



## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N. Water Ste.300  
Wichita KS. 67202

ATTN: Saman Sharifaic

### **Hammerschmidt #1-24**

### **24-4s-31w Rawlins,KS**

Start Date: 2014.03.07 @ 17:40:00

End Date: 2014.03.08 @ 01:23:30

Job Ticket #: 56801                      DST #: 1

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

Printed: 2014.03.16 @ 12:13:04



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drilling Co.

**24-4s-31w Rawlins,KS**

250 N. Water Ste.300  
Wichita KS. 67202

**Hammerschmidt #1-24**

Job Ticket: 56801

**DST#: 1**

ATTN: Saman Sharifaic

Test Start: 2014.03.07 @ 17:40:00

## GENERAL INFORMATION:

Formation: **Toronto - LKC B**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 20:20:00

Time Test Ended: 01:23:30

Test Type: Conventional Bottom Hole (Initial)

Tester: Chuck Kreuzer Jr.

Unit No: 61

**Interval: 3905.00 ft (KB) To 3991.00 ft (KB) (TVD)**

Reference Elevations: 2916.00 ft (KB)

Total Depth: 3991.00 ft (KB) (TVD)

2905.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 11.00 ft

**Serial #: 8673**

**Inside**

Press@RunDepth: 49.49 psig @ 3906.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.03.07

End Date:

2014.03.08

Last Calib.:

2014.03.08

Start Time:

17:40:05

End Time:

01:23:29

Time On Btm:

2014.03.07 @ 20:00:00

Time Off Btm:

2014.03.07 @ 23:31:30

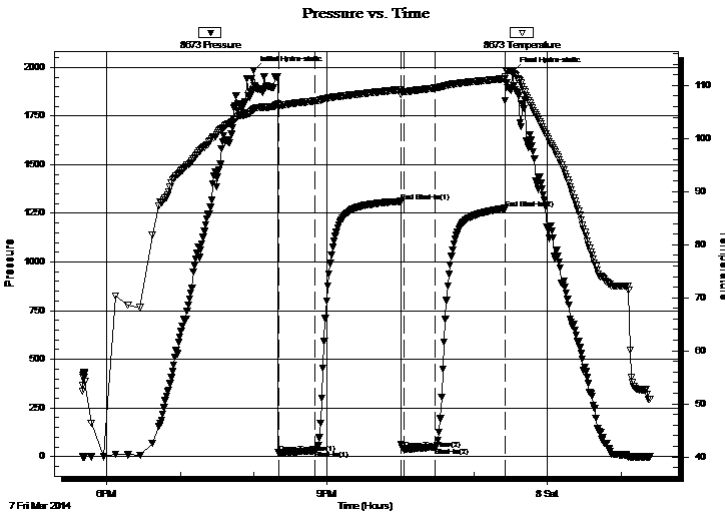
TEST COMMENT: IF: Weak blow , 1/4". Dead in 28 mins.

IS: No blow back

FF: No blow

FS: No blow back

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1984.14	105.44	Initial Hydro-static
20	19.04	106.15	Open To Flow (1)
50	31.31	107.08	Shut-In(1)
120	1311.19	109.23	End Shut-In(1)
123	38.33	108.81	Open To Flow (2)
149	49.49	109.51	Shut-In(2)
205	1275.13	111.29	End Shut-In(2)
212	1979.46	112.66	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
60.00	mud w ith oil spots	0.30
5.00	oil on top-100%o	0.02

## 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: Saman Sharifaic

**24-4s-31w Rawlins,KS**  
**Hammerschmidt #1-24**  
Job Ticket: 56801      **DST#: 1**  
Test Start: 2014.03.07 @ 17:40:00

## GENERAL INFORMATION:

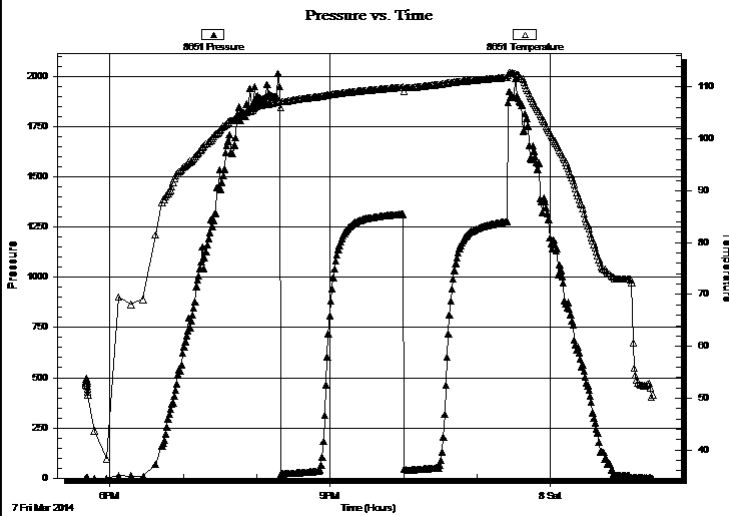
Formation: **Toronto - LKC B**  
 Deviated: No Whipstock:                      ft (KB)      Test Type: Conventional Bottom Hole (Initial)  
 Time Tool Opened: 20:20:00      Tester: Chuck Kreuzer Jr.  
 Time Test Ended: 01:23:30      Unit No: 61

Interval: **3905.00 ft (KB) To 3991.00 ft (KB) (TVD)**      Reference Elevations: 2916.00 ft (KB)  
 Total Depth: 3991.00 ft (KB) (TVD)      2905.00 ft (CF)  
 Hole Diameter: 7.88 inches Hole Condition: Good      KB to GR/CF: 11.00 ft

**Serial #: 8651      Outside**

Press@RunDepth:                      psig @      3906.00 ft (KB)      Capacity: 8000.00 psig  
 Start Date: 2014.03.07      End Date: 2014.03.08      Last Calib.: 2014.03.08  
 Start Time: 17:40:05      End Time: 01:23:29      Time On Btm:  
    Time Off Btm:

**TEST COMMENT:** IF: Weak blow , 1/4". Dead in 28 mins.  
 IS: No blow back  
 FF: No blow  
 FS: No blow back



## PRESSURE SUMMARY

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

## Recovery

Length (ft)	Description	Volume (bbl)
60.00	mud with oil spots	0.30
5.00	oil on top-100%o	0.02

## Gas Rates

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



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drilling Co.

**24-4s-31w Rawlins,KS**

250 N. Water Ste.300  
Wichita KS. 67202

**Hammerschmidt #1-24**

Job Ticket: 56801

**DST#: 1**

ATTN: Saman Sharifaic

Test Start: 2014.03.07 @ 17:40:00

## Tool Information

Drill Pipe:	Length: 3590.00 ft	Diameter: 3.80 inches	Volume: 50.36 bbl	Tool Weight: 2400.00 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: 297.00 ft	Diameter: 2.25 inches	Volume: 1.46 bbl	Weight to Pull Loose: 66000.00 lb
			<u>Total Volume: 51.82 bbl</u>	Tool Chased 2.00 ft
Drill Pipe Above KB:	10.00 ft			String Weight: Initial 64000.00 lb
Depth to Top Packer:	3905.00 ft			Final 64000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	86.00 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
Shut In Tool	5.00			3882.00	
Hydraulic tool	5.00			3887.00	
Jars	5.00			3892.00	
Safety Joint	3.00			3895.00	
Packer	5.00			3900.00	28.00 Bottom Of Top Packer
Packer	5.00			3905.00	
Stubb	1.00			3906.00	
Recorder	0.00	8673	Inside	3906.00	
Recorder	0.00	8651	Outside	3906.00	
Perforations	16.00			3922.00	
change Over Sub	1.00			3923.00	
Drill Pipe	64.00			3987.00	
Change Over Sub	1.00			3988.00	
Bullnose	3.00			3991.00	86.00 Bottom Packers & Anchor

**Total Tool Length: 114.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling Co.

**24-4s-31w Rawlins,KS**

250 N. Water Ste.300  
Witchita KS. 67202

**Hammerschmidt #1-24**

Job Ticket: 56801

**DST#: 1**

ATTN: Saman Sharifaic

Test Start: 2014.03.07 @ 17:40:00

## Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 58.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.98 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 2300.00 ppm

Filter Cake: 2.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
60.00	mud w ith oil spots	0.295
5.00	oil on top-100%o	0.025

