4556.00 ft (KB) (TVD)

3046.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 10.00 ft

Serial #: 8846

Inside

Press@RunDepth: 331.85 psig @ 4485.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.10.01

End Date:

2014.10.01

Last Calib.: 2014.10.01

Start Time: 15:06:15

End Time:

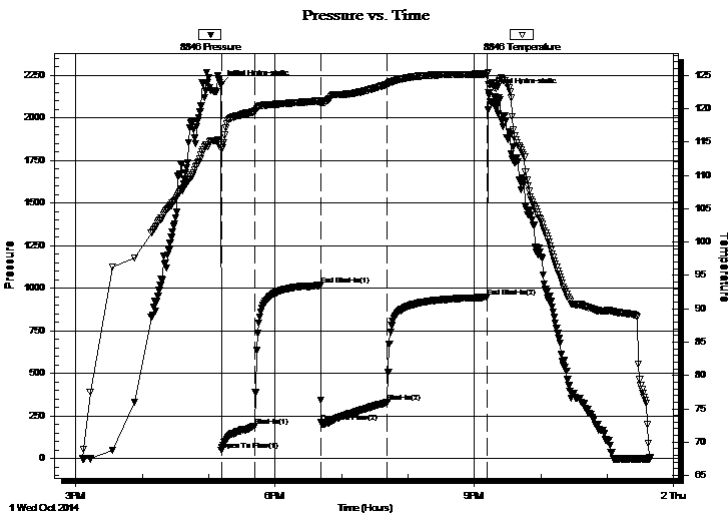
23:38:45

Time On Btm: 2014.10.01 @ 17:11:15

Time Off Btm: 2014.10.01 @ 21:13:00

TEST COMMENT: IF:BOB in 13 min.
IS:Return blow built to 7"
FF:BOB in 5 min.
FS:Return blow built to 8"

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2196.39	114.55	Initial Hydro-static
1	48.35	113.89	Open To Flow (1)
31	192.39	119.54	Shut-In(1)
90	1017.75	121.17	End Shut-In(1)
91	213.72	121.01	Open To Flow (2)
151	331.85	123.67	Shut-In(2)
241	947.43	125.20	End Shut-In(2)
242	2146.47	123.60	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
434.00	ocgm 10%o 40%g 50%m	3.28
124.00	gcmo 30%g 35%m 35%o	1.74
372.00	mcgo 5%m 10%g 85%o	5.22
0.00	GIP= 1674	0.00

* Recovery from multiple tests

Gas Rates

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



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co. Inc.

250 N Water STE
Wichita KS 67202

ATTN: Larry Nicholson

5-13s-32w Logan,KS

Vanava #3 5

Job Ticket: 59161

DST#: 5

Test Start: 2014.10.01 @ 15:06:15

GENERAL INFORMATION:

Formation: **Pawnee-Ft.Scott**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 17:11:30

Time Test Ended: 23:38:45

Test Type: Conventional Bottom Hole (Reset)

Tester: Mike Roberts

Unit No: 65

Interval: 4474.00 ft (KB) To 4556.00 ft (KB) (TVD)

Reference Elevations: 3056.00 ft (KB)

Total Depth: 4556.00 ft (KB) (TVD)

3046.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 10.00 ft

Serial #: 8737 Outside

Press@RunDepth: psig @ 4485.00 ft (KB)

Start Date: 2014.10.01

End Date:

2014.10.01

Capacity: 8000.00 psig

Last Calib.:

2014.10.01

Start Time: 15:06:15

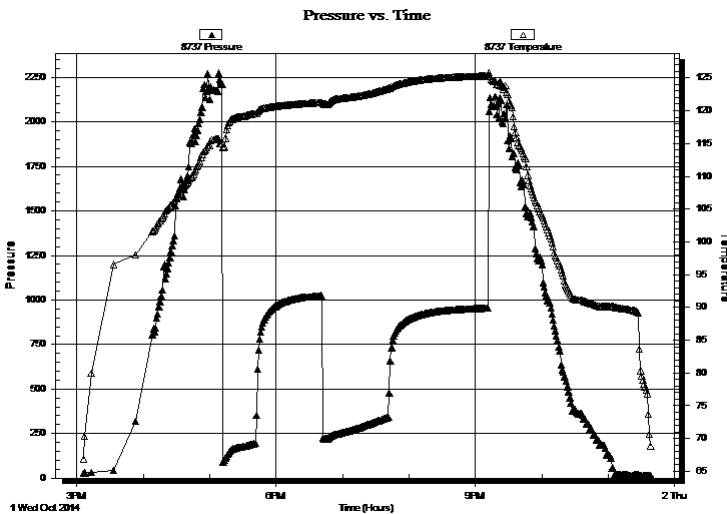
End Time:

23:38:45

Time On Btm:

Time Off Btm:

TEST COMMENT: IF:BOB in 13 min.
IS:Return blow built to 7"
FF:BOB in 5 min.
FS:Return blow built to 8"



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
434.00	ocgm 10%o 40%g 50%m	3.28
124.00	gcmo 30%g 35%m 35%o	1.74
372.00	mcgo 5%m 10%g 85%o	5.22
0.00	GIP= 1674	0.00

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co. Inc.

5-13s-32w Logan,KS

250 N Water STE
Wichita KS 67202

Vanava #3 5

Job Ticket: 59161

DST#: 5

ATTN: Larry Nicholson

Test Start: 2014.10.01 @ 15:06:15

Tool Information

Drill Pipe:	Length: 4171.00 ft	Diameter: 3.80 inches	Volume: 58.51 bbl	Tool Weight: 1500.00 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: 308.00 ft	Diameter: 2.25 inches	Volume: 1.51 bbl	Weight to Pull Loose: 90000.00 lb
			<u>Total Volume: 60.02 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	29.00 ft			String Weight: Initial 74000.00 lb
Depth to Top Packer:	4474.00 ft			Final 76000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	82.00 ft			
Tool Length:	106.00 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			4451.00	
Shut In Tool	5.00			4456.00	
Hydraulic tool	5.00			4461.00	
Jars	5.00			4466.00	
Safety Joint	3.00			4469.00	
Packer	5.00			4474.00	24.00 Bottom Of Top Packer
Packer - Shale	0.00			4474.00	
Stubb	1.00			4475.00	
Perforations	10.00			4485.00	
Recorder	0.00	8846	Inside	4485.00	
Recorder	0.00	8737	Outside	4485.00	
Change Over Sub	1.00			4486.00	
Blank Spacing	64.00			4550.00	
Change Over Sub	1.00			4551.00	
Bullnose	5.00			4556.00	82.00 Anchor Tool

Total Tool Length: 106.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co. Inc.

