



## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N. Water STE 300  
Wichita KS 67202

ATTN: Robert Hendrix

**Walter #1-1**

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

Start Date: 2013.08.26 @ 03:58:00

End Date: 2013.08.26 @ 12:02:00

Job Ticket #: 53509                      DST #: 1

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

Printed: 2013.09.03 @ 11:22:15



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Murfin Drilling Co.  
 250 N. Water STE 300  
 Wichita KS 67202  
 ATTN: Robert Hendrix

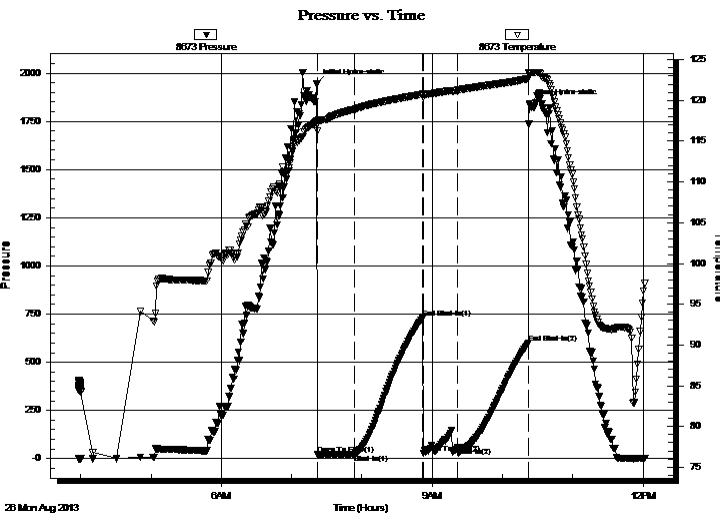
**1-1s-36w Rawlins KS**  
**Walter #1-1**  
 Job Ticket: 53509      **DST#: 1**  
 Test Start: 2013.08.26 @ 03:58:00

## GENERAL INFORMATION:

Formation: **Stottler - Topeka**  
 Deviated: No Whipstock: ft (KB)  
 Test Type: Conventional Bottom Hole (Initial)  
 Time Tool Opened: 07:22:00 Tester: Ryan Nichols  
 Time Test Ended: 12:02:00 Unit No: 61  
 Interval: **3834.00 ft (KB) To 3943.00 ft (KB) (TVD)** Reference Elevations: 3195.00 ft (KB)  
 Total Depth: 3943.00 ft (KB) (TVD) 3184.00 ft (CF)  
 Hole Diameter: 7.88 inches Hole Condition: Good KB to GR/CF: 11.00 ft

**Serial #: 8673 Inside**  
 Press @ Run Depth: 56.54 psig @ 3835.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2013.08.26 End Date: 2013.08.26 Last Calib.: 2013.08.26  
 Start Time: 03:58:01 End Time: 12:02:00 Time On Btm: 2013.08.26 @ 07:21:30  
 Time Off Btm: 2013.08.26 @ 10:23:00

**TEST COMMENT:** 30 IF - Surface blow built to 1/4" @ 15 mins died back to surface blow  
 60 ISI - No return  
 30 FF - No blow  
 60 FSI - No return



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1944.03	117.45	Initial Hydro-static
1	21.31	116.23	Open To Flow (1)
32	24.18	118.91	Shut-In(1)
91	732.07	120.76	End Shut-In(1)
91	28.42	120.34	Open To Flow (2)
121	56.54	121.26	Shut-In(2)
181	598.79	122.66	End Shut-In(2)
182	1843.16	123.31	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
5.00	Mud w / oil spots - 100%M	0.02

## 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 #1-1**

Job Ticket: 53509

**DST#: 1**

ATTN: Robert Hendrix

Test Start: 2013.08.26 @ 03:58:00

## Tool Information

Drill Pipe:	Length: 3301.00 ft	Diameter: 3.88 inches	Volume: 48.27 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: 535.00 ft	Diameter: 2.25 inches	Volume: 2.63 bbl	Weight to Pull Loose: 80000.00 lb
			<u>Total Volume: 50.90 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	30.00 ft			String Weight: Initial 70000.00 lb
Depth to Top Packer:	3834.00 ft			Final 70000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	109.00 ft			
Tool Length:	137.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
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Shut In Tool	5.00			3811.00	
Hydraulic tool	5.00			3816.00	
Jars	5.00			3821.00	
Safety Joint	3.00			3824.00	
Packer	5.00			3829.00	28.00 Bottom Of Top Packer
Packer	5.00			3834.00	
Stubb	1.00			3835.00	
Recorder	0.00	8673	Inside	3835.00	
Recorder	0.00	8651	Outside	3835.00	
Perforations	10.00			3845.00	
change Over Sub	1.00			3846.00	
Drill Pipe	93.00			3939.00	
Change Over Sub	1.00			3940.00	
Bullnose	3.00			3943.00	109.00 Bottom Packers & Anchor

**Total Tool Length: 137.00**



**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 #1-1**

Job Ticket: 53509

**DST#: 1**

ATTN: Robert Hendrix

Test Start: 2013.08.26 @ 03:58:00

## 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: 62.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.38 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 600.00 ppm

Filter Cake: 2.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
5.00	Mud w / oil spots - 100%M	0.025

Total Length: 5.00 ft      Total Volume: 0.025 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

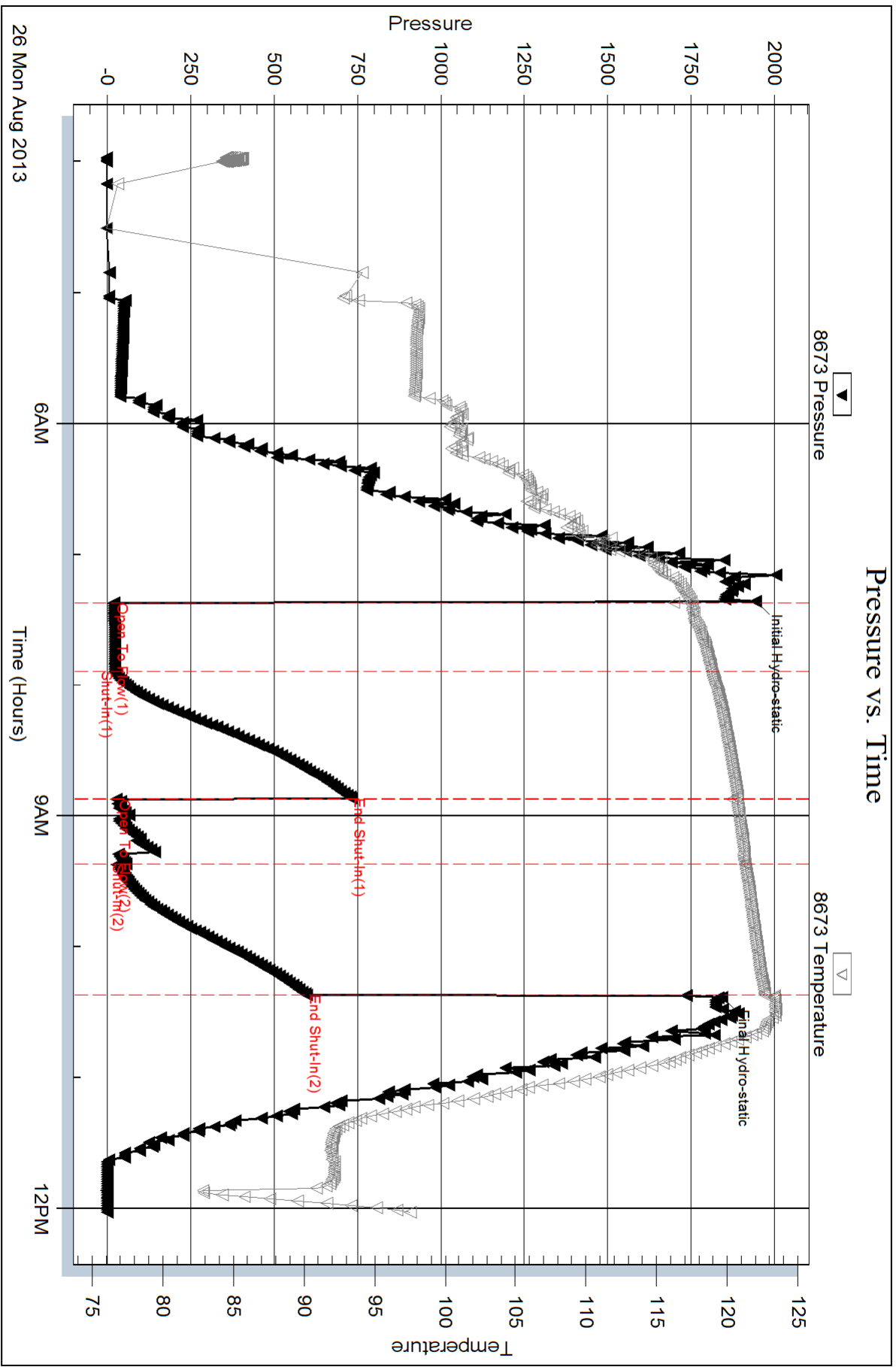
Serial #: 8673

Inside

Murfin Drilling Co.

