



## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N. Water STE #300  
Wichita, KS 67202

ATTN: Robert Hendrix

### **Walter #4-1**

### **1-1s-36w Rawlins,KS**

Start Date: 2013.11.10 @ 19:35:00

End Date: 2013.11.11 @ 03:57:30

Job Ticket #: 55192                      DST #: 1

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

Printed: 2013.11.15 @ 16:27:15



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drilling Co.

**1-1s-36w Rawlins,KS**

250 N. Water STE #300  
Wichita, KS 67202

**Walter #4-1**

Job Ticket: 55192

**DST#: 1**

ATTN: Robert Hendrix

Test Start: 2013.11.10 @ 19:35:00

## GENERAL INFORMATION:

Formation: **LKC "D"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 21:44:30

Time Test Ended: 03:57:30

Test Type: Conventional Bottom Hole (Initial)

Tester: Kevin Mack

Unit No: 66

**Interval: 4096.00 ft (KB) To 4137.00 ft (KB) (TVD)**

Total Depth: 4137.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 3136.00 ft (KB)

3125.00 ft (CF)

KB to GR/CF: 11.00 ft

**Serial #: 8653 Outside**

Press@RunDepth: 261.42 psig @ 4097.00 ft (KB)

Start Date: 2013.11.10

End Date:

2013.11.11

Start Time: 19:36:00

End Time:

03:57:30

Capacity: 8000.00 psig

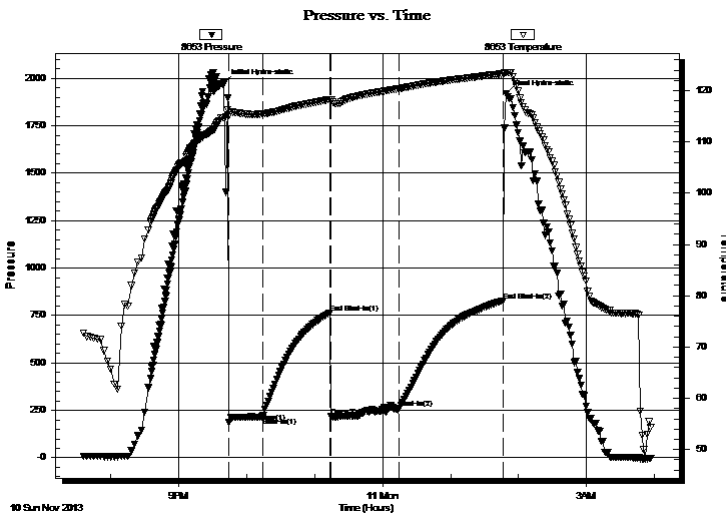
Last Calib.: 2013.11.11

Time On Btm: 2013.11.10 @ 21:40:00

Time Off Btm: 2013.11.11 @ 01:49:00

**TEST COMMENT:** 30 - IF- 1/2" Blow built to 1"  
60 - IS- No Return  
60 - FF- Surface Blow started at 5 min. Built to 1 1/4"  
90 - FS- No Return

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1974.13	114.68	Initial Hydro-static
5	185.92	115.23	Open To Flow (1)
34	213.64	115.46	Shut-In(1)
93	761.14	118.30	End Shut-In(1)
95	216.77	118.13	Open To Flow (2)
155	261.42	120.39	Shut-In(2)
246	827.78	123.28	End Shut-In(2)
249	1916.37	123.55	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
405.00	Mud 100M	3.57

## Gas Rates

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





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drilling Co.

**1-1s-36w Rawlins,KS**

250 N. Water STE #300  
Wichita, KS 67202

**Walter #4-1**

Job Ticket: 55192

**DST#: 1**

ATTN: Robert Hendrix

Test Start: 2013.11.10 @ 19:35:00

## Tool Information

Drill Pipe:	Length: 3847.00 ft	Diameter: 3.80 inches	Volume: 53.96 bbl	Tool Weight:	2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length: 232.00 ft	Diameter: 2.25 inches	Volume: 1.14 bbl	Weight to Pull Loose:	80000.00 lb
			<u>Total Volume: 55.10 bbl</u>	Tool Chased	15.00 ft
Drill Pipe Above KB:	11.00 ft			String Weight: Initial	65000.00 lb
Depth to Top Packer:	4096.00 ft			Final	68000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	41.00 ft				
Tool Length:	69.00 ft				
Number of Packers:	2	Diameter: 6.75 inches			