5-13s-32w Logan,KS

250 N Water STE
Wichita KS 67202

Vanava #3 5

Job Ticket: 59161

DST#: 5

ATTN: Larry Nicholson

Test Start: 2014.10.01 @ 15:06:15

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

28 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

0 ppm

Viscosity: 49.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.93 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 2900.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
434.00	ocgm 10%o 40%g 50%m	3.282
124.00	gcmo 30%g 35%m 35%o	1.739
372.00	mcgo 5%m 10%g 85%o	5.218
0.00	GIP= 1674	0.000

Total Length: 930.00 ft Total Volume: 10.239 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: API= 28 @ 60

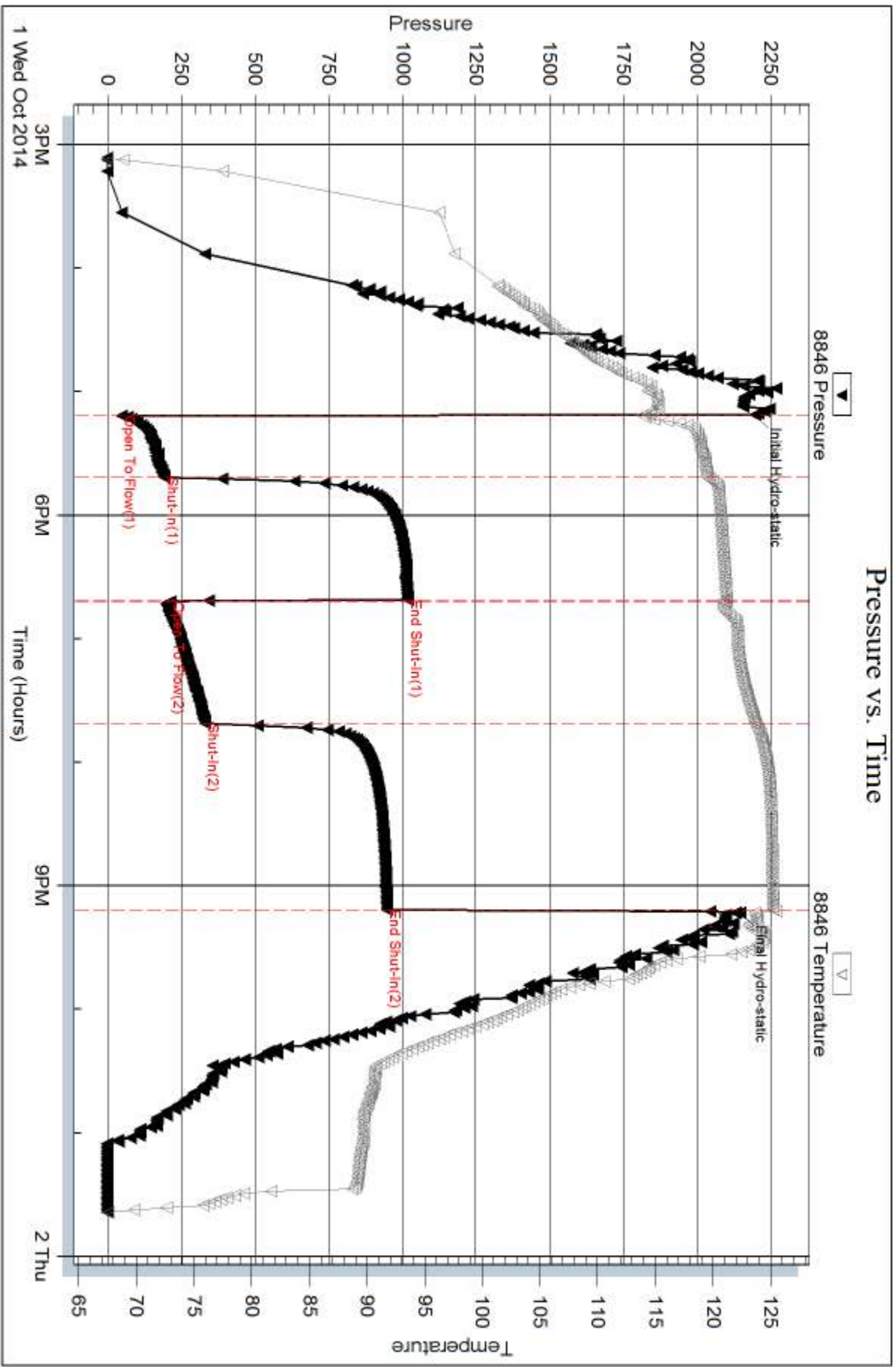
Serial #: 8846

Inside

Murfin Drilling Co. Inc.