Walter #1-1

DST Test Number: 1



Trilobite Testing, Inc

Ref. No: 53509

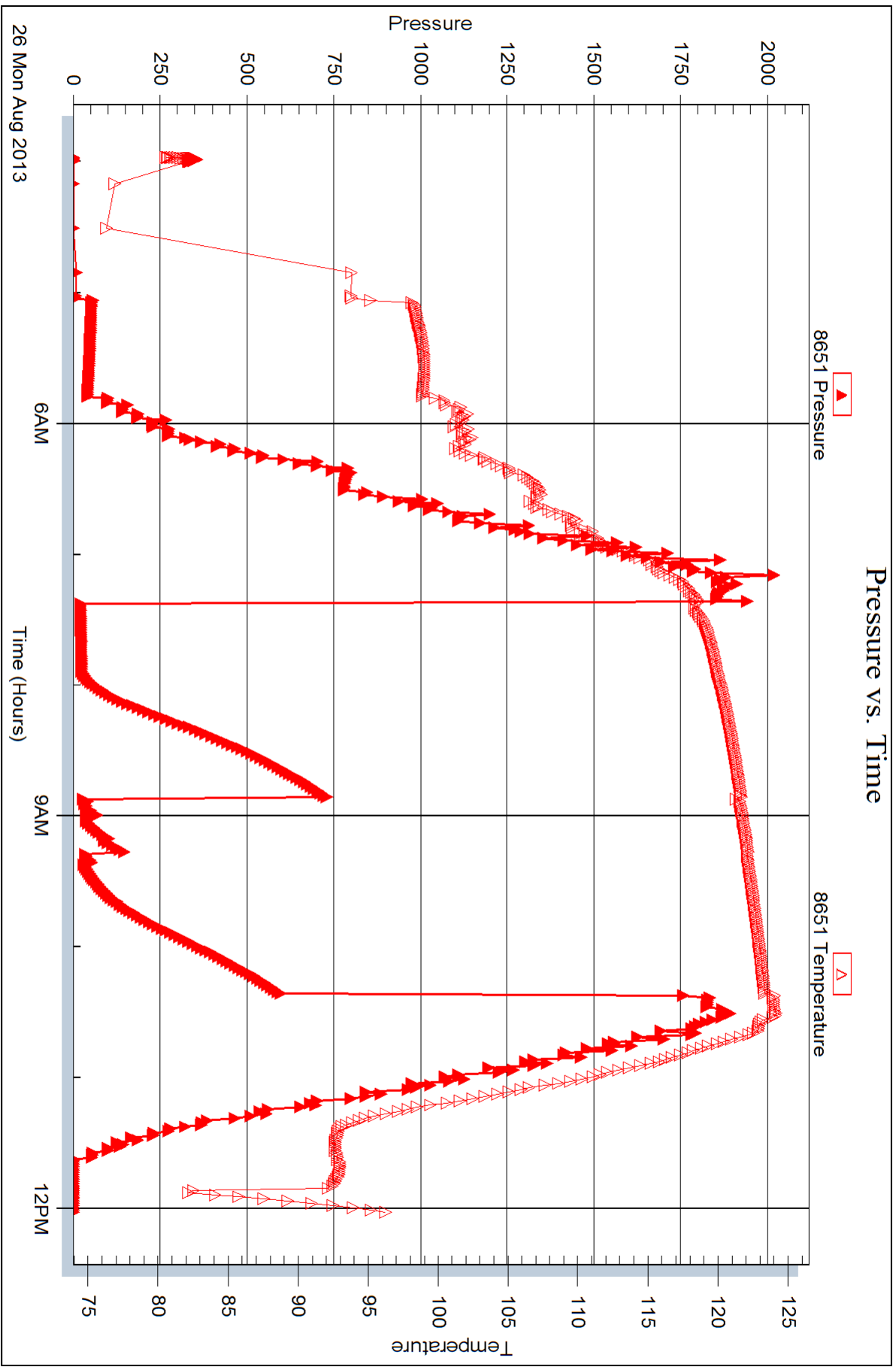
Printed: 2013.09.03 @ 11:22:17

Serial #: 8651

Outside Murfin Drilling Co.

Walter #1-1

DST Test Number: 1





## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N. Water STE 300  
Wichita KS 67202

ATTN: Robert Hendrix

**Walter #1-1**

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

Start Date: 2013.08.26 @ 00:00:41

End Date: 2013.08.26 @ 07:19:41

Job Ticket #: 53510                      DST #: 2

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

Printed: 2013.09.03 @ 11:18:58





**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

Murfin Drilling Co.

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

250 N. Water STE 300  
Wichita KS 67202

**Walter #1-1**

Job Ticket: 53510

**DST#: 2**

ATTN: Robert Hendrix

Test Start: 2013.08.26 @ 00:00:41

## GENERAL INFORMATION:

Formation: **Oread**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 02:24:41

Time Test Ended: 07:19:41

Test Type: Conventional Bottom Hole (Reset)

Tester: Ryan Nichols

Unit No: 61

**Interval: 3994.00 ft (KB) To 4045.00 ft (KB) (TVD)**

Reference Elevations: 3195.00 ft (KB)

Total Depth: 4045.00 ft (KB) (TVD)

3184.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 11.00 ft

**Serial #: 8673**

**Inside**

Press @ Run Depth: 42.11 psig @ 3995.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2013.08.26

End Date:

2013.08.26

Last Calib.:

2013.08.27

Start Time: 00:00:42

End Time:

07:19:41

Time On Btm:

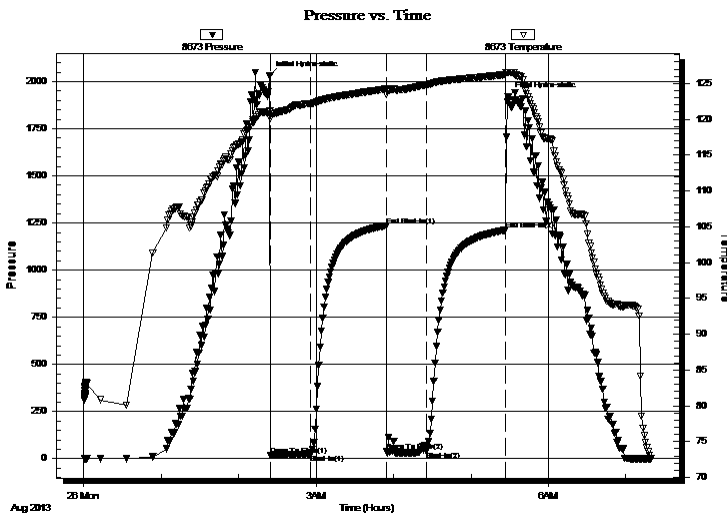
2013.08.26 @ 02:24:11

Time Off Btm:

2013.08.26 @ 05:28:41

**TEST COMMENT:** 30 IF - Surface blow  
60 ISI - No return  
30 FF - No blow  
60 FSI - No return

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2031.94	121.13	Initial Hydro-static
1	19.76	120.09	Open To Flow (1)
32	25.26	122.19	Shut-In(1)
90	1236.47	124.22	End Shut-In(1)
91	41.19	123.40	Open To Flow (2)
121	42.11	124.80	Shut-In(2)
183	1212.40	126.22	End Shut-In(2)
185	1918.29	126.54	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
5.00	Mud w / oil spots - 100%M	0.02

## Gas Rates

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

\* Recovery from multiple tests



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drilling Co.