Tool Comments: tool had to be chased approx 15' to bottom

## Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4069.00	
Shut In Tool	5.00			4074.00	
Hydraulic tool	5.00			4079.00	
Jars	5.00			4084.00	
Safety Joint	3.00			4087.00	
Packer	5.00			4092.00	28.00 Bottom Of Top Packer
Packer	4.00			4096.00	
Stubb	1.00			4097.00	
Recorder	0.00	8653	Outside	4097.00	
Recorder	0.00	8874	Inside	4097.00	
Perforations	1.00			4098.00	
Change Over Sub	1.00			4099.00	
Drill Pipe	32.00			4131.00	
Change Over Sub	1.00			4132.00	
Bullnose	5.00			4137.00	41.00 Bottom Packers & Anchor

**Total Tool Length: 69.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

Murfin Drilling Co.

**1-1s-36w Rawlins,KS**

250 N. Water STE #300  
Wichita, KS 67202

**Walter #4-1**

Job Ticket: 55192

**DST#: 1**

ATTN: Robert Hendrix

Test Start: 2013.11.10 @ 19:35:00

### 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: 55.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.19 in<sup>3</sup>

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 600.00 ppm

Filter Cake: 1.00 inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
405.00	Mud 100M	3.568

Total Length: 405.00 ft      Total Volume: 3.568 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

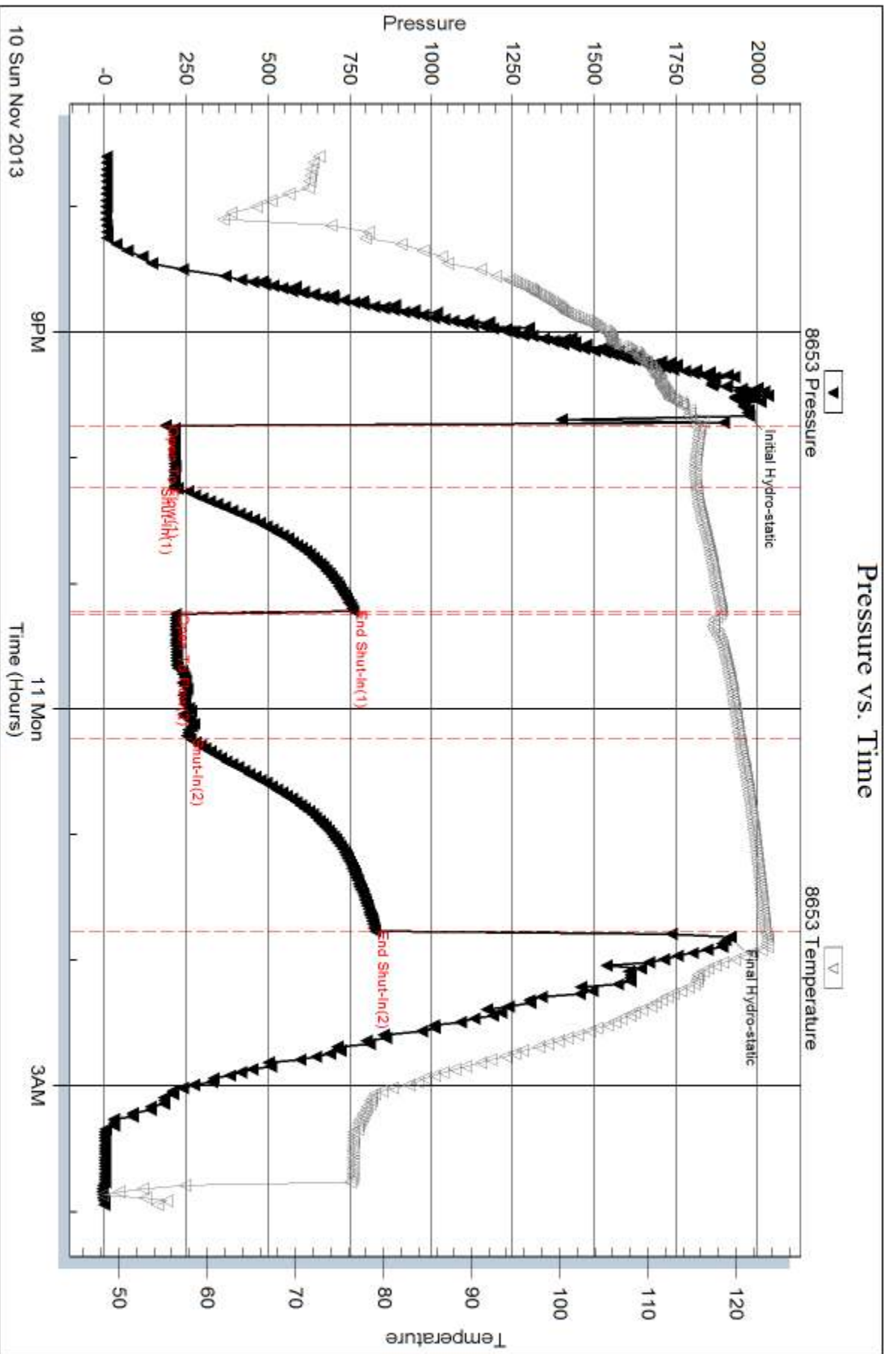
Recovery Comments:

Serial #: 8653

Outside Murfin Drilling Co.