Vanava #3 5

DST Test Number: 5



Trilobite Testing, Inc

Ref. No: 59161

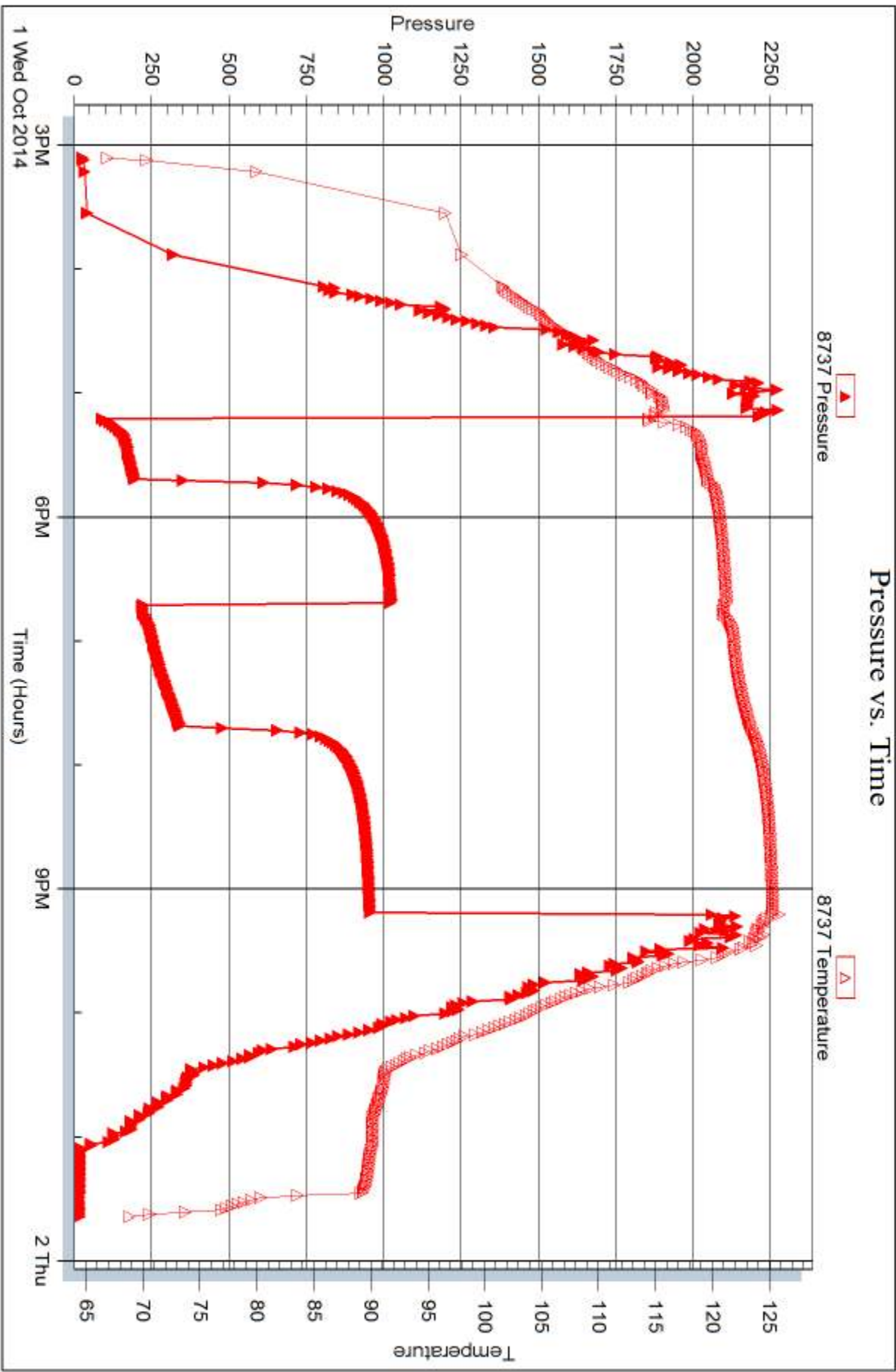
Printed: 2014, 10, 03 @ 16:39:43

Serial #: 8737

Outside Murfin Drilling Co. Inc.

Vanava #3 5

DST Test Number: 5



Triobite Testing, Inc

Ref. No: 59161

Printed: 2014, 10:03 @ 16:39:43



DRILL STEM TEST REPORT

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

250 N Water STE
Wichita KS 67202

ATTN: Larry Nicholson

Vanava #3 5

5-13s-32w Logan,KS

Start Date: 2014.10.02 @ 16:23:15

End Date: 2014.10.03 @ 01:05:15

Job Ticket #: 59164 DST #: 6

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

Printed: 2014.10.03 @ 16:39:07



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Murfin Drilling Co. Inc.

5-13s-32w Logan,KS

250 N Water STE
Wichita KS 67202

Vanava #3 5

Job Ticket: 59164

DST#: 6

ATTN: Larry Nicholson

Test Start: 2014.10.02 @ 16:23:15

GENERAL INFORMATION:

Formation: **Johnson**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 19:04:00

Time Test Ended: 01:05:15

Test Type: Conventional Bottom Hole (Reset)

Tester: Mike Roberts

Unit No: 65

Interval: 4583.00 ft (KB) To 4627.00 ft (KB) (TVD)

Reference Elevations: 3056.00 ft (KB)

Total Depth: 4527.00 ft (KB) (TVD)

3046.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 10.00 ft

Serial #: 8846

Inside

Press@RunDepth: 168.00 psig @ 4589.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.10.02

End Date:

2014.10.03

Last Calib.: 2014.10.03

Start Time: 16:23:15

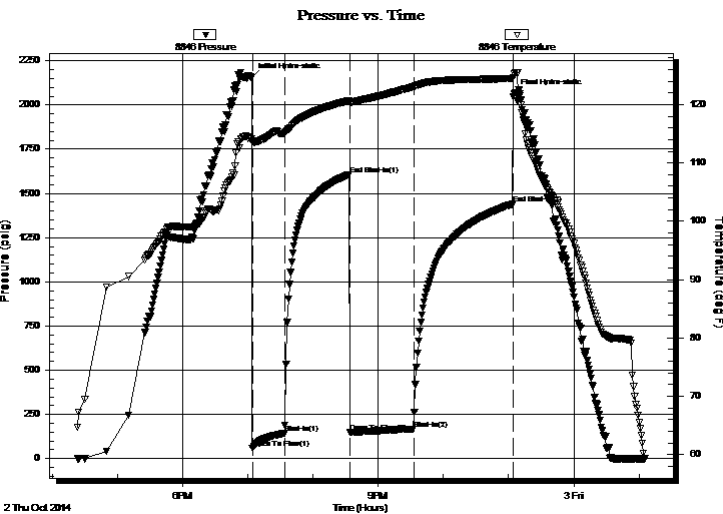
End Time:

01:05:15

Time On Btm: 2014.10.02 @ 19:03:15

Time Off Btm: 2014.10.02 @ 23:05:00

TEST COMMENT: IF:BOB in 25 min
IS:No return blow
FF:Built to 5" blow
FS:No retrurn blow



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2157.49	114.16	Initial Hydro-static
1	56.96	113.83	Open To Flow (1)
31	142.85	115.12	Shut-In(1)
91	1608.14	120.65	End Shut-In(1)
91	149.52	120.31	Open To Flow (2)
150	168.00	123.04	Shut-In(2)
241	1439.77	124.46	End Shut-In(2)
242	2066.22	125.26	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
323.00	mud 100%m	1.73

* Recovery from multiple tests

Gas Rates

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



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co. Inc.

5-13s-32w Logan, KS

250 N Water STE
Wichita KS 67202

Vanava #3 5

Job Ticket: 59164

DST#: 6

ATTN: Larry Nicholson

Test Start: 2014.10.02 @ 16:23:15

GENERAL INFORMATION:

Formation: **Johnson**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 19:04:00

Time Test Ended: 01:05:15

Test Type: Conventional Bottom Hole (Reset)

Tester: Mike Roberts

Unit No: 65

Interval: **4583.00 ft (KB) To 4627.00 ft (KB) (TVD)**

Reference Elevations: 3056.00 ft (KB)

Total Depth: 4527.00 ft (KB) (TVD)

3046.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 10.00 ft

Serial #: 8737 Outside

Press@RunDepth: psig @ 4589.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.10.02

End Date:

2014.10.03

Last Calib.:

2014.10.03

Start Time: 16:23:15

End Time:

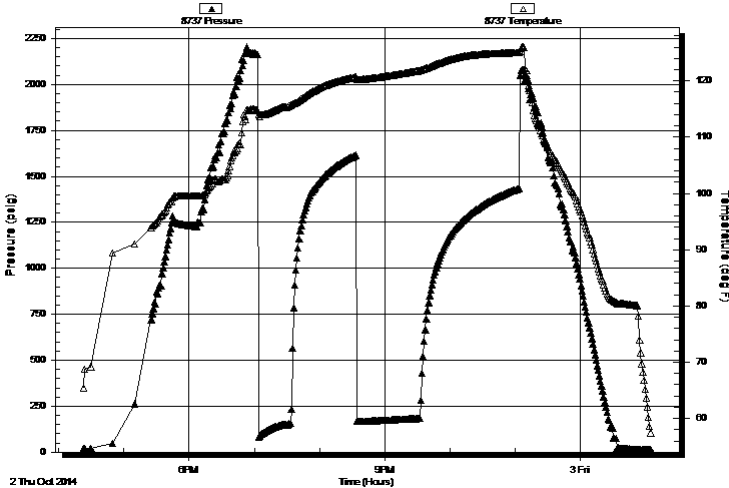
01:05:00

Time On Btm:

Time Off Btm:

TEST COMMENT: IF:BOB in 25 min
IS:No return blow
FF:Built to 5" blow
FS:No retrurn blow

Pressure vs. Time



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
323.00	mud 100%m	1.73

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co. Inc.

5-13s-32w Logan,KS

250 N Water STE
Wichita KS 67202

Vanava #3 5

Job Ticket: 59164

DST#: 6

ATTN: Larry Nicholson

Test Start: 2014.10.02 @ 16:23:15

Tool Information

Drill Pipe:	Length: 4268.00 ft	Diameter: 3.80 inches	Volume: 59.87 bbl	Tool Weight: 1500.00 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: 308.00 ft	Diameter: 2.25 inches	Volume: 1.51 bbl	Weight to Pull Loose: 90000.00 lb
			<u>Total Volume: 61.38 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	17.00 ft			String Weight: Initial 78000.00 lb
Depth to Top Packer:	4583.00 ft			Final 79000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	44.00 ft			
Tool Length:	68.00 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			4560.00	
Shut In Tool	5.00			4565.00	
Hydraulic tool	5.00			4570.00	
Jars	5.00			4575.00	
Safety Joint	3.00			4578.00	
Packer	5.00			4583.00	24.00 Bottom Of Top Packer
Packer - Shale	0.00			4583.00	
Stubb	1.00			4584.00	
Perforations	5.00			4589.00	
Recorder	0.00	8846	Inside	4589.00	
Recorder	0.00	8737	Outside	4589.00	
Change Over Sub	1.00			4590.00	
Blank Spacing	31.00			4621.00	
Change Over Sub	1.00			4622.00	
Bullnose	5.00			4627.00	44.00 Anchor Tool

Total Tool Length: 68.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co. Inc.

5-13s-32w Logan,KS

250 N Water STE
Wichita KS 67202

Vanava #3 5

Job Ticket: 59164

DST#: 6

ATTN: Larry Nicholson

Test Start: 2014.10.02 @ 16:23:15

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

0 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

0 ppm

Viscosity: 61.00 sec/qt

Cushion Volume:

bbl

Water Loss: 6.39 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 1900.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
323.00	mud 100%m	1.725

Total Length: 323.00 ft Total Volume: 1.725 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