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

250 N. Water STE 300  
Wichita KS 67202

**Walter #1-1**

Job Ticket: 53510

**DST#: 2**

ATTN: Robert Hendrix

Test Start: 2013.08.26 @ 00:00:41

## Tool Information

Drill Pipe:	Length: 3456.00 ft	Diameter: 3.88 inches	Volume: 50.54 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: 535.00 ft	Diameter: 2.25 inches	Volume: 2.63 bbl	Weight to Pull Loose: 80000.00 lb
			<u>Total Volume: 53.17 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	25.00 ft			String Weight: Initial 70000.00 lb
Depth to Top Packer:	3994.00 ft			Final 70000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	51.00 ft			
Tool Length:	79.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
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Shut In Tool	5.00			3971.00	
Hydraulic tool	5.00			3976.00	
Jars	5.00			3981.00	
Safety Joint	3.00			3984.00	
Packer	5.00			3989.00	28.00 Bottom Of Top Packer
Packer	5.00			3994.00	
Stubb	1.00			3995.00	
Recorder	0.00	8673	Inside	3995.00	
Recorder	0.00	8651	Outside	3995.00	
Perforations	13.00			4008.00	
change Over Sub	1.00			4009.00	
Drill Pipe	32.00			4041.00	
Change Over Sub	1.00			4042.00	
Bullnose	3.00			4045.00	51.00 Bottom Packers & Anchor

**Total Tool Length: 79.00**



**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 #1-1**

Job Ticket: 53510

**DST#: 2**

ATTN: Robert Hendrix

Test Start: 2013.08.26 @ 00:00:41

### 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: 62.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.38 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 600.00 ppm

Filter Cake: 2.00 inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
5.00	Mud w / oil spots - 100%M	0.025

Total Length: 5.00 ft      Total Volume: 0.025 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

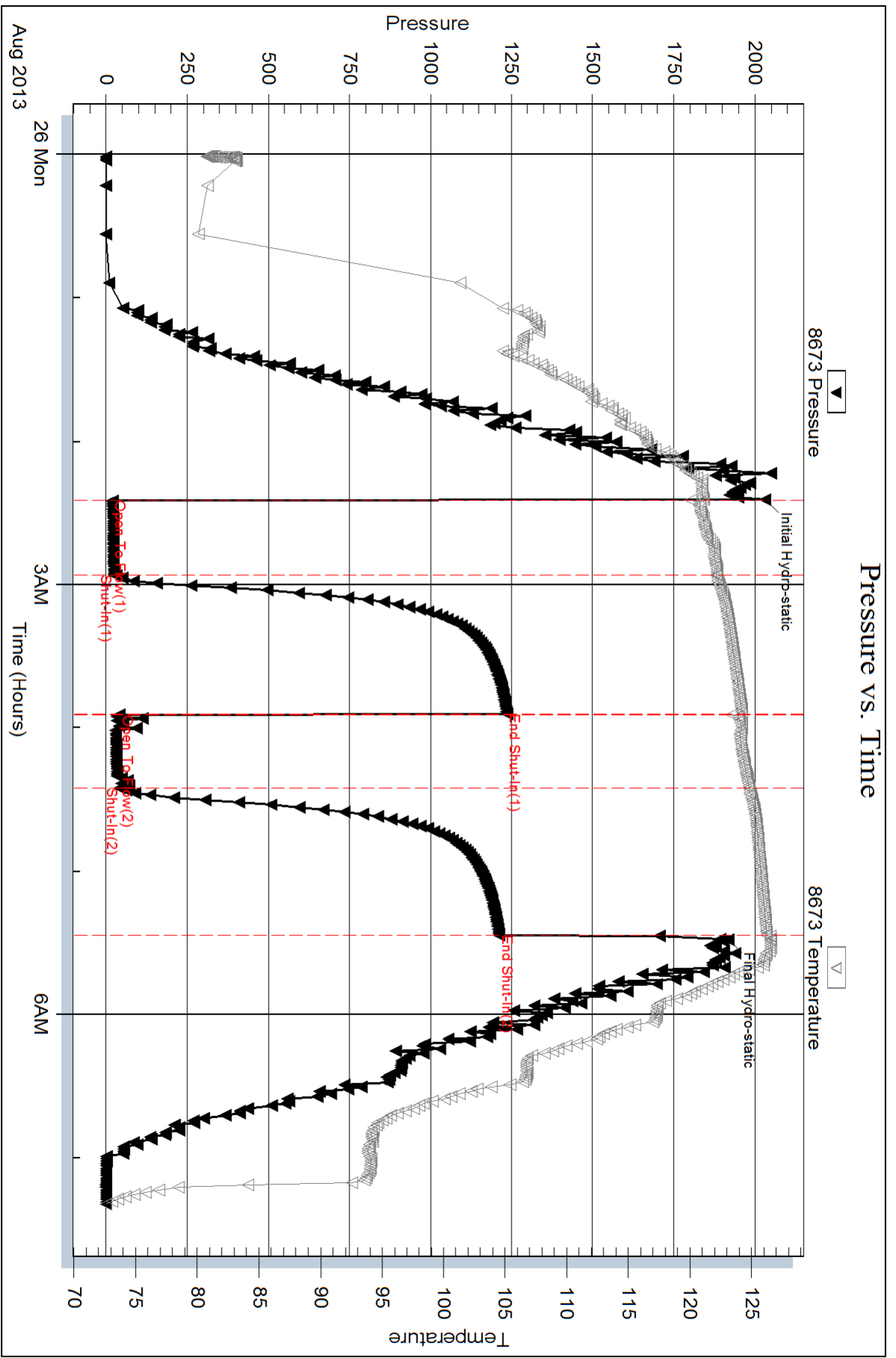
Serial #: 8673

Inside

Murfin Drilling Co.

Walter #1-1

DST Test Number: 2



Trilobite Testing, Inc

Ref. No: 53510

Printed: 2013.09.03 @ 11:18:59



## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N. Water STE 300  
Wichita KS 67202

ATTN: Robert Hendrix

**Walter #1-1**

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

Start Date: 2013.08.27 @ 20:18:00

End Date: 2013.08.28 @ 04:23:30

Job Ticket #: 53511                      DST #: 3

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

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

Printed: 2013.09.03 @ 11:17:13

Murfin Drilling Co.  
1-1s-36w Rawlins KS  
Walter #1-1  
DST # 3  
Lansing " A "  
2013.08.27



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

Murfin Drilling Co.

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

250 N. Water STE 300  
Wichita KS 67202

**Walter #1-1**

Job Ticket: 53511

**DST#: 3**

ATTN: Robert Hendrix

Test Start: 2013.08.27 @ 20:18:00

## GENERAL INFORMATION:

Formation: **Lansing " A "**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 22:36:00

Time Test Ended: 04:23:30

Test Type: Conventional Bottom Hole (Reset)

Tester: Ryan Nichols

Unit No: 61

**Interval: 4076.00 ft (KB) To 4166.00 ft (KB) (TVD)**

Reference Elevations: 3195.00 ft (KB)

Total Depth: 4166.00 ft (KB) (TVD)

3184.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 11.00 ft

**Serial #: 8673**

**Inside**

Press @ Run Depth: 63.12 psig @ 4077.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2013.08.27

End Date:

2013.08.28

Last Calib.:

2013.08.28

Start Time: 20:18:01

End Time:

04:23:30

Time On Btm:

2013.08.27 @ 22:35:30

Time Off Btm:

2013.08.28 @ 02:39:30

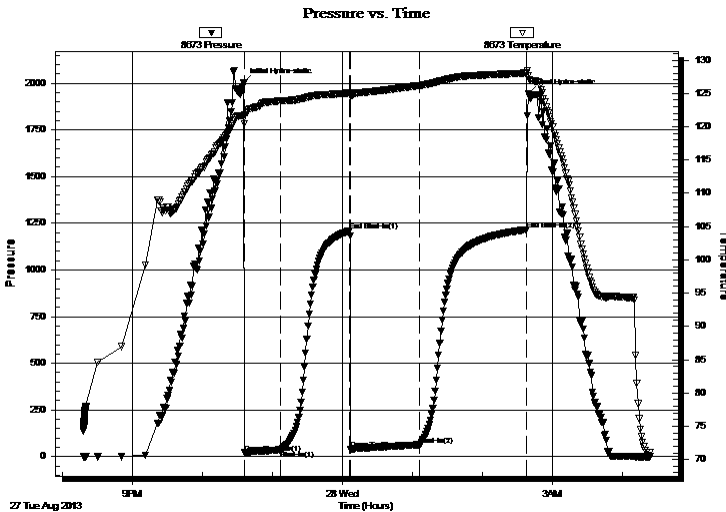
**TEST COMMENT:** 30 IF - 1/4" blow built to 5"