Walter #4-1

DST Test Number: 1



Triobite Testing, Inc

Ref. No: 55192

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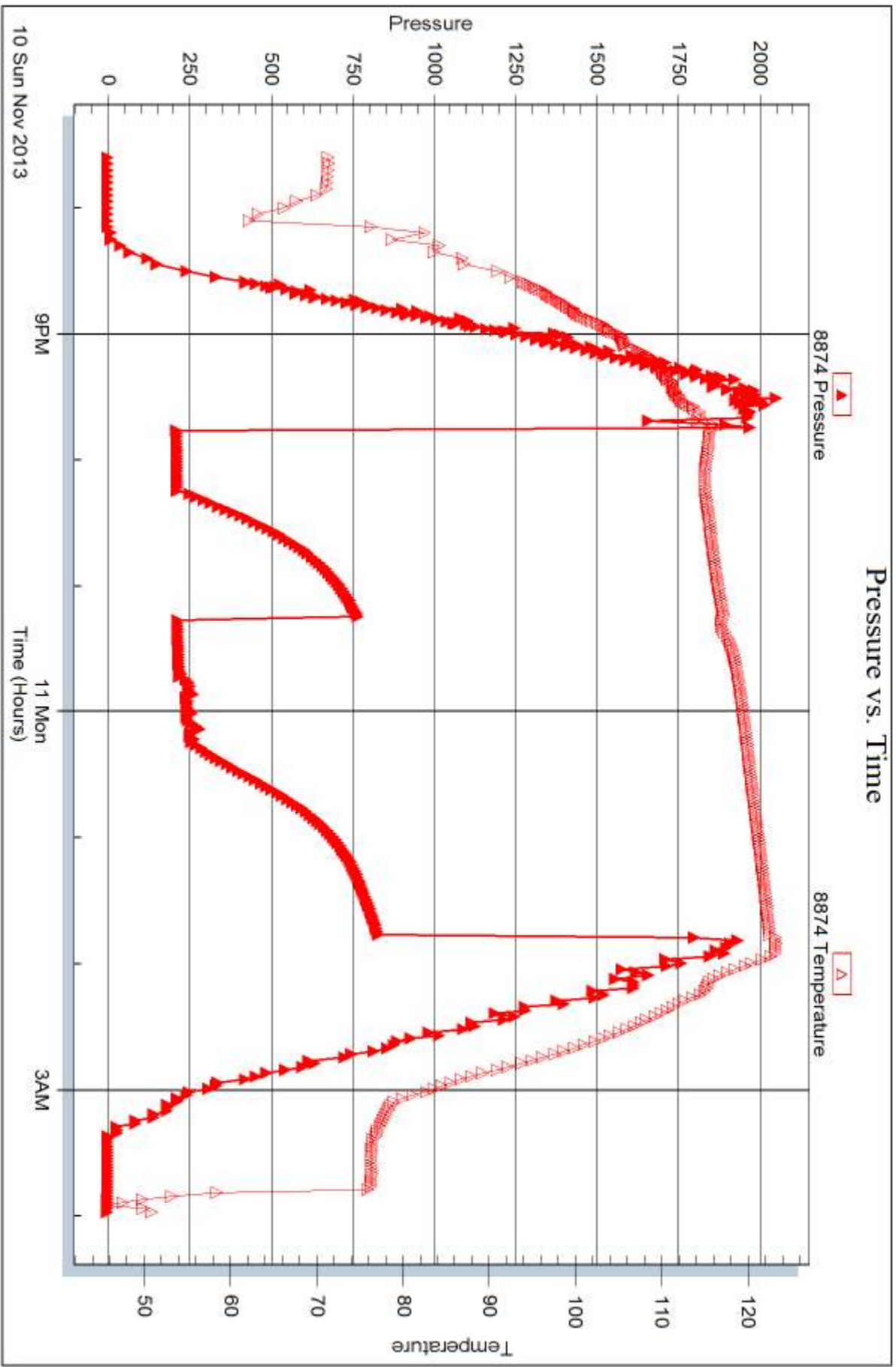
Serial #: 8874

Inside

Murfin Drilling Co.

