



## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co**

250 N Water STE 300  
Wichita KS. 67202

ATTN: Steve Miller

### **Stec #1-23**

#### **23 1s 37w Cheyenne KS**

Start Date: 2014.04.10 @ 15:40:00

End Date: 2014.04.11 @ 00:48:30

Job Ticket #: 55985                      DST #: 1

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

Printed: 2014.04.16 @ 10:08:22



**TRILOBITE TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drilling Co  
 250 N Water STE 300  
 Wichita KS. 67202  
 ATTN: Steve Miller

**23 1s 37w Cheyenne KS**

**Stec #1-23**

Job Ticket: 55985

**DST#: 1**

Test Start: 2014.04.10 @ 15:40:00

## GENERAL INFORMATION:

Formation: **Oread**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 18:08:45  
 Time Test Ended: 00:48:30  
 Interval: **4026.00 ft (KB) To 4074.00 ft (KB) (TVD)**  
 Total Depth: 4074.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Fair  
 Test Type: Conventional Bottom Hole (Initial)  
 Tester: Robert Zodrow  
 Unit No: 54  
 Reference Elevations: 3174.00 ft (KB)  
 3163.00 ft (CF)  
 KB to GR/CF: 11.00 ft

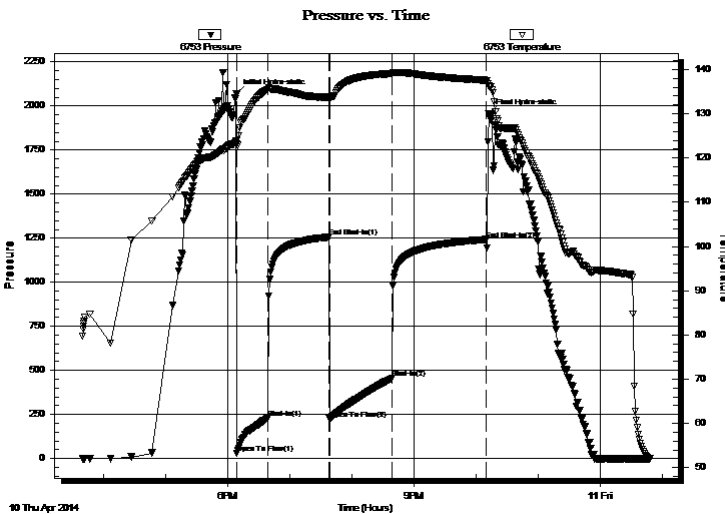
## Serial #: 6753

Inside

Press@RunDepth: 455.42 psig @ 4027.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2014.04.10 End Date: 2014.04.11 Last Calib.: 2014.04.11  
 Start Time: 15:40:05 End Time: 00:48:30 Time On Btm: 2014.04.10 @ 18:08:30  
 Time Off Btm: 2014.04.10 @ 22:12:30

TEST COMMENT: 30-IF- Bob In 9 Mins  
 60-ISI- No Return  
 60-FF- Bob In 11 Mins  
 90-FSI- No Return

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2068.40	123.85	Initial Hydro-static
1	29.69	123.13	Open To Flow (1)
31	231.01	135.52	Shut-In(1)
90	1257.00	133.71	End Shut-In(1)
90	225.65	133.14	Open To Flow (2)
151	455.42	139.09	Shut-In(2)
242	1243.03	137.56	End Shut-In(2)
244	1958.60	136.26	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
675.00	m w 20% m 80% w	8.13
278.00	w m 30% w 70% m	4.07

## Gas Rates

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





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drilling Co

**23 1s 37w Cheyenne KS**

250 N Water STE 300  
Wichita KS. 67202

**Stec #1-23**

Job Ticket: 55985

**DST#: 1**

ATTN: Steve Miller

Test Start: 2014.04.10 @ 15:40:00

## Tool Information

Drill Pipe:	Length: 3826.00 ft	Diameter: 3.88 inches	Volume: 55.95 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: 179.00 ft	Diameter: 2.25 inches	Volume: 0.88 bbl	Weight to Pull Loose: 84000.00 lb
			<u>Total Volume: 56.83 bbl</u>	Tool Chased ft
Drill Pipe Above KB:	6.00 ft			String Weight: Initial 68000.00 lb
Depth to Top Packer:	4026.00 ft			Final 76000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	48.00 ft			
Tool Length:	75.00 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			4004.00	
Hydraulic tool	5.00			4009.00	
Jars	5.00			4014.00	
Safety Joint	3.00			4017.00	
Packer	4.00			4021.00	27.00 Bottom Of Top Packer
Packer	5.00			4026.00	
Stubb	1.00			4027.00	
Recorder	0.00	8368	Inside	4027.00	
Recorder	0.00	6753	Inside	4027.00	
Perforations	10.00			4037.00	
Change Over Sub	1.00			4038.00	
Drill Pipe	31.00			4069.00	
Change Over Sub	1.00			4070.00	
Bullnose	4.00			4074.00	48.00 Bottom Packers & Anchor

