



## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co**

250 N Water STE 300  
Wichita KS 67202

ATTN: Keith Reavis

### **Ivatee #1-4**

#### **4 -1s -37w Cheyenne Ks**

Start Date: 2014.02.17 @ 02:22:00

End Date: 2014.02.17 @ 09:34:00

Job Ticket #: 56752                      DST #: 1

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

Printed: 2014.02.27 @ 11:55:35



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drilling Co  
250 N Water STE 300  
Wichita KS 67202  
ATTN: Keith Reavis

**4 -1s -37w Cheyenne Ks**

**Ivaley #1-4**

Job Ticket: 56752

**DST#: 1**

Test Start: 2014.02.17 @ 02:22:00

## GENERAL INFORMATION:

Formation: **Foraker**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 04:32:30

Time Test Ended: 09:34:00

Test Type: Conventional Bottom Hole (Initial)

Tester: Robert Zodrow

Unit No: 66

**Interval: 3664.00 ft (KB) To 3716.00 ft (KB) (TVD)**

Reference Elevations: 3170.00 ft (KB)

Total Depth: 3716.00 ft (KB) (TVD)

3157.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 13.00 ft

**Serial #: 8874 Inside**

Press@RunDepth: 29.67 psig @ 3665.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.02.17

End Date:

2014.02.17

Last Calib.: 2014.02.17

Start Time: 02:23:00

End Time:

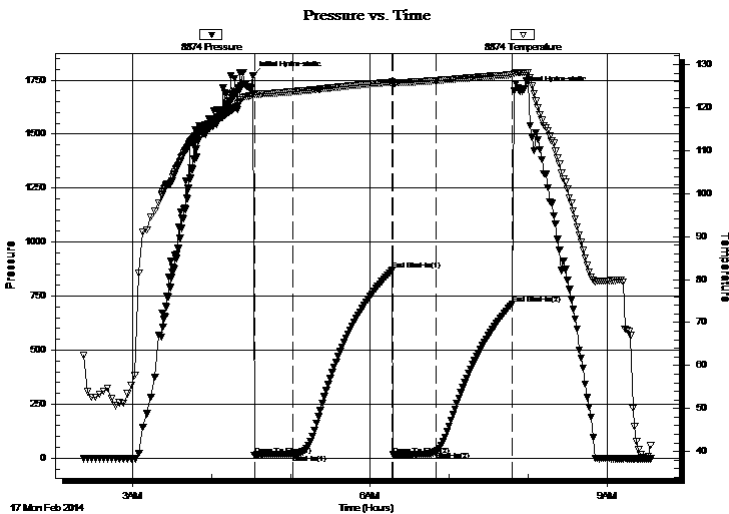
09:34:00

Time On Btm: 2014.02.17 @ 04:31:30

Time Off Btm: 2014.02.17 @ 07:53:30

TEST COMMENT: 30-IF- weak 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	1771.39	123.20	Initial Hydro-static
1	14.22	123.04	Open To Flow (1)
31	15.22	123.68	Shut-In(1)
106	870.90	125.89	End Shut-In(1)
106	15.09	125.54	Open To Flow (2)
139	29.67	126.25	Shut-In(2)
197	714.29	127.60	End Shut-In(2)
202	1700.94	128.14	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
1.00	mud 100%m	0.01

## Gas Rates

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



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**DRILL STEM TEST REPORT**

Murfin Drilling Co  
 250 N Water STE 300  
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 ATTN: Keith Reavis

**4 -1s -37w Cheyenne Ks**

**Ivaley #1-4**

Job Ticket: 56752      **DST#: 1**  
 Test Start: 2014.02.17 @ 02:22:00

**GENERAL INFORMATION:**

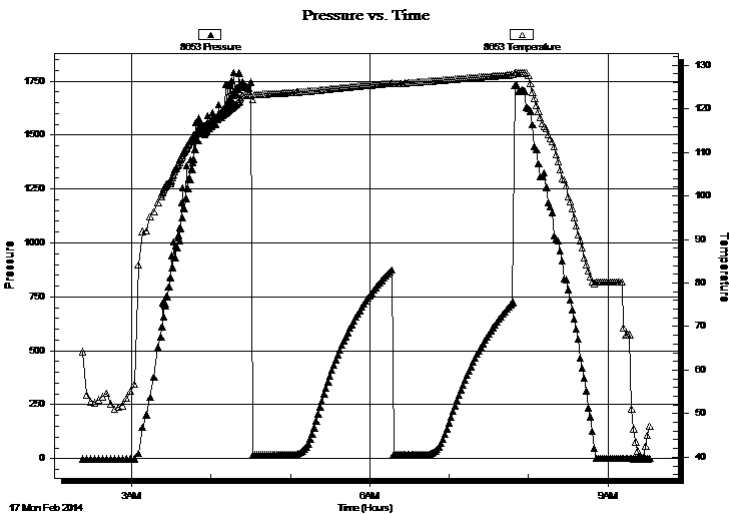
Formation:	<b>Foraker</b>		
Deviated:	No Whipstock:	ft (KB)	Test Type: Conventional Bottom Hole (Initial)
Time Tool Opened:	04:32:30		Tester: Robert Zodrow
Time Test Ended:	09:34:00		Unit No: 66
<b>Interval:</b>	<b>3664.00 ft (KB) To 3716.00 ft (KB) (TVD)</b>		Reference Elevations: 3170.00 ft (KB)
Total Depth:	3716.00 ft (KB) (TVD)		3157.00 ft (CF)
Hole Diameter:	7.88 inches	Hole Condition: Fair	KB to GR/CF: 13.00 ft

**Serial #: 8653      Outside**

Press@RunDepth:	psig @ 3665.00 ft (KB)	Capacity:	8000.00 psig
Start Date:	2014.02.17	End Date:	2014.02.17
Start Time:	02:23:00	End Time:	09:32:30
		Time On Btm:	
		Time Off Btm:	

**TEST COMMENT:** 30-IF- weak surface blow  
 60-ISI-no return  
 30-FF- no blow  
 60-FSI- no return

**PRESSURE SUMMARY**



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

**Recovery**

Length (ft)	Description	Volume (bbl)
1.00	mud 100%m	0.01

**Gas Rates**

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



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drilling Co

**4 -1s -37w Cheyenne Ks**

250 N Water STE 300  
Wichita KS 67202

**Ivalee #1-4**

Job Ticket: 56752

**DST#: 1**

ATTN: Keith Reavis

Test Start: 2014.02.17 @ 02:22:00

## Tool Information

Drill Pipe:	Length: 3649.00 ft	Diameter: 3.88 inches	Volume: 53.36 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: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight to Pull Loose:	40000.00 lb
			<u>Total Volume: 53.36 bbl</u>	Tool Chased	ft
Drill Pipe Above KB:	13.00 ft			String Weight: Initial	38000.00 lb
Depth to Top Packer:	3664.00 ft			Final	38000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	52.00 ft				
Tool Length:	80.00 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			3637.00	
Shut In Tool	5.00			3642.00	
Hydraulic tool	5.00			3647.00	
Jars	5.00			3652.00	
Safety Joint	3.00			3655.00	
Packer	5.00			3660.00	28.00 Bottom Of Top Packer
Packer	4.00			3664.00	
Stubb	1.00			3665.00	
Recorder	0.00	8653	Outside	3665.00	
Recorder	0.00	8874	Inside	3665.00	
Perforations	13.00			3678.00	
Change Over Sub	1.00			3679.00	
Drill Pipe	31.00			3710.00	
Change Over Sub	1.00			3711.00	
Bullnose	5.00			3716.00	52.00 Bottom Packers & Anchor

**Total Tool Length: 80.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

Murfin Drilling Co

**4 -1s -37w Cheyenne Ks**

250 N Water STE 300  
Wichita KS 67202

**Ivalee #1-4**

Job Ticket: 56752

**DST#: 1**

ATTN: Keith Reavis

Test Start: 2014.02.17 @ 02:22:00

### 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: 69.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.58 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
1.00	mud 100%m	0.015

Total Length: 1.00 ft      Total Volume: 0.015 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

Serial #: 8874

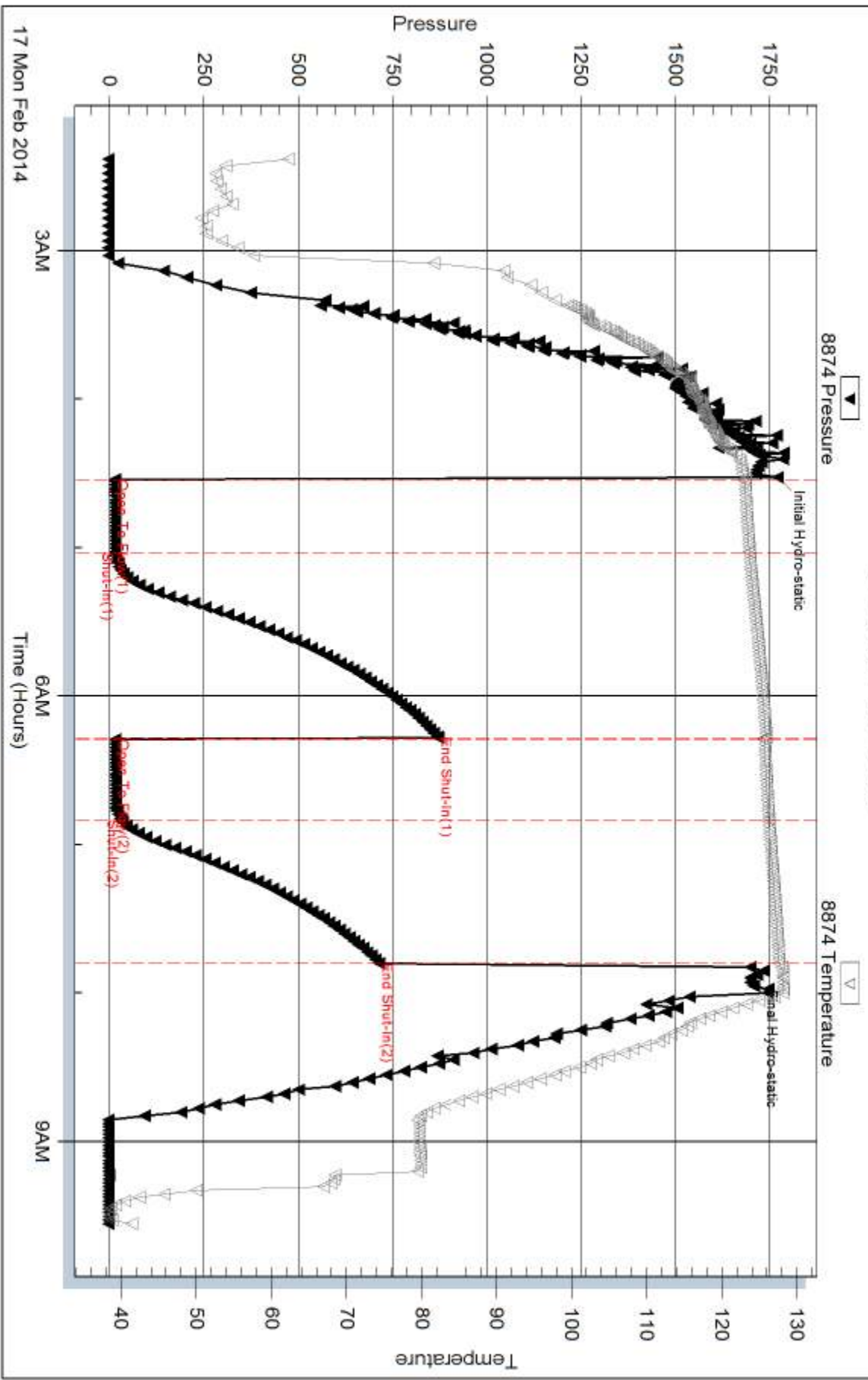
Inside

Murfin Drilling Co

Wells #1-4

DST Test Number: 1

### Pressure vs. Time



Trilobite Testing, Inc

Ref. No: 56752

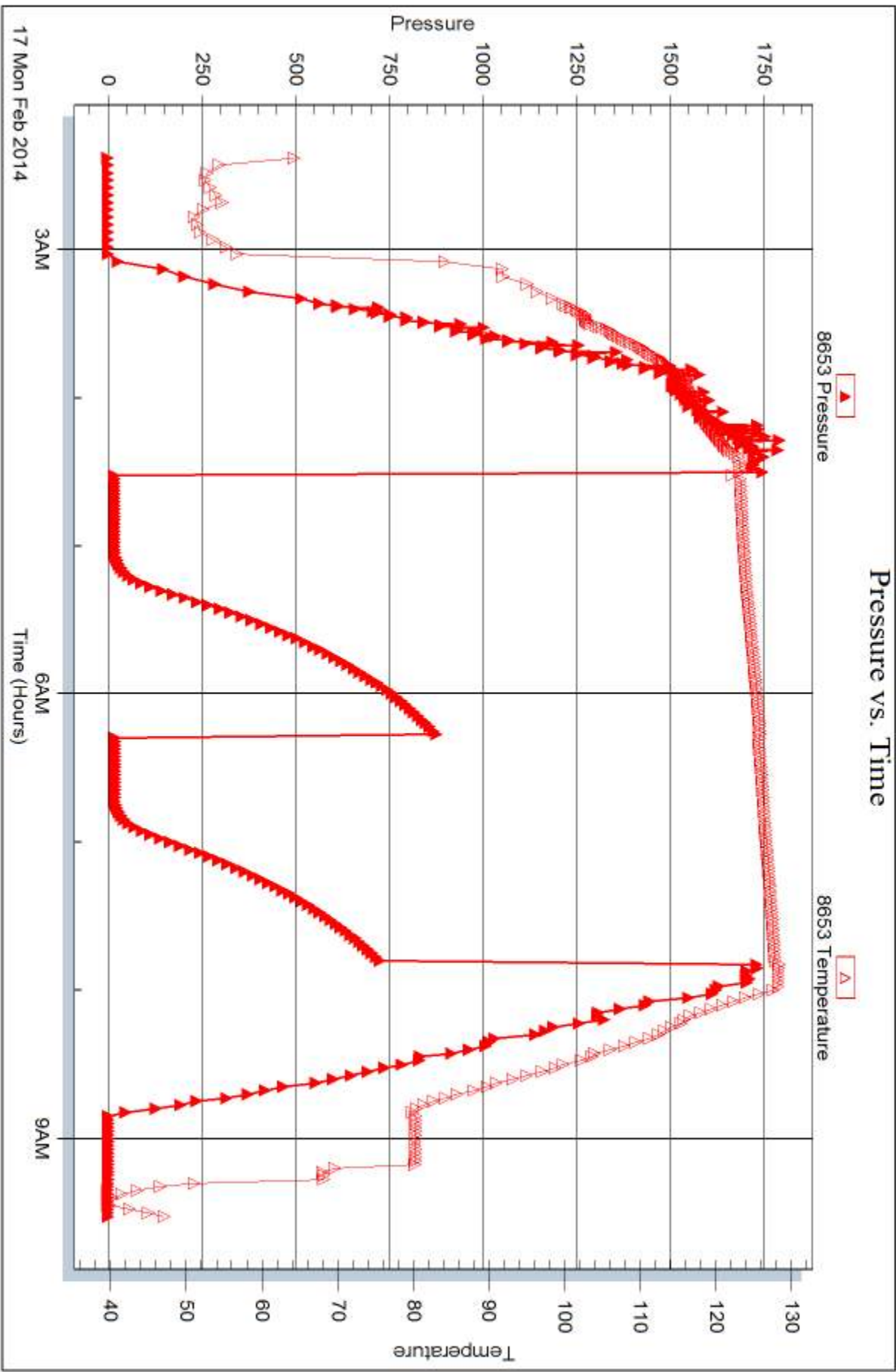
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Serial #: 8653