Total Length: 65.00 ft      Total Volume: 0.320 bbl

Num Fluid Samples: 0

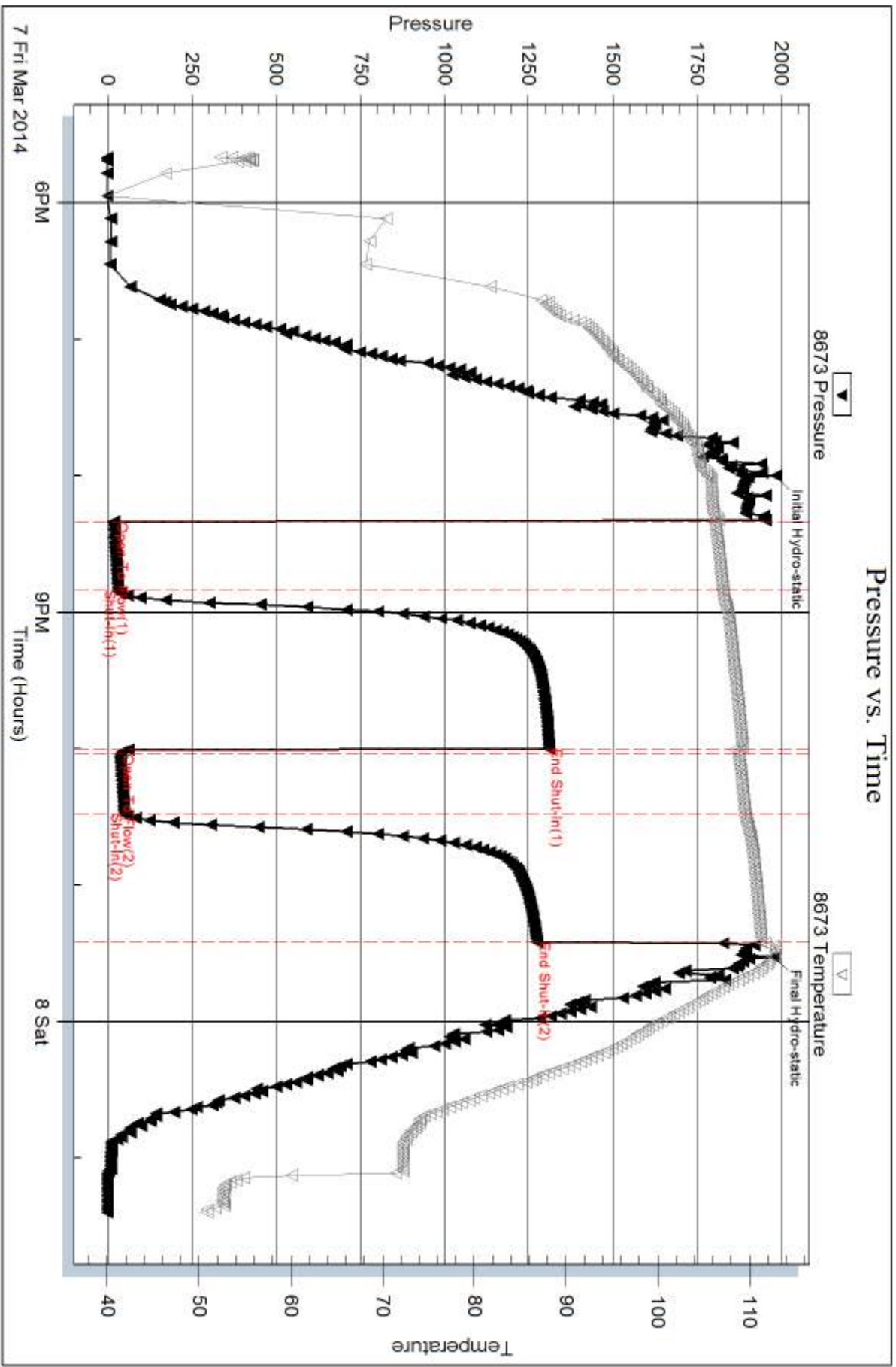
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

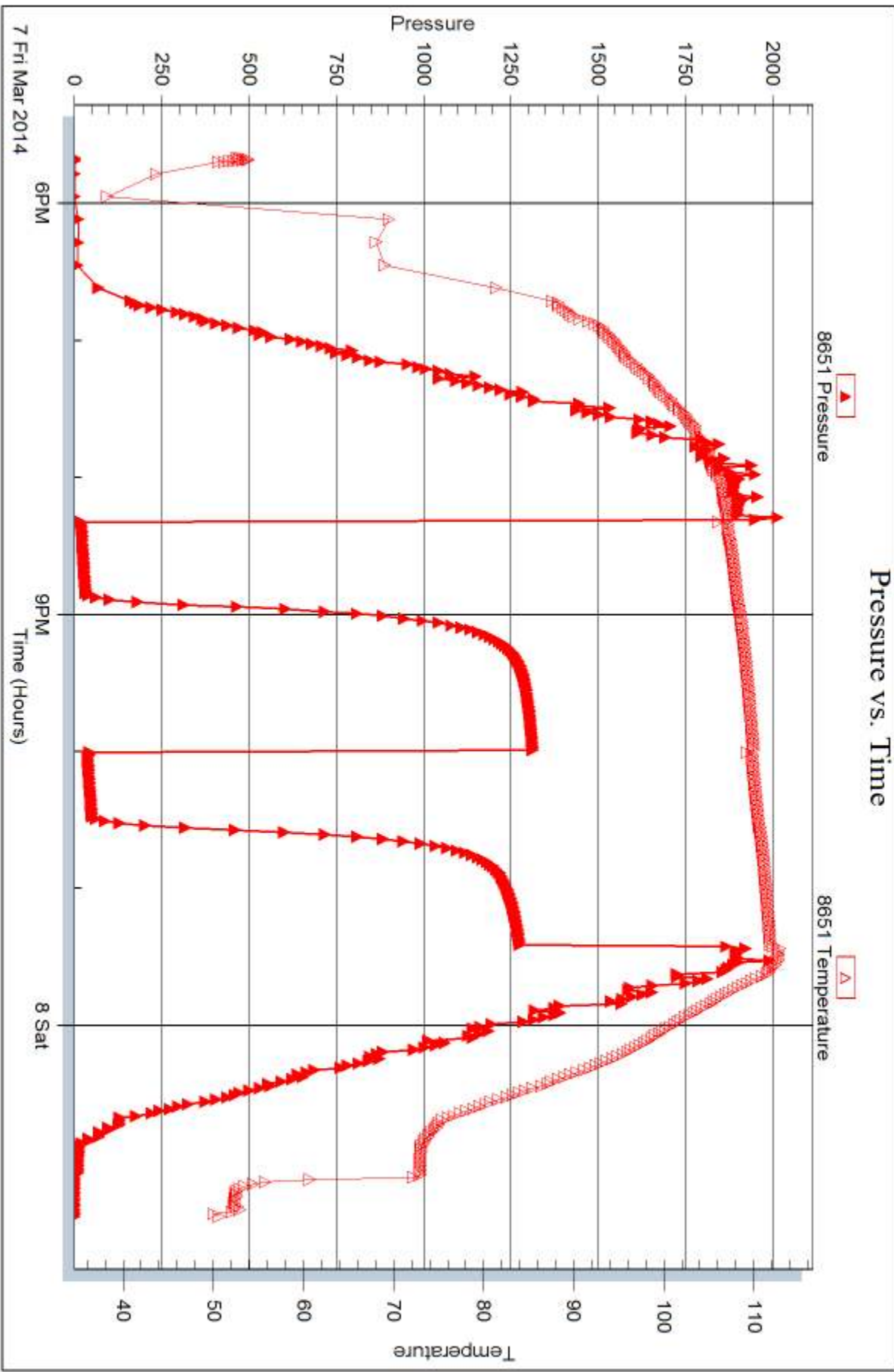


Serial #: 8651

Outside Murfin Drilling Co.

Hammerschmidt #1-24

DST Test Number: 1





## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N. Water Ste.300  
Wichita KS. 67202

ATTN: Saman Sharifaic

### **Hammerschmidt #1-24**

### **24-4s-31w Rawlins,KS**

Start Date: 2014.03.08 @ 11:30:00

End Date: 2014.03.08 @ 18:26:00

Job Ticket #: 56802                      DST #: 2

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

Printed: 2014.03.16 @ 12:12:40





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drilling Co.

**24-4s-31w Rawlins,KS**

250 N. Water Ste.300  
Wichita KS. 67202

**Hammerschmidt #1-24**

ATTN: Saman Sharifaic

Job Ticket: 56802

**DST#: 2**

Test Start: 2014.03.08 @ 11:30:00

## GENERAL INFORMATION:

Formation: **LKC F - G**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 13:34:00

Time Test Ended: 18:26:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Chuck Kreuzer Jr.