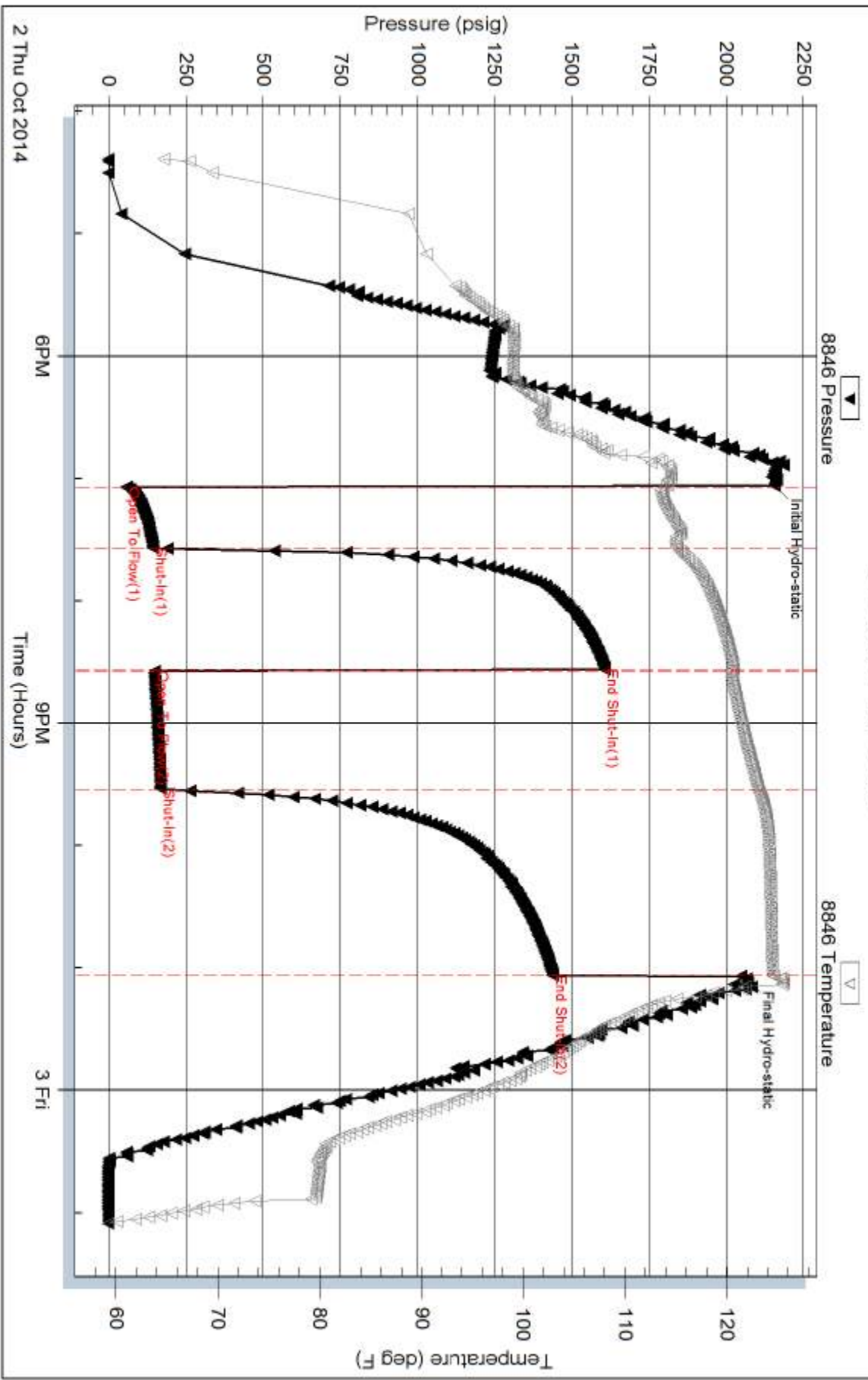
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: Ran a 75 Bbl. Sweep to get 18# LCM out of zone.

