



## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Company**

250 N Water STE 300  
Wichtia KS 67202

ATTN: Saman Sharifaie

### **Butler #1-9**

### **9-17s-19w Rush,KS**

Start Date: 2014.05.18 @ 09:06:11

End Date: 2014.05.18 @ 16:06:31

Job Ticket #: 58936                      DST #: 1

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

Printed: 2014.05.23 @ 09:16:46



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drilling Company

**9-17s-19w Rush,KS**

250 N Water STE 300  
Wichita KS 67202

**Butler #1-9**

Job Ticket: 58936

**DST#: 1**

ATTN: Saman Sharifaie

Test Start: 2014.05.18 @ 09:06:11

## GENERAL INFORMATION:

Formation: **LKC "B"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 10:58:31

Time Test Ended: 16:06:31

Test Type: Conventional Bottom Hole (Initial)

Tester: Tate Lang

Unit No: 49

**Interval: 3516.00 ft (KB) To 3540.00 ft (KB) (TVD)**

Reference Elevations: 2138.00 ft (KB)

Total Depth: 3540.00 ft (KB) (TVD)

2133.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 5.00 ft

**Serial #: 8898 Outside**

Press@RunDepth: 62.70 psig @ 3517.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.05.18

End Date:

2014.05.18

Last Calib.:

2014.05.18

Start Time:

09:06:12

End Time:

16:06:31

Time On Btm:

2014.05.18 @ 10:58:21

Time Off Btm:

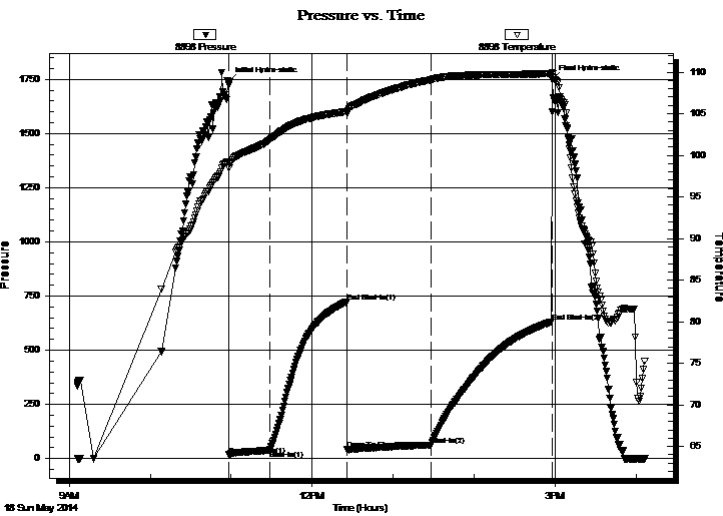
2014.05.18 @ 14:58:11

TEST COMMENT: Fair blow built to 4 1/2"

Dead no blow back

Good blow built to 8"

Dead no blow back



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1737.18	99.27	Initial Hydro-static
1	17.39	98.48	Open To Flow (1)
30	38.14	101.82	Shut-In(1)
88	723.18	105.25	End Shut-In(1)
88	44.67	105.06	Open To Flow (2)
150	62.70	109.07	Shut-In(2)
240	631.68	109.81	End Shut-In(2)
240	1747.39	109.81	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
115.00	MCW 30%M 70%W	1.36
5.00	Free Oil 100%O	0.07

## Gas Rates

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



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# DRILL STEM TEST REPORT

Murfin Drilling Company

**9-17s-19w Rush,KS**

250 N Water STE 300  
Wichita KS 67202

**Butler #1-9**

Job Ticket: 58936

**DST#: 1**

ATTN: Saman Sharifaie

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Test Type: Conventional Bottom Hole (Initial)

Tester: Tate Lang

Unit No: 49

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2133.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 5.00 ft

**Serial #: 8897 Inside**

Press@RunDepth: psig @ 3517.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.05.18 End Date: 2014.05.18

Last Calib.: 2014.05.18

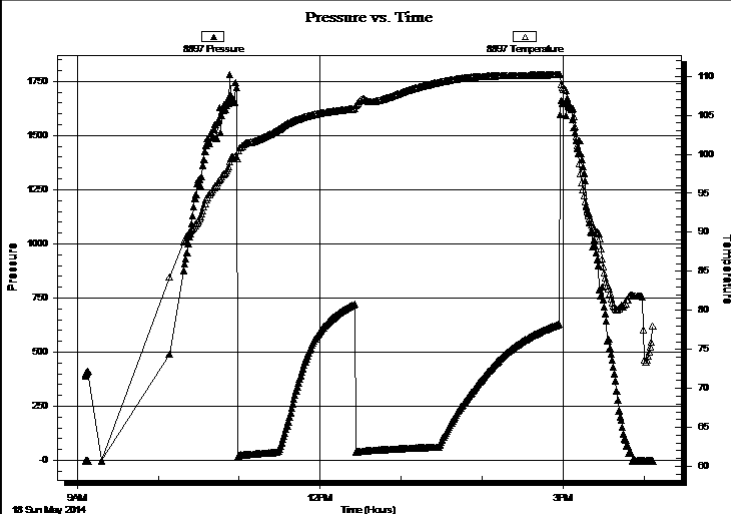
Start Time: 09:06:08 End Time: 16:06:27

Time On Btm:

Time Off Btm:

TEST COMMENT: Fair blow built to 4 1/2"  
Dead no blow back  
Good blow built to 8"  
Dead no blow back

## PRESSURE SUMMARY



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

## Recovery

Length (ft)	Description	Volume (bbl)
115.00	MCW 30%M 70%W	1.36
5.00	Free Oil 100%O	0.07

## Gas Rates

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



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drilling Company

**9-17s-19w Rush,KS**

250 N Water STE 300  
Wichita KS 67202

**Butler #1-9**

Job Ticket: 58936

**DST#: 1**

ATTN: Saman Sharifaie

Test Start: 2014.05.18 @ 09:06:11

## Tool Information

Drill Pipe:	Length: 3483.00 ft	Diameter: 3.80 inches	Volume: 48.86 bbl	Tool Weight:	2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer:	20000.00 lb
Drill Collar:	Length: 28.00 ft	Diameter: 2.25 inches	Volume: 0.14 bbl	Weight to Pull Loose:	lb
			<u>Total Volume: 49.00 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	17.00 ft			String Weight: Initial	51000.00 lb
Depth to Top Packer:	3516.00 ft			Final	lb
Depth to Bottom Packer:	ft				
Interval between Packers:	24.00 ft				
Tool Length:	46.00 ft				
Number of Packers:	2	Diameter: 6.75 inches			

Tool Comments:

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

Shut In Tool	5.00			3499.00	
Hydraulic tool	5.00			3504.00	
Safety Joint	2.00			3506.00	
Packer	5.00			3511.00	22.00 Bottom Of Top Packer
Packer	5.00			3516.00	
Stubb	1.00			3517.00	
Recorder	0.00	8897	Inside	3517.00	
Recorder	0.00	8898	Outside	3517.00	
Perforations	20.00			3537.00	
Bullnose	3.00			3540.00	24.00 Bottom Packers & Anchor
<b>Total Tool Length:</b>	<b>46.00</b>				



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

Murfin Drilling Company

**9-17s-19w Rush,KS**

250 N Water STE 300  
Wichita KS 67202

**Butler #1-9**

Job Ticket: 58936

**DST#: 1**

ATTN: Saman Sharifaie

Test Start: 2014.05.18 @ 09:06:11

### 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:

40000 ppm

Viscosity: 53.00 sec/qt

Cushion Volume:

bbf

Water Loss: 7.99 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 4000.00 ppm

Filter Cake: 1.00 inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbf
115.00	MCW 30%M 70%W	1.358
5.00	Free Oil 100%O	0.070