Unit No: 61

**Interval: 4008.00 ft (KB) To 4040.00 ft (KB) (TVD)**

Reference Elevations: 2916.00 ft (KB)

Total Depth: 4040.00 ft (KB) (TVD)

2905.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 11.00 ft

**Serial #: 8673**

**Inside**

Press@RunDepth: 38.97 psig @ 4009.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.03.08

End Date:

2014.03.08

Last Calib.:

2014.03.08

Start Time: 11:30:05

End Time:

18:25:59

Time On Btm:

2014.03.08 @ 13:24:30

Time Off Btm:

2014.03.08 @ 16:47:30

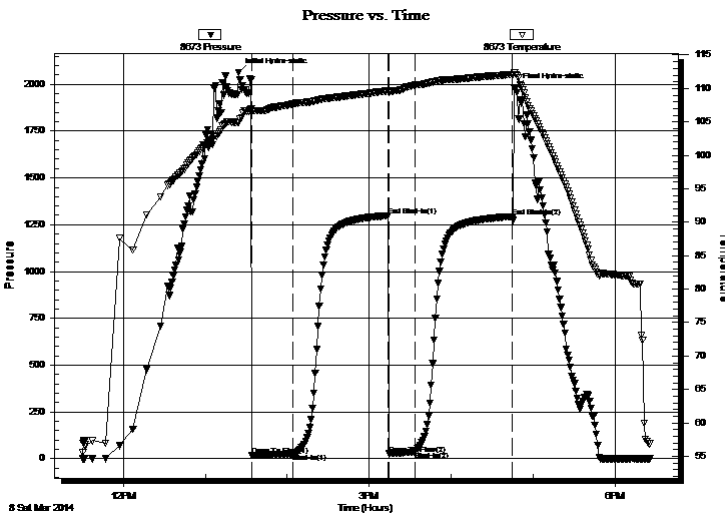
TEST COMMENT: IF: Weak blow , surface over 30 mins.

IS: no blow back

FF: Weak surface over 30 mins.

FS: No blow back

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2063.63	104.89	Initial Hydro-static
10	17.90	106.47	Open To Flow (1)
40	26.35	107.71	Shut-In(1)
109	1298.34	109.64	End Shut-In(1)
110	26.15	109.43	Open To Flow (2)
129	38.97	110.50	Shut-In(2)
201	1293.50	112.11	End Shut-In(2)
203	1982.30	112.12	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
60.00	ocm-35%o65%m	0.30

\* 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.

**24-4s-31w Rawlins,KS**

250 N. Water Ste.300  
Wichita KS. 67202

**Hammerschmidt #1-24**

Job Ticket: 56802

**DST#: 2**

ATTN: Saman Sharifaic

Test Start: 2014.03.08 @ 11:30:00

## Tool Information

Drill Pipe:	Length: 3687.00 ft	Diameter: 3.80 inches	Volume: 51.72 bbl	Tool Weight: 2400.00 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: 297.00 ft	Diameter: 2.25 inches	Volume: 1.46 bbl	Weight to Pull Loose: 66000.00 lb
			<u>Total Volume: 53.18 bbl</u>	Tool Chased 2.00 ft
Drill Pipe Above KB:	4.00 ft			String Weight: Initial 64000.00 lb
Depth to Top Packer:	4008.00 ft			Final 64000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	32.00 ft			
Tool Length:	60.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

## Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Shut In Tool	5.00			3985.00	
Hydraulic tool	5.00			3990.00	
Jars	5.00			3995.00	
Safety Joint	3.00			3998.00	
Packer	5.00			4003.00	28.00 Bottom Of Top Packer
Packer	5.00			4008.00	
Stubb	1.00			4009.00	
Recorder	0.00	8673	Inside	4009.00	
Recorder	0.00	8651	Outside	4009.00	
Perforations	28.00			4037.00	
Bullnose	3.00			4040.00	32.00 Bottom Packers & Anchor

**Total Tool Length: 60.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

Murfin Drilling Co.

**24-4s-31w Rawlins,KS**

250 N. Water Ste.300  
Witchita KS. 67202

**Hammerschmidt #1-24**

Job Ticket: 56802

**DST#: 2**

ATTN: Saman Sharifaic

Test Start: 2014.03.08 @ 11:30:00

### 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: 58.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.97 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 2300.00 ppm

Filter Cake: 2.00 inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
60.00	ocm-35%o65%m	0.295

Total Length: 60.00 ft      Total Volume: 0.295 bbl

Num Fluid Samples: 0

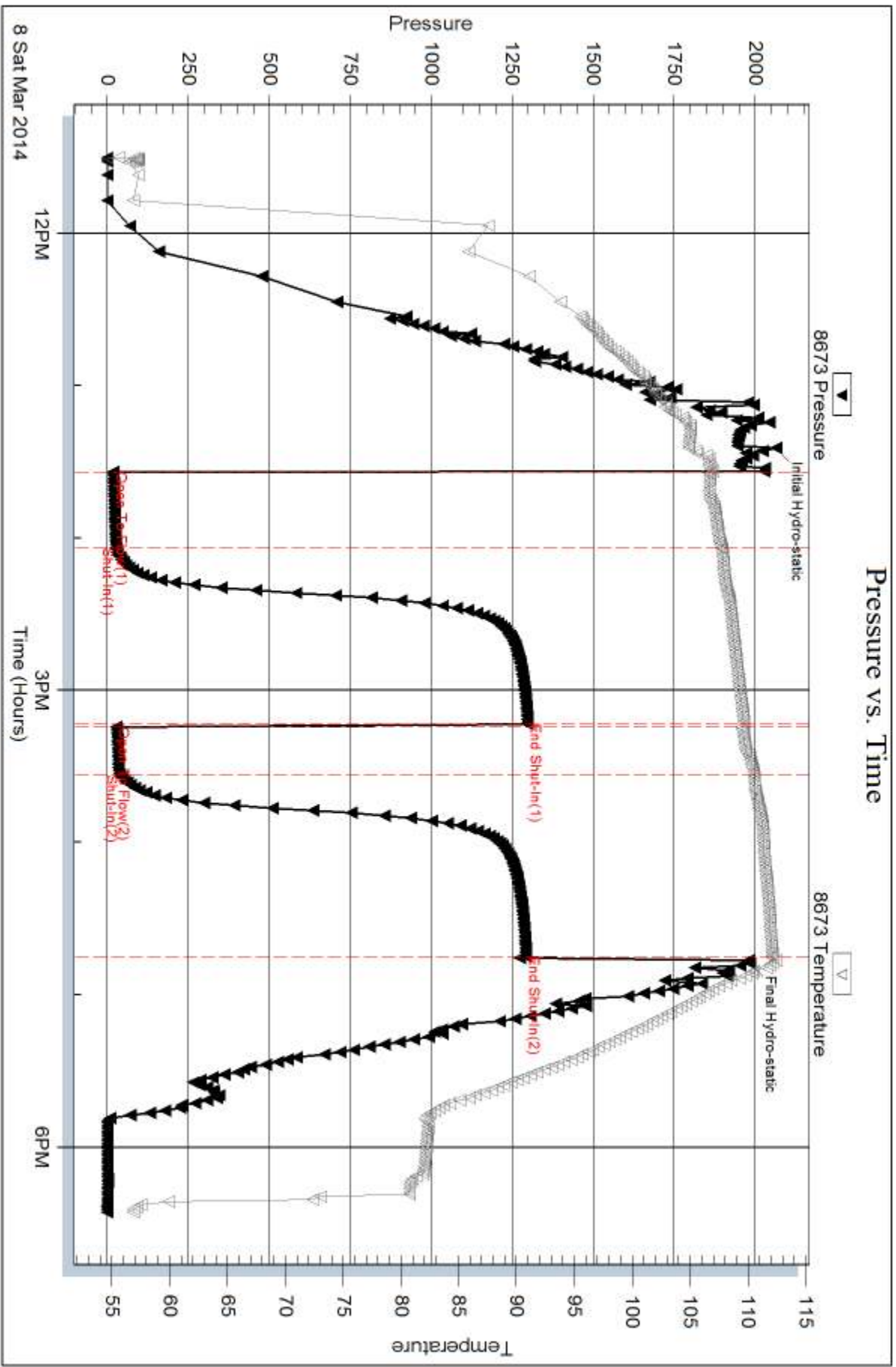
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