Pressure vs. Time

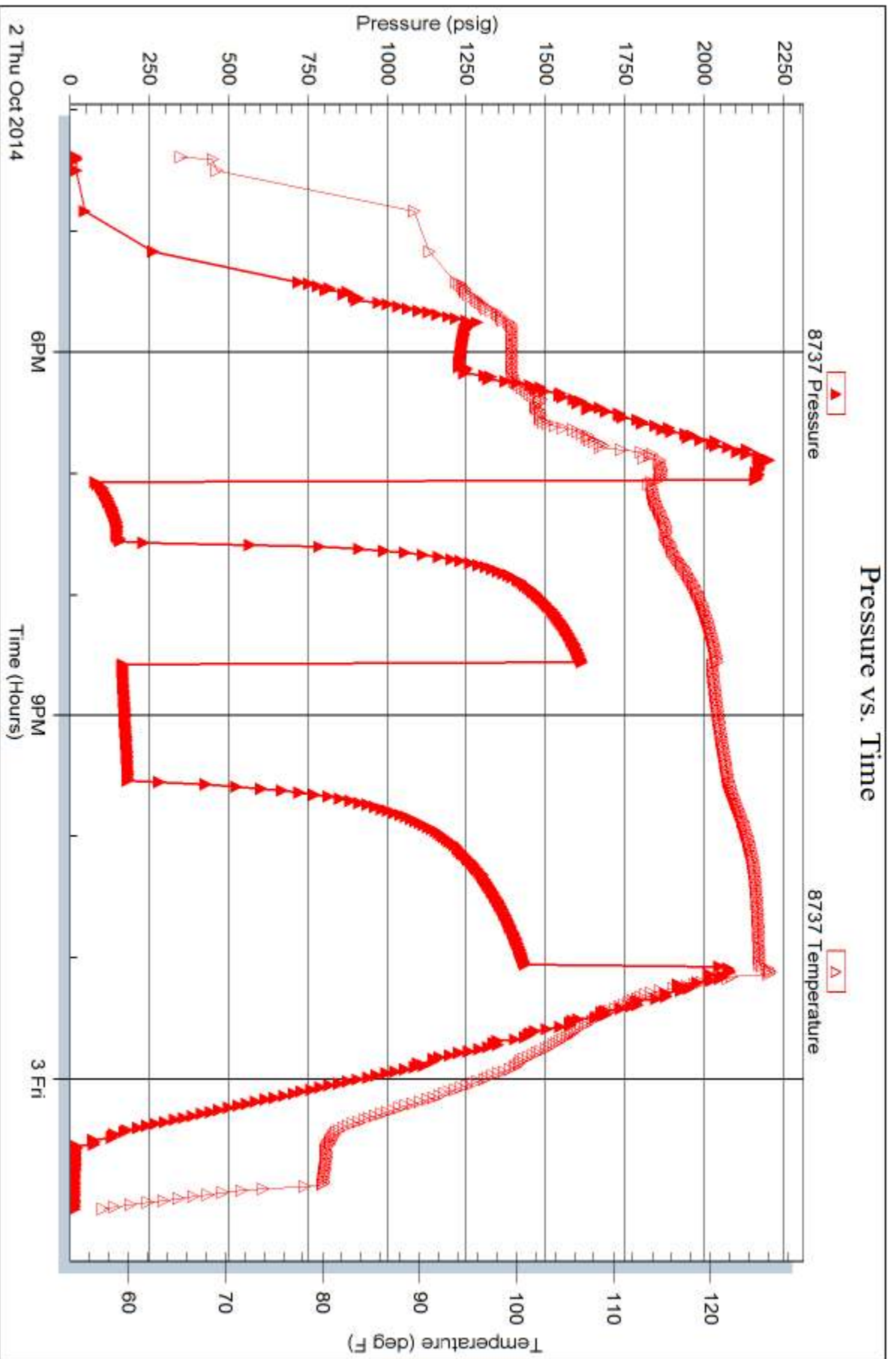


Serial #: 8737

Outside Murfin Drilling Co. Inc.

Vanava #3 5

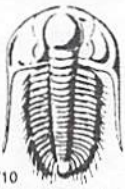
DST Test Number: 6



Trilobite Testing, Inc

Ref. No: 59164

Printed: 2014, 10, 03 @ 16:39:08



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 59157

4/10

Well Name & No. Vanava #3-5 Test No. 1 Date 9-28-14
 Company Murfin Drilling Co Inc. Elevation 3056 KB 3046 GL
 Address 250 N. Water STE 300 Wichita KS 67202
 Co. Rep / Geo. Larry Nicholson Rig Murfin 21
 Location: Sec. 5 Twp. 13S Rge. 32W Co. Logan State KS

Interval Tested 4043-4118 Zone Tested Lansing A-B-D
 Anchor Length 75 Drill Pipe Run 3734 Mud Wt. 9.0
 Top Packer Depth 4038 Drill Collars Run 308 Vis 50
 Bottom Packer Depth 4043 Wt. Pipe Run Ø WL 6.4
 Total Depth 4118 Chlorides 2400 ppm System LCM 8

Blow Description IF: Bu. 1+ to 2" Blow then Died to 1" Blow
FS: No Return Blow
FF: BOB in 39 Min.
FS: No Return Blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>62</u>	<u>Wcm trace of oil</u>		<u>50</u>	<u>50</u>	
<u>744</u>	<u>Wcm</u>		<u>50</u>	<u>50</u>	
<u>308</u>	<u>mcw</u>		<u>60</u>	<u>40</u>	

Rec Total 1114 BHT 121 Gravity 1.250 API RW .547 @ 82.3 °F Chlorides 12,000 ppm
 (A) Initial Hydrostatic 2003 Test 1250.00 T-On Location 03:45
 (B) First Initial Flow 80 Jars 250.00 T-Started 05:41
 (C) First Final Flow 253 Safety Joint 75.00 T-Open 07:34
 (D) Initial Shut-In 1157 Circ Sub _____ T-Pulled 11:34
 (E) Second Initial Flow 305 Hourly Standby _____ T-Out 13:25
 (F) Second Final Flow 485 Mileage 84 RT 130.20/- Comments _____
 (G) Final Shut-In 1144 Sampler _____
 (H) Final Hydrostatic 2024 Straddle _____
 Shale Packer 250.00 Ruined Shale Packer _____
 Extra Packer _____ Ruined Packer _____
 Extra Recorder _____ Extra Copies _____

Initial Open 30
 Initial Shut-In 60
 Final Flow 60
 Final Shut-In 90
 Sub Total 1955.20/-
 Total 1955.20
 MP/DST Disc't _____

Approved By _____ Our Representative Mike Roberts

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. 59158

Well Name & No. Vanava #3-5 Test No. 2 Date 9-28-14
 Company Murfin Drilling Co Inc. Elevation 3056 KB 3046 GL
 Address 250 N. Water STE 300 Wichita KS 67202
 Co. Rep / Geo. Larry Nicholson Rig Murfin 21
 Location: Sec. 5 Twp. 13 S Rge. 32W Co. Logan State KS

Interval Tested 4116-4151 Zone Tested LKC E+F
 Anchor Length 35' Drill Pipe Run 3800 Mud Wt. 9.2
 Top Packer Depth 4111 Drill Collars Run 308 Vis 74
 Bottom Packer Depth 4116 Wt. Pipe Run Ø WL 64
 Total Depth 4151 Chlorides 1900 ppm System LCM 8
 Blow Description IF: Built to 3" Blow
IS: NO Return Blow
FF: BOB in 32 Min
FS: No Return Blow

Rec	Feet of	%gas	%oil	%water	%mud
0	GIP 186'	100			
310	gcmo	5	85	10	
310	gcmo	5	80	15	
372	OCgwm	20	10	30	40
308	OCmW		10	80	10

Rec Total 1300 BHT 123 Gravity 0.31 API RW 32 @ 32 °F Chlorides _____ ppm

(A) Initial Hydrostatic 2039 Test 1250.00 T-On Location 19:50
 (B) First Initial Flow 99 Jars 250.00 T-Started 20:17
 (C) First Final Flow 296 Safety Joint 75.00 T-Open 22:32
 (D) Initial Shut-In ~~1163~~ 1163 Circ Sub NL T-Pulled 02:32
 (E) Second Initial Flow 317 Hourly Standby _____ T-Out 05:07
 (F) Second Final Flow 565 Mileage 84 RT 130.20 Comments _____
 (G) Final Shut-In 1121 Sampler _____
 (H) Final Hydrostatic 2035 Straddle _____ Ruined Shale Packer _____
 Shale Packer 250.00 Ruined Packer _____
 Extra Packer _____ Extra Copies _____
 Initial Open 30 Extra Recorder _____ Sub Total 0
 Initial Shut-In 60 Day Standby _____ Total 1955.20
 Final Flow 60 Accessibility _____ MP/DST Disc't _____
 Final Shut-In 90 Sub Total 1955.20/-