Total Length: 120.00 ft

Total Volume: 1.428 bbf

Num Fluid Samples: 0

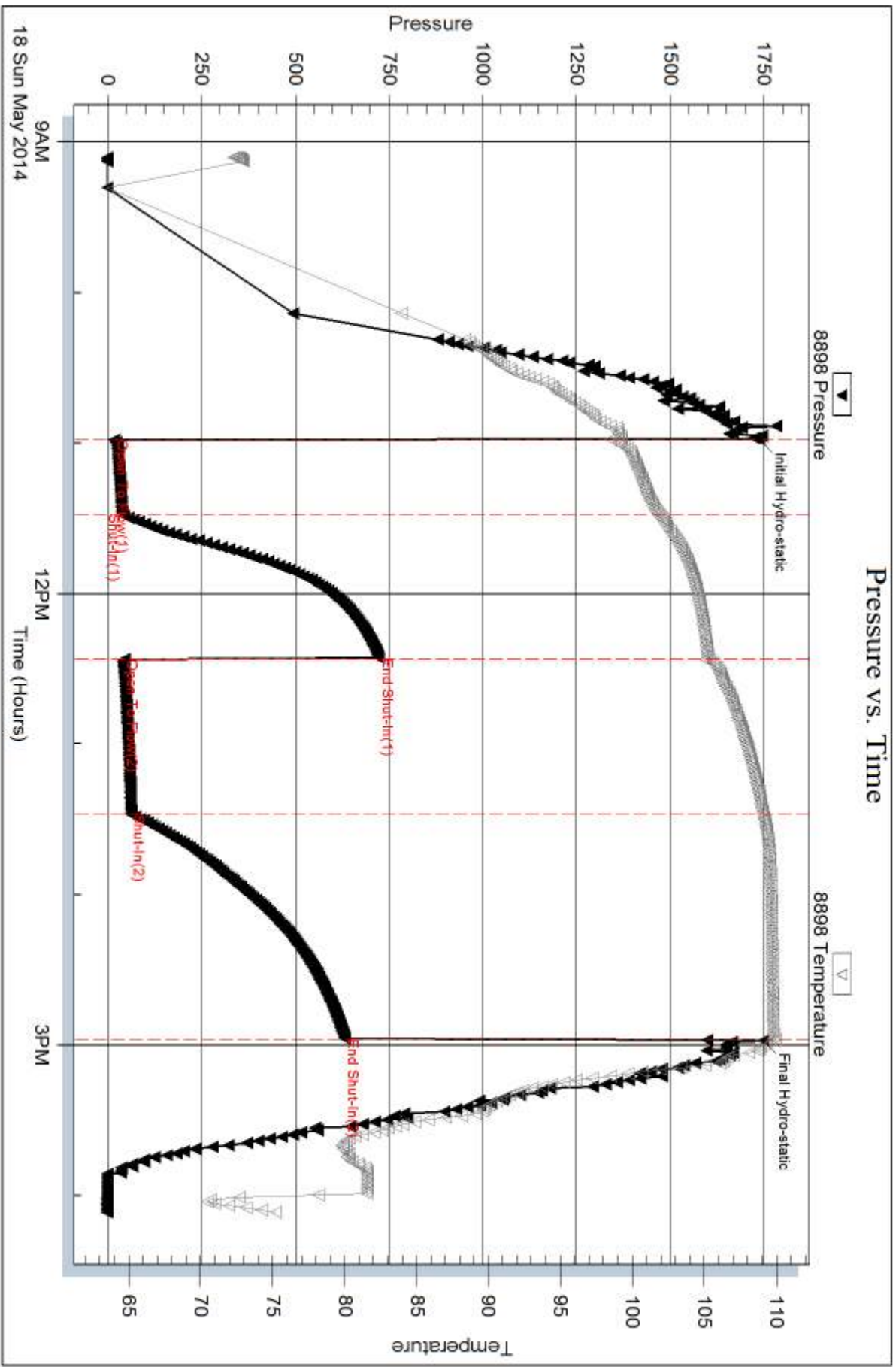
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