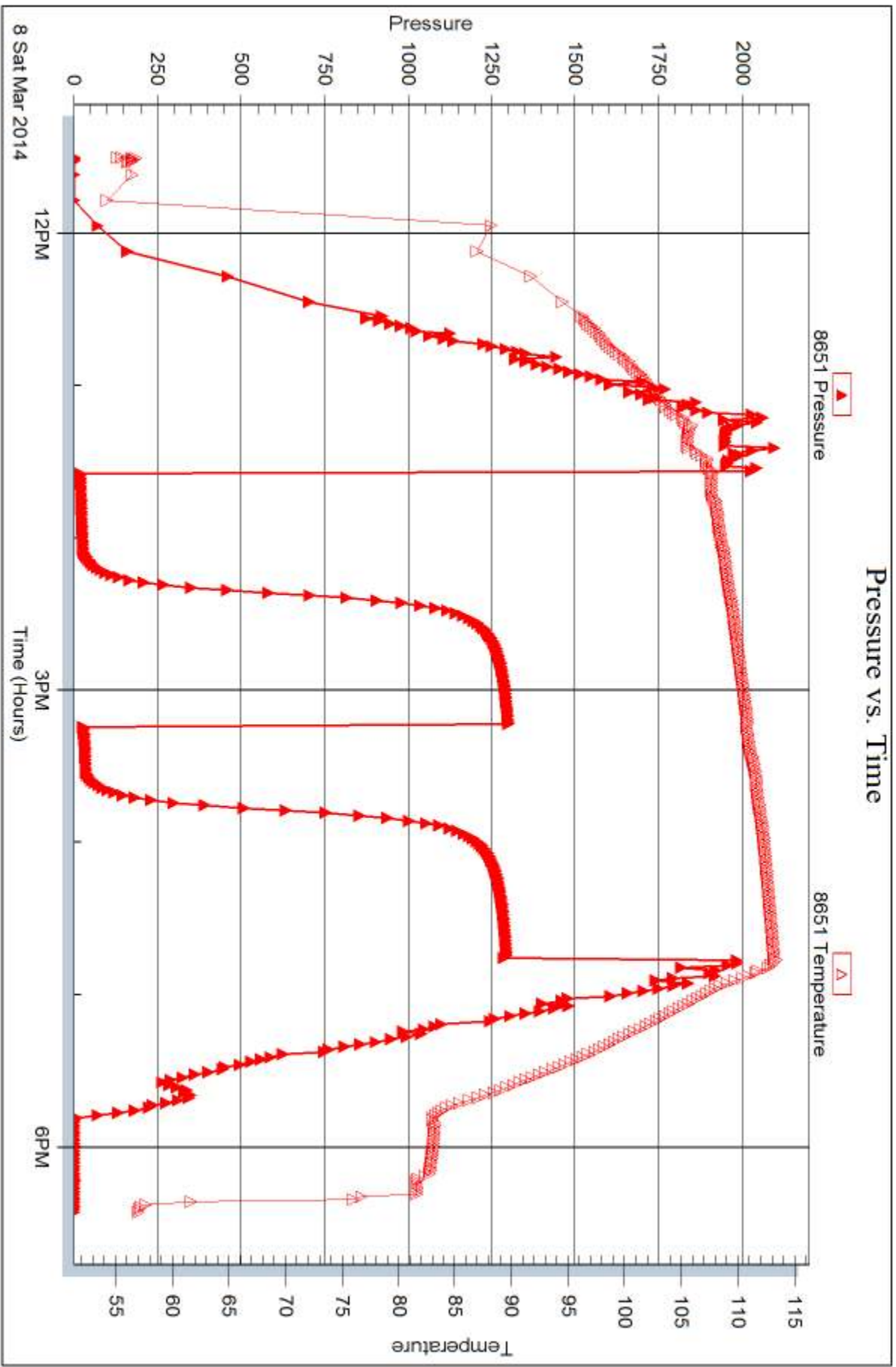


Serial #: 8651

Outside Murfin Drilling Co.

Hammerschmidt #1-24

DST Test Number: 2



Trilobite Testing, Inc

Ref. No: 56802

Printed: 2014.03.16 @ 12:12:43



## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N. Water Ste.300  
Wichita KS. 67202

ATTN: Saman Sharifaic

### **Hammerschmidt #1-24**

### **24-4s-31w Rawlins,KS**

Start Date: 2014.03.09 @ 05:00:00

End Date: 2014.03.09 @ 13:20:30

Job Ticket #: 56803                      DST #: 3

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

Printed: 2014.03.16 @ 12:12:17

Murfin Drilling Co.  
24-4s-31w Rawlins,KS  
Hammerschmidt #1-24  
DST # 3  
LKC H - J  
2014.03.09



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drilling Co.

**24-4s-31w Rawlins,KS**

250 N. Water Ste.300  
Wichita KS. 67202

**Hammerschmidt #1-24**

Job Ticket: 56803

**DST#: 3**

ATTN: Saman Sharifaic

Test Start: 2014.03.09 @ 05:00:00

## GENERAL INFORMATION:

Formation: **LKC H - J**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 08:14:00

Time Test Ended: 13:20:30

Test Type: Conventional Bottom Hole (Reset)

Tester: Chuck Kreuzer Jr.

Unit No: 61

**Interval: 4054.00 ft (KB) To 4120.00 ft (KB) (TVD)**

Reference Elevations: 2916.00 ft (KB)

Total Depth: 4120.00 ft (KB) (TVD)

2905.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 11.00 ft

**Serial #: 8673**

**Inside**

Press@RunDepth: 326.90 psig @ 4055.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.03.09

End Date: 2014.03.09

Last Calib.: 2014.03.09

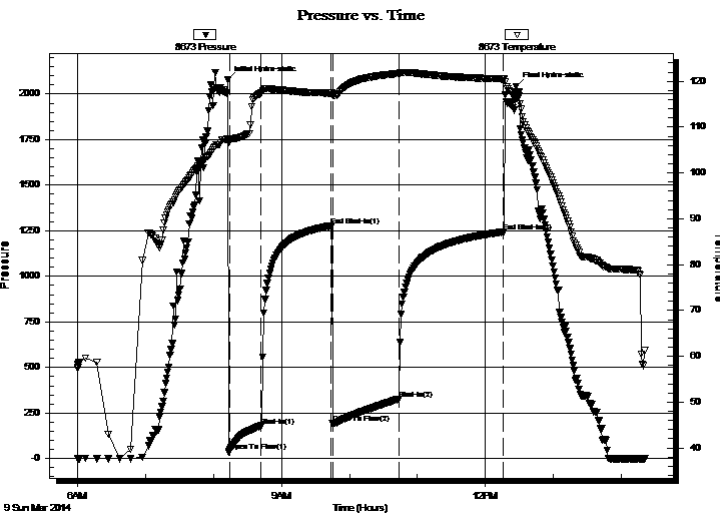
Start Time: 06:00:05

End Time: 14:20:29

Time On Btm: 2014.03.09 @ 08:12:30

Time Off Btm: 2014.03.09 @ 12:27:00

**TEST COMMENT:** IF: Strong blow , Built to B.O.B in 4 mins.  
IS: Weak blow back, Built to 1" over 10 mins. Died in 30 mins.  
FF: Strong blow , Built to B.O.B in 5 mins.  
FS: Weak blow built to B.O.B in 20 mins. Died to 4" over 90 mins.



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2076.24	107.32	Initial Hydro-static
2	40.03	106.94	Open To Flow (1)
30	179.52	117.43	Shut-In(1)
92	1277.46	117.41	End Shut-In(1)
93	191.87	116.85	Open To Flow (2)
151	326.90	121.67	Shut-In(2)
244	1244.08	120.48	End Shut-In(2)
255	2039.31	116.85	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
173.00	mcw -20%m80%w	0.85
124.00	mud-100%m	0.61
186.00	vsocm-5%o95%m	2.61
92.00	go-20%g80%o	1.29
0.00	216 ft of gas in pipe	0.00

\* Recovery from multiple tests

## Gas Rates

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







**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drilling Co.

**24-4s-31w Rawlins,KS**

250 N. Water Ste.300  
Wichita KS. 67202

**Hammerschmidt #1-24**

Job Ticket: 56803

**DST#: 3**

ATTN: Saman Sharifaic

Test Start: 2014.03.09 @ 05:00:00

## Tool Information

Drill Pipe:	Length: 3749.00 ft	Diameter: 3.80 inches	Volume: 52.59 bbl	Tool Weight: 2400.00 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: 297.00 ft	Diameter: 2.25 inches	Volume: 1.46 bbl	Weight to Pull Loose: 70000.00 lb
			<u>Total Volume: 54.05 bbl</u>	Tool Chased 2.00 ft
Drill Pipe Above KB:	20.00 ft			String Weight: Initial 64000.00 lb
Depth to Top Packer:	4054.00 ft			Final 70000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	66.00 ft			
Tool Length:	94.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

## Tool Description

**Length (ft) Serial No. Position Depth (ft) Accum. Lengths**

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Shut In Tool	5.00			4031.00	
Hydraulic tool	5.00			4036.00	
Jars	5.00			4041.00	
Safety Joint	3.00			4044.00	
Packer	5.00			4049.00	28.00 Bottom Of Top Packer
Packer	5.00			4054.00	
Stubb	1.00			4055.00	
Recorder	0.00	8673	Inside	4055.00	
Recorder	0.00	8651	Outside	4055.00	
Perforations	16.00			4071.00	
change Over Sub	1.00			4072.00	
Drill Pipe	31.00			4103.00	
Change Over Sub	1.00			4104.00	
Perforations	13.00			4117.00	
Bullnose	3.00			4120.00	66.00 Bottom Packers & Anchor

**Total Tool Length: 94.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling Co.

**24-4s-31w Rawlins,KS**

250 N. Water Ste.300  
Witchita KS. 67202

**Hammerschmidt #1-24**

Job Ticket: 56803

**DST#: 3**

ATTN: Saman Sharifaic

Test Start: 2014.03.09 @ 05:00:00

## 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: 59.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 59.84 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1300.00 ppm