Outside Murfin Drilling Co

Wells #1-4

DST Test Number: 1



Trilobite Testing, Inc

Ref. No: 56752

Printed: 2014.02.27 @ 11:55:37



## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co**

250 N Water STE 300  
Wichita KS 67202

ATTN: Keith Reavis

### **Ivatee #1-4**

#### **4 -1s -37w Cheyenne Ks**

Start Date: 2014.02.18 @ 05:46:00

End Date: 2014.02.18 @ 12:52:30

Job Ticket #: 56753                      DST #: 2

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

Printed: 2014.02.27 @ 11:55:11





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drilling Co

**4 -1s -37w Cheyenne Ks**

250 N Water STE 300  
Wichita KS 67202

**Ivaley #1-4**

Job Ticket: 56753

**DST#: 2**

ATTN: Keith Reavis

Test Start: 2014.02.18 @ 05:46:00

## GENERAL INFORMATION:

Formation: **Oread**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 08:00:30

Time Test Ended: 12:52:30

Test Type: Conventional Bottom Hole (Reset)

Tester: Robert Zodrow

Unit No: 66

**Interval: 4009.00 ft (KB) To 4073.00 ft (KB) (TVD)**

Total Depth: 3716.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 3170.00 ft (KB)

3157.00 ft (CF)

KB to GR/CF: 13.00 ft

**Serial #: 8874**

**Inside**

Press@RunDepth: 33.93 psig @ 4010.00 ft (KB)

Start Date: 2014.02.18

End Date:

2014.02.18

Start Time: 05:47:00

End Time:

12:52:30

Capacity: 8000.00 psig

Last Calib.: 2014.02.18

Time On Btm: 2014.02.18 @ 08:00:00

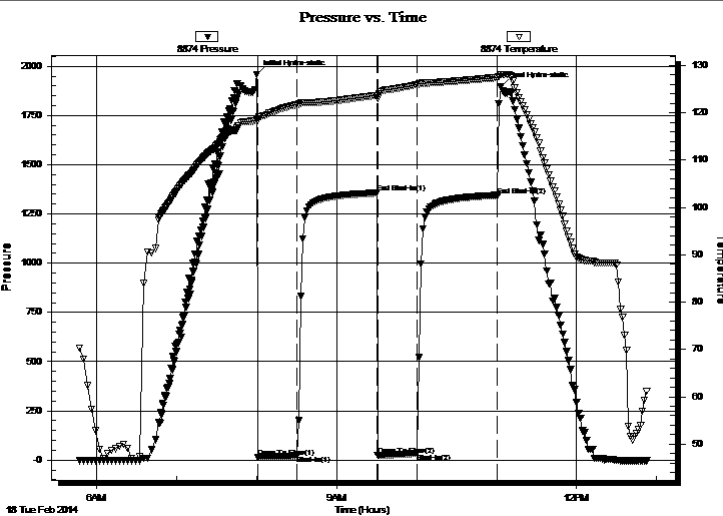
Time Off Btm: 2014.02.18 @ 11:03:00

TEST COMMENT: 30-IF- Blow Built To 1 1/4"

60-ISI- No Return

30-FF- Blow Built 1/4"

60-FSI- No Return



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1958.79	118.53	Initial Hydro-static
1	15.01	118.47	Open To Flow (1)
30	22.46	121.73	Shut-In(1)
90	1356.34	123.71	End Shut-In(1)
91	24.35	123.09	Open To Flow (2)
120	33.93	125.98	Shut-In(2)
181	1343.06	127.47	End Shut-In(2)
183	1896.88	128.10	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
50.00	Mud 100% with oil spots	0.73

## 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: Keith Reavis

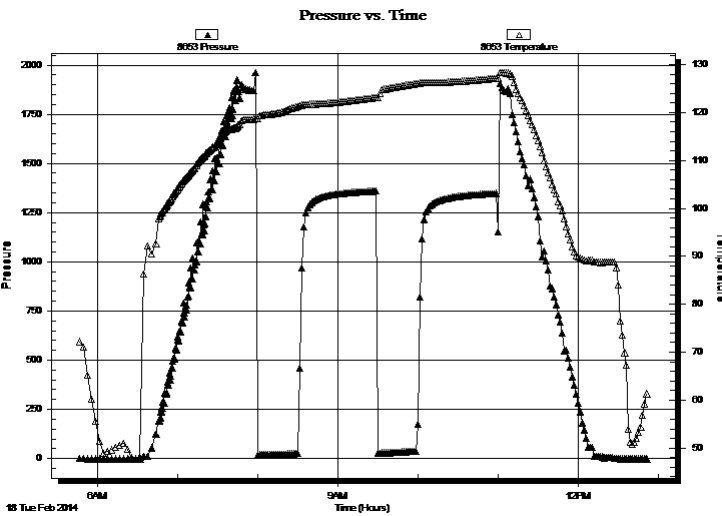
**4 -1s -37w Cheyenne Ks**  
**Ivaley #1-4**  
 Job Ticket: 56753      **DST#: 2**  
 Test Start: 2014.02.18 @ 05:46:00

## GENERAL INFORMATION:

Formation: <b>Oread</b>			
Deviated: No Whipstock:	ft (KB)	Test Type: Conventional Bottom Hole (Reset)	
Time Tool Opened: 08:00:30		Tester: Robert Zodrow	
Time Test Ended: 12:52:30		Unit No: 66	
<b>Interval: 4009.00 ft (KB) To 4073.00 ft (KB) (TVD)</b>		Reference Elevations: 3170.00 ft (KB)	
Total Depth: 3716.00 ft (KB) (TVD)		3157.00 ft (CF)	
Hole Diameter: 7.88 inches	Hole Condition: Fair	KB to GR/CF: 13.00 ft	

<b>Serial #: 8653</b>	<b>Outside</b>		
Press@RunDepth:                      psig @	4010.00 ft (KB)	Capacity:	8000.00 psig
Start Date: 2014.02.18	End Date: 2014.02.18	Last Calib.:	2014.02.18
Start Time: 05:47:00	End Time: 12:51:30	Time On Btm:	
		Time Off Btm:	

TEST COMMENT: 30-IF- Blow Built To 1 1/4"  
 60-ISI- No Return  
 30-FF- Blow Built 1/4"  
 60-FSI- No Return



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

Recovery		
Length (ft)	Description	Volume (bbl)
50.00	Mud 100% with oil spots	0.73

\* 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

**4 -1s -37w Cheyenne Ks**

250 N Water STE 300  
Wichita KS 67202

**Ivalee #1-4**

Job Ticket: 56753

**DST#: 2**

ATTN: Keith Reavis

Test Start: 2014.02.18 @ 05:46:00

## Tool Information

Drill Pipe:	Length: 3995.00 ft	Diameter: 3.88 inches	Volume: 58.42 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: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight to Pull Loose:	46000.00 lb
			<u>Total Volume: 58.42 bbl</u>	Tool Chased	ft
Drill Pipe Above KB:	14.00 ft			String Weight: Initial	42000.00 lb
Depth to Top Packer:	4009.00 ft			Final	42000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	64.00 ft				
Tool Length:	92.00 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			3982.00	
Shut In Tool	5.00			3987.00	
Hydraulic tool	5.00			3992.00	
Jars	5.00			3997.00	
Safety Joint	3.00			4000.00	
Packer	5.00			4005.00	28.00 Bottom Of Top Packer
Packer	4.00			4009.00	
Stubb	1.00			4010.00	
Recorder	0.00	8653	Outside	4010.00	
Recorder	0.00	8874	Inside	4010.00	
Perforations	25.00			4035.00	
Change Over Sub	1.00			4036.00	
Drill Pipe	31.00			4067.00	
Change Over Sub	1.00			4068.00	
Bullnose	5.00			4073.00	64.00 Bottom Packers & Anchor

**Total Tool Length: 92.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling Co

**4 -1s -37w Cheyenne Ks**

250 N Water STE 300  
Wichita KS 67202

**Ivalee #1-4**

Job Ticket: 56753

**DST#: 2**

ATTN: Keith Reavis

Test Start: 2014.02.18 @ 05:46:00

## 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: 700.00 ppm

Filter Cake: 2.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
50.00	Mud 100% with oil spots	0.731

Total Length: 50.00 ft      Total Volume: 0.731 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