Walter #4-1

DST Test Number: 1



Trilobite Testing, Inc

Ref. No: 55192

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## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N. Water STE #300  
Wichita, KS 67202

ATTN: Robert Hendrix

### **Walter #4-1**

### **1-1s-36w Rawlins,KS**

Start Date: 2013.11.11 @ 22:43:00

End Date: 2013.11.12 @ 07:32:00

Job Ticket #: 55193                      DST #: 2

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

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**TRILOBITE TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drilling Co.

**1-1s-36w Rawlins,KS**

250 N. Water STE #300  
Wichita, KS 67202

**Walter #4-1**

Job Ticket: 55193

**DST#: 2**

ATTN: Robert Hendrix

Test Start: 2013.11.11 @ 22:43:00

## GENERAL INFORMATION:

Formation: **LKC "I,J"**  
 Deviated: No Whipstock: ft (KB)  
 Test Type: Conventional Bottom Hole (Initial)  
 Time Tool Opened: 00:38:10  
 Tester: Kevin Mack  
 Time Test Ended: 07:32:00  
 Unit No: 66  
 Interval: **4243.00 ft (KB) To 4286.00 ft (KB) (TVD)**  
 Reference Elevations: 3136.00 ft (KB)  
 Total Depth: 4286.00 ft (KB) (TVD)  
 3125.00 ft (CF)  
 Hole Diameter: 7.88 inches  
 Hole Condition: Good  
 KB to GR/CF: 11.00 ft

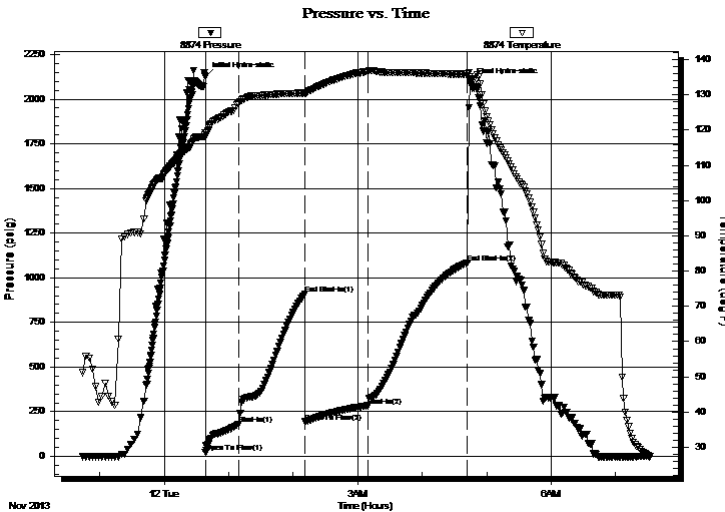
## Serial #: 8874

Inside

Press@RunDepth: 283.46 psig @ 4244.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2013.11.11 End Date: 2013.11.12 Last Calib.: 2013.11.12  
 Start Time: 22:44:00 End Time: 07:32:00 Time On Btm: 2013.11.12 @ 00:38:00  
 Time Off Btm: 2013.11.12 @ 04:44:30

TEST COMMENT: 30 - IF- BoB in 7 min.  
 60 - IS- BoB in 8 min  
 60 - FF- BoB in 8 min  
 90 - FS- BoB in 12 min.

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2125.08	119.26	Initial Hydro-static
1	21.38	118.17	Open To Flow (1)
31	177.75	127.60	Shut-In(1)
93	908.15	130.53	End Shut-In(1)
93	193.23	130.27	Open To Flow (2)
151	283.46	136.53	Shut-In(2)
244	1084.32	135.84	End Shut-In(2)
247	2090.87	135.18	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
180.00	GMCO 20G 50o 30M	0.89
186.00	GMCO 20G 70o 10M	2.14
320.00	Clean Gassy Oil 20G 80o	4.49
0.00	2045' GIP 100G	0.00