Filter Cake: 2.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
173.00	mcw -20%m80%w	0.851
124.00	mud-100%m	0.610
186.00	vsocm-5%o95%m	2.609
92.00	go-20%g80%o	1.291
0.00	216 ft of gas in pipe	0.000

Total Length: 575.00 ft

Total Volume: 5.361 bbl

Num Fluid Samples: 0

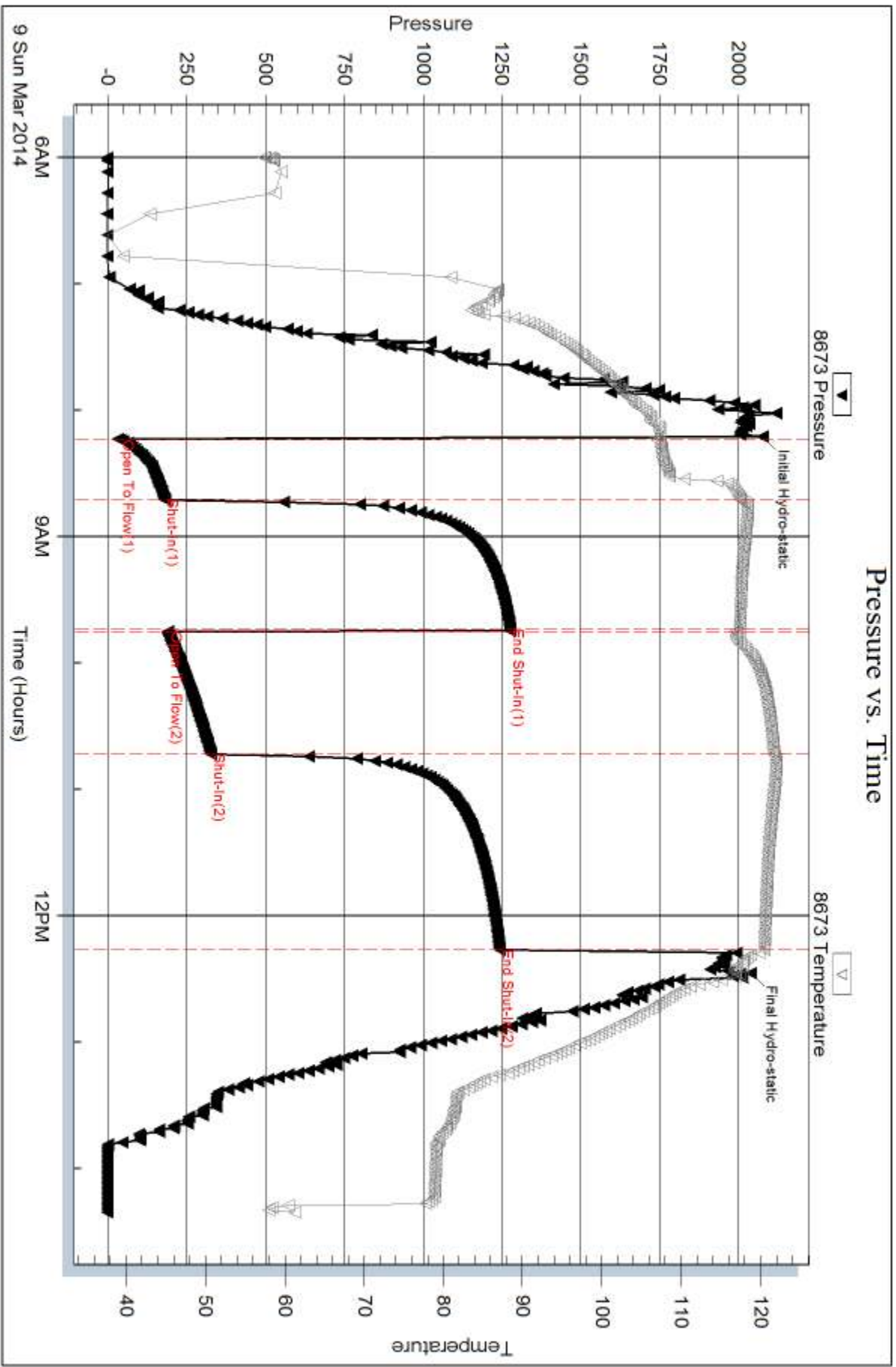
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: 38@80\*=36

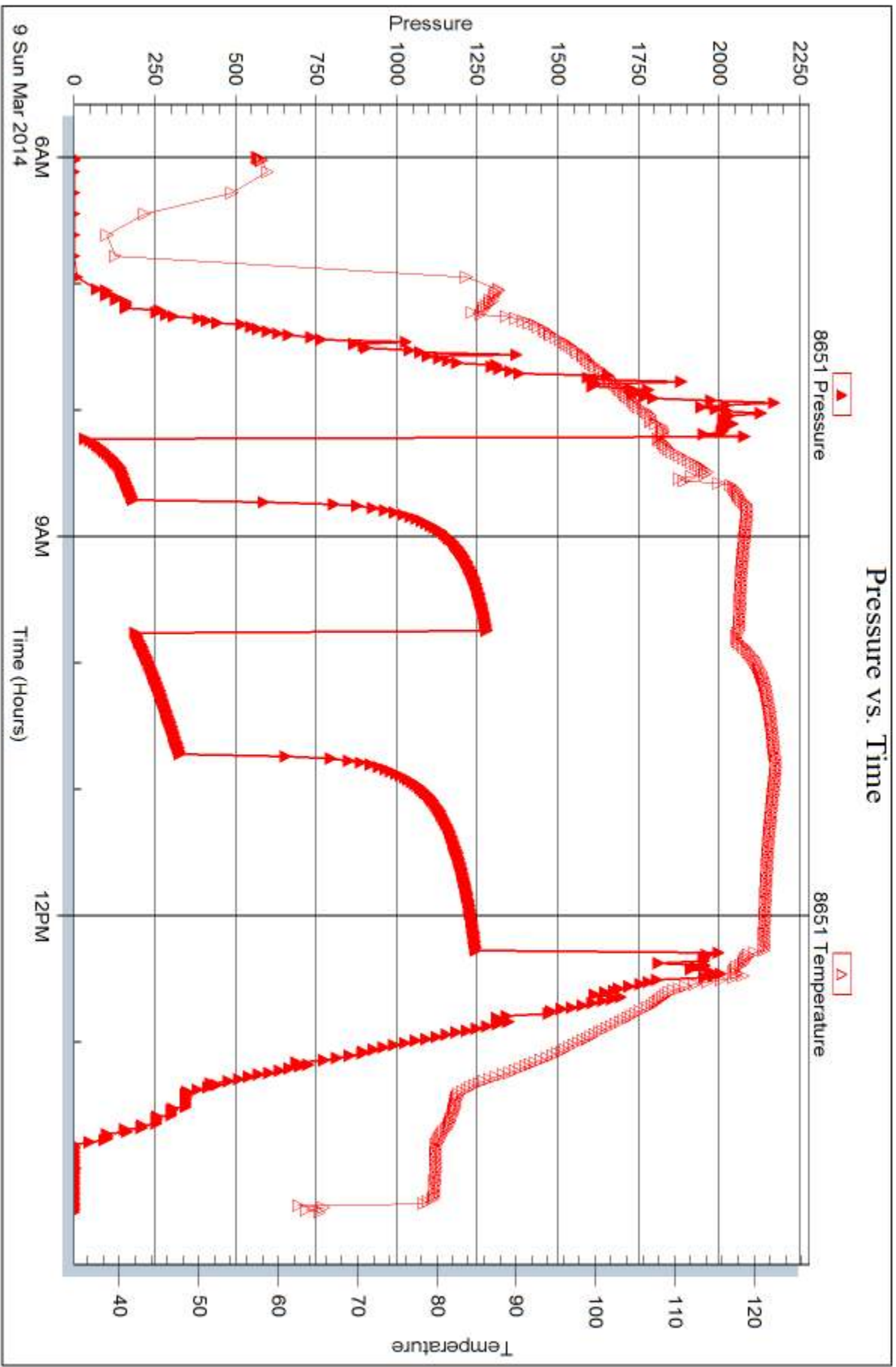


Serial #: 8651

Outside Murfin Drilling Co.

Hammerschmidt #1-24

DST Test Number: 3



Tribble Testing, Inc

Ref. No: 56803

Printed: 2014.03.16 @ 12:12:20



## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N. Water Ste.300  
Wichita KS. 67202

ATTN: Saman Sharifaic

### **Hammerschmidt #1-24**

### **24-4s-31w Rawlins,KS**

Start Date: 2014.03.09 @ 01:40:00

End Date: 2014.03.09 @ 08:50:00

Job Ticket #: 56804                      DST #: 4

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

Printed: 2014.03.16 @ 12:11:33



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drilling Co.