60 ISI - No return

60 FF - Surface blow built to BoB @ 37 mins

90 FSI - Surface blow @ 5 mins died @ 15 mins

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2000.91	121.61	Initial Hydro-static
1	20.08	120.48	Open To Flow (1)
32	35.16	123.90	Shut-In(1)
91	1210.53	125.07	End Shut-In(1)
92	37.41	124.68	Open To Flow (2)
151	63.12	126.17	Shut-In(2)
242	1215.51	128.05	End Shut-In(2)
244	1942.24	127.63	Final Hydro-static

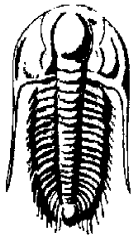
## Recovery

Length (ft)	Description	Volume (bbl)
93.00	GMCO - 10%G - 35%M - 55%o	0.46
15.00	GO - 5%G - 95%o	0.07

## Gas Rates

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

\* Recovery from multiple tests



**TRILLOBITE TESTING, INC.**

**DRILL STEM TEST REPORT**

Murfin Drilling Co.  
 250 N. Water STE 300  
 Wichita KS 67202  
 ATTN: Robert Hendrix

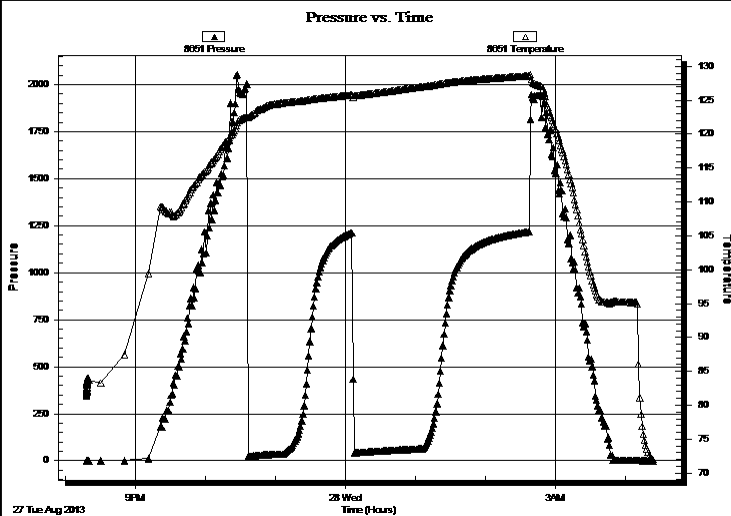
**1-1s-36w Rawlins KS**  
**Walter #1-1**  
 Job Ticket: 53511 **DST#: 3**  
 Test Start: 2013.08.27 @ 20:18:00

**GENERAL INFORMATION:**

<b>Formation:</b>	<b>Lansing " A "</b>		
<b>Deviated:</b>	No Whipstock:	ft (KB)	<b>Test Type:</b> Conventional Bottom Hole (Reset)
<b>Time Tool Opened:</b>	22:36:00		<b>Tester:</b> Ryan Nichols
<b>Time Test Ended:</b>	04:23:30		<b>Unit No:</b> 61
<b>Interval:</b>	<b>4076.00 ft (KB) To 4166.00 ft (KB) (TVD)</b>		<b>Reference Elevations:</b> 3195.00 ft (KB)
<b>Total Depth:</b>	4166.00 ft (KB) (TVD)		3184.00 ft (CF)
<b>Hole Diameter:</b>	7.88 inches	<b>Hole Condition:</b> Good	<b>KB to GR/CF:</b> 11.00 ft

<b>Serial #:</b> 8651	<b>Outside</b>		
<b>Press @RunDepth:</b>	psig @ 4077.00 ft (KB)	<b>Capacity:</b>	8000.00 psig
<b>Start Date:</b>	2013.08.27	<b>End Date:</b>	2013.08.28
<b>Start Time:</b>	20:18:01	<b>End Time:</b>	04:23:30
		<b>Last Calib.:</b>	2013.08.28
		<b>Time On Btm:</b>	
		<b>Time Off Btm:</b>	

**TEST COMMENT:** 30 IF - 1/4" blow built to 5"  
 60 ISI - No return  
 60 FF - Surface blow built to BoB @ 37 mins  
 90 FSI - Surface blow @ 5 mins died @ 15 mins



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

Recovery		
Length (ft)	Description	Volume (bbl)
93.00	GMCO - 10%G - 35%M - 55%o	0.46
15.00	GO - 5%G - 95%o	0.07

\* Recovery from multiple tests

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



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drilling Co.

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

250 N. Water STE 300  
Wichita KS 67202

**Walter #1-1**

Job Ticket: 53511

**DST#: 3**

ATTN: Robert Hendrix

Test Start: 2013.08.27 @ 20:18:00

## Tool Information

Drill Pipe:	Length: 3520.00 ft	Diameter: 3.88 inches	Volume: 51.48 bbl	Tool Weight:	2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length: 535.00 ft	Diameter: 2.25 inches	Volume: 2.63 bbl	Weight to Pull Loose:	90000.00 lb
			<u>Total Volume: 54.11 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	7.00 ft			String Weight: Initial	76000.00 lb
Depth to Top Packer:	4076.00 ft			Final	78000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	90.00 ft				
Tool Length:	118.00 ft				
Number of Packers:	2	Diameter: 6.75 inches			

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
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Shut In Tool	5.00			4053.00	
Hydraulic tool	5.00			4058.00	
Jars	5.00			4063.00	
Safety Joint	3.00			4066.00	
Packer	5.00			4071.00	28.00 Bottom Of Top Packer
Packer	5.00			4076.00	
Stubb	1.00			4077.00	
Recorder	0.00	8673	Inside	4077.00	
Recorder	0.00	8651	Outside	4077.00	
Perforations	20.00			4097.00	
change Over Sub	1.00			4098.00	
Drill Pipe	64.00			4162.00	
Change Over Sub	1.00			4163.00	
Bullnose	3.00			4166.00	90.00 Bottom Packers & Anchor

**Total Tool Length: 118.00**





**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 #1-1**

Job Ticket: 53511

**DST#: 3**

ATTN: Robert Hendrix

Test Start: 2013.08.27 @ 20:18:00

## Mud and Cushion Information

Mud Type: Gel Chem  
Mud Weight: 9.00 lb/gal  
Viscosity: 6297.00 sec/qt  
Water Loss: 5.99 in<sup>3</sup>  
Resistivity: ohm.m  
Salinity: 700.00 ppm  
Filter Cake: 2.00 inches

Cushion Type:  
Cushion Length: ft  
Cushion Volume: bbl  
Gas Cushion Type:  
Gas Cushion Pressure: psig