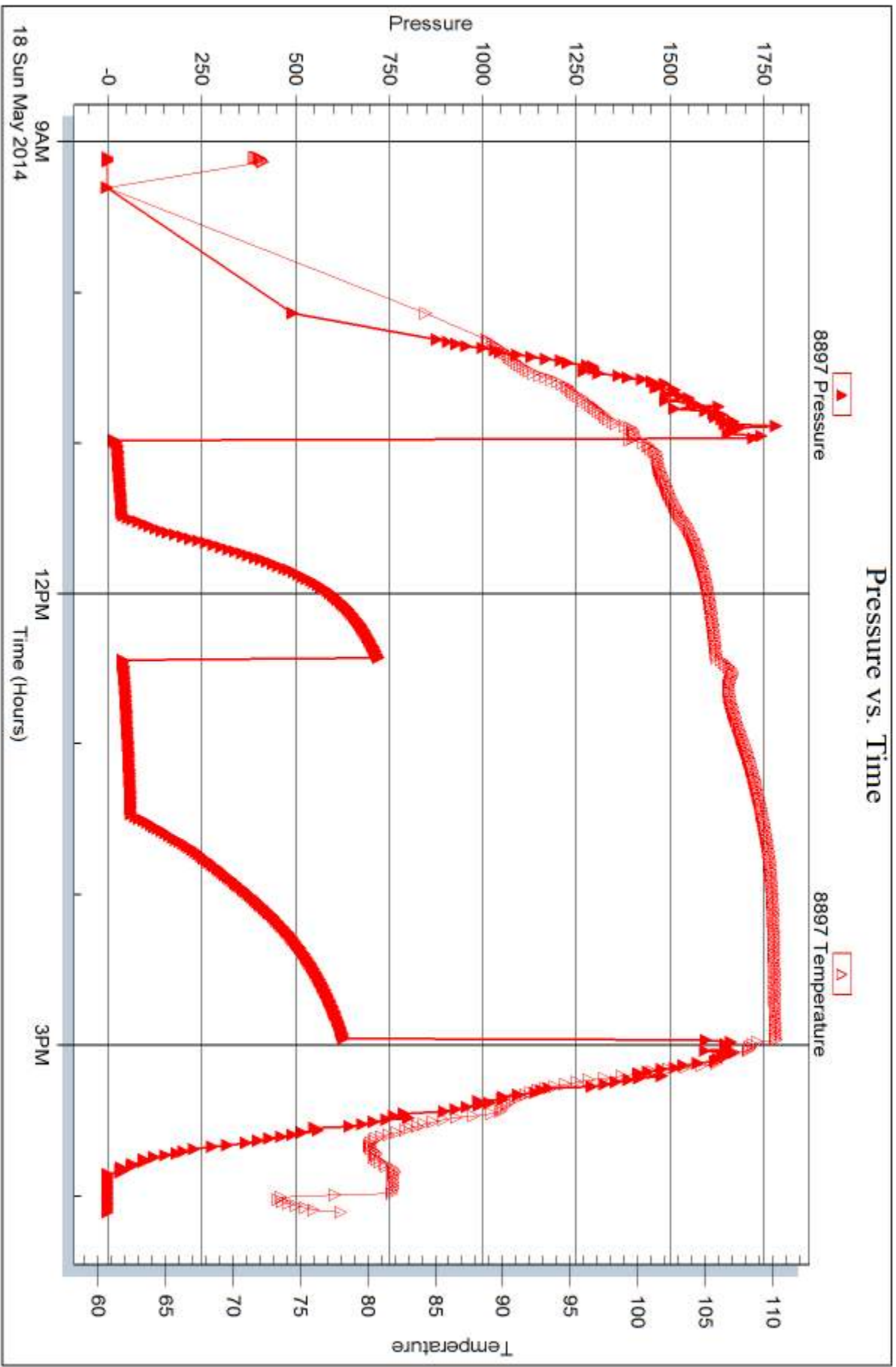
Serial #: 8897

Inside

Murfin Drilling Company

Butler #1-9

DST Test Number: 1



Trilobite Testing, Inc

Ref. No: 58936

Printed: 2014.05.23 @ 09:16:47



## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Company**

250 N Water STE 300  
Wichtia KS 67202

ATTN: Saman Sharifaie

### **Butler #1-9**

### **9-17s-19w Rush,KS**

Start Date: 2014.05.19 @ 21:45:02

End Date: 2014.05.20 @ 06:44:32

Job Ticket #: 58937                      DST #: 2

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

Printed: 2014.05.23 @ 09:16:23





**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Murfin Drilling Company

**9-17s-19w Rush,KS**

250 N Water STE 300  
Wichita KS 67202

**Butler #1-9**

Job Ticket: 58937

**DST#: 2**

ATTN: Saman Sharifaie

Test Start: 2014.05.19 @ 21:45:02

## GENERAL INFORMATION:

Formation: **Cong. Sand**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 23:26:32

Time Test Ended: 06:44:32

Test Type: Conventional Bottom Hole (Reset)

Tester: Tate Lang

Unit No: 49

**Interval: 3858.00 ft (KB) To 3910.00 ft (KB) (TVD)**

Reference Elevations: 2138.00 ft (KB)

Total Depth: 3910.00 ft (KB) (TVD)

2133.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 5.00 ft

**Serial #: 8898 Outside**

Press@RunDepth: 992.15 psig @ 3859.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.05.19

End Date:

2014.05.20

Last Calib.: 2014.05.20

Start Time: 21:45:03

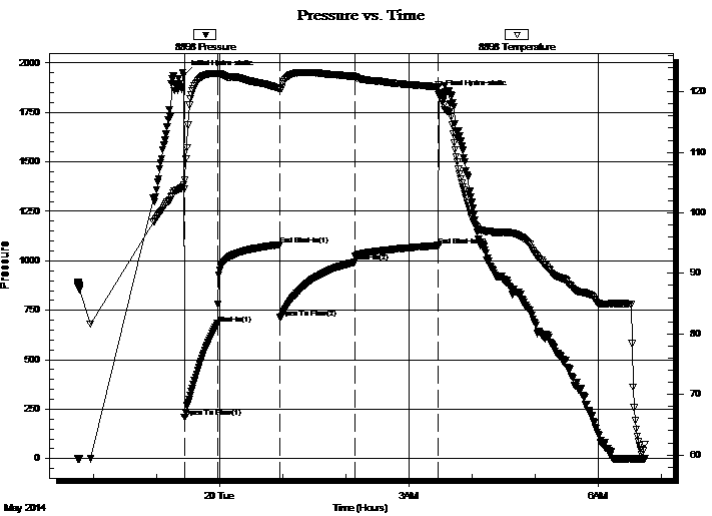
End Time:

06:44:32

Time On Btm: 2014.05.19 @ 23:26:22

Time Off Btm: 2014.05.20 @ 03:28:11

**TEST COMMENT:** B.O.B. In 2 mins  
Dead no blow back  
B.O.B. In 2 mins  
Dead no blow back



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1939.53	104.67	Initial Hydro-static
1	209.17	103.97	Open To Flow (1)
32	682.45	122.98	Shut-In(1)
91	1081.92	120.50	End Shut-In(1)
92	713.49	120.33	Open To Flow (2)
162	992.15	122.55	Shut-In(2)
242	1075.24	120.83	End Shut-In(2)
242	1839.11	121.24	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
868.00	Water 100%W	11.92
930.00	OMCW 10%O 80%W 10%M	13.05
335.00	OCMW 10%O 50%W 40%M	4.70
10.00	Free Oil 100%O	0.14