**24-4s-31w Rawlins, KS**

250 N. Water Ste.300  
Wichita KS. 67202

**Hammerschmidt #1-24**

Job Ticket: 56804

**DST#: 4**

ATTN: Saman Sharifaic

Test Start: 2014.03.09 @ 01:40:00

## GENERAL INFORMATION:

Formation: **LKC -K - L**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 03:36:00

Time Test Ended: 08:50:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Chuck Kreuzer Jr.

Unit No: 61

**Interval: 4121.00 ft (KB) To 4180.00 ft (KB) (TVD)**

Reference Elevations: 2916.00 ft (KB)

Total Depth: 4180.00 ft (KB) (TVD)

2905.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 11.00 ft

**Serial #: 8673**

**Inside**

Press@RunDepth: 48.40 psig @ 4122.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.03.10

End Date:

2014.03.10

Last Calib.:

2014.03.11

Start Time: 01:40:05

End Time:

08:49:59

Time On Btm:

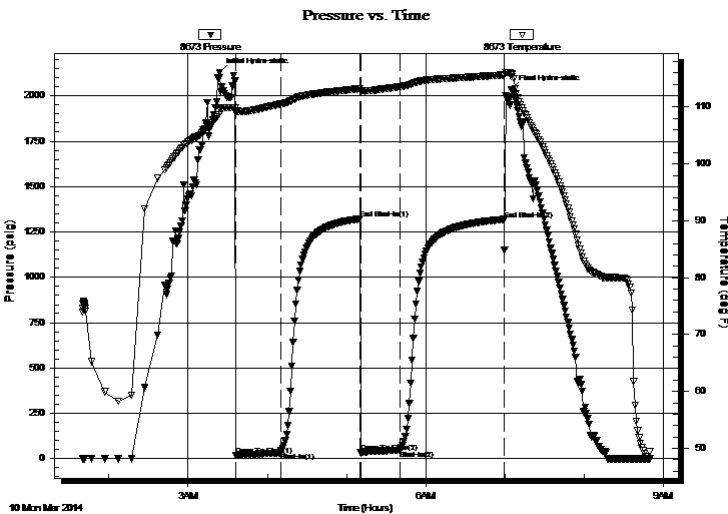
2014.03.10 @ 03:24:00

Time Off Btm:

2014.03.10 @ 07:05:00

**TEST COMMENT:** IF: Weak blow , Built to 1/4". over 30 mins.  
IS: No blow back  
FF: Weak blow , Built to surface over 30 mins.  
FS: No blow back

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2129.52	109.67	Initial Hydro-static
12	19.19	108.97	Open To Flow (1)
46	37.52	110.55	Shut-In(1)
106	1322.31	113.22	End Shut-In(1)
107	33.41	112.79	Open To Flow (2)
137	48.40	113.59	Shut-In(2)
215	1319.40	115.64	End Shut-In(2)
221	2035.11	115.39	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
60.00	HOCM-45%o65%m	0.30
20.00	o-100%	0.10

\* Recovery from multiple tests

## 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: Saman Sharifaic

**24-4s-31w Rawlins,KS**  
**Hammerschmidt #1-24**  
Job Ticket: 56804      **DST#: 4**  
Test Start: 2014.03.09 @ 01:40:00

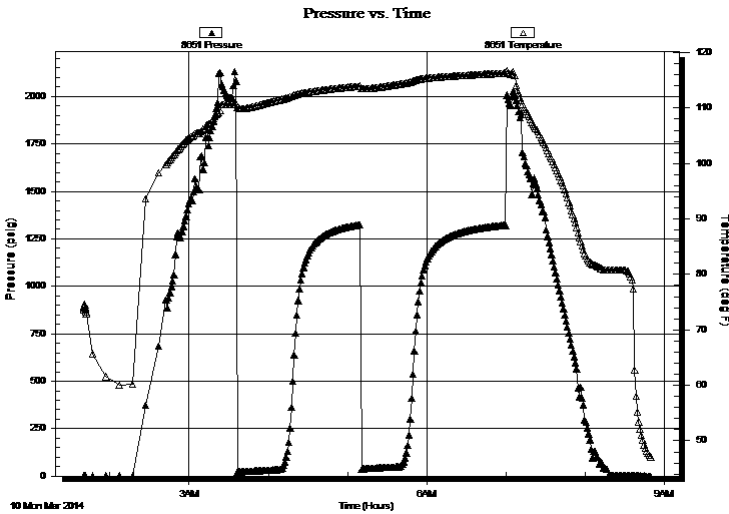
### GENERAL INFORMATION:

Formation: **LKC -K - L**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 03:36:00  
 Time Test Ended: 08:50:00  
 Interval: **4121.00 ft (KB) To 4180.00 ft (KB) (TVD)**  
 Total Depth: 4180.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Good  
 Test Type: Conventional Bottom Hole (Reset)  
 Tester: Chuck Kreutzer Jr.  
 Unit No: 61  
 Reference Elevations: 2916.00 ft (KB)  
 2905.00 ft (CF)  
 KB to GR/CF: 11.00 ft

### Serial #: 8651      Outside

Press@RunDepth:                      psig @      4122.00 ft (KB)      Capacity:                                      8000.00 psig  
 Start Date:                                      2014.03.10      End Date:                                      2014.03.10      Last Calib.:                                      2014.03.10  
 Start Time:                                      01:40:05      End Time:                                      08:49:59      Time On Btm:                                           Time Off Btm:

TEST COMMENT: IF: Weak blow , Built to 1/4". over 30 mins.  
 IS: No blow back  
 FF: Weak blow , Built to surface over 30 mins.  
 FS: No blow back



### PRESSURE SUMMARY

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

### Recovery

Length (ft)	Description	Volume (bbl)
60.00	HOCM-45%o65%m	0.30
20.00	o-100%	0.10

\* 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.

**24-4s-31w Rawlins,KS**

250 N. Water Ste.300  
Wichita KS. 67202

**Hammerschmidt #1-24**

Job Ticket: 56804

**DST#: 4**

ATTN: Saman Sharifaic

Test Start: 2014.03.09 @ 01:40:00

## Tool Information

Drill Pipe:	Length: 3816.00 ft	Diameter: 3.80 inches	Volume: 53.53 bbl	Tool Weight: 2400.00 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: 297.00 ft	Diameter: 2.25 inches	Volume: 1.46 bbl	Weight to Pull Loose: 70000.00 lb
			<u>Total Volume: 54.99 bbl</u>	Tool Chased 2.00 ft
Drill Pipe Above KB:	20.00 ft			String Weight: Initial 66000.00 lb
Depth to Top Packer:	4121.00 ft			Final 68000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	59.00 ft			
Tool Length:	87.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

## Tool Description

**Length (ft) Serial No. Position Depth (ft) Accum. Lengths**

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
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	28.00 Bottom Of Top Packer
Packer	5.00			4121.00	
Stubb	1.00			4122.00	
Recorder	0.00	8673	Inside	4122.00	
Recorder	0.00	8651	Outside	4122.00	
Perforations	16.00			4138.00	
change Over Sub	1.00			4139.00	
Drill Pipe	31.00			4170.00	
Change Over Sub	1.00			4171.00	
Perforations	6.00			4177.00	
Bullnose	3.00			4180.00	59.00 Bottom Packers & Anchor

**Total Tool Length: 87.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling Co.

**24-4s-31w Rawlins,KS**

250 N. Water Ste.300  
Witchita KS. 67202

**Hammerschmidt #1-24**

Job Ticket: 56804

**DST#: 4**

ATTN: Saman Sharifaic

Test Start: 2014.03.09 @ 01:40:00

## 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: 59.00 sec/qt

Cushion Volume:

bbbl

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

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1300.00 ppm

Filter Cake: 2.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
60.00	HOCM-45%o65%m	0.295
20.00	o-100%	0.098