Serial #: 8874

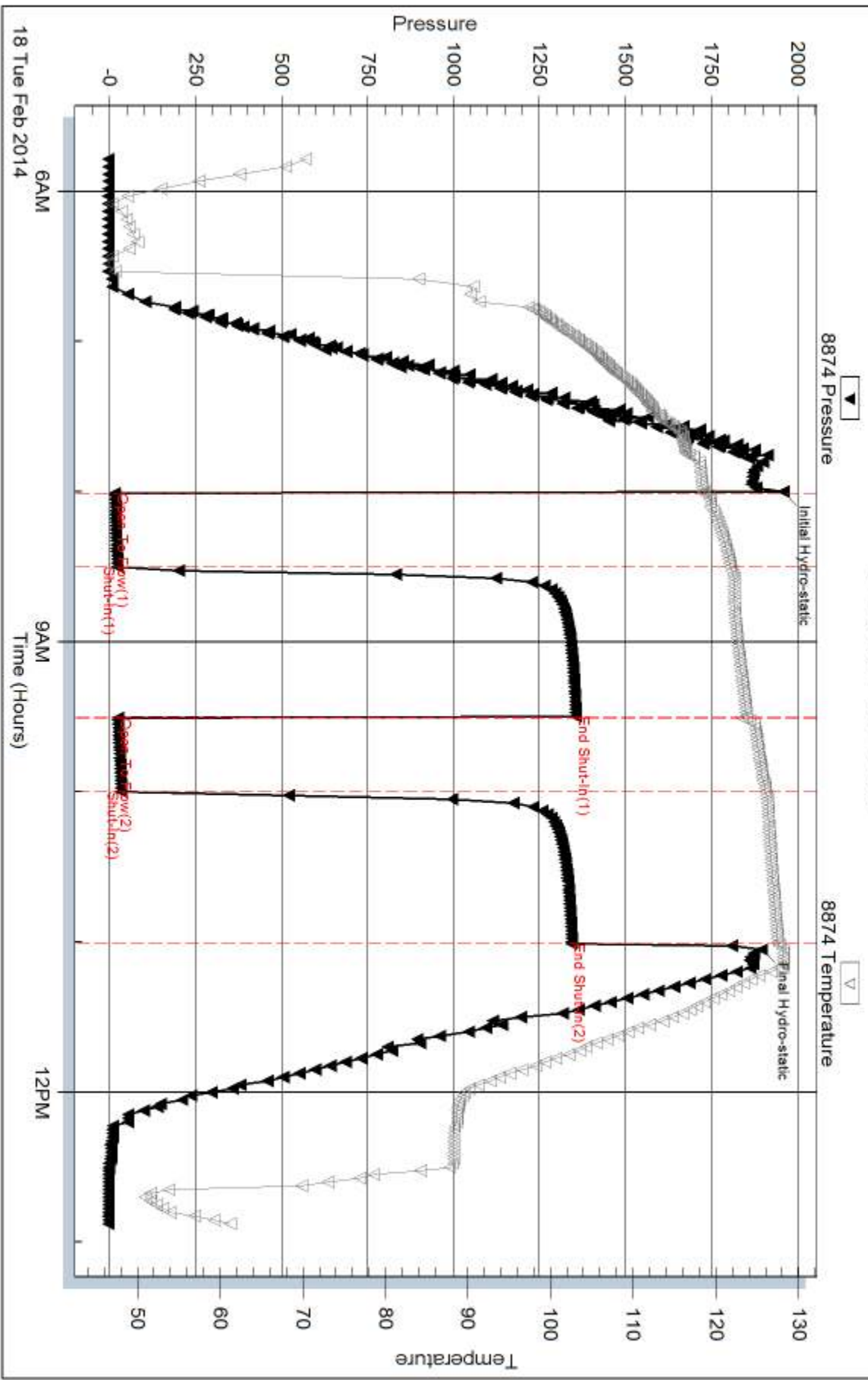
Inside

Murfin Drilling Co

Wells #1-4

DST Test Number: 2

### Pressure vs. Time

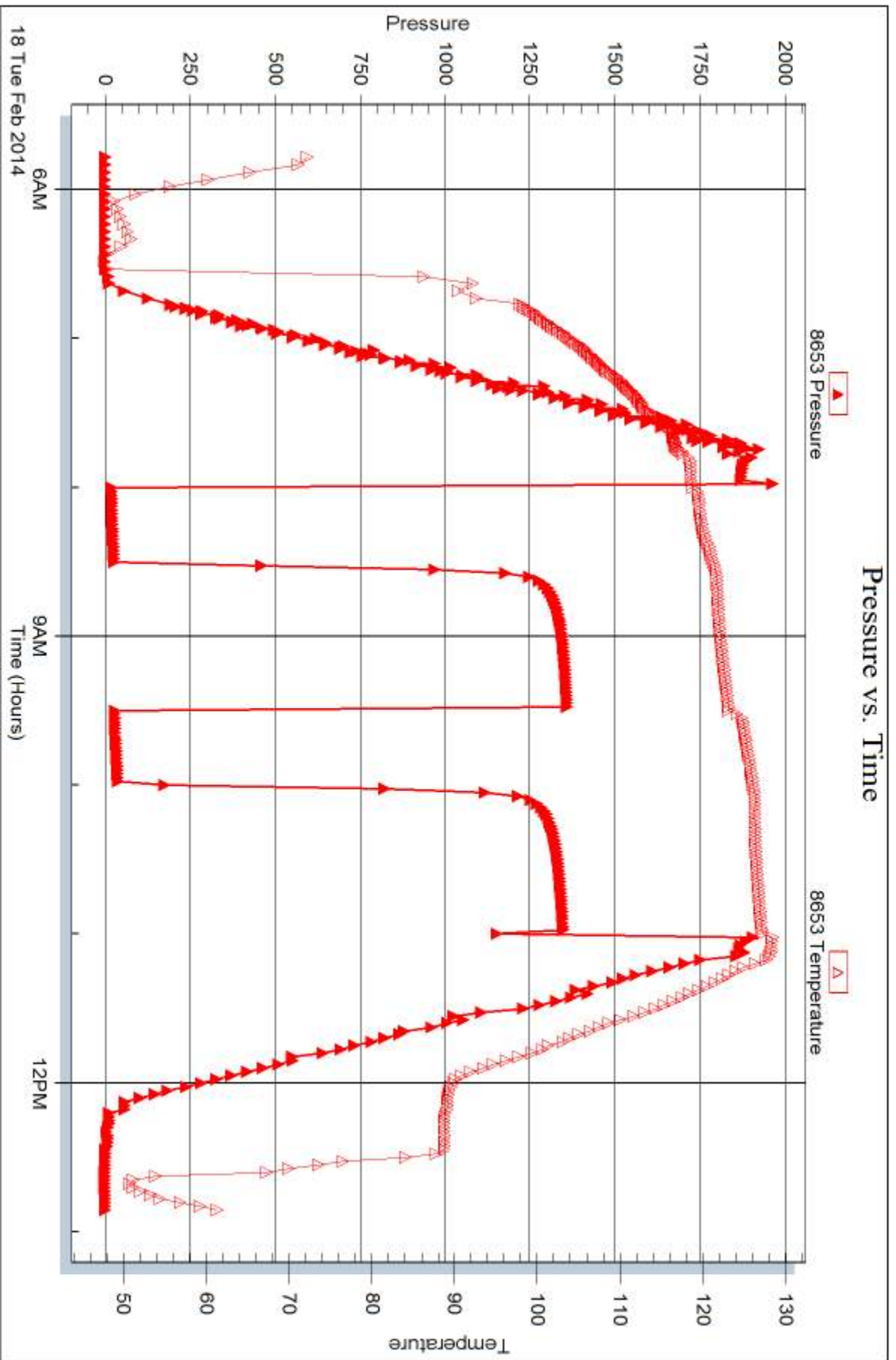


Serial #: 8653

Outside Murfin Drilling Co

Wells #1-4

DST Test Number: 2



Trilobite Testing, Inc

Ref. No: 56753

Printed: 2014.02.27 @ 11:55:13



## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co**

250 N Water STE 300  
Wichita KS 67202

ATTN: Keith Reavis

### **Ivatee #1-4**

#### **4 -1s -37w Cheyenne Ks**

Start Date: 2014.02.19 @ 02:25:00

End Date: 2014.02.19 @ 10:06:00

Job Ticket #: 56754                      DST #: 3

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

**4 -1s -37w Cheyenne Ks**

250 N Water STE 300  
Wichita KS 67202

**Ivaley #1-4**

Job Ticket: 56754

**DST#: 3**

ATTN: Keith Reavis

Test Start: 2014.02.19 @ 02:25:00

## GENERAL INFORMATION:

Formation: **LKC "A - D"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 05:23:00

Time Test Ended: 10:06:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Robert Zodrow

Unit No: 66

**Interval: 4146.00 ft (KB) To 4218.00 ft (KB) (TVD)**

Total Depth: 3716.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 3170.00 ft (KB)

3157.00 ft (CF)

KB to GR/CF: 13.00 ft

**Serial #: 8874**

**Inside**

Press@RunDepth: 50.21 psig @ 4147.00 ft (KB)

Start Date: 2014.02.19

End Date:

2014.02.19

Start Time: 02:26:00

End Time:

10:06:00

Capacity: 8000.00 psig

Last Calib.: 2014.02.19

Time On Btm: 2014.02.19 @ 05:22:30

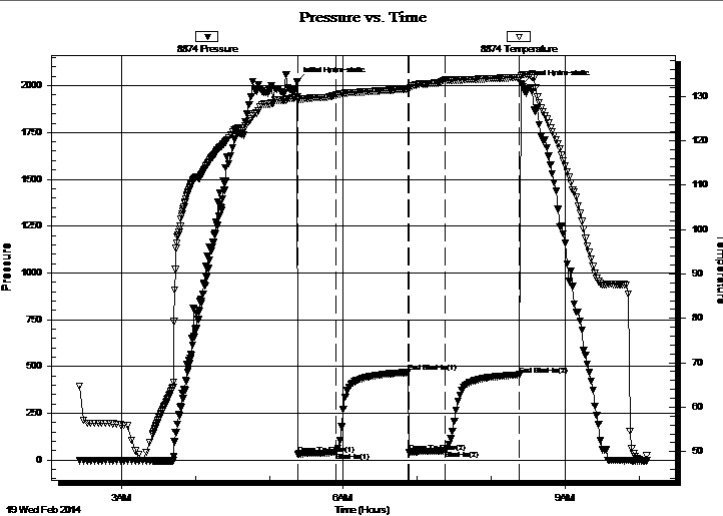
Time Off Btm: 2014.02.19 @ 08:25:00

TEST COMMENT: 30-IF-Blow Built To 2"

60-ISI- No Return

30-FF-No Blow

60-FSI-No Return



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2023.62	129.80	Initial Hydro-static
1	32.36	129.30	Open To Flow (1)
32	41.46	130.26	Shut-In(1)
90	468.18	131.64	End Shut-In(1)
91	43.37	131.49	Open To Flow (2)
120	50.21	133.63	Shut-In(2)
181	456.11	134.23	End Shut-In(2)
183	2005.11	134.83	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
70.00	OCM 99% <sub>m</sub> 1% <sub>o</sub>	1.02

## 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: Keith Reavis

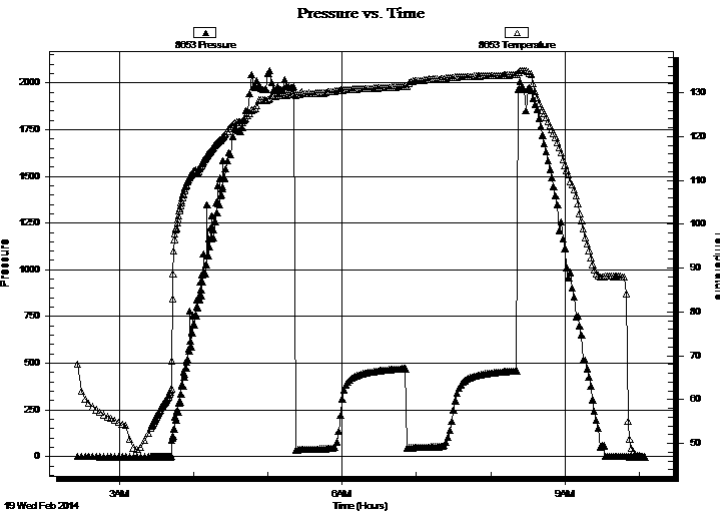
**4 -1s -37w Cheyenne Ks**  
**Ivalee #1-4**  
Job Ticket: 56754      **DST#: 3**  
Test Start: 2014.02.19 @ 02:25:00

**GENERAL INFORMATION:**

Formation: **LKC "A - D"**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 05:23:00  
 Time Test Ended: 10:06:00  
 Interval: **4146.00 ft (KB) To 4218.00 ft (KB) (TVD)**  
 Total Depth: 3716.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Fair  
 Test Type: Conventional Bottom Hole (Reset)  
 Tester: Robert Zodrow  
 Unit No: 66  
 Reference Elevations: 3170.00 ft (KB)  
 3157.00 ft (CF)  
 KB to GR/CF: 13.00 ft

**Serial #: 8653      Outside**  
 Press@RunDepth:      psig @ 4147.00 ft (KB)      Capacity: 8000.00 psig  
 Start Date: 2014.02.19      End Date: 2014.02.19      Last Calib.: 2014.02.19  
 Start Time: 02:26:00      End Time: 10:04:30      Time On Btm:  
 Time Off Btm:

TEST COMMENT: 30-IF-Blow Built To 2"  
 60-ISI- No Return  
 30-FF-No Blow  
 60-FSI-No Return



**PRESSURE SUMMARY**

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

**Recovery**

Length (ft)	Description	Volume (bbl)
70.00	OCM 99% <sup>m</sup> 1% <sup>o</sup>	1.02

\* 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

**4 -1s -37w Cheyenne Ks**

250 N Water STE 300  
Wichita KS 67202

**Ivalee #1-4**

Job Ticket: 56754

**DST#: 3**

ATTN: Keith Reavis

Test Start: 2014.02.19 @ 02:25:00

## Tool Information

Drill Pipe:	Length: 4151.00 ft	Diameter: 3.88 inches	Volume: 60.71 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: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight to Pull Loose:	56000.00 lb
			<u>Total Volume: 60.71 bbl</u>	Tool Chased	ft
Drill Pipe Above KB:	33.00 ft			String Weight: Initial	42000.00 lb
Depth to Top Packer:	4146.00 ft			Final	42000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	72.00 ft				
Tool Length:	100.00 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			4119.00	
Shut In Tool	5.00			4124.00	
Hydraulic tool	5.00			4129.00	
Jars	5.00			4134.00	
Safety Joint	3.00			4137.00	
Packer	5.00			4142.00	28.00 Bottom Of Top Packer
Packer	4.00			4146.00	
Stubb	1.00			4147.00	
Recorder	0.00	8653	Outside	4147.00	
Recorder	0.00	8874	Inside	4147.00	
Perforations	33.00			4180.00	
Change Over Sub	1.00			4181.00	
Drill Pipe	31.00			4212.00	
Change Over Sub	1.00			4213.00	
Bullnose	5.00			4218.00	72.00 Bottom Packers & Anchor

**Total Tool Length: 100.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

Murfin Drilling Co

**4 -1s -37w Cheyenne Ks**

250 N Water STE 300  
Wichita KS 67202

**Ivalee #1-4**

Job Ticket: 56754

**DST#: 3**

ATTN: Keith Reavis

Test Start: 2014.02.19 @ 02:25:00

### 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: 70.00 sec/qt

Cushion Volume:

bbl

Water Loss: 5.58 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
70.00	OCM 99%m 1%o	1.024

Total Length: 70.00 ft      Total Volume: 1.024 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: Hit A Bridge 5 Foot Off Bottom And The Tool Opened , The Fluid Dropped  
15 Foot