Approved By _____ Our Representative Mate Roberts
 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. **59159**

Well Name & No. Vanava #3-5 Test No. 3 Date 9-29-14
 Company Martin Drilling Co Inc. Elevation 3056 KB 3046 GL
 Address 250 N. Water St 300 Wichita KS 67202
 Co. Rep / Geo. Larry Nicholson Rig Martin 21
 Location: Sec. 5 Twp. 13S Rge. 32W Co. Logan State KS

Interval Tested 4246-4276 Zone Tested J
 Anchor Length 30 Drill Pipe Run 3923 Mud Wt. 9.1
 Top Packer Depth 4241 Drill Collars Run 308 Vis 56
 Bottom Packer Depth 4246 Wt. Pipe Run Ø WL 6.8
 Total Depth 4276 Chlorides 2700 ppm System LCM 7
 Blow Description IF: Built to 3" Blow
IS: NO Return Blow
FF: BOB in 40 Min
FS: NO Return Blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>248</u>	<u>OCWM</u>	<u>5</u>	<u>15</u>	<u>80</u>	
<u>248</u>	<u>MCW</u>		<u>70</u>	<u>30</u>	
<u>618</u>	<u>SW</u>		<u>100</u>		

Rec Total 1114 BHT 123 Gravity — API RW: 411 @ 62.9° F Chlorides 19000 ppm

(A) Initial Hydrostatic <u>2077</u>	<input checked="" type="checkbox"/> Test <u>1250.00</u>	T-On Location <u>17:15</u>
(B) First Initial Flow <u>33</u>	<input checked="" type="checkbox"/> Jars <u>250.00</u>	T-Started <u>18:18</u>
(C) First Final Flow <u>246</u>	<input checked="" type="checkbox"/> Safety Joint <u>75.00</u>	T-Open <u>20:23</u>
(D) Initial Shut-In <u>1165</u>	<input checked="" type="checkbox"/> Circ Sub <u>NL</u>	T-Pulled <u>00:23</u>
(E) Second Initial Flow <u>253</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>02:42</u>
(F) Second Final Flow <u>481</u>	<input checked="" type="checkbox"/> Mileage <u>84 RT 130.20</u>	Comments
(G) Final Shut-In <u>1144</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>2022</u>	<input type="checkbox"/> Straddle	<input type="checkbox"/> Ruined Shale Packer
	<input checked="" type="checkbox"/> Shale Packer <u>250.00</u>	<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>1955.20</u>
Final Shut-In <u>90</u>	<input type="checkbox"/> Accessibility	MP/DST Disc't
	Sub Total <u>\$1955.20</u>	

Approved By _____

Our Representative Mike Roberts

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. 59160

Well Name & No. Vanava #3-5 Test No. 4 Date 9-30-14
 Company Martin Drilling Co Inc. Elevation 3056 KB 3046 GL
 Address 250 N. Water STE 300 Wichita KS 67202
 Co. Rep / Geo. Larry Nicholson Rig Martin 21
 Location: Sec. 5 Twp. 13S Rge. 32W Co. Logan State KS

Interval Tested 4387-4477 Zone Tested Marmaton
 Anchor Length 90' Drill Pipe Run 4082 Mud Wt. 9.2
 Top Packer Depth 4382 Drill Collars Run 308 Vis 49
 Bottom Packer Depth 4387 Wt. Pipe Run Ø WL 8.0
 Total Depth 4477 Chlorides 2900 ppm System LCM 6

Blow Description TF: Boilt to 3" Blow
IS: Wash Surface Blow that died in 20 Min.
FF: BOBIN 28 Min
FS: No Return Blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>Ø</u>	Feet of <u>GIP 806</u>				
<u>248</u>	Feet of <u>gco</u>	<u>20</u>	<u>80</u>		
<u>184</u>	Feet of <u>gcmo</u>	<u>20</u>	<u>40</u>	<u>40</u>	
<u>126</u>	Feet of <u>gcOM</u>	<u>5</u>	<u>10</u>	<u>85</u>	
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 560 BHT 124 Gravity 29 API RW — @ —° F Chlorides — ppm

(A) Initial Hydrostatic <u>2241</u>	<input checked="" type="checkbox"/> Test <u>1250.00</u>	T-On Location <u>20:00</u>
(B) First Initial Flow <u>70</u>	<input checked="" type="checkbox"/> Jars <u>250.00</u>	T-Started <u>20:32</u>
(C) First Final Flow <u>133</u>	<input checked="" type="checkbox"/> Safety Joint <u>75.00</u>	T-Open <u>22:27</u>
(D) Initial Shut-In <u>569</u>	<input checked="" type="checkbox"/> Circ Sub <u>NC</u>	T-Pulled <u>02:27</u>
(E) Second Initial Flow <u>163</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>04:44</u>
(F) Second Final Flow <u>214</u>	<input checked="" type="checkbox"/> Mileage <u>84RT = 130.20</u>	Comments
(G) Final Shut-In <u>598</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>2163</u>	<input type="checkbox"/> Straddle	

Initial Open <u>30</u>	<input checked="" type="checkbox"/> Shale Packer <u>250.00</u>	<input type="checkbox"/> Ruined Shale Packer
Initial Shut-In <u>60</u>	<input type="checkbox"/> Extra Packer	<input type="checkbox"/> Ruined Packer
Final Flow <u>60</u>	<input type="checkbox"/> Extra Recorder	Sub Total <u>0</u>
Final Shut-In <u>90</u>	<input type="checkbox"/> Day Standby	Total <u>1955.20</u>
	<input type="checkbox"/> Accessibility	MP/DST Disc't
	Sub Total <u>1955.20/-</u>	