\* Recovery from multiple tests

## Gas Rates

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



# DRILL STEM TEST REPORT

Murfin Drilling Company  
 250 N Water STE 300  
 Wichtia KS 67202  
 ATTN: Saman Sharifaie

**9-17s-19w Rush,KS**  
**Butler #1-9**  
 Job Ticket: 58937      **DST#: 2**  
 Test Start: 2014.05.19 @ 21:45:02

## GENERAL INFORMATION:

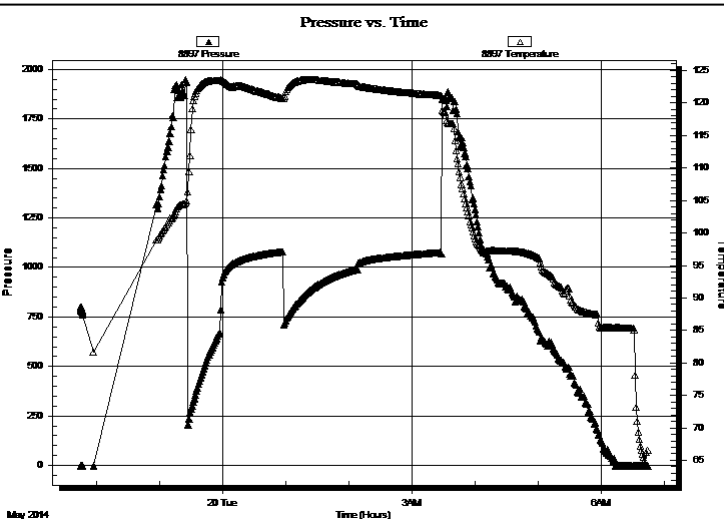
Formation: **Cong. Sand**  
 Deviated: No Whipstock:                      ft (KB)      Test Type: Conventional Bottom Hole (Reset)  
 Time Tool Opened: 23:26:32      Tester: Tate Lang  
 Time Test Ended: 06:44:32      Unit No: 49

**Interval: 3858.00 ft (KB) To 3910.00 ft (KB) (TVD)**      Reference Elevations: 2138.00 ft (KB)  
 Total Depth: 3910.00 ft (KB) (TVD)      2133.00 ft (CF)  
 Hole Diameter: 7.88 inches Hole Condition: Good      KB to GR/CF: 5.00 ft

**Serial #: 8897      Inside**

Press@RunDepth:                      psig @      3859.00 ft (KB)      Capacity: 8000.00 psig  
 Start Date: 2014.05.19      End Date: 2014.05.20      Last Calib.: 2014.05.20  
 Start Time: 21:45:09      End Time: 06:44:38      Time On Btm:  
    Time Off Btm:

**TEST COMMENT:** B.O.B. In 2 mins  
 Dead no blow back  
 B.O.B. In 2 mins  
 Dead no blow back



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

Recovery		
Length (ft)	Description	Volume (bbl)
868.00	Water 100%W	11.92
930.00	OMCW 10%O 80%W 10%M	13.05
335.00	OCMW 10%O 50%W 40%M	4.70
10.00	Free Oil 100%O	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 Company

**9-17s-19w Rush,KS**

250 N Water STE 300  
Wichita KS 67202

**Butler #1-9**

Job Ticket: 58937

**DST#: 2**

ATTN: Saman Sharifaie

Test Start: 2014.05.19 @ 21:45:02

## Tool Information

Drill Pipe:	Length: 3832.00 ft	Diameter: 3.80 inches	Volume: 53.75 bbl	Tool Weight: 2000.00 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: 28.00 ft	Diameter: 2.25 inches	Volume: 0.14 bbl	Weight to Pull Loose: 70000.00 lb
			<u>Total Volume: 53.89 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	24.00 ft			String Weight: Initial 54000.00 lb
Depth to Top Packer:	3858.00 ft			Final 65000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	52.00 ft			
Tool Length:	74.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

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

Shut In Tool	5.00			3841.00	
Hydraulic tool	5.00			3846.00	
Safety Joint	2.00			3848.00	
Packer	5.00			3853.00	22.00 Bottom Of Top Packer
Packer	5.00			3858.00	
Stubb	1.00			3859.00	
Recorder	0.00	8897	Inside	3859.00	
Recorder	0.00	8898	Outside	3859.00	
Perforations	15.00			3874.00	
Change Over Sub	1.00			3875.00	
Drill Pipe	31.00			3906.00	
Change Over Sub	1.00			3907.00	
Bullnose	3.00			3910.00	52.00 Bottom Packers & Anchor