## 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: Robert Hendrix

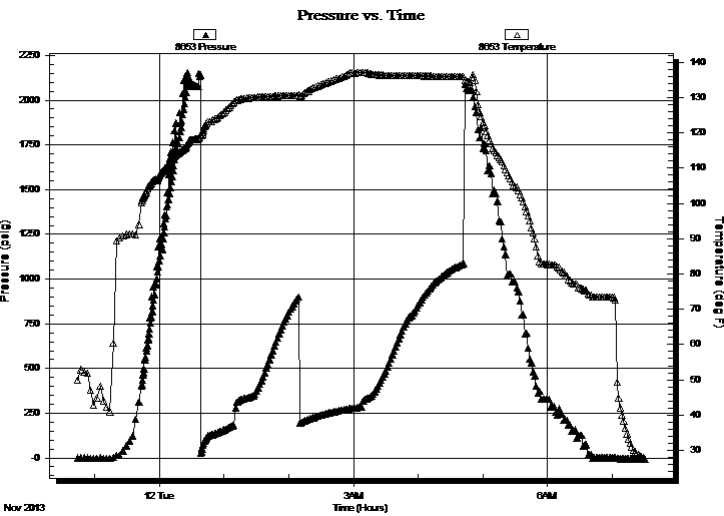
**1-1s-36w Rawlins,KS**  
**Walter #4-1**  
Job Ticket: 55193      **DST#: 2**  
Test Start: 2013.11.11 @ 22:43:00

## GENERAL INFORMATION:

Formation: **LKC "I,J"**  
Deviated: No Whipstock: ft (KB)  
Time Tool Opened: 00:38:10  
Time Test Ended: 07:32:00  
Interval: **4243.00 ft (KB) To 4286.00 ft (KB) (TVD)**  
Total Depth: 4286.00 ft (KB) (TVD)  
Hole Diameter: 7.88 inches Hole Condition: Good  
Test Type: Conventional Bottom Hole (Initial)  
Tester: Kevin Mack  
Unit No: 66  
Reference Elevations: 3136.00 ft (KB)  
3125.00 ft (CF)  
KB to GR/CF: 11.00 ft

**Serial #: 8653      Outside**  
Press@RunDepth:                      psig @      4244.00 ft (KB)      Capacity:                                      8000.00 psig  
Start Date:                                      2013.11.11      End Date:                                      2013.11.12      Last Calib.:                                      2013.11.12  
Start Time:                                      22:44:00      End Time:                                      07:30:30      Time On Btm:  
Time Off Btm:

TEST COMMENT: 30 - IF- BoB in 7 min.  
60 - IS- BoB in 8 min  
60 - FF- BoB in 8 min  
90 - FS- BoB in 12 min.



## PRESSURE SUMMARY

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

## Recovery

Length (ft)	Description	Volume (bbl)
180.00	GMCO 20G 50o 30M	0.89
186.00	GMCO 20G 70o 10M	2.14
320.00	Clean Gassy Oil 20G 80o	4.49
0.00	2045' GIP 100G	0.00

## Gas Rates

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



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drilling Co.

**1-1s-36w Rawlins,KS**

250 N. Water STE #300  
Wichita, KS 67202

**Walter #4-1**

Job Ticket: 55193

**DST#: 2**

ATTN: Robert Hendrix

Test Start: 2013.11.11 @ 22:43:00

## Tool Information

Drill Pipe:	Length: 4003.00 ft	Diameter: 3.80 inches	Volume: 56.15 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 232.00 ft	Diameter: 2.25 inches	Volume: 1.14 bbl	Weight to Pull Loose: 72000.00 lb
			<u>Total Volume: 57.29 bbl</u>	Tool Chased ft
Drill Pipe Above KB:	20.00 ft			String Weight: Initial 68000.00 lb
Depth to Top Packer:	4243.00 ft			Final 68000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	43.00 ft			
Tool Length:	71.00 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			4216.00	
Shut In Tool	5.00			4221.00	
Hydraulic tool	5.00			4226.00	
Jars	5.00			4231.00	
Safety Joint	3.00			4234.00	
Packer	5.00			4239.00	28.00 Bottom Of Top Packer
Packer	4.00			4243.00	
Stubb	1.00			4244.00	
Recorder	0.00	8653	Outside	4244.00	
Recorder	0.00	8874	Inside	4244.00	
Perforations	3.00			4247.00	
Change Over Sub	1.00			4248.00	
Drill Pipe	32.00			4280.00	
Change Over Sub	1.00			4281.00	
Bullnose	5.00			4286.00	43.00 Bottom Packers & Anchor

**Total Tool Length: 71.00**



**TRILOBITE  
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# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling Co.