Total Length: 80.00 ft      Total Volume: 0.393 bbl

Num Fluid Samples: 0

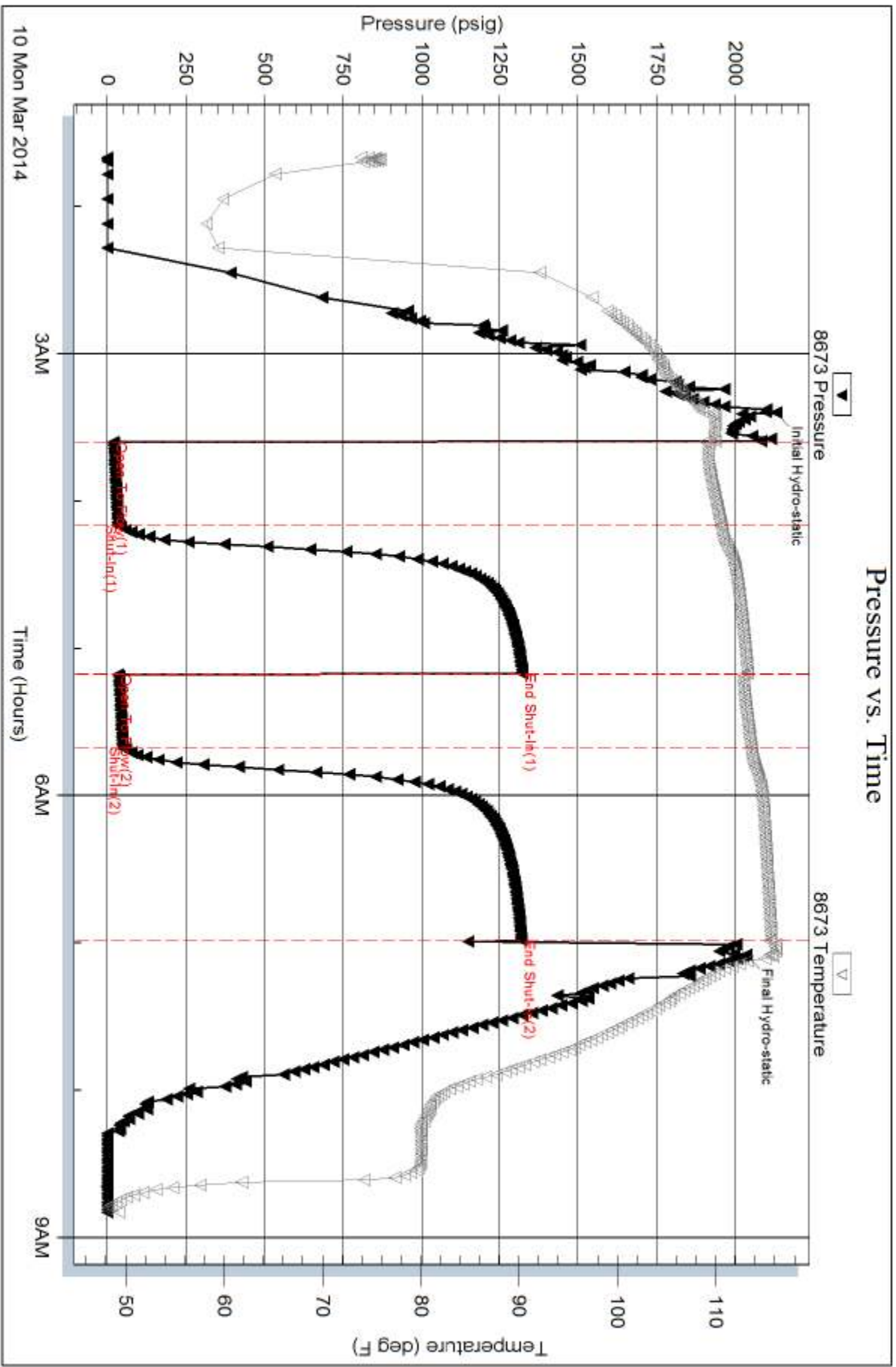
Num Gas Bombs: 0

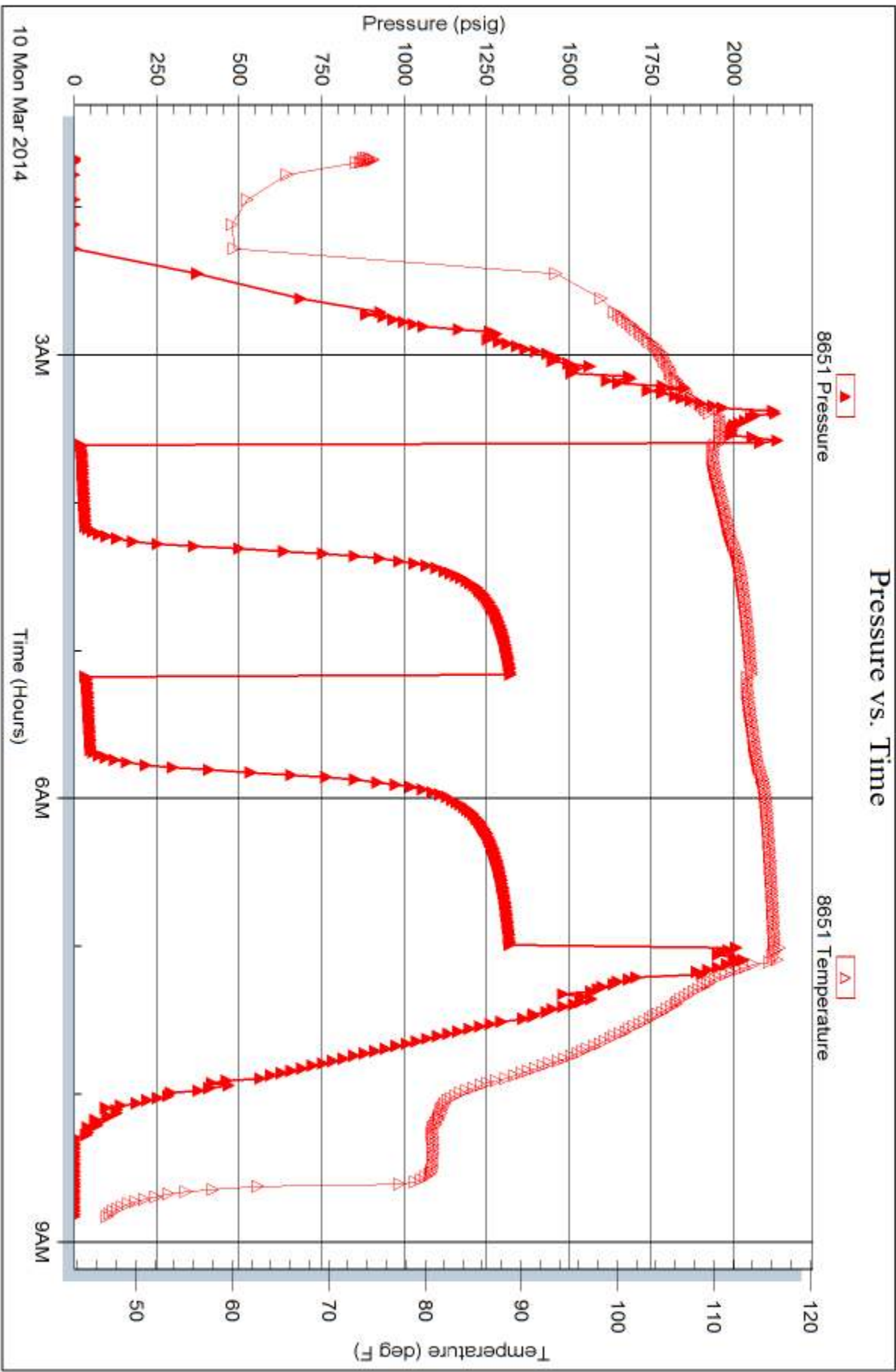
Serial #:

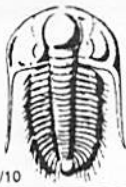
Laboratory Name:

Laboratory Location:

Recovery Comments: 38@80\*=36 gravity







# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 56801

Well Name & No. Hammer Schmidt #1-24 Test No. 1 Date 3-7-2014  
 Company Murfin Drilling Co. Elevation 2916 KB 2905 GL  
 Address 250 N. Water Ste. 300 Wichita KS 67202  
 Co. Rep / Geo. Saman Sharifai Rig Murfin #2  
 Location: Sec. 24 Twp. 4S Rge. 31W Co. Rawlins State Ks

Interval Tested 3905 3991 Zone Tested TOR, LKCA-B  
 Anchor Length 86 Drill Pipe Run 3590 Mud Wt. 9.1  
 Top Packer Depth 3900 Drill Collars Run 297 Vis 58  
 Bottom Packer Depth 3905 Wt. Pipe Run -0- WL 6.0  
 Total Depth 3991 Chlorides 2300 ppm System LCM 6#

Blow Description IF: Weak blow, built to 1/4 in. Dead in 28 mins.  
ISI: No blow back  
FF: No blow  
FSI: No blow back.

Rec	Feet of	%gas	%oil	%water	%mud
<u>5</u>	<u>Oil on top</u>		<u>100</u>		
<u>60</u>	<u>mud oil spots</u>				

Rec Total 65 BHT 109 Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm

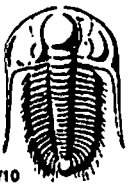
(A) Initial Hydrostatic 1984  Test 1150 T-On Location 16:10  
 (B) First Initial Flow 19  Jars 250 T-Started 17:40  
 (C) First Final Flow 31  Safety Joint 75 T-Open 20:20  
 (D) Initial Shut-In 1311  Circ Sub \_\_\_\_\_ T-Pulled 23:25  
 (E) Second Initial Flow 38  Hourly Standby \_\_\_\_\_ T-Out 1:23  
 (F) Second Final Flow 49  Mileage 22x2 = 44x1.55 68.20 Comments \_\_\_\_\_  
 (G) Final Shut-In 1275  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 1479  Straddle \_\_\_\_\_

Ruined Shale Packer \_\_\_\_\_  
 Ruined Packer \_\_\_\_\_  
 Extra Copies \_\_\_\_\_  
 Initial Open 30  
 Initial Shut-In 60  
 Final Flow 30  
 Final Shut-In 60  
 Day Standby \_\_\_\_\_  
 Accessibility \_\_\_\_\_  
 Sub Total 1543.20  
 Sub Total \_\_\_\_\_  
 Total 1543.20  
 MP/DST Disc't \_\_\_\_\_

Approved By \_\_\_\_\_ Our Representative Charles K...