**Total Tool Length: 74.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

Murfin Drilling Company

**9-17s-19w Rush,KS**

250 N Water STE 300  
Wichita KS 67202

**Butler #1-9**

Job Ticket: 58937

**DST#: 2**

ATTN: Saman Sharifaie

Test Start: 2014.05.19 @ 21:45:02

### 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:

45000 ppm

Viscosity: 53.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 9.59 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 6000.00 ppm

Filter Cake: 1.00 inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
868.00	Water 100%W	11.921
930.00	OMCW 10%O 80%W 10%M	13.045
335.00	OCMW 10%O 50%W 40%M	4.699
10.00	Free Oil 100%O	0.140

Total Length: 2143.00 ft

Total Volume: 29.805 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

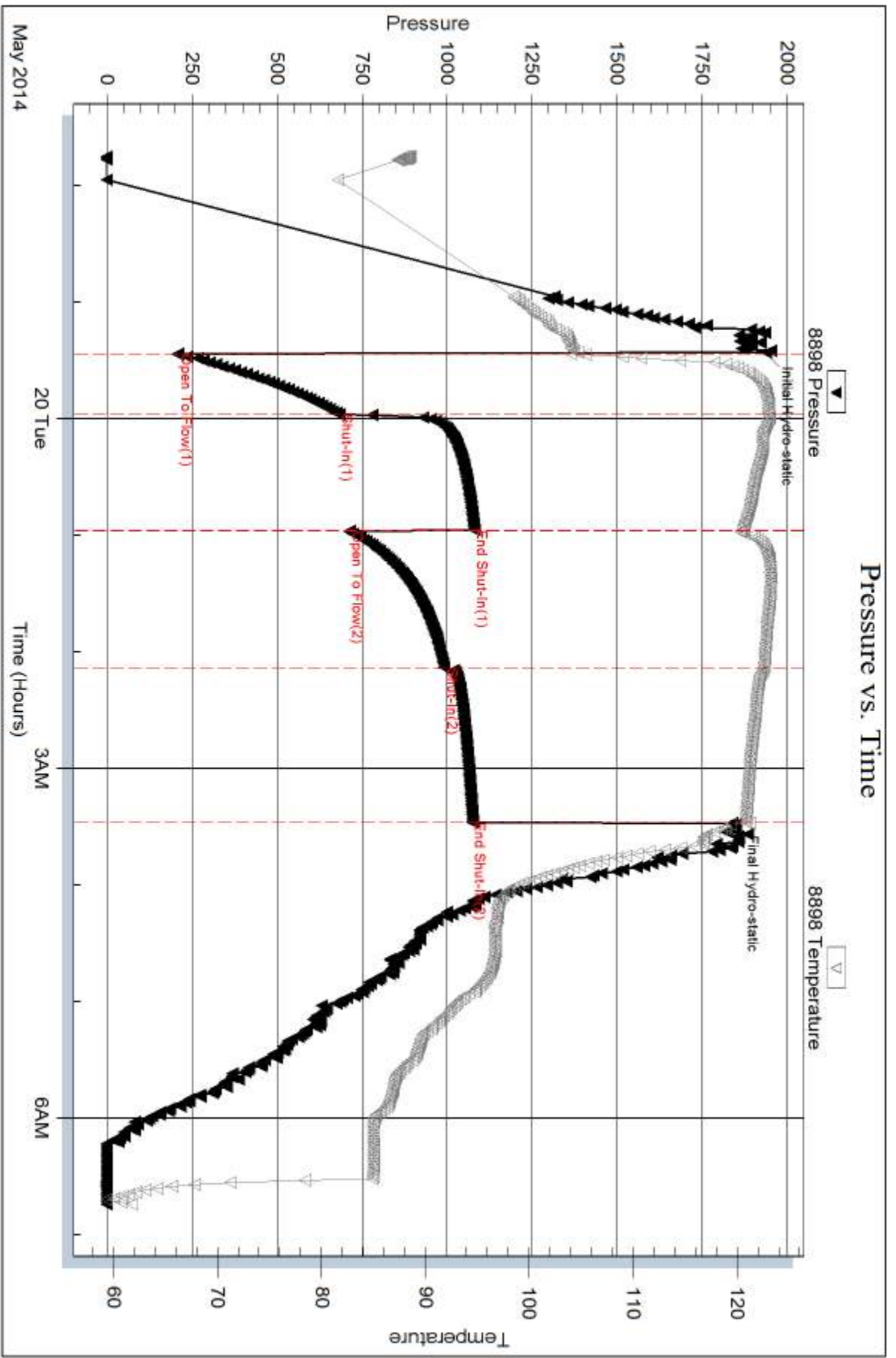
Recovery Comments:

Serial #: 8898

Outside Murfin Drilling Company

Butter #1-9

DST Test Number: 2



Trilobite Testing, Inc

Ref. No: 58937

Printed: 2014.05.23 @ 09:16:24

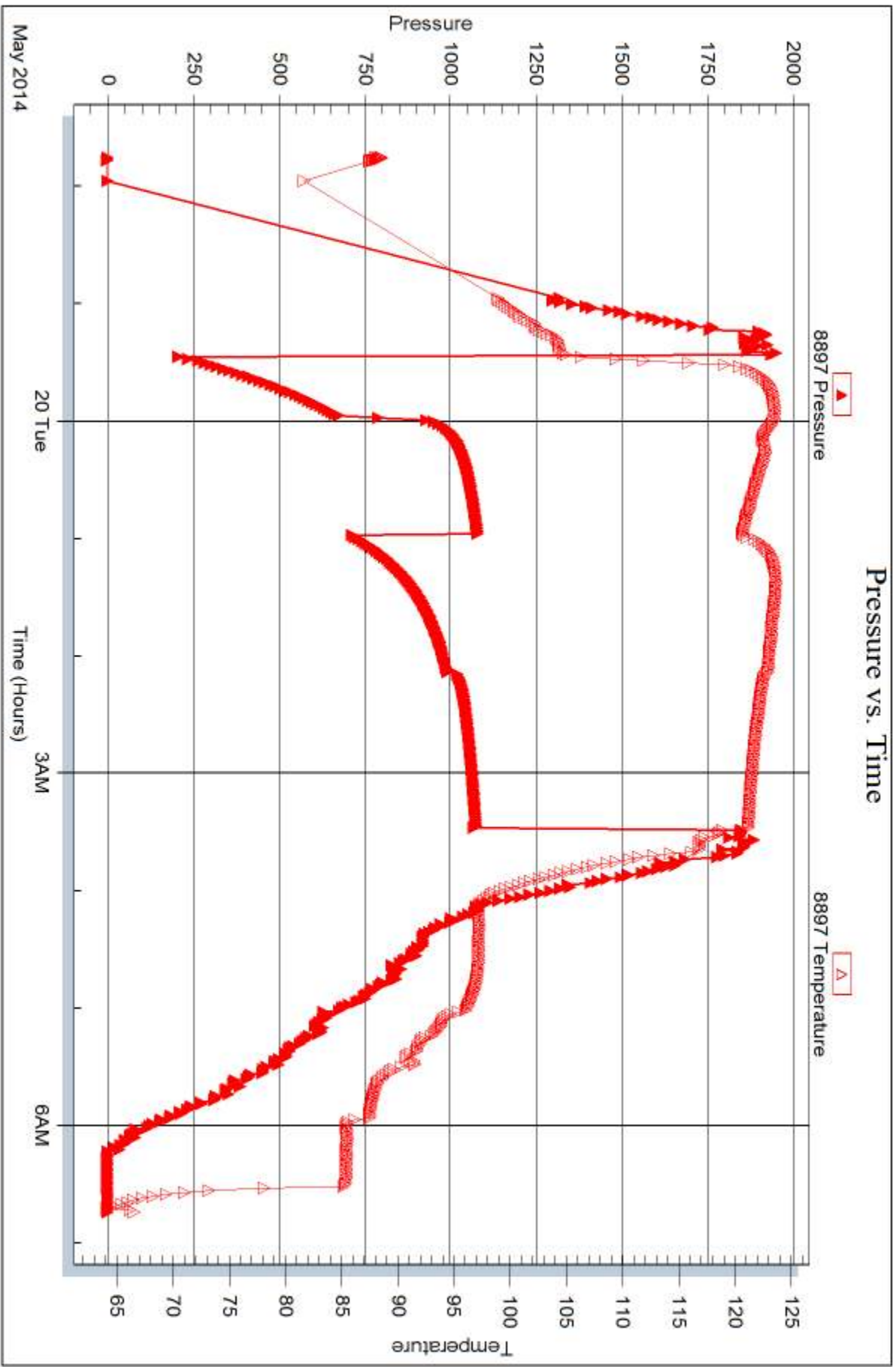
Serial #: 8897

Inside

Murfin Drilling Company

Butler #1-9

DST Test Number: 2



Trilobite Testing, Inc

Ref. No: 58937

Printed: 2014.05.23 @ 09:16:24



# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 58936

4/10

Well Name & No. Butler #1-9 Test No. 1 Date 5-18-14  
 Company Murfin Drilling Company Elevation 2138 KB 2133 GL  
 Address 250 N Water STE 300 Wichita KS 67202  
 Co. Rep / Geo. Saman Sharifaire Rig Murfin #16  
 Location: Sec. 9 Twp. 17S Rge. 19W Co. Rush State KS

Interval Tested 3516 : 3540 Zone Tested LHC "B" 4  
 Anchor Length \_\_\_\_\_ Drill Pipe Run 3483 Mud Wt. 8.9  
 Top Packer Depth 3511 Drill Collars Run 28 Vis 53  
 Bottom Packer Depth 3516 Wt. Pipe Run 0 WL 8.0  
 Total Depth 3540 Chlorides .4000 ppm System LCM 1 1/2 #