**Total Tool Length: 75.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

Murfin Drilling Co

**23 1s 37w Cheyenne KS**

250 N Water STE 300  
Wichita KS. 67202

**Stec #1-23**

Job Ticket: 55985

**DST#: 1**

ATTN: Steve Miller

Test Start: 2014.04.10 @ 15:40:00

### 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:

65000 ppm

Viscosity: 61.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.78 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 500.00 ppm

Filter Cake: 2.00 inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
675.00	mw 20%m 80%w	8.134
278.00	w m 30%w 70%m	4.066

Total Length: 953.00 ft      Total Volume: 12.200 bbl

Num Fluid Samples: 0

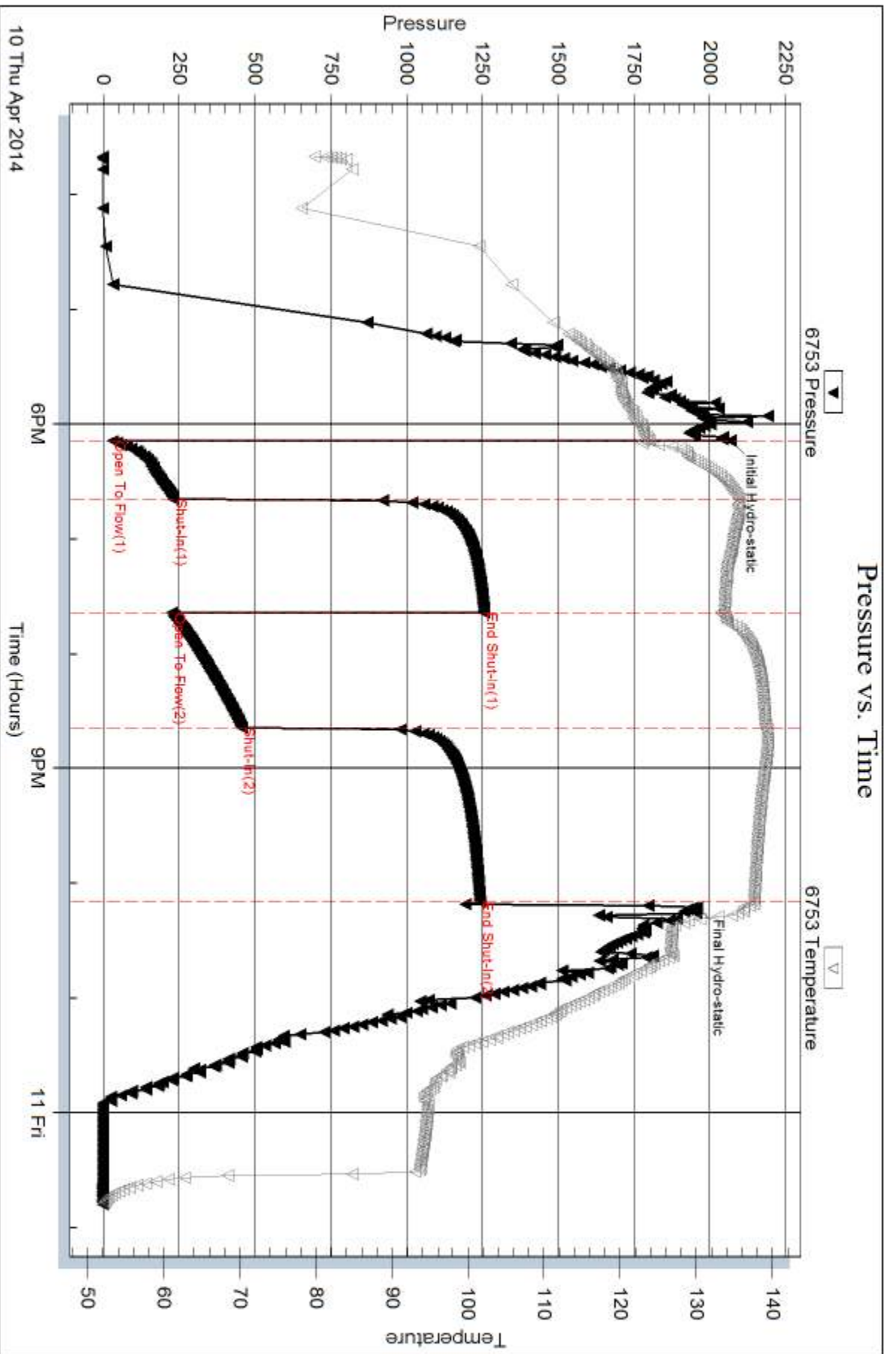
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: .175@54deg F= 65000