Serial #: 8874

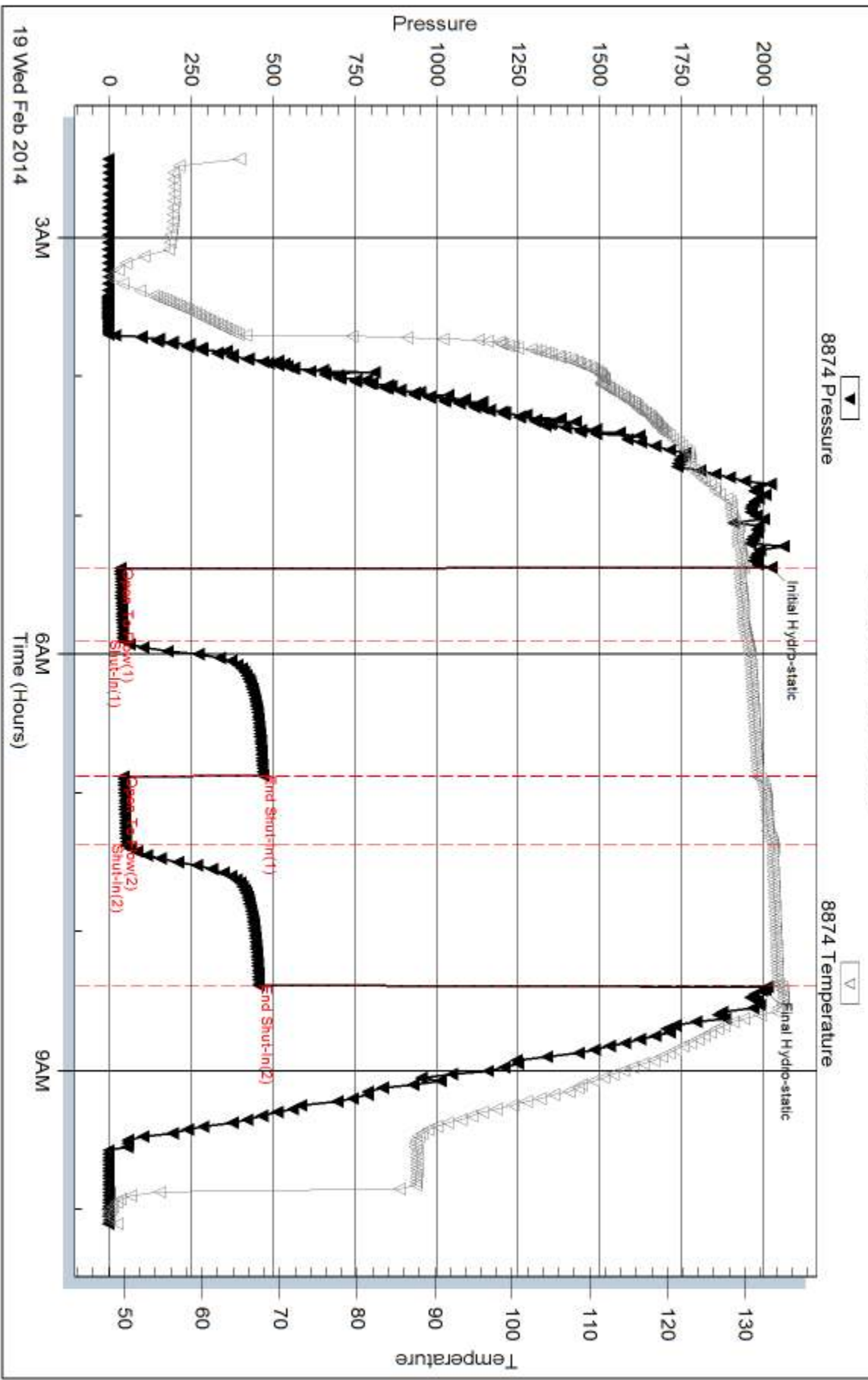
Inside

Murfin Drilling Co

Wells #1-4

DST Test Number: 3

### Pressure vs. Time

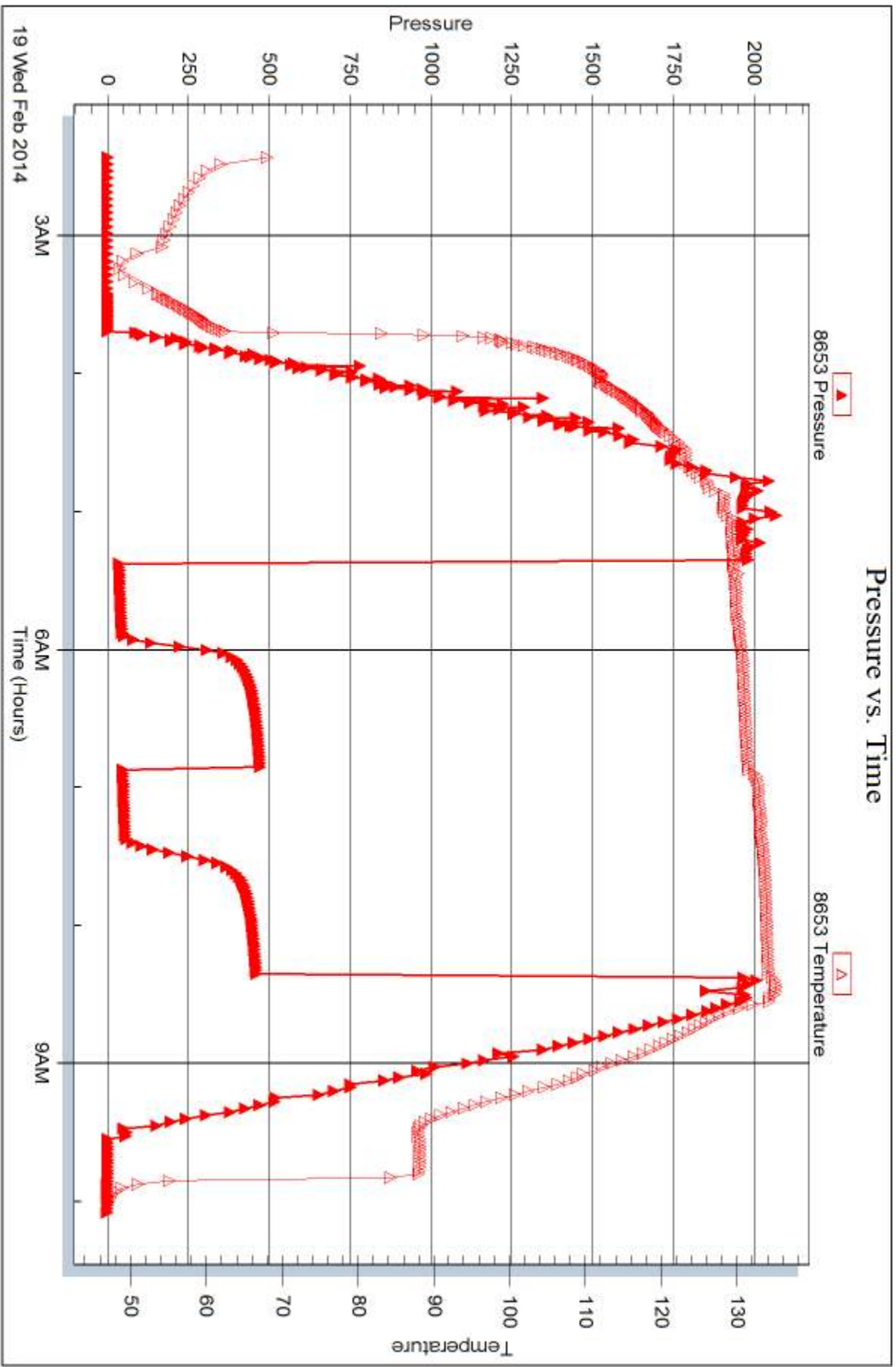


Serial #: 8653

Outside Murfin Drilling Co

Wells #1-4

DST Test Number: 3



19 Wed Feb 2014

Trilobite Testing, Inc

Ref. No: 56754

Printed: 2014.02.27 @ 11:54:49



## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co**

250 N Water STE 300  
Wichita KS 67202

ATTN: Keith Reavis

### **Ivatee #1-4**

#### **4 -1s -37w Cheyenne Ks**

Start Date: 2014.02.19 @ 18:26:00

End Date: 2014.02.20 @ 01:39:30

Job Ticket #: 53392                      DST #: 4

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

Printed: 2014.02.27 @ 11:54:20



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drilling Co  
250 N Water STE 300  
Wichita KS 67202  
ATTN: Keith Reavis

**4 -1s -37w Cheyenne Ks**

**Ivaley #1-4**

Job Ticket: 53392

**DST#: 4**

Test Start: 2014.02.19 @ 18:26:00

## GENERAL INFORMATION:

Formation: **LKC "G-G" "**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 20:37:00  
 Time Test Ended: 01:39:30  
 Interval: **4212.00 ft (KB) To 4292.00 ft (KB) (TVD)**  
 Total Depth: 4292.00 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: 3170.00 ft (KB)  
 3157.00 ft (CF)  
 KB to GR/CF: 13.00 ft

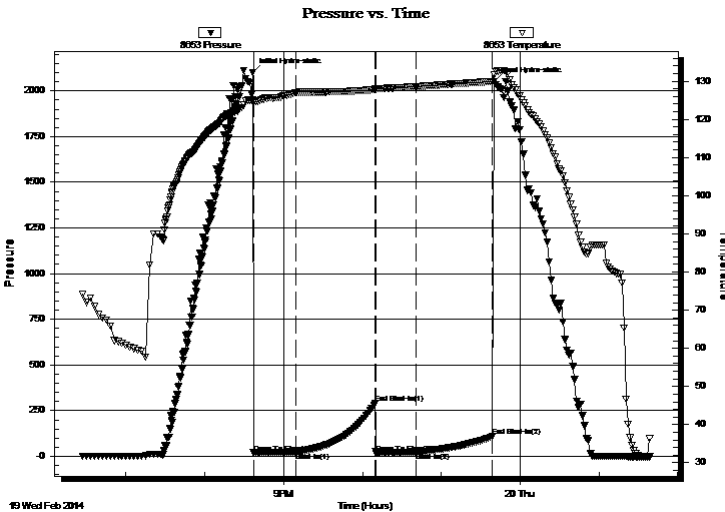
## Serial #: 8653

**Outside**

Press@RunDepth: 21.10 psig @ 4213.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2014.02.19 End Date: 2014.02.20 Last Calib.: 2014.02.20  
 Start Time: 18:27:00 End Time: 01:39:30 Time On Btm: 2014.02.19 @ 20:36:30  
 Time Off Btm: 2014.02.19 @ 23:40:00

TEST COMMENT: 30 - IF- 1/2" Blow built to 1 1/2"  
 60 - IS- No Return  
 30 - FF- No Blow  
 60 - FS- No Return

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2101.33	125.06	Initial Hydro-static
1	19.05	124.70	Open To Flow (1)
33	21.21	127.03	Shut-In(1)
93	288.07	127.77	End Shut-In(1)
94	17.33	128.04	Open To Flow (2)
124	21.10	128.57	Shut-In(2)
182	107.75	129.94	End Shut-In(2)
184	2052.69	131.57	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
15.00	OCM 80M 20o	0.21

## Gas Rates

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



**TRILOBITE TESTING, INC.**

## DRILL STEM TEST REPORT

Murfin Drilling Co

**4 -1s -37w Cheyenne Ks**

250 N Water STE 300  
Wichita KS 67202

**Ivaley #1-4**

Job Ticket: 53392

**DST#: 4**

ATTN: Keith Reavis

Test Start: 2014.02.19 @ 18:26:00

### GENERAL INFORMATION:

Formation: **LKC "G-G" "**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 20:37:00

Time Test Ended: 01:39:30

Test Type: Conventional Bottom Hole (Initial)

Tester: Kevin Mack

Unit No: 66

**Interval: 4212.00 ft (KB) To 4292.00 ft (KB) (TVD)**

Total Depth: 4292.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 3170.00 ft (KB)

3157.00 ft (CF)

KB to GR/CF: 13.00 ft

**Serial #: 8874**

Inside

Press@RunDepth: psig @ 4213.00 ft (KB)

Start Date: 2014.02.19

End Date:

2014.02.20

Start Time: 18:27:00

End Time:

01:41:00

Capacity: 8000.00 psig

Last Calib.:

2014.02.20

Time On Btm:

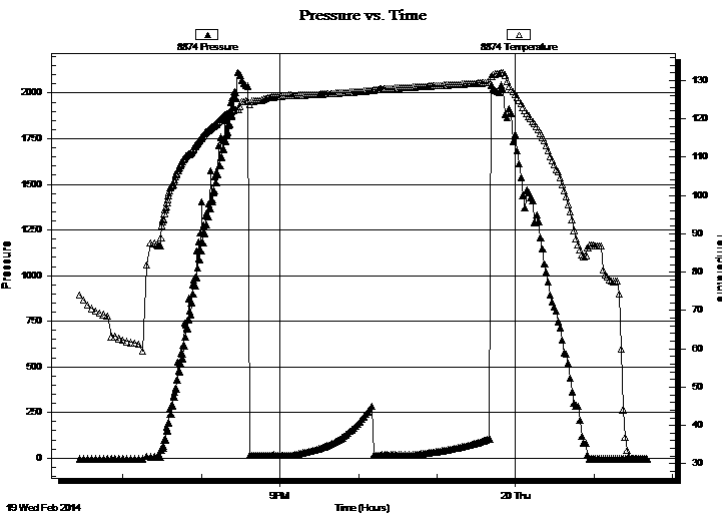
Time Off Btm:

TEST COMMENT: 30 - IF- 1/2" Blow built to 1 1/2"

60 - IS- No Return

30 - FF- No Blow

60 - FS- No Return



### PRESSURE SUMMARY

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

### Recovery

Length (ft)	Description	Volume (bbl)
15.00	OCM 80M 20o	0.21

### Gas Rates

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





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drilling Co

**4 -1s -37w Cheyenne Ks**

250 N Water STE 300  
Wichita KS 67202

**Ivalee #1-4**

Job Ticket: 53392

**DST#: 4**

ATTN: Keith Reavis

Test Start: 2014.02.19 @ 18:26:00

## Tool Information

Drill Pipe:	Length: 4215.00 ft	Diameter: 3.80 inches	Volume: 59.13 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: 0.00 ft	Diameter: 2.25 inches	Volume: 0.00 bbl	Weight to Pull Loose:	55000.00 lb
			<u>Total Volume: 59.13 bbl</u>	Tool Chased	ft
Drill Pipe Above KB:	31.00 ft			String Weight: Initial	44000.00 lb
Depth to Top Packer:	4212.00 ft			Final	44000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	80.00 ft				
Tool Length:	108.00 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			4185.00	
Shut In Tool	5.00			4190.00	
Hydraulic tool	5.00			4195.00	
Jars	5.00			4200.00	
Safety Joint	3.00			4203.00	
Packer	5.00			4208.00	28.00 Bottom Of Top Packer
Packer	4.00			4212.00	
Stubb	1.00			4213.00	
Packer - Shale	0.00			4213.00	
Recorder	0.00	8653	Outside	4213.00	
Recorder	0.00	8874	Inside	4213.00	
Perforations	9.00			4222.00	
Change Over Sub	1.00			4223.00	
Drill Pipe	63.00			4286.00	
Change Over Sub	1.00			4287.00	
Bullnose	5.00			4292.00	80.00 Bottom Packers & Anchor
<b>Total Tool Length:</b>	<b>108.00</b>				