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620-352-1253



# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 56802

4/10

Well Name & No. Hammerchnitt #1-24 Test No. 2 Date 3-8-2014  
 Company Murphy Drilling Co. Elevation 2016 KB 2905 GL  
 Address 250 N. Water Ste 300 Wichita Ks 67202  
 Co. Rep / Geo. Saman Sharifiaiz Rig Murphy #2  
 Location: Sec. 24 Twp. 4S Rge. 3W Co. Rushlim State Ks

Interval Tested 4008 4040 Zone Tested LKC-F-6  
 Anchor Length 32 Drill Pipe Run 3687 Mud Wt. 9.1  
 Top Packer Depth 4003 Drill Collars Run 297 Vis 58  
 Bottom Packer Depth 4008 Wt. Pipe Run -0- WL 6.0  
 Total Depth 4040 Chlorides 2300 ppm System LCM 6#

Blow Description IF: Weak blow, surface over 30 mins.  
ISI: No blow back  
FF: Weak blow, surface over 30 mins.  
FSI: No blow back

Rec	Feet of	%gas	%oil	%water	%mud
<u>60</u>	<u>OCM</u>		<u>35</u>		<u>65</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 60 BHT 110 Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm

(A) Initial Hydrostatic <u>2084</u>	<input checked="" type="checkbox"/> Test <u>1250</u>	T-On Location <u>10:30</u>
(B) First Initial Flow <u>18</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>11:30</u>
(C) First Final Flow <u>26</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>13:34</u>
(D) Initial Shut-In <u>1298</u>	<input type="checkbox"/> Circ Sub _____	T-Pulled <u>16:35</u>
(E) Second Initial Flow <u>26</u>	<input type="checkbox"/> Hourly Standby _____	T-Out <u>18:26</u>
(F) Second Final Flow <u>39</u>	<input checked="" type="checkbox"/> Mileage <u>22x2 = 44 x 1.55 = 68.20</u>	Comments _____
(G) Final Shut-In <u>1294</u>	<input type="checkbox"/> Sampler _____	_____
(H) Final Hydrostatic <u>1982</u>	<input type="checkbox"/> Straddle _____	<input type="checkbox"/> Ruined Shale Packer _____
Initial Open <u>30</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>30</u>	<input type="checkbox"/> Extra Recorder _____	Sub Total <u>0</u>
Final Shut-In <u>60</u>	<input type="checkbox"/> Day Standby _____	Total <u>1643.20</u>
	<input type="checkbox"/> Accessibility _____	MP/DST Disc't _____
	Sub Total <u>1643.20</u>	

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

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. **56803**

Well Name & No. Hammerschmidt #1-24 Test No. 3 Date 3-9-2014  
 Company Murfin Drilling Co. Elevation 2916 KB 2905 GL  
 Address 250 N. water st. 300 Wichita Ks  
 Co. Rep / Geo. Saman Sharifia Rig Murfin 2  
 Location: Sec. 24 Twp. 45 Rge. 31w Co. Rawlins State \_\_\_\_\_

Interval Tested 4054 4120 Zone Tested LKC-H-J  
 Anchor Length 66 Drill Pipe Run 3749 Mud Wt. 9.4  
 Top Packer Depth 4049 Drill Collars Run 247 Vis 59  
 Bottom Packer Depth 4054 Wt. Pipe Run -0- WL 60  
 Total Depth 4120 Chlorides 1,300 ppm System LCM 6#

Blow Description IF: strong blow, built to B.O.B in 4 mins.  
ISI: weak blow built to 1 in. over 10 mins died in 30 mins.  
FF: strong blow, built to B.O.B in 5 mins.  
FSI: Weak blow built to B.O.B in 20 mins. Died to 4 in. over 90 mins

Rec	Feet of	%gas	%oil	%water	%mud
<u>0</u>	<u>216 ft of gas in pipe</u>				
<u>92</u>	<u>gob</u>	<u>20%</u>	<u>80</u>		
<u>186</u>	<u>vsocm</u>		<u>5</u>		<u>95</u>
<u>124</u>	<u>mud</u>				<u>100</u>
<u>173</u>	<u>new</u>			<u>80</u>	<u>20</u>

Rec Total 575 BHT 121 Gravity 36 API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm

(A) Initial Hydrostatic 2119 ~~44~~  Test 1250 T-On Location 3:30  
 (B) First Initial Flow 40 ~~180~~  Jars 250 T-Started 5:00  
 (C) First Final Flow 180 ~~1277~~  Safety Joint 75 T-Open 8:14  
 (D) Initial Shut-In 1277 ~~412~~  Circ Sub \_\_\_\_\_ T-Pulled 12:20  
 (E) Second Initial Flow 192 ~~527~~  Hourly Standby \_\_\_\_\_ T-Out 13:20  
 (F) Second Final Flow 327  Mileage 2272-44 x 1.55 68.20  
 (G) Final Shut-In 1244  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 2034  Straddle \_\_\_\_\_

Ruined Shale Packer \_\_\_\_\_  
 Ruined Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  
 Extra Copies \_\_\_\_\_  
 Initial Open 30  
 Initial Shut-In 60  
 Final Flow 60  
 Final Shut-In 90  
 Extra Recorder \_\_\_\_\_  
 Day Standby \_\_\_\_\_  
 Accessibility \_\_\_\_\_  
 Sub Total 1643.20  
 Sub Total 1643.20  
 Sub Total 0  
 Total 1643.20  
 MP/DST Disc't \_\_\_\_\_

Approved By \_\_\_\_\_ Our Representative Chad Keyser

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 56804

Well Name & No. Hammerschmidt #1-24 Test No. 4 Date 3-10-2014  
 Company MarFin Drilling Co. Elevation 2916 KB 2905 GL  
 Address 250 N. Water Ste. 300 Wichita Ks  
 Co. Rep / Geo. Saman Sharfpaic Rig MarFin #2  
 Location: Sec. 24 Twp. 4S Rge. 31 Co. Rawlins State Ks

Interval Tested 4121 4180 Zone Tested LKC-K-1  
 Anchor Length 59 Drill Pipe Run 3816 Mud Wt. 9.4  
 Top Packer Depth 4006 Drill Collars Run 297 Vis 59  
 Bottom Packer Depth 4121 Wt. Pipe Run -0- WL 6.0  
 Total Depth 4180 Chlorides 1,300 ppm System LCM 6#

Blow Description IF: Weak surface blow, Built to 1/4 in. over 30mins.  
ISF: No blow back  
FF: Weak blow surface over 30mins.  
FSI: No blow back

Rec	Feet of	%gas	%oil	%water	%mud
<u>20</u>	<u>oil</u>		<u>100</u>		
<u>60</u>	<u>HOLM</u>		<u>45</u>		<u>65</u>

Rec Total 90 BHT 123 Gravity 36 API RW @ °F Chlorides ppm  
 (A) Initial Hydrostatic 2130 2119  Test 1250 T-On Location 12:25  
 (B) First Initial Flow 20 33  Jars 250 T-Started 1:40  
 (C) First Final Flow 38 197  Safety Joint 75 T-Open 7:13  
 (D) Initial Shut-In 1322 1278  Circ Sub \_\_\_\_\_ T-Pulled 6:50  
 (E) Second Initial Flow 33 145  Hourly Standby \_\_\_\_\_ T-Out 8:49  
 (F) Second Final Flow 48 337  Mileage 2222 = 444 x 1.55 = 136.40 Comments rounded tools at 10:40 on  
 (G) Final Shut-In 1319 1244  Sampler \_\_\_\_\_ 3-11-2014  
 (H) Final Hydrostatic 2035 2034  Straddle \_\_\_\_\_  
 Ruined Shale Packer \_\_\_\_\_  
 Ruined Packer \_\_\_\_\_  
 Extra Copies \_\_\_\_\_

Initial Open 30  Shale Packer \_\_\_\_\_  
 Initial Shut-In 60  Extra Packer \_\_\_\_\_  
 Final Flow 30  Extra Recorder \_\_\_\_\_  
 Final Shut-In 60  Day Standby 1d 2h Sub Total 800  
 Accessibility \_\_\_\_\_ Total 2511.40  
 Sub Total 1711.40 MP/DST Disc't \_\_\_\_\_

Approved By \_\_\_\_\_ Our Representative Chap...

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