Approved By _____ Our Representative Mike Roberts

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. 59163

Well Name & No. Vanava #3-5 Test No. 5 Date 10-1-14
 Company Murfin Drilling Co Inc. Elevation 3056 KB 3046 GL
 Address 250 N. Water STE 300 Wichita KS 67202
 Co. Rep / Geo. Larry Nicholson Rig Murfin 21
 Location: Sec. 5 Twp. 13S Rge. 32W Co. Logan State KS

Interval Tested 4474-4556 Zone Tested Pawnee-Ft. Scott
 Anchor Length 82 Drill Pipe Run 4171 Mud Wt. 9.2
 Top Packer Depth 4469 Drill Collars Run 308 Vis 49
 Bottom Packer Depth 4474 Wt. Pipe Run Ø WL 8.0
 Total Depth 4556 Chlorides 2900 ppm System LCM 6#

Blow Description IF: BOB IN 13 MIN
IS: Return Blow 7"
FF: BOB IN 5 MIN
FS: Return Blow 8"

Rec	Feet of	%gas	%oil	%water	%mud
<u>0</u>	<u>Feet of GIP = 1674'</u>	<u>100</u>			
<u>372</u>	<u>Feet of mcgo</u>	<u>10</u>	<u>85</u>		<u>5</u>
<u>124</u>	<u>Feet of gcmo</u>	<u>30</u>	<u>35</u>		<u>35</u>
<u>434</u>	<u>Feet of ocgm</u>	<u>40</u>	<u>10</u>		<u>50</u>

Rec Total 930 BHT 125 Gravity 28 API RW - @ - °F Chlorides - ppm

(A) Initial Hydrostatic <u>2196</u>	<input checked="" type="checkbox"/> Test <u>1250.00</u>	T-On Location <u>14:45</u>
(B) First Initial Flow <u>48</u>	<input checked="" type="checkbox"/> Jars <u>250.00</u>	T-Started <u>15:06</u>
(C) First Final Flow <u>192</u>	<input checked="" type="checkbox"/> Safety Joint <u>75.00</u>	T-Open <u>17:12</u>
(D) Initial Shut-In <u>1017</u>	<input checked="" type="checkbox"/> Circ Sub <u>N/C</u>	T-Pulled <u>21:12</u>
(E) Second Initial Flow <u>213</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>23:38</u>
(F) Second Final Flow <u>331</u>	<input checked="" type="checkbox"/> Mileage <u>Ø4 RT 130.00</u>	Comments
(G) Final Shut-In <u>947</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>2146</u>	<input type="checkbox"/> Straddle	

Initial Open 30 Shale Packer 250.00 Ruined Shale Packer
 Initial Shut-In 60 Extra Packer Ruined Packer
 Final Flow 60 Extra Recorder Extra Copies
 Final Shut-In 90 Day Standby Sub Total 0
 Accessibility Total 1955.20
 Sub Total 1955.20 MP/DST Disc't

Approved By _____ Our Representative Mike Polak

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. 59164

4/10

Well Name & No. Vanava #3-5 Test No. 6 Date 10-2-14
 Company Martin Drilling Co Inc Elevation 3056 KB 3046 GL
 Address 250 N. Water STE 300 Wichita KS 67202
 Co. Rep / Geo. Larry Nicholson Rig Martin 21
 Location: Sec. 5 Twp. 13S Rge. 32W Co. Logan State KS

Interval Tested 4583-4627 Zone Tested Johnson
 Anchor Length 44' Drill Pipe Run 4268 Mud Wt. 8.9
 Top Packer Depth 4578 Drill Collars Run 308 Vis 61
 Bottom Packer Depth 4583 Wt. Pipe Run Ø WL 6.4
 Total Depth 4627 Chlorides 1900 ppm System LCM 16# Pumped 75
 Blow Description IF: BOB in 21 Min
IS: No Return Blow
FF: Built to 5"
FS: No Return Blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>323</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 323 BHT 125 Gravity — API RW — @ — ° F Chlorides — ppm

(A) Initial Hydrostatic <u>2157</u>	<input checked="" type="checkbox"/> Test <u>1250.00</u>	T-On Location <u>15:00</u>
(B) First Initial Flow <u>56</u>	<input checked="" type="checkbox"/> Jars <u>250.00</u>	T-Started <u>16:23</u>
(C) First Final Flow <u>142</u>	<input checked="" type="checkbox"/> Safety Joint <u>75.00</u>	T-Open <u>19:03</u>
(D) Initial Shut-In <u>1608</u>	<input checked="" type="checkbox"/> Circ Sub <u>NC</u>	T-Pulled <u>23:03</u>
(E) Second Initial Flow <u>149</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>01:05</u>
(F) Second Final Flow <u>168</u>	<input checked="" type="checkbox"/> Mileage <u>84RT 130.20</u>	Comments <u>Loaded tools</u>
(G) Final Shut-In <u>1439</u>	<input type="checkbox"/> Sampler <u>130.20</u>	<u>X2 13:00 10-3-14</u>
(H) Final Hydrostatic <u>2066</u>	<input type="checkbox"/> Straddle	
	<input checked="" type="checkbox"/> Shale Packer <u>250.00</u>	<input type="checkbox"/> Ruined Shale Packer
	<input type="checkbox"/> Extra Packer	<input type="checkbox"/> Ruined Packer
Initial Open <u>30</u>	<input type="checkbox"/> Extra Recorder	Sub Total <u>0</u>
Initial Shut-In <u>60</u>	<input type="checkbox"/> Day Standby	Total <u>2085.40</u>
Final Flow <u>60</u>	<input type="checkbox"/> Accessibility <u>2085.40</u>	MP/DST Disc't
Final Shut-In <u>90</u>	Sub Total <u>1955.20</u>	

Approved By _____ Our Representative Mike Robert

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.