Oil API: 29.8 deg API  
Water Salinity: ppm

## Recovery Information

Recovery Table

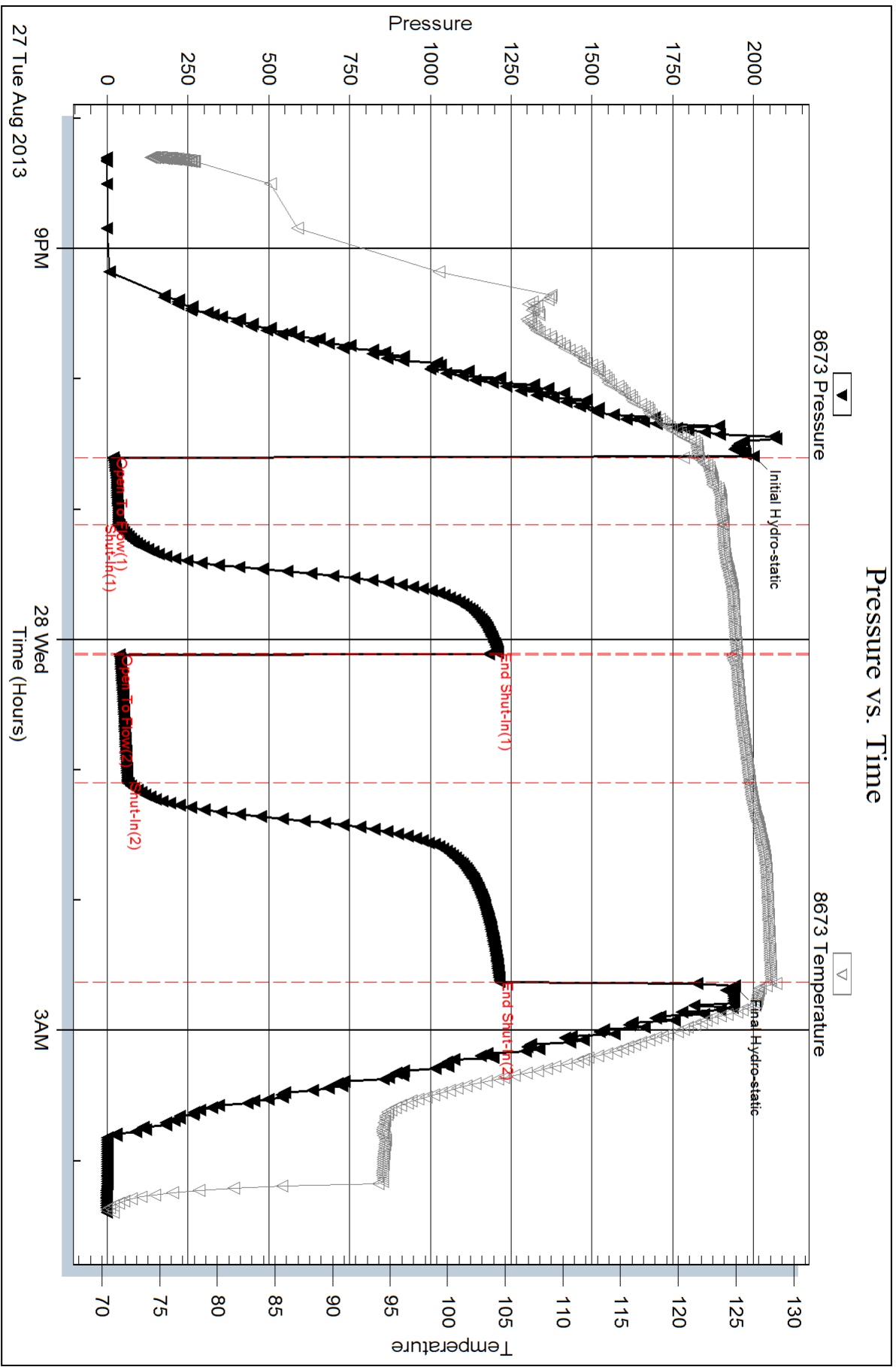
Length ft	Description	Volume bbl
93.00	GMCO - 10%G - 35%M - 55%o	0.457
15.00	GO - 5%G - 95%o	0.074

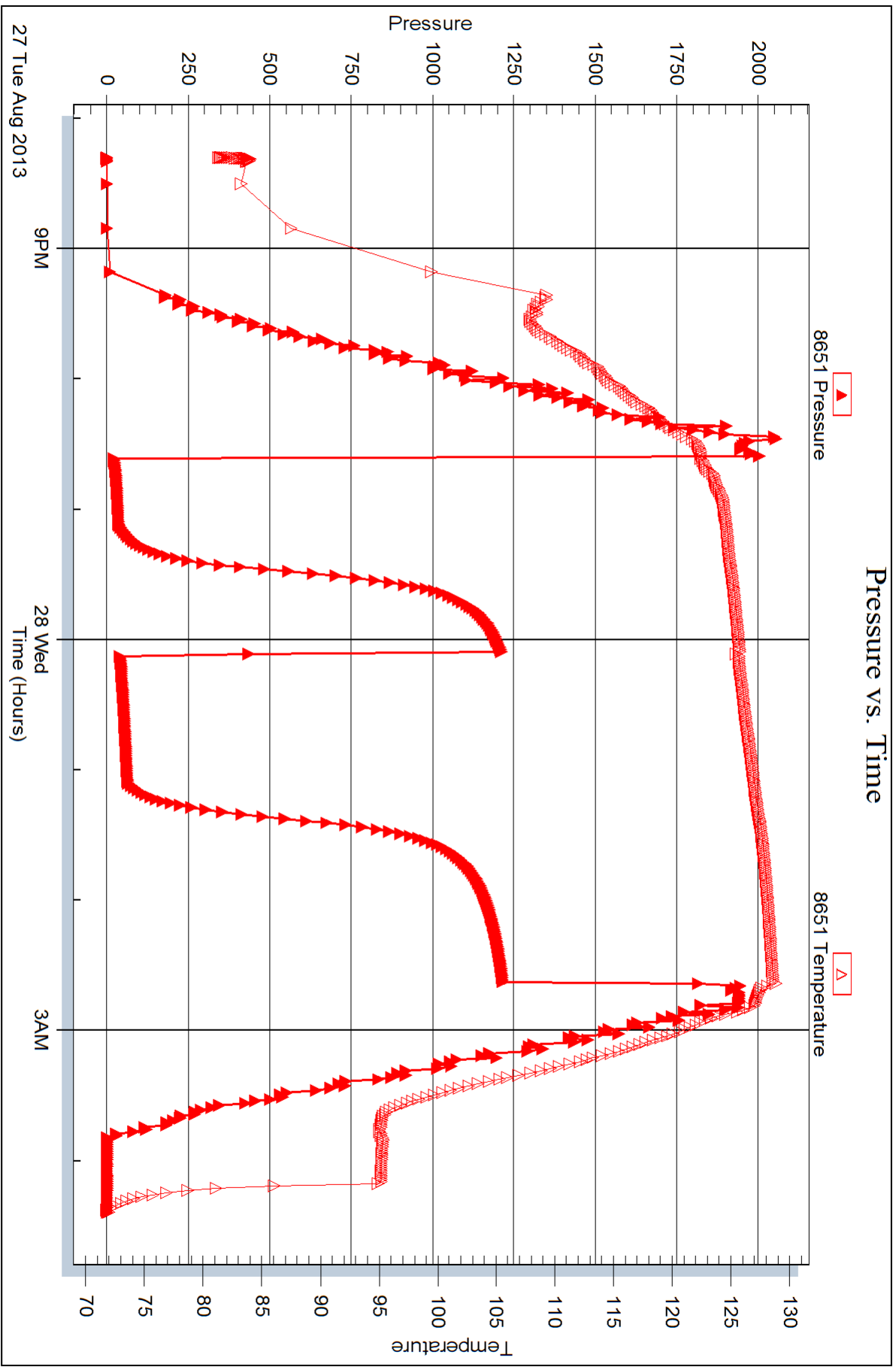
Total Length: 108.00 ft      Total Volume: 0.531 bbl

Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:

Laboratory Name:      Laboratory Location:

Recovery Comments: OIL API = 32 @ 82 DEG F = 29.8 COR 60 DEG F







## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N. Water STE 300  
Wichita KS 67202

ATTN: Robert Hendrix

**Walter #1-1**

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

Start Date: 2013.08.28 @ 12:10:00

End Date: 2013.08.28 @ 20:52:30

Job Ticket #: 52735                      DST #: 4

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

Printed: 2013.09.03 @ 11:15:35



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Murfin Drilling Co.

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

250 N. Water STE 300  
Wichita KS 67202

**Walter #1-1**

ATTN: Robert Hendrix

Job Ticket: 52735

**DST#: 4**

Test Start: 2013.08.28 @ 12:10:00

## GENERAL INFORMATION:

Formation: **LKC-D**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 14:09:00

Time Test Ended: 20:52:30

Test Type: Conventional Bottom Hole (Reset)

Tester: Chuck Kreuzer

Unit No: 61

**Interval: 4161.00 ft (KB) To 4200.00 ft (KB) (TVD)**

Total Depth: 4200.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 3195.00 ft (KB)

3184.00 ft (CF)

KB to GR/CF: 11.00 ft

**Serial #: 8673**

**Inside**

Press @ Run Depth: 750.26 psig @ 4162.00 ft (KB)

Start Date: 2013.08.28

End Date:

2013.08.28

Start Time: 12:10:01

End Time:

20:52:30

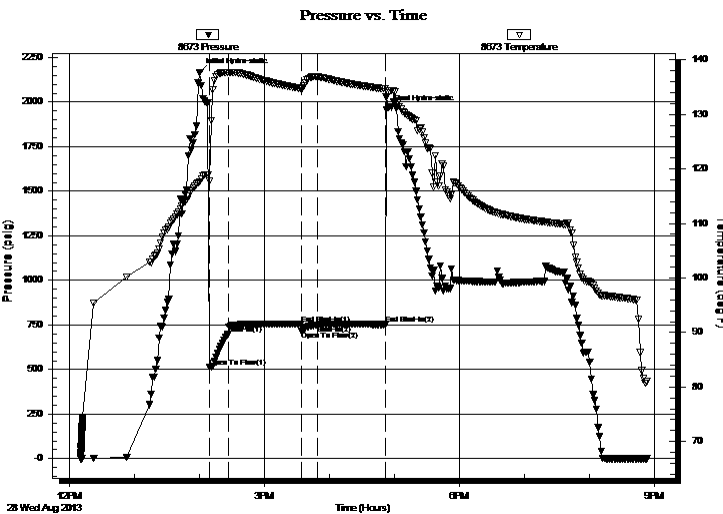
Capacity: 8000.00 psig

Last Calib.: 2013.08.28

Time On Btm: 2013.08.28 @ 14:00:00

Time Off Btm: 2013.08.28 @ 16:52:00

**TEST COMMENT:** IF: Strong blow, Built to B.O.B in 45 sec.  
IS: Blow back after 20 secs. Built to B.O.B in 2 mins. gas to surface in 30 mins.  
FF: Strong blow, Built to B.O.B in 30 secs.  
FS: Blow back, Built to B.O.B int.