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

Murfin Drilling Co

**4 -1s -37w Cheyenne Ks**

250 N Water STE 300  
Wichita KS 67202

**Ivalee #1-4**

Job Ticket: 53392

**DST#: 4**

ATTN: Keith Reavis

Test Start: 2014.02.19 @ 18:26:00

### 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: 57.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 4.79 in<sup>3</sup>

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 600.00 ppm

Filter Cake: 2.00 inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
15.00	OCM 80M 20o	0.210

Total Length: 15.00 ft      Total Volume: 0.210 bbl

Num Fluid Samples: 0

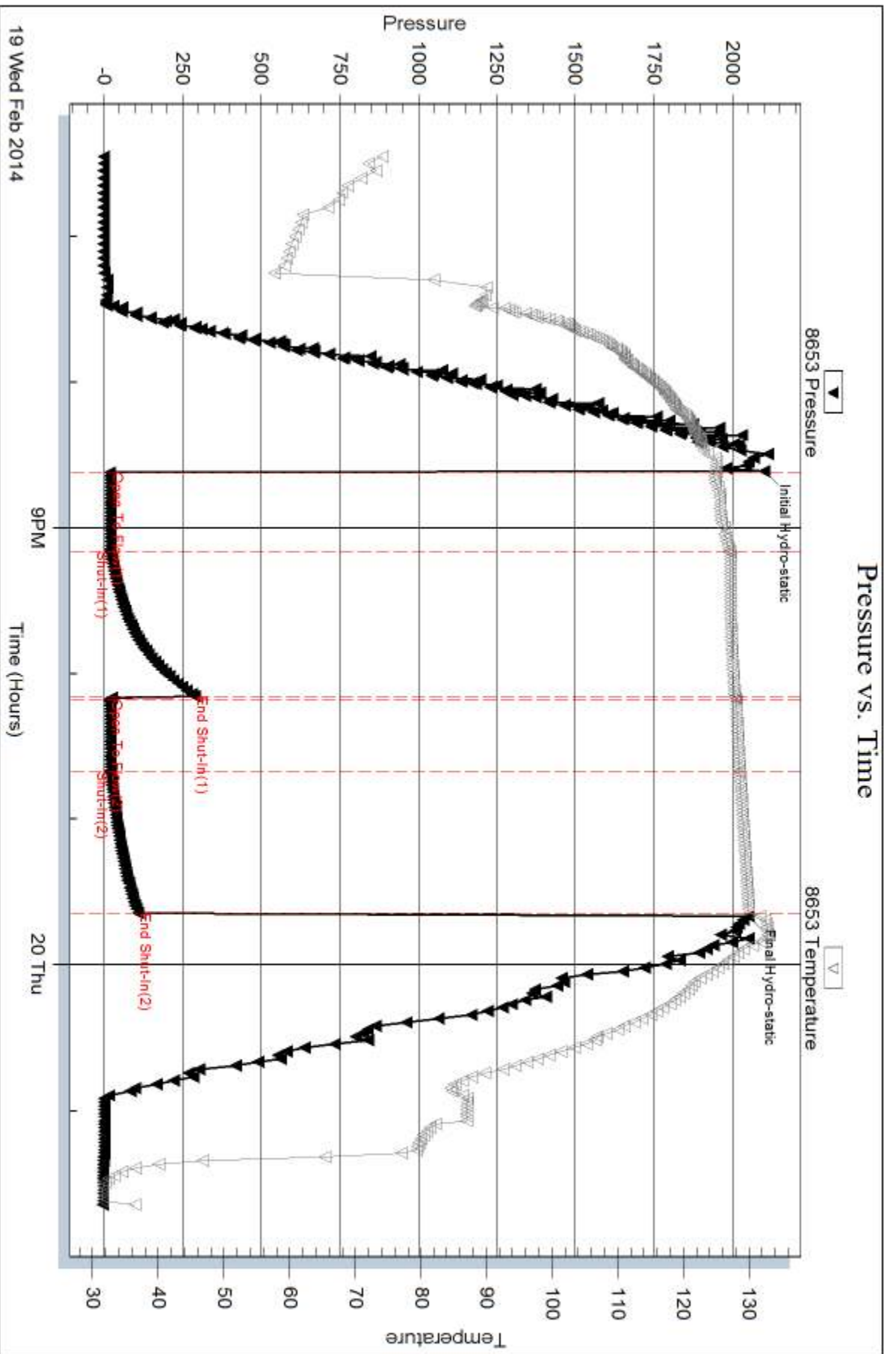
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



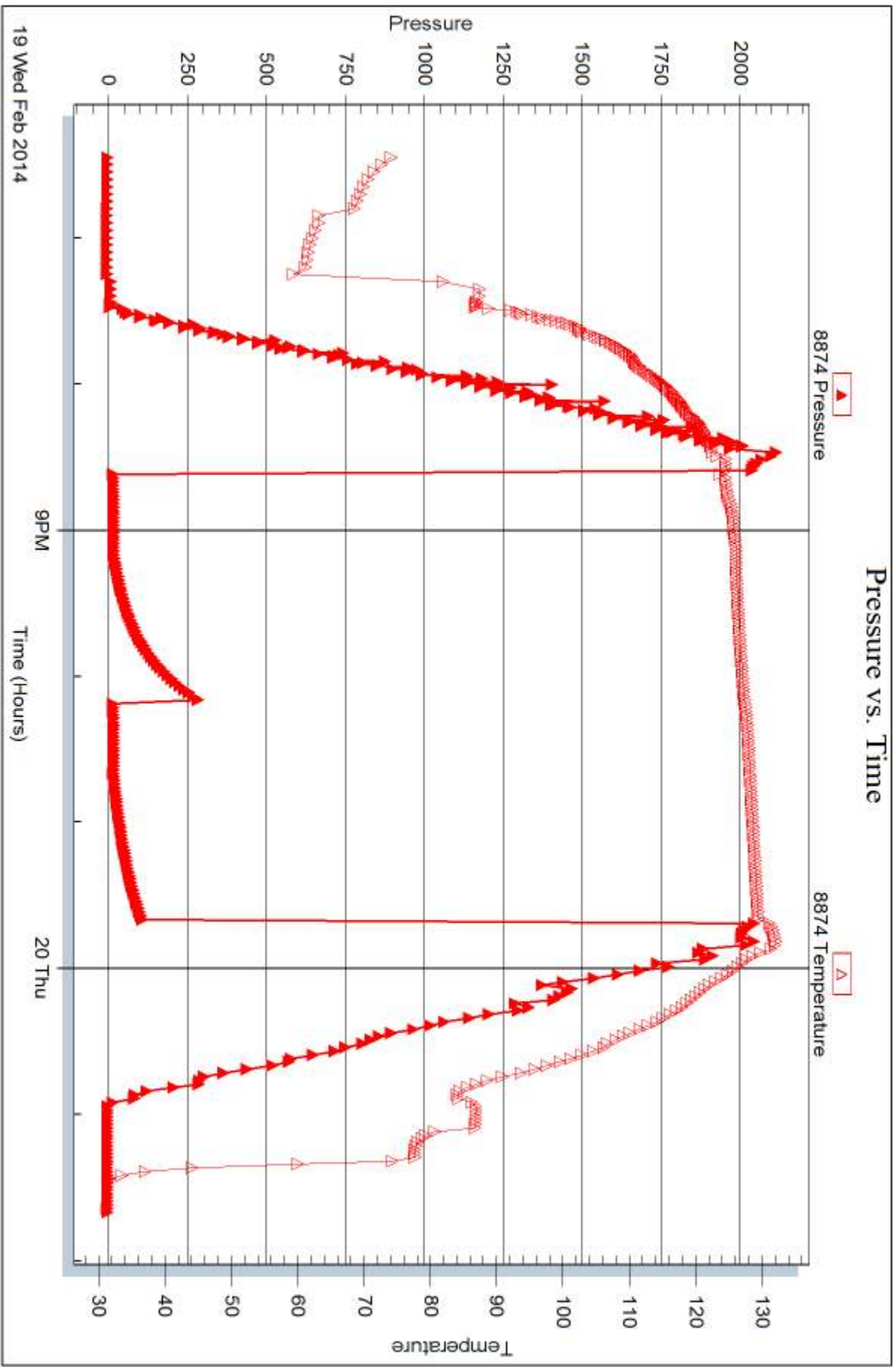
Serial #: 8874

Inside

Murfin Drilling Co

Walee #1-4

DST Test Number: 4



Trilobite Testing, Inc

Ref. No: 53392

Printed: 2014.02.27 @ 11:54:23



## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co**

250 N Water STE 300  
Wichita KS 67202

ATTN: Keith Reavis

### **Ivalee #1-4**

#### **4 -1s -37w Cheyenne Ks**

Start Date: 2014.02.20 @ 12:45:00

End Date: 2014.02.20 @ 21:57:00

Job Ticket #: 53393                      DST #: 5

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

Printed: 2014.02.27 @ 11:53:55



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drilling Co  
250 N Water STE 300  
Wichita KS 67202  
ATTN: Keith Reavis

**4 -1s -37w Cheyenne Ks**

**Ivaley #1-4**

Job Ticket: 53393

**DST#: 5**

Test Start: 2014.02.20 @ 12:45:00

## GENERAL INFORMATION:

Formation: **LKC "H-J"**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 15:15:30  
 Time Test Ended: 21:57:00  
 Interval: **4266.00 ft (KB) To 4360.00 ft (KB) (TVD)**  
 Total Depth: 4360.00 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: 3170.00 ft (KB)  
 3157.00 ft (CF)  
 KB to GR/CF: 13.00 ft

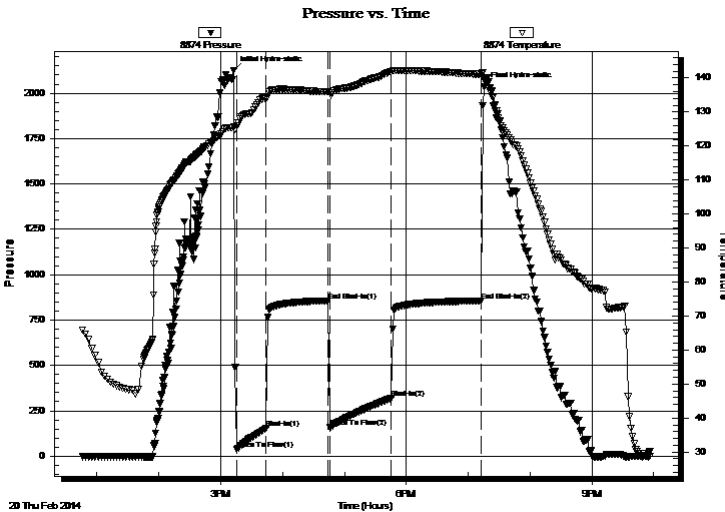
## Serial #: 8874

Inside

Press@RunDepth: 320.55 psig @ 4267.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2014.02.20 End Date: 2014.02.20 Last Calib.: 2014.02.20  
 Start Time: 12:46:00 End Time: 21:57:00 Time On Btm: 2014.02.20 @ 15:12:30  
 Time Off Btm: 2014.02.20 @ 19:15:30

TEST COMMENT: 30 - IF- BoB in 8 min.  
 60 - IS- BoB in 45 min.  
 60 - FF- BoB in 7 min.  
 90 - FS- Surface Blow built to 9"

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2125.53	125.51	Initial Hydro-static
3	39.47	125.85	Open To Flow (1)
32	152.36	133.88	Shut-In(1)
92	856.52	135.91	End Shut-In(1)
93	156.90	135.62	Open To Flow (2)
153	320.55	141.93	Shut-In(2)
240	855.37	141.12	End Shut-In(2)
243	2034.30	139.59	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
94.00	OCM 10o 90M	1.32
238.00	GOCM 10G 30o 60M	3.34
441.00	Clean Gassy Oil 20G 80o	6.19
0.00	720' GIP	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: Keith Reavis

**4 -1s -37w Cheyenne Ks**  
**Ivalee #1-4**  
 Job Ticket: 53393 **DST#: 5**  
 Test Start: 2014.02.20 @ 12:45:00

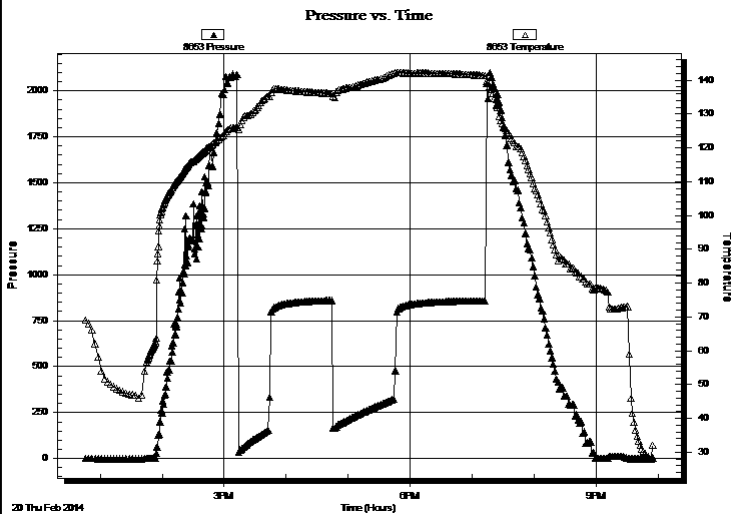
## GENERAL INFORMATION:

Formation: **LKC "H-J"**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 15:15:30  
 Time Test Ended: 21:57:00  
 Interval: **4266.00 ft (KB) To 4360.00 ft (KB) (TVD)**  
 Total Depth: 4360.00 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: 3170.00 ft (KB)  
 3157.00 ft (CF)  
 KB to GR/CF: 13.00 ft

## Serial #: 8653 Outside

Press@RunDepth: psig @ 4267.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2014.02.20 End Date: 2014.02.20 Last Calib.: 2014.02.20  
 Start Time: 12:46:00 End Time: 21:55:30 Time On Btm:  
 Time Off Btm:

TEST COMMENT: 30 - IF- BoB in 8 min.  
 60 - IS- BoB in 45 min.  
 60 - FF- BoB in 7 min.  
 90 - FS- Surface Blow built to 9"



## PRESSURE SUMMARY

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

## Recovery

Length (ft)	Description	Volume (bbl)
94.00	OCM 10o 90M	1.32
238.00	GOCM 10G 30o 60M	3.34
441.00	Clean Gassy Oil 20G 80o	6.19
0.00	720' GIP	0.00

## Gas Rates

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



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drilling Co

**4 -1s -37w Cheyenne Ks**

250 N Water STE 300  
Wichita KS 67202

**Ivalee #1-4**

Job Ticket: 53393

**DST#: 5**

ATTN: Keith Reavis

Test Start: 2014.02.20 @ 12:45:00

## Tool Information

Drill Pipe:	Length: 4245.00 ft	Diameter: 3.80 inches	Volume: 59.55 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: 0.00 ft	Diameter: 2.25 inches	Volume: 0.00 bbl	Weight to Pull Loose: 60000.00 lb
			<u>Total Volume: 59.55 bbl</u>	Tool Chased ft
Drill Pipe Above KB:	7.00 ft			String Weight: Initial 45000.00 lb
Depth to Top Packer:	4266.00 ft			Final 45000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	94.00 ft			
Tool Length:	122.00 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			4239.00	
Shut In Tool	5.00			4244.00	
Hydraulic tool	5.00			4249.00	
Jars	5.00			4254.00	
Safety Joint	3.00			4257.00	
Packer	5.00			4262.00	28.00 Bottom Of Top Packer
Packer	4.00			4266.00	
Stubb	1.00			4267.00	
Packer - Shale	0.00			4267.00	
Recorder	0.00	8653	Outside	4267.00	
Recorder	0.00	8874	Inside	4267.00	
Perforations	23.00			4290.00	
Change Over Sub	1.00			4291.00	
Drill Pipe	63.00			4354.00	
Change Over Sub	1.00			4355.00	
Bullnose	5.00			4360.00	94.00 Bottom Packers & Anchor
<b>Total Tool Length:</b>	<b>122.00</b>				





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

Murfin Drilling Co

**4 -1s -37w Cheyenne Ks**

250 N Water STE 300  
Wichita KS 67202

**Ivalee #1-4**

Job Ticket: 53393

**DST#: 5**

ATTN: Keith Reavis

Test Start: 2014.02.20 @ 12:45:00

### Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

39 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 54.00 sec/qt

Cushion Volume:

bbf

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

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 600.00 ppm

Filter Cake: 2.00 inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbf
94.00	OCM 10o 90M	1.319
238.00	GOCM 10G 30o 60M	3.339
441.00	Clean Gassy Oil 20G 80o	6.186
0.00	720' GIP	0.000

Total Length: 773.00 ft      Total Volume: 10.844 bbf

Num Fluid Samples: 0

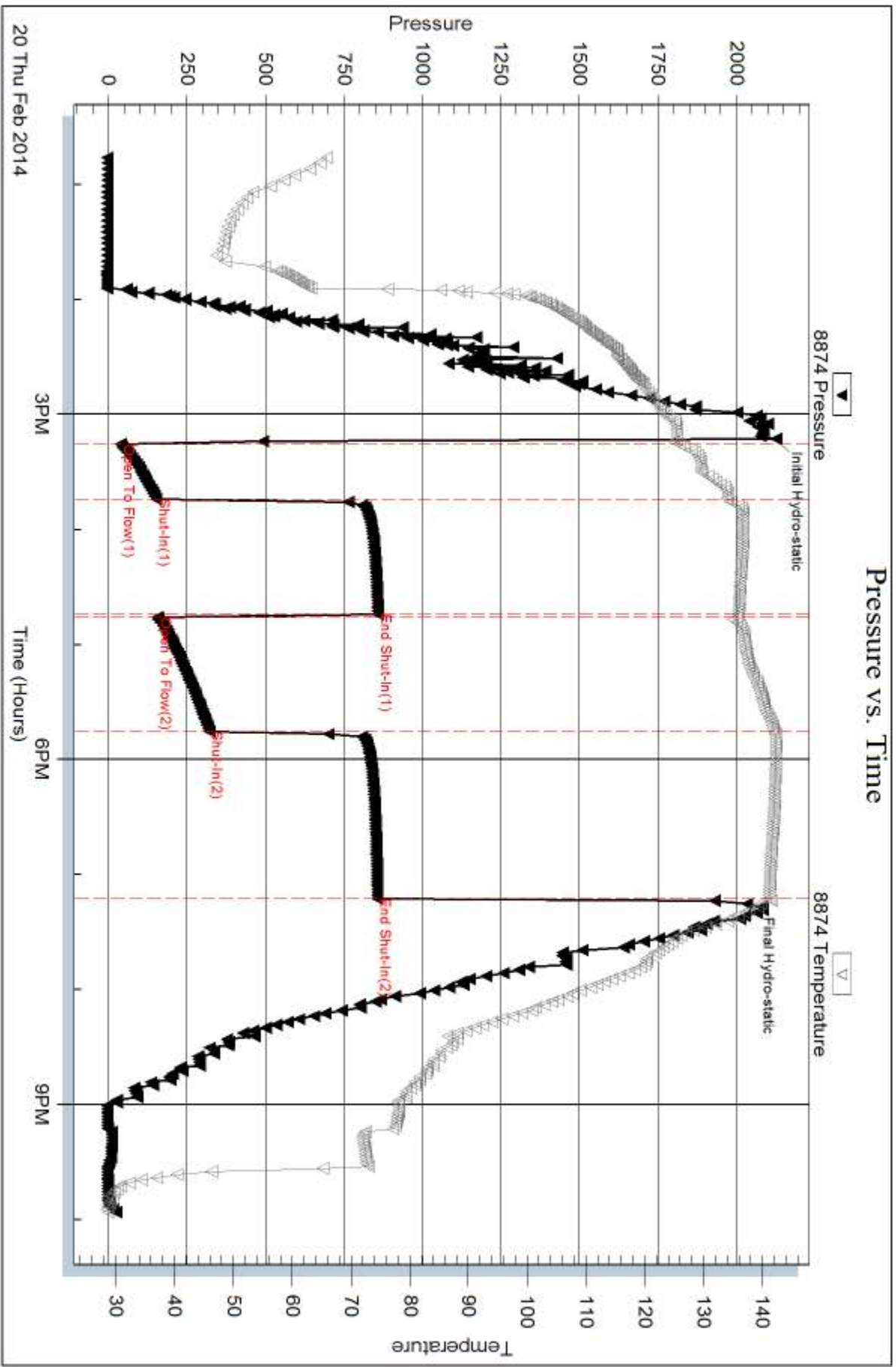
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: Oil API 38 @ 50 deg = 39 cor.

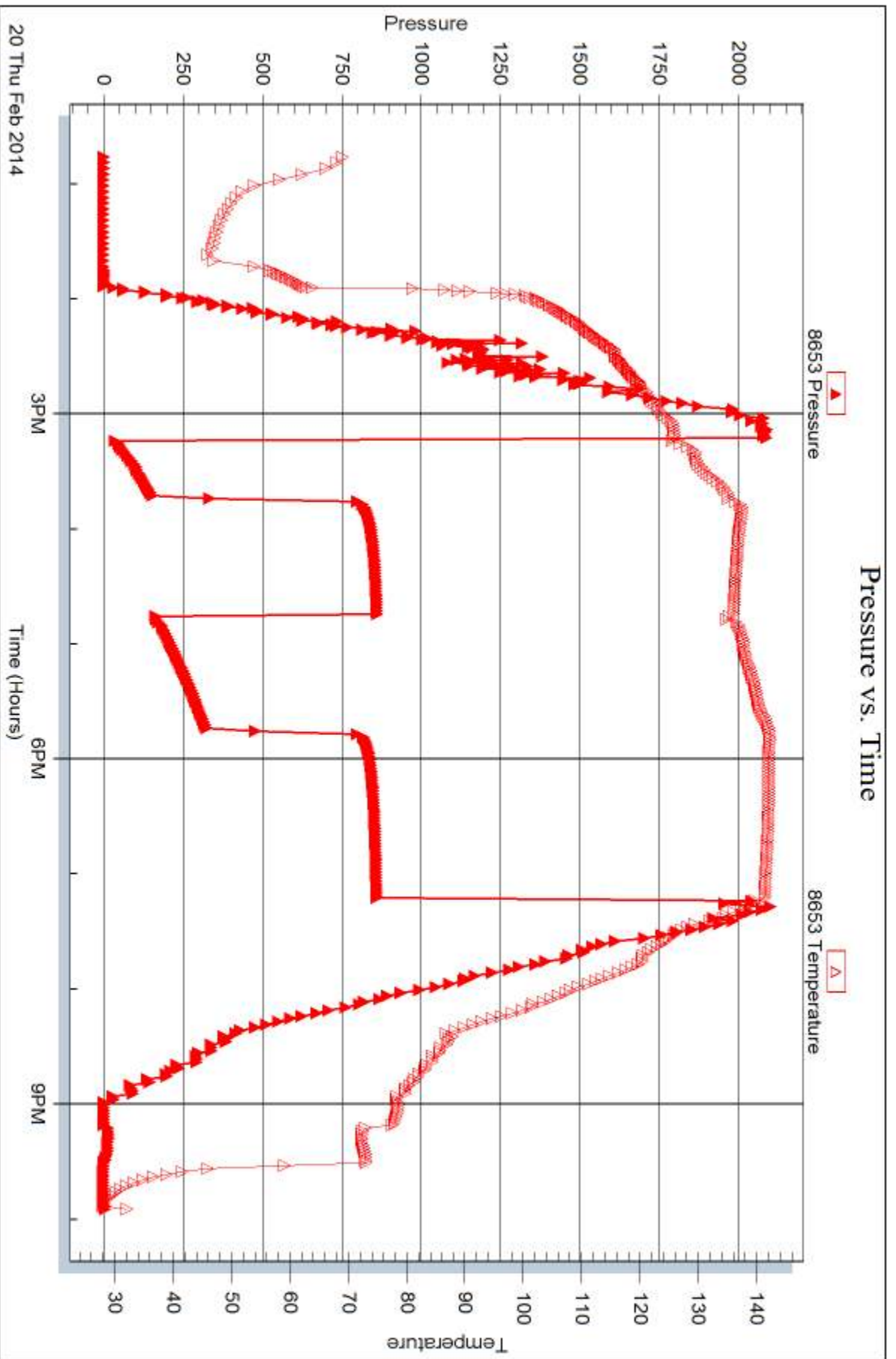


Serial #: 8653

Outside Murfin Drilling Co

Wells #1-4

DST Test Number: 5



Trilobite Testing, Inc

Ref. No: 53393

Printed: 2014.02.27 @ 11:53:57



## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co**

250 N Water STE 300  
Wichita KS 67202

ATTN: Keith Reavis

### **Ivatee #1-4**

#### **4 -1s -37w Cheyenne Ks**

Start Date: 2014.02.21 @ 23:50:00

End Date: 2014.02.22 @ 06:52:00

Job Ticket #: 53394                      DST #: 6

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

Printed: 2014.02.27 @ 11:53:01



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drilling Co  
250 N Water STE 300  
Wichita KS 67202  
ATTN: Keith Reavis

**4 -1s -37w Cheyenne Ks**

**Ivalee #1-4**

Job Ticket: 53394

**DST#: 6**

Test Start: 2014.02.21 @ 23:50:00

## GENERAL INFORMATION:

Formation: **Pawnee**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 01:53:00  
 Time Test Ended: 06:52:00  
 Interval: **4511.00 ft (KB) To 4554.00 ft (KB) (TVD)**  
 Total Depth: 4554.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Fair  
 Test Type: Conventional Bottom Hole (Initial)  
 Tester: Kevin Mack  
 Unit No: 66  
 Reference Elevations: 3170.00 ft (KB)  
 3157.00 ft (CF)  
 KB to GR/CF: 13.00 ft

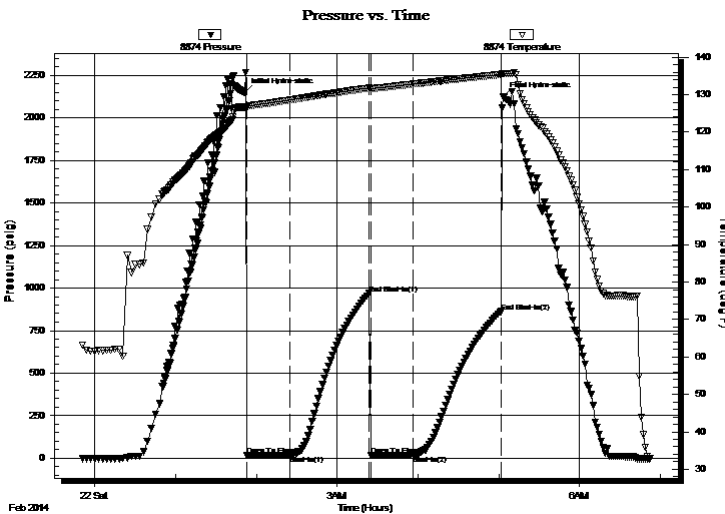
## Serial #: 8874

Inside

Press@RunDepth: 19.66 psig @ 4512.00 ft (KB)  
 Start Date: 2014.02.21 End Date: 2014.02.22  
 Start Time: 23:51:00 End Time: 06:52:00  
 Capacity: 8000.00 psig  
 Last Calib.: 2014.02.22  
 Time On Btm: 2014.02.22 @ 01:51:00  
 Time Off Btm: 2014.02.22 @ 05:03:30

TEST COMMENT: 30 - IF- 1/2" Blow built to 1 1/4"  
 60 - IS- No Return  
 30 - FF- No Blow  
 60 - FS- No Return