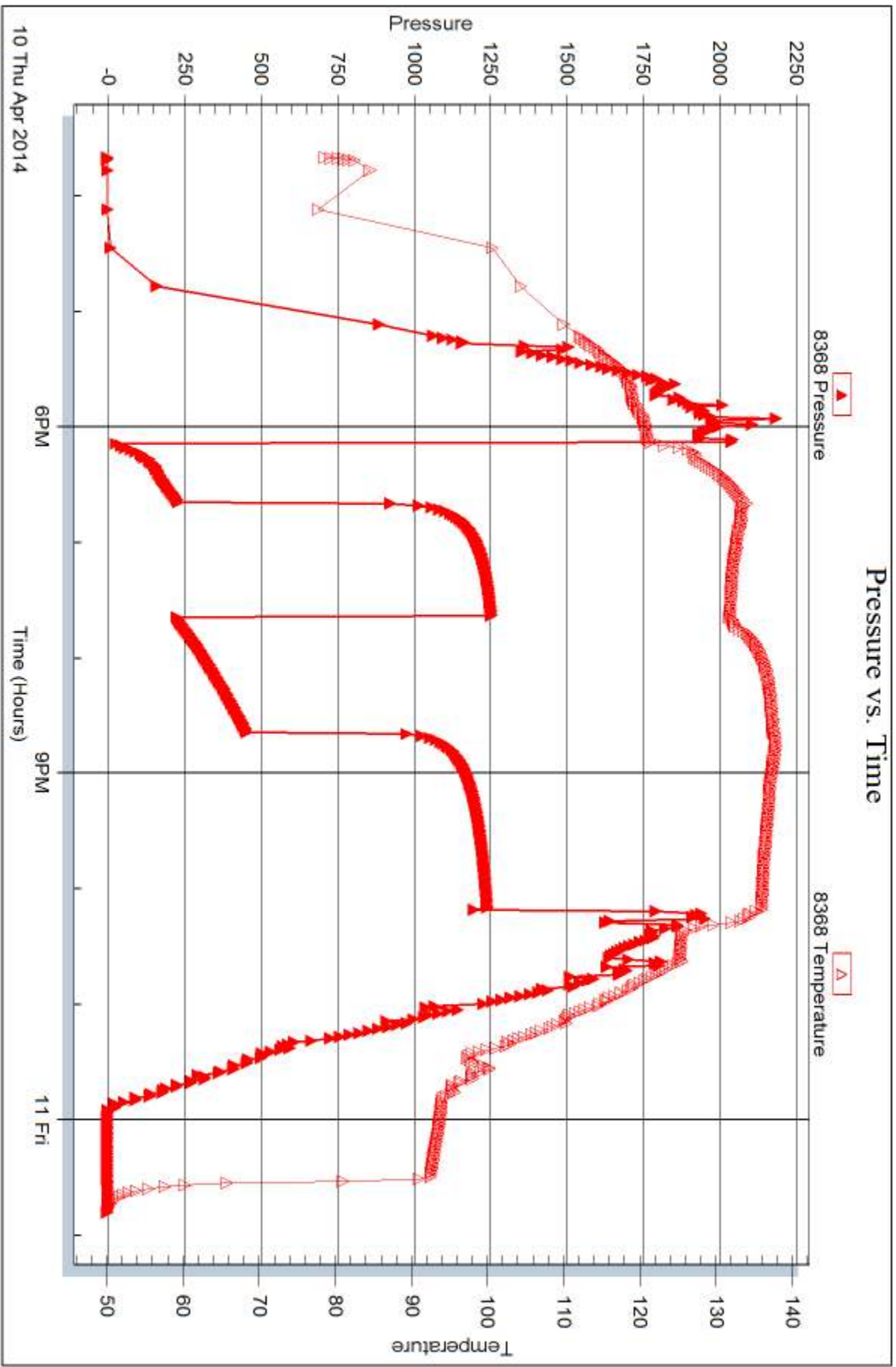
Serial #: 8368

Inside

Murfin Drilling Co

Sec #1-23

DST Test Number: 1



Trilobite Testing, Inc

Ref. No: 55985

Printed: 2014.04.16 @ 10:08:24



## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co**

250 N Water STE 300  
Wichita KS. 67202

ATTN: Steve Miller

### **Stec #1-23**

#### **23 1s 37w Cheyenne KS**

Start Date: 2014.04.11 @ 17:00:00

End Date: 2014.04.12 @ 00:00:00

Job Ticket #: 55207                      DST #: 2

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

Printed: 2014.04.16 @ 10:07:29





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drilling Co  
250 N Water STE 300  
Wichita KS. 67202  
ATTN: Steve Miller