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2166.31	117.62	Initial Hydro-static
9	514.26	117.75	Open To Flow (1)
26	697.13	137.66	Shut-In(1)
94	753.08	134.78	End Shut-In(1)
94	714.99	134.75	Open To Flow (2)
109	750.26	136.86	Shut-In(2)
171	753.04	134.67	End Shut-In(2)
172	1956.34	133.30	Final Hydro-static

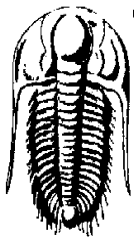
## Recovery

Length (ft)	Description	Volume (bbl)
94.00	gocm-30%g20%o50%m	0.46
376.00	go-15%g85%o	1.85
1881.00	go-30%g70%o	26.88

## Gas Rates

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

\* Recovery from multiple tests



# TRILOBITE TESTING, INC.

## DRILL STEM TEST REPORT

Murfin Drilling Co.  
250 N. Water STE 300  
Wichita KS 67202  
ATTN: Robert Hendrix

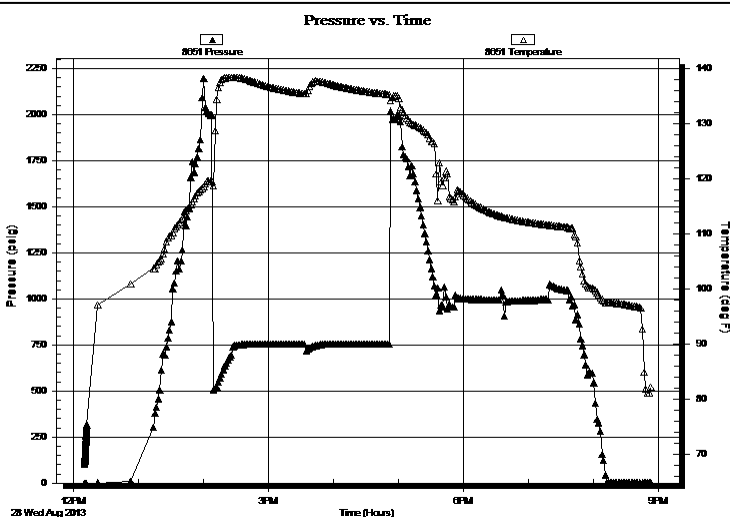
**1-1s-36w Rawlins KS**  
**Walter #1-1**  
Job Ticket: 52735 **DST#: 4**  
Test Start: 2013.08.28 @ 12:10:00

### GENERAL INFORMATION:

Formation: **LKC-D**  
 Deviated: No Whipstock: ft (KB) Test Type: Conventional Bottom Hole (Reset)  
 Time Tool Opened: 14:09:00 Tester: Chuck Kreutzer  
 Time Test Ended: 20:52:30 Unit No: 61  
**Interval: 4161.00 ft (KB) To 4200.00 ft (KB) (TVD)** Reference Elevations: 3195.00 ft (KB)  
 Total Depth: 4200.00 ft (KB) (TVD) 3184.00 ft (CF)  
 Hole Diameter: 7.88 inches Hole Condition: Good KB to GR/CF: 11.00 ft

**Serial #: 8651 Outside**  
 Press @ Run Depth: psig @ 4162.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2013.08.28 End Date: 2013.08.28 Last Calib.: 2013.08.28  
 Start Time: 12:10:01 End Time: 20:52:30 Time On Btm:  
 Time Off Btm:

**TEST COMMENT:** IF: Strong blow , Built to B.O.B in 45 sec.  
 IS: Blow back after 20 secs. Built to B.O.B in 2 mins. gas to surface in 30 mins.  
 FF: Strong blow , Built to B.O.B in 30 secs.  
 FS: Blow back, Built to B.O.B int.



### PRESSURE SUMMARY

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

### Recovery

Length (ft)	Description	Volume (bbl)
94.00	gocm-30%g20%o50%m	0.46
376.00	go-15%g85%o	1.85
1881.00	go-30%g70%o	26.88

### Gas Rates

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

\* Recovery from multiple tests



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drilling Co.

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

250 N. Water STE 300  
Wichita KS 67202

**Walter #1-1**

Job Ticket: 52735

**DST#: 4**

ATTN: Robert Hendrix

Test Start: 2013.08.28 @ 12:10:00

## Tool Information

Drill Pipe:	Length: 3618.00 ft	Diameter: 3.88 inches	Volume: 52.91 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: 535.00 ft	Diameter: 2.25 inches	Volume: 2.63 bbl	Weight to Pull Loose: 80000.00 lb
			<u>Total Volume: 55.54 bbl</u>	Tool Chased 2.00 ft
Drill Pipe Above KB:	20.00 ft			String Weight: Initial 72000.00 lb
Depth to Top Packer:	4161.00 ft			Final 80000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	109.00 ft			
Tool Length:	137.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
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Shut In Tool	5.00			4138.00	
Hydraulic tool	5.00			4143.00	
Jars	5.00			4148.00	
Safety Joint	3.00			4151.00	
Packer	5.00			4156.00	28.00 Bottom Of Top Packer
Packer	5.00			4161.00	
Stubb	1.00			4162.00	
Recorder	0.00	8673	Inside	4162.00	
Recorder	0.00	8651	Outside	4162.00	
Perforations	10.00			4172.00	
change Over Sub	1.00			4173.00	
Drill Pipe	93.00			4266.00	
Change Over Sub	1.00			4267.00	
Bullnose	3.00			4270.00	109.00 Bottom Packers & Anchor

**Total Tool Length: 137.00**



**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 #1-1**

Job Ticket: 52735

**DST#: 4**

ATTN: Robert Hendrix

Test Start: 2013.08.28 @ 12:10:00

## 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: 66.00 sec/qt

Cushion Volume:

bbbl

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

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 550.00 ppm

Filter Cake: 2.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
94.00	gocm-30%g20%o50%m	0.462
376.00	go-15%g85%o	1.849
1881.00	go-30%g70%o	26.877

Total Length: 2351.00 ft      Total Volume: 29.188 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