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2149.46	126.71	Initial Hydro-static
2	17.00	126.56	Open To Flow (1)
34	17.95	128.58	Shut-In(1)
93	968.14	131.76	End Shut-In(1)
94	18.93	131.60	Open To Flow (2)
126	19.66	132.82	Shut-In(2)
191	861.85	135.36	End Shut-In(2)
193	2123.67	135.57	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
15.00	Mud 100M	0.21

## 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: Keith Reavis

**4 -1s -37w Cheyenne Ks**

**Ivaley #1-4**

Job Ticket: 53394

**DST#: 6**

Test Start: 2014.02.21 @ 23:50:00

**GENERAL INFORMATION:**

Formation: **Pawnee**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 01:53:00

Time Test Ended: 06:52:00

**Interval: 4511.00 ft (KB) To 4554.00 ft (KB) (TVD)**

Total Depth: 4554.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Test Type: Conventional Bottom Hole (Initial)

Tester: Kevin Mack

Unit No: 66

Reference Elevations: 3170.00 ft (KB)

3157.00 ft (CF)

KB to GR/CF: 13.00 ft

**Serial #: 8653 Outside**

Press@RunDepth: psig @ 4512.00 ft (KB)

Start Date: 2014.02.21 End Date: 2014.02.22

Start Time: 23:51:00 End Time: 06:51:00

Capacity: 8000.00 psig

Last Calib.: 2014.02.22

Time On Btm:

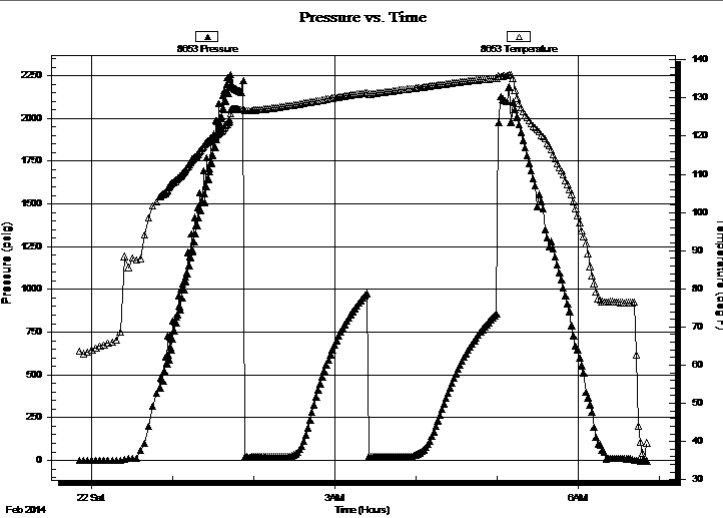
Time Off Btm:

TEST COMMENT: 30 - IF- 1/2" Blow built to 1 1/4"

60 - IS- No Return

30 - FF- No Blow

60 - FS- No Return



**PRESSURE SUMMARY**

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

**Recovery**

Length (ft)	Description	Volume (bbl)
15.00	Mud 100M	0.21

**Gas Rates**

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



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drilling Co

**4 -1s -37w Cheyenne Ks**

250 N Water STE 300  
Wichita KS 67202

**Ivalee #1-4**

Job Ticket: 53394

**DST#: 6**

ATTN: Keith Reavis

Test Start: 2014.02.21 @ 23:50:00

## Tool Information

Drill Pipe:	Length: 4495.00 ft	Diameter: 3.80 inches	Volume: 63.05 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: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight to Pull Loose:	60000.00 lb
			<u>Total Volume: 63.05 bbl</u>	Tool Chased	ft
Drill Pipe Above KB:	12.00 ft			String Weight: Initial	48000.00 lb
Depth to Top Packer:	4511.00 ft			Final	48000.00 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			4484.00	
Shut In Tool	5.00			4489.00	
Hydraulic tool	5.00			4494.00	
Jars	5.00			4499.00	
Safety Joint	3.00			4502.00	
Packer	5.00			4507.00	28.00 Bottom Of Top Packer
Packer	4.00			4511.00	
Stubb	1.00			4512.00	
Packer - Shale	0.00			4512.00	
Recorder	0.00	8653	Outside	4512.00	
Recorder	0.00	8874	Inside	4512.00	
Perforations	3.00			4515.00	
Change Over Sub	1.00			4516.00	
Drill Pipe	32.00			4548.00	
Change Over Sub	1.00			4549.00	
Bullnose	5.00			4554.00	43.00 Bottom Packers & Anchor
<b>Total Tool Length:</b>	<b>71.00</b>				



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling Co

**4 -1s -37w Cheyenne Ks**

250 N Water STE 300  
Wichita KS 67202

**Ivalee #1-4**

Job Ticket: 53394

**DST#: 6**

ATTN: Keith Reavis

Test Start: 2014.02.21 @ 23:50:00

## 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: 123.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 4.39 in<sup>3</sup>

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 800.00 ppm

Filter Cake: 2.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
15.00	Mud 100M	0.210

Total Length: 15.00 ft      Total Volume: 0.210 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

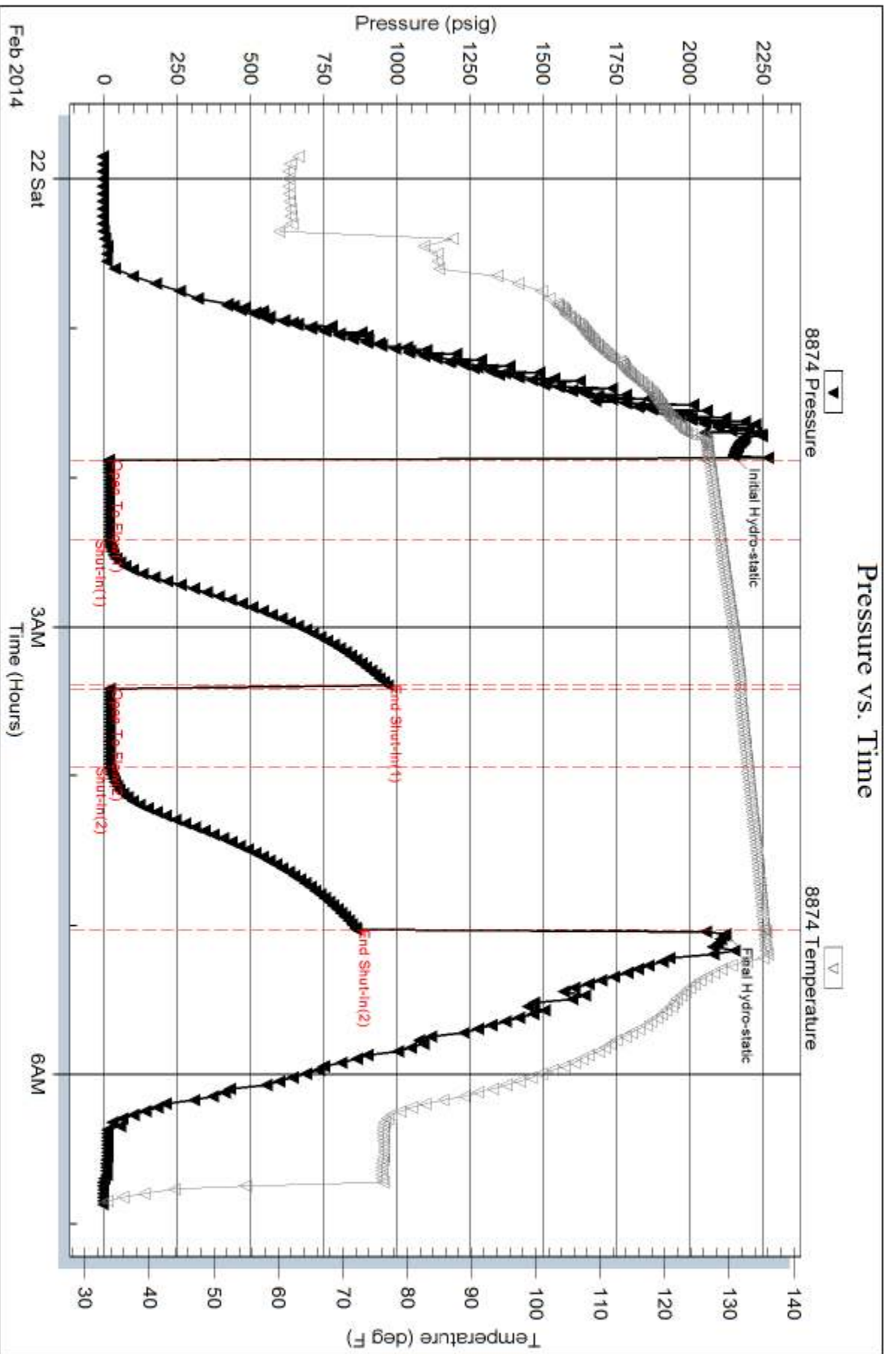
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



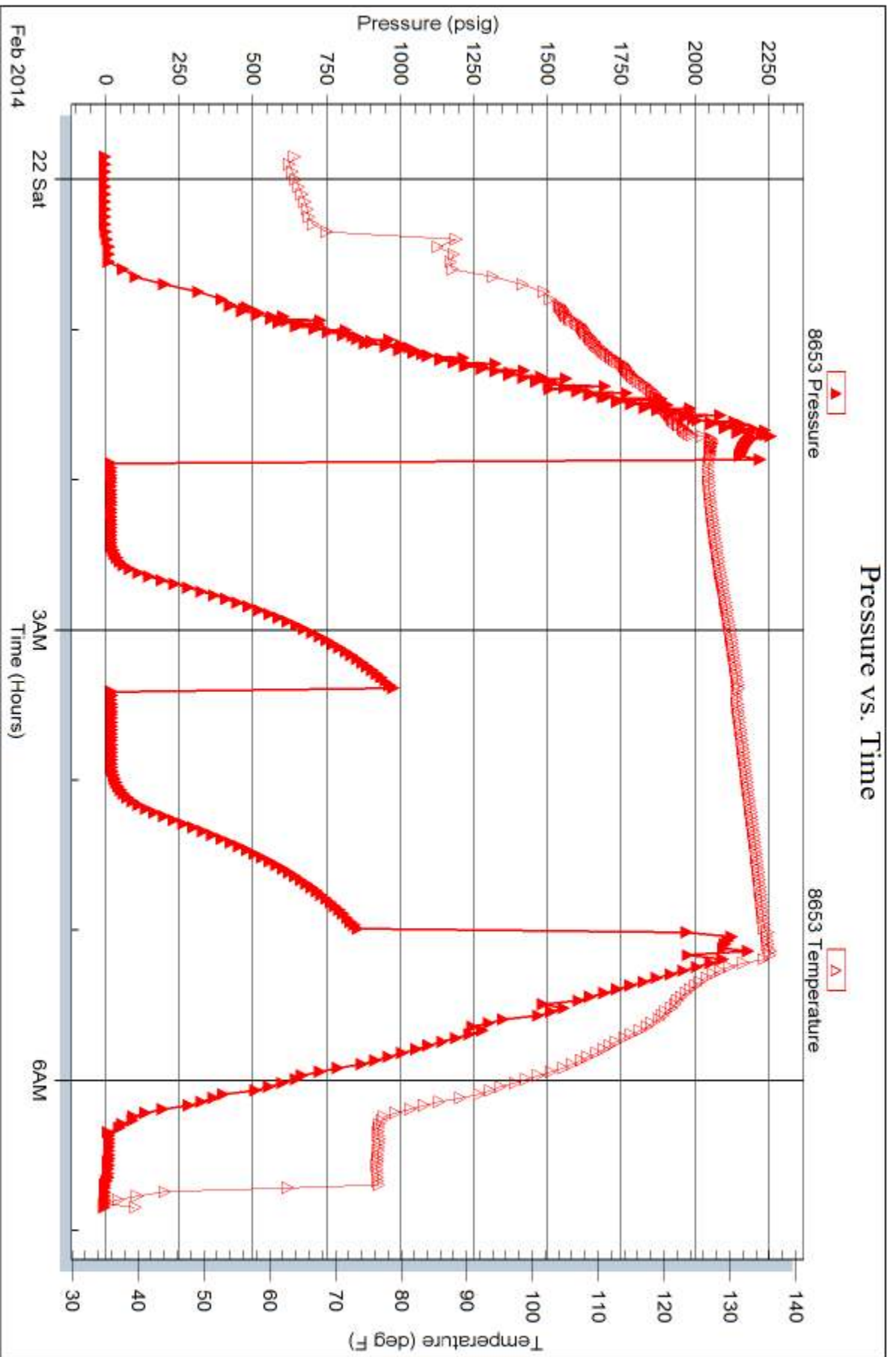


Serial #: 8653

Outside Murfin Drilling Co

Walee #1-4

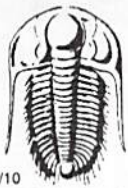
DST Test Number: 6



Trilobite Testing, Inc

Ref. No: 53394

Printed: 2014.02.27 @ 11:53:03



# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 56752

4/10

Well Name & No. Ivaley #1-4 Test No. 1 Date 2-17-2014  
 Company Murfin Drilling CO Elevation 3170 KB 3157 GL  
 Address 250 N water st E 300 Wichita KS, 67202  
 Co. Rep / Geo. Keith Reavis Rig Murfin #25  
 Location: Sec. 4 Twp. 15 Rge. 374 Co. Cheyenne State KS

Interval Tested 3664 - 3716 Zone Tested Foraker  
 Anchor Length 52 Drill Pipe Run 3649 Mud Wt. 8.6  
 Top Packer Depth 3660 Drill Collars Run 0 Vis 69  
 Bottom Packer Depth 3664 (shale) Wt. Pipe Run 0 WL 5.6  
 Total Depth 3716 Chlorides 600 ppm System LCM 6.0  
 Blow Description IF - weak surface blow  
EST - no return  
FF - no blow  
FSE - no return

Rec	Feet of	%gas	%oil	%water	%mud
<u>1</u>	<u>mud</u>			<u>100</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

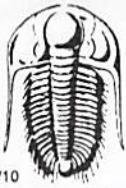
Rec Total 1 BHT 127 Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm

(A) Initial Hydrostatic <u>1771</u>	<input checked="" type="checkbox"/> Test <u>1150</u>	T-On Location <u>2:00 AM 2-17</u>
(B) First Initial Flow <u>14</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>2:22 AM</u>
(C) First Final Flow <u>15</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>4:32 AM</u>
(D) Initial Shut-In <u>871</u>	<input checked="" type="checkbox"/> Circ Sub _____	T-Pulled <u>7:32 AM</u>
(E) Second Initial Flow <u>15</u>	<input type="checkbox"/> Hourly Standby _____	T-Out <u>9:15 AM</u>
(F) Second Final Flow <u>30</u>	<input checked="" type="checkbox"/> Mileage <u>176 RT 160rt 248</u>	Comments _____
(G) Final Shut-In <u>714</u>	<input type="checkbox"/> Sampler _____	<input type="checkbox"/> Ruined Shale Packer _____
(H) Final Hydrostatic <u>1701</u>	<input type="checkbox"/> Straddle _____	<input type="checkbox"/> Ruined Packer _____
Initial Open <u>30</u>	<input checked="" type="checkbox"/> Shale Packer <u>250</u>	<input type="checkbox"/> Extra Copies _____
Initial Shut-In <u>60</u>	<input type="checkbox"/> Extra Packer _____	Sub Total <u>0</u>
Final Flow <u>30</u>	<input type="checkbox"/> Extra Recorder _____	Total <u>1973</u>
Final Shut-In <u>60</u>	<input type="checkbox"/> Day Standby _____	MP/DST Disc't _____
	<input type="checkbox"/> Accessibility _____	
	Sub Total <u>1973</u>	

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

Our Representative Robert Zohraw

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 56753

Well Name & No. Iva Lee #1-4 Test No. 2 Date 2-18-2014  
 Company Murfin Drilling CO Elevation 3170 KB 3157 GL  
 Address 250 N water ste 300 Wichita KS, 67202  
 Co. Rep / Geo. Keith Reavis Rig Murfin #25  
 Location: Sec. 4 Twp. 1S Rge. 37W Co. Cheyenne State KS

Interval Tested 4009 - 4073 Zone Tested ORLEAD  
 Anchor Length 64 Drill Pipe Run 3995 Mud Wt. 9.2  
 Top Packer Depth 4004 Drill Collars Run 0 Vis 58  
 Bottom Packer Depth 4009 (shale) Wt. Pipe Run 0 WL 6.0  
 Total Depth 4073 Chlorides 700 ppm System LCM 4.0  
 Blow Description IF - blow built to 1 1/4"  
ISI - no return  
FF - blow built to 1/4"  
FSL - no return

Rec	Feet of	%gas	%oil	%water	%mud
<u>50</u>	<u>M w/ oil spots</u>	<u>spotted</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 50 BHT 127 Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm

(A) Initial Hydrostatic 1959  Test 1250 T-On Location 4:45 AM 2-18  
 (B) First Initial Flow 15  Jars 250 T-Started 5:46 AM  
 (C) First Final Flow 22  Safety Joint 75 T-Open 8:00 AM  
 (D) Initial Shut-In 1356  Circ Sub NC T-Pulled 11:00 AM  
 (E) Second Initial Flow 24  Hourly Standby \_\_\_\_\_ T-Out 12:45 PM  
 (F) Second Final Flow 34  Mileage 176 RT 248 Comments \_\_\_\_\_  
 (G) Final Shut-In 1343  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 1897  Straddle \_\_\_\_\_  
 Shale Packer 250  Ruined Shale Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  Ruined Packer \_\_\_\_\_  
 Extra Recorder \_\_\_\_\_  Extra Copies \_\_\_\_\_  
 Day Standby \_\_\_\_\_ Sub Total 0  
 Accessibility \_\_\_\_\_ Total 2073  
 Sub Total 2073 MP/DST Disc't \_\_\_\_\_

Approved By \_\_\_\_\_ Our Representative Robert Zecher

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 56754

Well Name & No. Eval Lee # 1-4 Test No. 3 Date 2-19-2014  
 Company MURFIN Drilling CO Elevation 3170 KB 3157 GL  
 Address 250 N water ste 300 Wichita KS, 67202  
 Co. Rep / Geo. Keith Reavis Rig Murfin #25  
 Location: Sec. 4 Twp. 15 Rge. 37w Co. cheyenne State KS

Interval Tested 4146 - 4218 Zone Tested LKC "A-D"  
 Anchor Length 72 Drill Pipe Run 4151 Mud Wt. 9.2  
 Top Packer Depth 4142 Drill Collars Run 0 Vis 70  
 Bottom Packer Depth 4146 (shale) Wt. Pipe Run 0 WL 5.6  
 Total Depth 4218 Chlorides 600 ppm System LCM 2.0  
 Blow Description \_\_\_\_\_

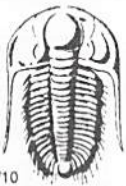
Rec	Feet of	%gas	%oil	%water	%mud
<u>70</u>	<u>0 cm</u>	<u>1</u>		<u>99</u>	
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Rec Total 70 BHT 134 Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm

(A) Initial Hydrostatic 2024  Test 1250 T-On Location 1:25 Am 2-19  
 (B) First Initial Flow 32  Jars 250 T-Started 2:25 Am  
 (C) First Final Flow 41  Safety Joint 75 T-Open 5:23 Am  
 (D) Initial Shut-In 468  Circ Sub \_\_\_\_\_ T-Pulled 8:23 Am  
 (E) Second Initial Flow 43  Hourly Standby \_\_\_\_\_ T-Out 10:10 Am  
 (F) Second Final Flow 50  Mileage 176 RT 248 Comments Hit a bridge  
 (G) Final Shut-In 456  Sampler \_\_\_\_\_ 5 feet off bottom and  
 (H) Final Hydrostatic 2005  Straddle \_\_\_\_\_ the tool opened fluid dropped  
 Ruined Shale Packer 15 foot  
 Ruined Packer \_\_\_\_\_  
 Extra Copies \_\_\_\_\_  
 Initial Open 30  Extra Packer \_\_\_\_\_ Sub Total 0  
 Initial Shut-In 60  Extra Recorder \_\_\_\_\_ Total 2073  
 Final Flow 30  Day Standby \_\_\_\_\_ MP/DST Disc't \_\_\_\_\_  
 Final Shut-In 60  Accessibility \_\_\_\_\_  
 Sub Total 2073

Approved By Keith Reavis Our Representative Robert Zolner

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 53392

Well Name & No. Iva Lee #1-4 Test No. 4 Date 2-19-14  
 Company Murfin Drilling Co., Inc Elevation 3170 KB 3157 GL  
 Address 2500 N Water STE # 3000 Wichita, KS 67202  
 Co. Rep / Geo. Keith Rivas Rig Murfin #25  
 Location: Sec. 4 Twp. 1S Rge. 37W Co. Cheyenne State KS

Interval Tested 4200-4292 Zone Tested LKC "G-B"  
 Anchor Length 80' Drill Pipe Run 4215' Mud Wt. 9.4  
 Top Packer Depth 4208 Drill Collars Run 0 Vis 57  
 Bottom Packer Depth 4212 Wt. Pipe Run 0 WL 4.8  
 Total Depth 4292 Chlorides 600 ppm System LCM 2#

Blow Description IF-1/2" Blow built to 1 1/2"  
ISI- NO Return  
FF- No Blow  
FSI- No Return

Rec	Feet of	%gas	%oil	%water	%mud
<u>15</u>	<u>OCM</u>	<u>20</u>		<u>80</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

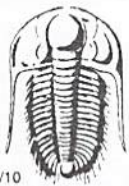
Rec Total 15 BHT 130 Gravity - API RW - @ - °F Chlorides - ppm

(A) Initial Hydrostatic 2101  Test 1250 T-On Location 5:40 PM  
 (B) First Initial Flow 19  Jars 250 T-Started 6:26 PM  
 (C) First Final Flow 21  Safety Joint 75 T-Open 8:40 PM  
 (D) Initial Shut-In 288  Circ Sub NIC T-Pulled 11:40 PM  
 (E) Second Initial Flow 17  Hourly Standby \_\_\_\_\_ T-Out 1:40 AM  
 (F) Second Final Flow 21  Mileage 1600 RT 248  
 (G) Final Shut-In 107  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 2052  Straddle \_\_\_\_\_

Initial Open 30  Shale Packer 250  Ruined Shale Packer \_\_\_\_\_  
 Initial Shut-In 60  Extra Packer \_\_\_\_\_  Ruined Packer \_\_\_\_\_  
 Final Flow 30  Extra Recorder \_\_\_\_\_ Sub Total 0  
 Final Shut-In 60  Day Standby \_\_\_\_\_ Total 2073  
 Accessibility \_\_\_\_\_ MP/DST Disc't \_\_\_\_\_  
 Sub Total 2073

Approved By \_\_\_\_\_ Our Representative

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 53393

Well Name & No. Iva Lee Test No. 5 Date 2-28-14  
 Company Murfin Drilling Co., Inc Elevation 3170 KB 3157 GL  
 Address 250 N Water STE #300 Wichita, KS 67202  
 Co. Rep / Geo. Keith Rivas Rig Murfin #25  
 Location: Sec. 4 Twp. 1S Rge. 37W Co. Cheyenne State KS

Interval Tested 4266-4360 Zone Tested LKC "H, I, J"  
 Anchor Length 94' Drill Pipe Run 4245 Mud Wt. 9.4  
 Top Packer Depth 4262 Drill Collars Run 0 Vis 54  
 Bottom Packer Depth 4266 Wt. Pipe Run 0 WL 6.0  
 Total Depth 4360 Chlorides 600 ppm System LCM 2#

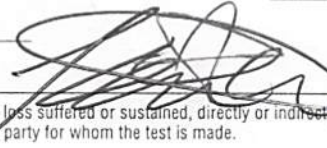
Blow Description IF- BoB in 8 min.  
ISI- BoB in 45 min.  
FF- BoB in 7 min.  
FSI- Surface Return built to 9"

Rec	Feet of	%gas	%oil	%water	%mud
<u>441</u>	<u>Clean Gassy oil</u>	<u>20</u>	<u>80</u>		
<u>238</u>	<u>60CM</u>	<u>10</u>	<u>30</u>		<u>60</u>
<u>94</u>	<u>OCM</u>		<u>10</u>		<u>90</u>
<u>720</u>	<u>GFP</u>	<u>100</u>			

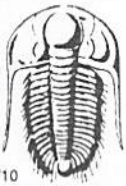
Rec Total \_\_\_\_\_ BHT 141 Gravity 39 API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm

(A) Initial Hydrostatic 2125  Test 1250 T-On Location 12:15 PM  
 (B) First Initial Flow 39  Jars 250 T-Started 12:45 PM  
 (C) First Final Flow 152  Safety Joint 75 T-Open 3:15 PM  
 (D) Initial Shut-In 856  Circ Sub NIC T-Pulled 7:15 PM  
 (E) Second Initial Flow 156  Hourly Standby \_\_\_\_\_ T-Out 10:00 PM  
 (F) Second Final Flow 320  Mileage 160 RT 248 Comments \_\_\_\_\_  
 (G) Final Shut-In 855  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 2034  Straddle \_\_\_\_\_  Ruined Shale Packer \_\_\_\_\_

Shale Packer 250  Ruined Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  Extra Copies \_\_\_\_\_  
 Initial Open 30  Extra Recorder \_\_\_\_\_ Sub Total 0  
 Initial Shut-In 60  Day Standby \_\_\_\_\_ Total 2073  
 Final Flow 60  Accessibility \_\_\_\_\_ MP/DST Disc't \_\_\_\_\_  
 Final Shut-In 90 Sub Total 2073

Approved By \_\_\_\_\_ Our Representative 

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 53394

4/10

Well Name & No. Iva Lee # H4 Test No. 6 Date 2-21-14  
 Company Murkin Drilling Co., Inc Elevation 3170 KB 3157 GL  
 Address 250 N Water STE #300 Wichita, KS 67202  
 Co. Rep / Geo. Keith Rivas Rig Murkin #25  
 Location: Sec. 4 Twp. 1S Rge. 37W Co. Cheyenne State KS

Interval Tested 4511-4554 Zone Tested Pawnee  
 Anchor Length 43' Drill Pipe Run 4495 Mud Wt. 8.7  
 Top Packer Depth 4507 Drill Collars Run 0 Vis 123  
 Bottom Packer Depth 4511 Wt. Pipe Run 0 WL 4.4  
 Total Depth 4554 Chlorides 800 ppm System LCM 10#

Blow Description IF - 1/2" Blow built to 1 1/4"  
ISI - No Return  
FF - No Blow  
FSI - No Return

Rec	Feet of	%gas	%oil	%water	%mud
<u>15</u>	<u>Mud</u>			<u>100</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 15 BHT 135 Gravity - API RW - @ - °F Chlorides - ppm

(A) Initial Hydrostatic 2149  Test 1250 T-On Location 10:30 PM  
 (B) First Initial Flow 17  Jars 250 T-Started 11:50 PM  
 (C) First Final Flow 17  Safety Joint 75 T-Open 1:55 AM  
 (D) Initial Shut-In 968  Circ Sub M/C T-Pulled 4:55 AM  
 (E) Second Initial Flow 18  Hourly Standby \_\_\_\_\_ T-Out 6:55 AM  
 (F) Second Final Flow 19  Mileage 160 RT 248  
 (G) Final Shut-In 861  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 2123  Straddle \_\_\_\_\_

Initial Open 308  Ruined Shale Packer \_\_\_\_\_  
 Initial Shut-In 68  Ruined Packer \_\_\_\_\_  
 Final Flow 308  Extra Packer \_\_\_\_\_  
 Final Shut-In 68  Extra Recorder \_\_\_\_\_  
 Sub Total 0  
 Total 2073  
 MP/DST Disc't \_\_\_\_\_  
 Sub Total 2073

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

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