Blow Description Fair blow built to 4 1/2 in  
Dead no blow back  
Good blow built to 8 in  
Dead no blow back

Rec	Feet of	%gas	%oil	%water	%mud
Rec <u>115</u>	Feet of <u>mcw</u>			<u>70</u> %water	<u>30</u> %mud
Rec <u>5</u>	Feet of <u>Free Oil</u>		<u>100</u> %oil		
Rec _____	Feet of _____				
Rec _____	Feet of _____				

Rec Total 120 BHT 139 Gravity \_\_\_\_\_ API RW .161 @ 80 ° F Chlorides 40000 ppm

(A) Initial Hydrostatic 1737  Test 1150 T-On Location 07:55  
 (B) First Initial Flow 17  Jars \_\_\_\_\_ T-Started 09:06  
 (C) First Final Flow 38  Safety Joint 75 T-Open 10:58  
 (D) Initial Shut-In 723  Circ Sub \_\_\_\_\_ T-Pulled 14:58  
 (E) Second Initial Flow 45  Hourly Standby \_\_\_\_\_ T-Out 16:06  
 (F) Second Final Flow 63  Mileage 60 R/H 93 Comments \_\_\_\_\_  
 (G) Final Shut-In 632  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 1747  Straddle \_\_\_\_\_  Ruined Shale Packer \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  Ruined Packer \_\_\_\_\_

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

Extra Packer \_\_\_\_\_  
 Extra Recorder \_\_\_\_\_  
 Day Standby \_\_\_\_\_  
 Accessibility \_\_\_\_\_

Sub Total 1318  
 Total 1318  
 MP/DST Disc't \_\_\_\_\_

Approved By \_\_\_\_\_ Our Representative [Signature]

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. 58937

Well Name & No. Butler # 1-9 Test No. 1 Date 5-19-14  
 Company Murfin Drilling Company Elevation 2138 KB 2133 GL  
 Address \_\_\_\_\_  
 Co. Rep / Geo. Saman Sharifaie Rig Murfin #11c  
 Location: Sec. 9 Twp. 17S Rge. 19W Co. Rush State KS

Interval Tested 3858 3910 Zone Tested Conq. Sand  
 Anchor Length \_\_\_\_\_ Drill Pipe Run 3832 Mud Wt. 9.1  
 Top Packer Depth 3853 Drill Collars Run 28 Vis 53  
 Bottom Packer Depth 3858 Wt. Pipe Run 9 WL 9.6  
 Total Depth 3910 Chlorides 2000 ppm System LCM 1#

Blow Description B.O.B. IN 2 mins  
Dead No blow back  
B.O.B. IN 2 mins  
Dead No blow back

Rec	Feet of	%gas	%oil	%water	%mud
<u>868</u>	<u>Water</u>			<u>100</u>	
<u>930</u>	<u>OCMW</u>	<u>10</u>	<u>80</u>	<u>10</u>	<u>10</u>
<u>335</u>	<u>OCMW</u>	<u>10</u>	<u>50</u>	<u>40</u>	<u>40</u>
<u>10</u>	<u>Clear Oil</u>	<u>100</u>			

Rec Total 2143 BHT 122 Gravity \_\_\_\_\_ API RW 169 @ 70 °F Chlorides 45 ppm

(A) Initial Hydrostatic 1940  Test 1150 T-On Location 21:40  
 (B) First Initial Flow 209  Jars \_\_\_\_\_ T-Started 21:45  
 (C) First Final Flow 682  Safety Joint 75 T-Open 22:28  
 (D) Initial Shut-In 1682  Circ Sub \_\_\_\_\_ T-Pulled 03:28  
 (E) Second Initial Flow 713  Hourly Standby \_\_\_\_\_ T-Out 06:44  
 (F) Second Final Flow 992  Mileage 186 Comments \_\_\_\_\_  
 (G) Final Shut-In 1675  Sampler \_\_\_\_\_ loaded 3/21 3:40  
 (H) Final Hydrostatic 1839  Straddle \_\_\_\_\_  
 Ruined Shale Packer \_\_\_\_\_  
 Ruined Packer \_\_\_\_\_  
 Extra Copies \_\_\_\_\_

Initial Open 30  Shale Packer \_\_\_\_\_  
 Initial Shut-In 60  Extra Packer \_\_\_\_\_  
 Final Flow 60  Extra Recorder \_\_\_\_\_ Sub Total 183.33  
 Final Shut-In 90  Day Standby \$57/hrs Total 1594.33  
 Accessibility \_\_\_\_\_ MP/DST Disc't \_\_\_\_\_  
 Sub Total 1411

Approved By \_\_\_\_\_ Our Representative [Signature]

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.