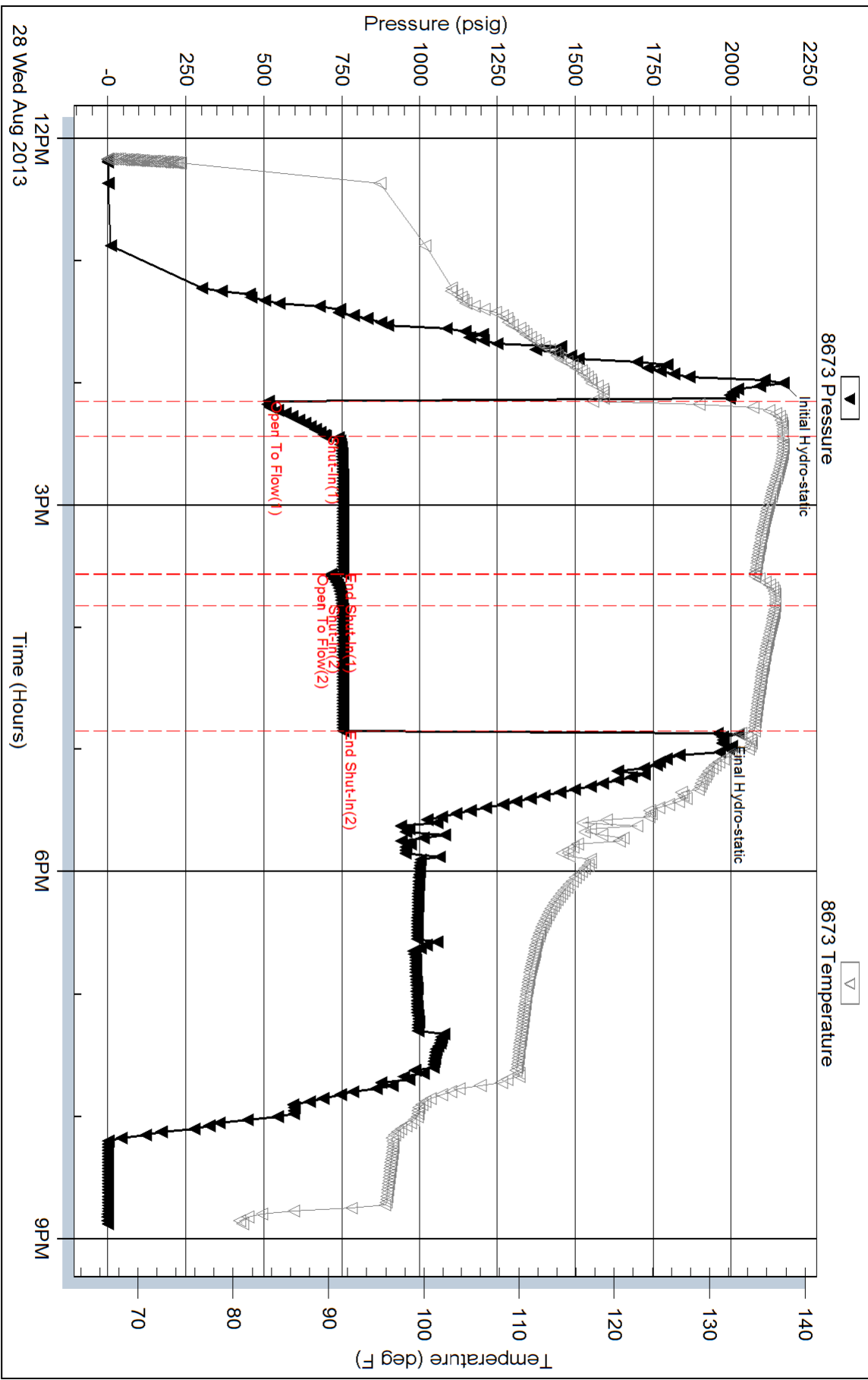
Laboratory Name:

Laboratory Location:

Recovery Comments:



### Pressure vs. Time

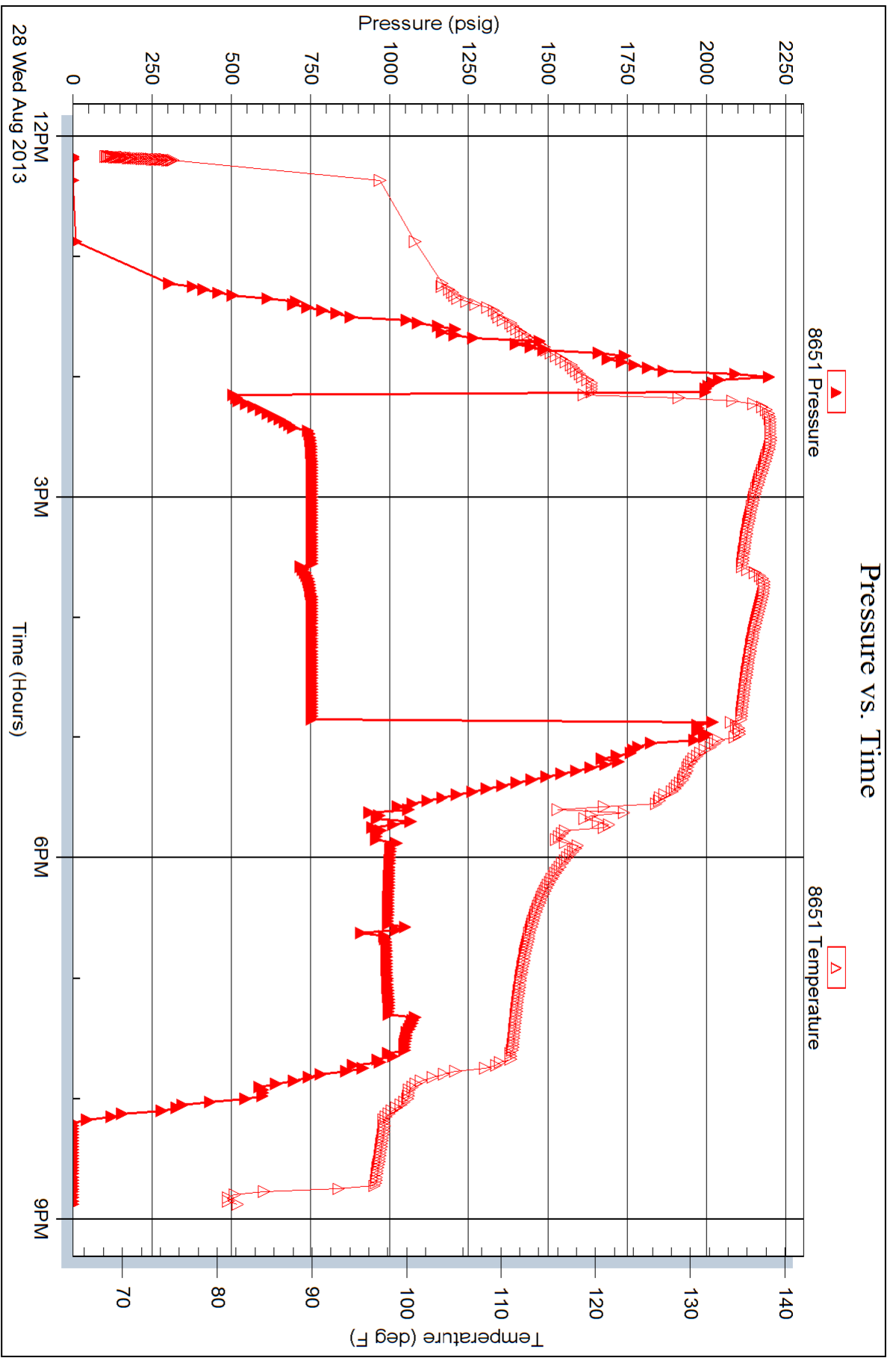


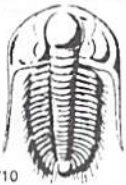
Serial #: 8651

Outside Murfin Drilling Co.

Walter #1-1

DST Test Number: 4





# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 53509

Well Name & No. Walter # 1-1 Test No. 1 Date 8/26/13  
 Company Martin Drilling Co. Elevation 3195 KB 3184 GL  
 Address 250 N Water STE 300 Wichita KS 67202  
 Co. Rep / Geo. Robert Hendrix Rig Martin #14  
 Location: Sec. 1 Twp. 15 Rge. 36 W Co. Rawlins State KS

Interval Tested 3834 - 3943 Zone Tested Stotter - Topoka  
 Anchor Length 109' Drill Pipe Run 3301' Mud Wt. 9.2  
 Top Packer Depth 3829 Drill Collars Run 535' Vis 62  
 Bottom Packer Depth 3834 Wt. Pipe Run 0' WL 6.4  
 Total Depth 3943 Chlorides 600 ppm System LCM 5

Blow Description IF - Surface blow built to 1/4" @ 15 mins died back to surface  
IST - No return  
FF - No blow  
FSI - No return

Rec	Feet of	%gas	%oil	%water	%mud
<u>5'</u>	<u>Mud w/oil spots</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 Total 5' BHT 123° Gravity — API RW — @ — ° F Chlorides — ppm

(A) Initial Hydrostatic <u>1944</u>	<input checked="" type="checkbox"/> Test <u>1150</u>	T-On Location <u>02:00</u>
(B) First Initial Flow <u>21</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>03:58</u>
(C) First Final Flow <u>24</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>07:22</u>
(D) Initial Shut-In <u>732</u>	<input checked="" type="checkbox"/> Circ Sub <u>NC</u>	T-Pulled <u>10:22</u>
(E) Second Initial Flow <u>26</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>12:02</u>
(F) Second Final Flow <u>56</u>	<input checked="" type="checkbox"/> Mileage <u>114 RT</u> 176.70	Comments
(G) Final Shut-In <u>599</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>1843</u>	<input type="checkbox"/> Straddle	<input type="checkbox"/> Ruined Shale Packer
	<input type="checkbox"/> Shale Packer	<input type="checkbox"/> Ruined Packer
Initial Open <u>30</u>	<input type="checkbox"/> Extra Packer	<input type="checkbox"/> Extra Copies
Initial Shut-In <u>60</u>	<input type="checkbox"/> Extra Recorder	Sub Total <u>0</u>
Final Flow <u>30</u>	<input type="checkbox"/> Day Standby	Total <u>1651.70</u>
Final Shut-In <u>60</u>	<input type="checkbox"/> Accessibility	MP/DST Disc't
	Sub Total <u>1651.70</u>	