**1-1s-36w Rawlins,KS**

250 N. Water STE #300  
Wichita, KS 67202

**Walter #4-1**

Job Ticket: 55193

**DST#: 2**

ATTN: Robert Hendrix

Test Start: 2013.11.11 @ 22:43:00

## Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

36 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 50.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.99 in<sup>3</sup>

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 500.00 ppm

Filter Cake: 1.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
180.00	GMCO 20G 50o 30M	0.885
186.00	GMCO 20G 70o 10M	2.135
320.00	Clean Gassy Oil 20G 80o	4.489
0.00	2045' GIP 100G	0.000

Total Length: 686.00 ft      Total Volume: 7.509 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: Oil API 37 @ 70 deg. = 36 corrected

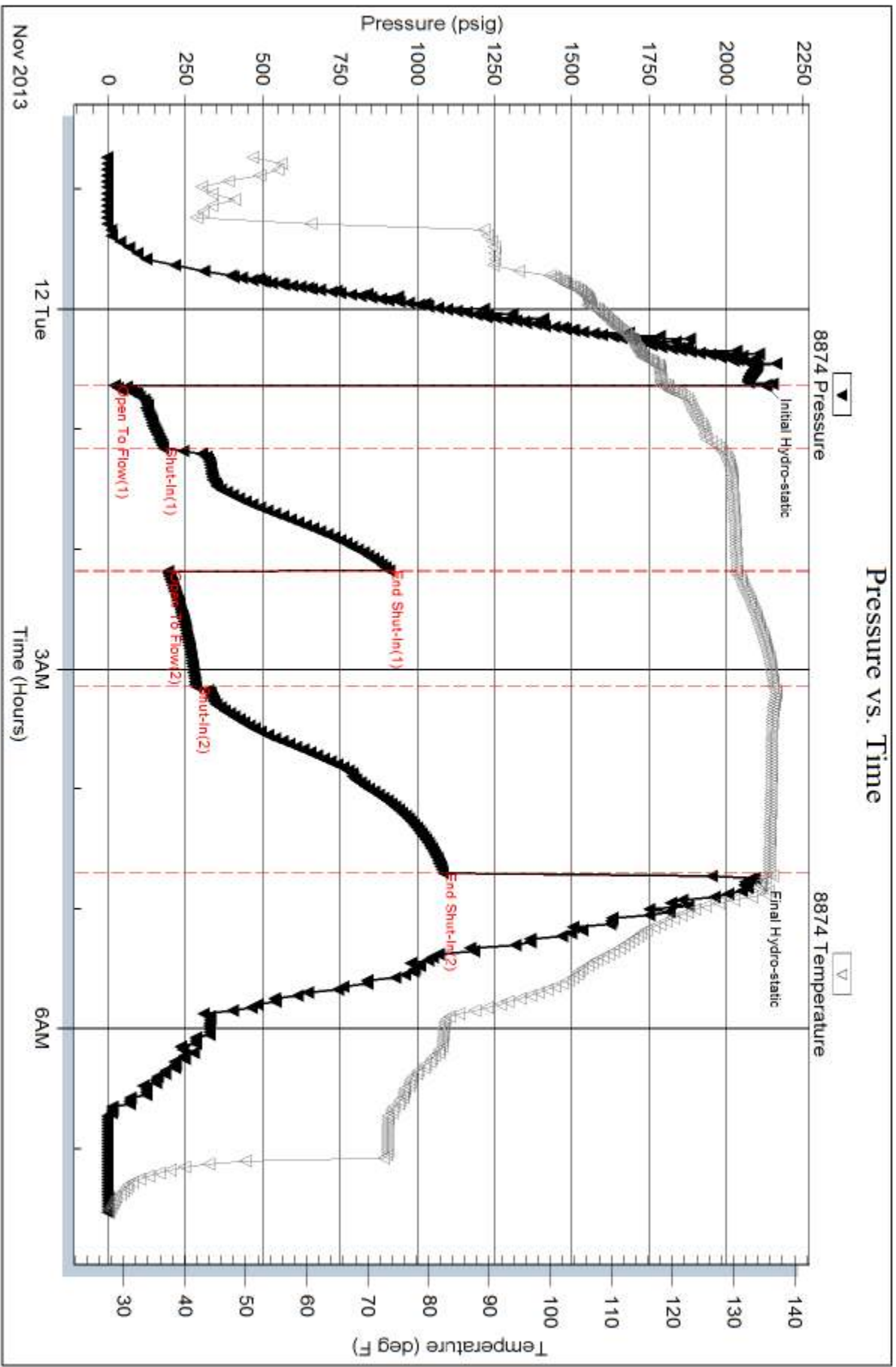
Serial #: 8874

Inside

Murfin Drilling Co.

Walter #4-1

DST Test Number: 2

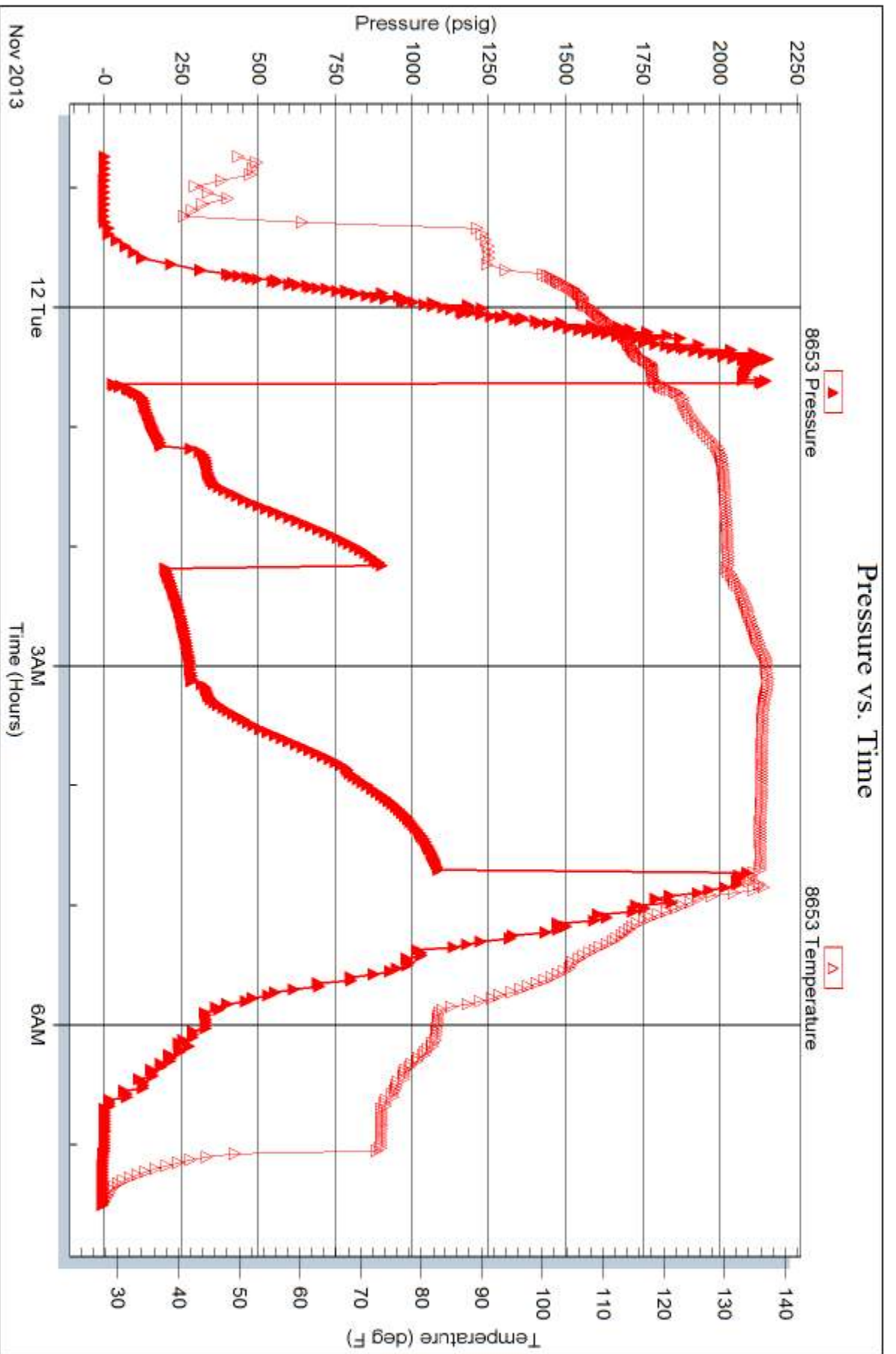


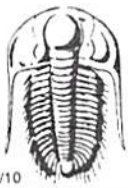
Serial #: 8653

Outside Murfin Drilling Co.