Approved By \_\_\_\_\_ Our Representative [Signature]  
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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 53510

Well Name & No. Walter #1-T Test No. 2 Date 8/26/13  
 Company Martin Drilling Co. Elevation 3195 KB 3184 GL  
 Address 250 N Water STE 300 Wichita KS 67202  
 Co. Rep / Geo. Robert Hendrix Rig Martin #14  
 Location: Sec. 1 Twp. 15 Rge. 36W Co. Rawlins State KS

Interval Tested 3994 - 4045 Zone Tested Oread  
 Anchor Length 51' Drill Pipe Run 3456' Mud Wt. 9.2  
 Top Packer Depth 3989 Drill Collars Run 535' Vis 62  
 Bottom Packer Depth 3994 Wt. Pipe Run 0' WL 6.4  
 Total Depth 4045 Chlorides 800 ppm System LCM 5  
 Blow Description IF - Surface blow  
ISI - No return  
FF - No blow  
FSL - No return

Rec	Feet of	%gas	%oil	%water	%mud
<u>5'</u>	<u>Mud w/oil spots</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 5' BHT 126° Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm

(A) Initial Hydrostatic 2032  Test 1250 T-On Location 23:30  
 (B) First Initial Flow 20  Jars 250 T-Started 00:00  
 (C) First Final Flow 25  Safety Joint 75 T-Open 02:24  
 (D) Initial Shut-In 1236  Circ Sub NC T-Pulled 05:24  
 (E) Second Initial Flow 41  Hourly Standby \_\_\_\_\_ T-Out 07:19  
 (F) Second Final Flow 42  Mileage 114 RT 176.70  
 (G) Final Shut-In 1212  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 1918  Straddle \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  
 Extra Recorder \_\_\_\_\_  
 Day Standby \_\_\_\_\_  
 Accessibility \_\_\_\_\_

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

Sub Total 1751.70

Sub Total 1751.70

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

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 53511

Well Name & No. Walter #1-1 Test No. 3 Date 8/27/13  
 Company Martin Drilling Co. Elevation 3195 KB 3184 GL  
 Address 250 N. Water STE 300 Wichita KS 67202  
 Co. Rep / Geo. Robert Hendrix Rig Martin #14  
 Location: Sec. 1 Twp. 15 Rge. 36W Co. Rawlins State KS

Interval Tested @4076-4166 Zone Tested Lansing "A"  
 Anchor Length 90' Drill Pipe Run \_\_\_\_\_ Mud Wt. 9.2  
 Top Packer Depth 4071 Drill Collars Run 535' Vis 97  
 Bottom Packer Depth 4076 Wt. Pipe Run 0' WL 6.0  
 Total Depth 4166 Chlorides 700 ppm System LCM 2

Blow Description IF - 1/4 blow built to 5"  
ISI - No return  
FF - Surface blow built to BoB @ 37 mins  
FSI - Surface blow started @ 5 mins died @ 15 mins

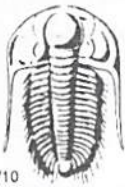
Rec	Feet of	%gas	%oil	%water	%mud
<u>15</u>	<u>60</u>	<u>5</u>	<u>95</u>		
<u>93</u>	<u>GMCO</u>	<u>10</u>	<u>55</u>		<u>35</u>
Rec _____	Feet of _____	%gas _____	%oil _____	%water _____	%mud _____
Rec _____	Feet of _____	%gas _____	%oil _____	%water _____	%mud _____
Rec _____	Feet of _____	%gas _____	%oil _____	%water _____	%mud _____

Rec Total 108' BHT 128° Gravity 29.8 API RW \_\_\_\_\_ @ \_\_\_\_\_ ° F Chlorides \_\_\_\_\_ ppm

(A) Initial Hydrostatic 2001  Test 1250  
 (B) First Initial Flow 20  Jars 250  
 (C) First Final Flow 35  Safety Joint 75  
 (D) Initial Shut-In 1211  Circ Sub NC  
 (E) Second Initial Flow 37  Hourly Standby \_\_\_\_\_  
 (F) Second Final Flow 63  Mileage 114 RT 176.70  
 (G) Final Shut-In 1215  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 1942  Straddle \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  
 Extra Recorder \_\_\_\_\_  
 Day Standby \_\_\_\_\_  
 Accessibility \_\_\_\_\_

T-On Location 20:00  
 T-Started 20:18  
 T-Open 22:37  
 T-Pulled 02:37  
 T-Out 04:23  
 Comments \_\_\_\_\_  
 Ruined Shale Packer \_\_\_\_\_  
 Ruined Packer \_\_\_\_\_  
 Extra Copies \_\_\_\_\_  
 Sub Total 0  
 Total 1751.70  
 MP/DST Disc't \_\_\_\_\_  
 Sub Total 1751.70

Approved By \_\_\_\_\_ Our Representative \_\_\_\_\_  
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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 52735

4/10

Well Name & No. Walter 1-1 Test No. 4 Date 8-28-13  
 Company Murfin Drilling Co. Elevation 3186 KB 3186 GL  
 Address 250 N. water st. 300 W. 1st St. Ks. 67202  
 Co. Rep / Geo. Robert Hendrix Rig Murfin #14  
 Location: Sec. 1 Twp. 1 Rge. 36 Co. Rawlins State Ks

Interval Tested 4161 4200 Zone Tested LRC-D  
 Anchor Length 39 Drill Pipe Run 3618 Mud Wt. 8.9  
 Top Packer Depth 4156 Drill Collars Run 538 Vis 66  
 Bottom Packer Depth 4161 Wt. Pipe Run -0- WL 6.0  
 Total Depth 4200 Chlorides 550 ppm System LCM 2#

Blow Description IF: Strong blow, Built to B.O.B in 45sec.  
ISI: Bled off, Blow Back after 20secs. Built to B.O.B in 2 mins. Gas to surface 300 ins into shut-in  
FF: Strong blow, Built to B.O.B in 30sec.  
FSI: Blow Back, Built to B.O.B Int.

Rec	Feet of go	%gas	%oil	%water	%mud
<u>1881</u>		<u>30</u>	<u>70</u>		
<u>376</u>		<u>15</u>	<u>85</u>		
<u>94</u>	<u>Feet of goem</u>	<u>30</u>	<u>30</u>		<u>50</u>

Rec Total 2351 BHT 136.9 Gravity 36.2 API RW @ 176.70 °F Chlorides ppm

(A) Initial Hydrostatic <u>2166</u>	<input checked="" type="checkbox"/> Test <u>1250</u>	T-On Location <u>12:10</u>
(B) First Initial Flow <u>514</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>12:10</u>
(C) First Final Flow <u>697</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>14:09</u>
(D) Initial Shut-In <u>753</u>	<input type="checkbox"/> Circ Sub	T-Pulled <u>16:50</u>
(E) Second Initial Flow <u>715</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>20:52</u>
(F) Second Final Flow <u>750</u>	<input checked="" type="checkbox"/> Mileage <u>57 x 2 = 114 x 1.50</u>	Comments
(G) Final Shut-In <u>753</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>1956</u>	<input type="checkbox"/> Straddle	<input type="checkbox"/> Ruined Shale Packer
Initial Open <u>15</u>	<input type="checkbox"/> Shale Packer	<input type="checkbox"/> Ruined Packer
Initial Shut-In <u>60</u>	<input type="checkbox"/> Extra Packer	<input type="checkbox"/> Extra Copies
Final Flow <u>15</u>	<input type="checkbox"/> Extra Recorder	Sub Total <u>0</u>
Final Shut-In <u>60</u>	<input type="checkbox"/> Day Standby	Total <u>1751.70</u>
	<input type="checkbox"/> Accessibility	MP/DST Disc't
	Sub Total <u>1751.70</u>	

Approved By \_\_\_\_\_

Our Representative Chuck Hays

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