Walter #4-1

DST Test Number: 2





# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 55192

Well Name & No. Walter #4-1 Test No. 1 Date 11-10-13  
 Company Murfin Drilling Co. Elevation 3136 KB 3125 GL  
 Address 250 N Water STE #3008 Wichita, KS 67202  
 Co. Rep / Geo. Robert Hendrix Rig Murfin #2  
 Location: Sec. 1 Twp. 1S Rge. 36W Co. Rawlins State KS

Interval Tested 4096-4137 Zone Tested LKC"D"  
 Anchor Length 41' Drill Pipe Run 3847' Mud Wt. 9.3  
 Top Packer Depth 4092 Drill Collars Run 232' Vis 55  
 Bottom Packer Depth 4096 Wt. Pipe Run 0 WL 7.2  
 Total Depth 4137 Chlorides 6000 ppm System LCM 3#

Blow Description IF - 1/2" Blow built to 1"  
ISI - NO Return  
FF - Surface Blow started at 5 min. Built to 1 1/4"  
FSI - NO Return

Rec	Feet of	%gas	%oil	%water	%mud
<u>405</u>	<u>Mud</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 405 BHT 123 Gravity - API RW - @ - °F Chlorides - ppm

(A) Initial Hydrostatic <u>1974</u>	<input checked="" type="checkbox"/> Test <u>1250</u>	T-On Location <u>5:15 PM</u>
(B) First Initial Flow <u>185</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>7:35 PM</u>
(C) First Final Flow <u>213</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>9:45 PM</u>
(D) Initial Shut-In <u>761</u>	<input checked="" type="checkbox"/> Circ Sub <u>NIL</u>	T-Pulled <u>1:45 AM</u>
(E) Second Initial Flow <u>216</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>4:00 AM</u>
(F) Second Final Flow <u>261</u>	<input checked="" type="checkbox"/> Mileage <u>181.35</u>	Comments <u>Chased tool 15' to Bottom</u>
(G) Final Shut-In <u>827</u>	<input type="checkbox"/> Sampler	<input type="checkbox"/> Ruined Shale Packer
(H) Final Hydrostatic <u>1916</u>	<input type="checkbox"/> Straddle	<input type="checkbox"/> Ruined Packer
Initial Open <u>300</u>	<input type="checkbox"/> Shale Packer	<input type="checkbox"/> Extra Copies
Initial Shut-In <u>600</u>	<input type="checkbox"/> Extra Packer	Sub Total <u>0</u>
Final Flow <u>600</u>	<input type="checkbox"/> Extra Recorder	Total <u>1756.35</u>
Final Shut-In <u>900</u>	<input type="checkbox"/> Day Standby	MP/DST Disc't
	<input type="checkbox"/> Accessibility	
	Sub Total <u>1756.35</u>	

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

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 55193

Well Name & No. Walter #4-1 Test No. 2 Date 11-1-13  
 Company Murfin Drilling Co. Elevation 3136 KB 3125 GL  
 Address 2538 N Walter STE # 3000 Wichita, KS 67202  
 Co. Rep / Geo. Robert Henarix Rig Murfin #2  
 Location: Sec. 1 Twp. 1S Rge. 36W Co. Rawlins State KS

Interval Tested 4243-4286 Zone Tested LKC "I, J"  
 Anchor Length 43' Drill Pipe Run 4003' Mud Wt. 9.3  
 Top Packer Depth 4239 Drill Collars Run 232 Vis 50  
 Bottom Packer Depth 4243 Wt. Pipe Run 0 WL 6.0  
 Total Depth 4286 Chlorides 500 ppm System LCM 2#

Blow Description IF - BoB in 7 min.  
ISL - BoB in 8 min  
FF - BoB in 8 min  
FSL - BoB in 12 min.

Rec	Feet of	%gas	%oil	%water	%mud
<u>320</u>	<u>Clean Gassy Oil</u>	<u>20</u>	<u>80</u>		
<u>186</u>	<u>GMCO</u>	<u>20</u>	<u>70</u>	<u>10</u>	
<u>180</u>	<u>GMCO</u>	<u>20</u>	<u>50</u>	<u>30</u>	
	<u>2045' GIP</u>	<u>100</u>			

Rec Total 686 BHT 136 Gravity 36 API RW - @ - °F Chlorides - ppm

(A) Initial Hydrostatic 2125  Test 1250 T-On Location 10:15 PM  
 (B) First Initial Flow 21  Jars 250 T-Started 10:43 PM  
 (C) First Final Flow 177  Safety Joint 75 T-Open 12:40 AM  
 (D) Initial Shut-In 908  Circ Sub N/C T-Pulled 4:40 AM  
 (E) Second Initial Flow 193  Hourly Standby \_\_\_\_\_ T-Out 7:30 AM  
 (F) Second Final Flow 283  Mileage 117 RT 181.35  
 (G) Final Shut-In 1084  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 2090  Straddle \_\_\_\_\_

Initial Open 300  Shale Packer \_\_\_\_\_  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 1756.35  
 Sub Total 1756.35 MP/DST Disc't \_\_\_\_\_

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

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