**23 1s 37w Cheyenne KS**

**Stec #1-23**

Job Ticket: 55207

**DST#: 2**

Test Start: 2014.04.11 @ 17:00:00

## GENERAL INFORMATION:

Formation: **LKC 'D'**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 18:42:30  
 Time Test Ended: 00:00:00  
 Interval: **4154.00 ft (KB) To 4206.00 ft (KB) (TVD)**  
 Total Depth: 4206.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Good  
 Test Type: Conventional Bottom Hole (Initial)  
 Tester: Royal Fisher  
 Unit No: #54  
 Reference Elevations: 3174.00 ft (KB)  
 3163.00 ft (CF)  
 KB to GR/CF: 11.00 ft

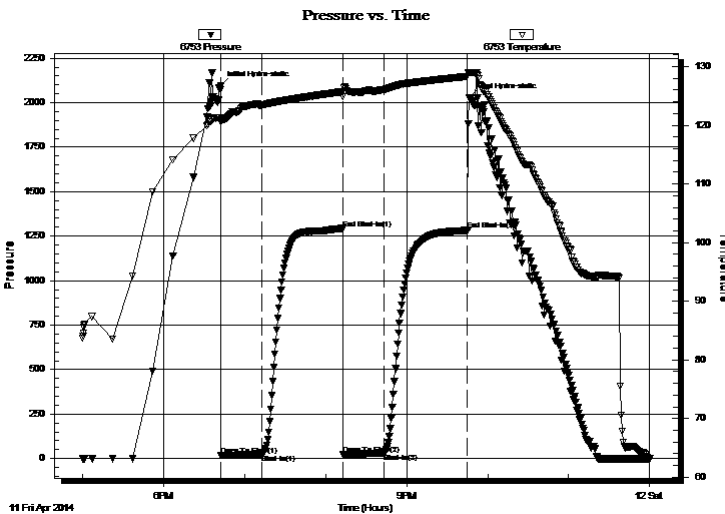
## Serial #: 6753

Inside

Press@RunDepth: 29.42 psig @ 4155.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2014.04.11 End Date: 2014.04.11 Last Calib.: 2014.04.12  
 Start Time: 17:00:05 End Time: 23:59:59 Time On Btm: 2014.04.11 @ 18:42:15  
 Time Off Btm: 2014.04.11 @ 21:46:30

TEST COMMENT: 30 - IF - Surface blow started around 3 mins. in and stayed at a weak surface  
 60 - ISI - No Return  
 30 - FF - No Surface blow  
 60 - FSI - No Return

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2093.93	121.23	Initial Hydro-static
1	16.97	120.52	Open To Flow (1)
31	22.74	123.36	Shut-In(1)
91	1293.59	125.72	End Shut-In(1)
91	24.91	124.86	Open To Flow (2)
122	29.42	126.07	Shut-In(2)
183	1282.95	128.31	End Shut-In(2)
185	2028.02	129.00	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
6.00	OSM - 100M - Oil Spots	0.03

## Gas Rates

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





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drilling Co

**23 1s 37w Cheyenne KS**

250 N Water STE 300  
Wichita KS. 67202

**Stec #1-23**

Job Ticket: 55207

**DST#: 2**

ATTN: Steve Miller

Test Start: 2014.04.11 @ 17:00:00

## Tool Information

Drill Pipe:	Length: 3949.40 ft	Diameter: 3.80 inches	Volume: 55.40 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: 182.60 ft	Diameter: 2.25 inches	Volume: 0.90 bbl	Weight to Pull Loose:	71000.00 lb
			<u>Total Volume: 56.30 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	5.00 ft			String Weight: Initial	68000.00 lb
Depth to Top Packer:	4154.00 ft			Final	68000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	52.00 ft				
Tool Length:	79.00 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			4132.00	
Hydraulic tool	5.00			4137.00	
Jars	5.00			4142.00	
Safety Joint	3.00			4145.00	
Packer	4.00			4149.00	27.00 Bottom Of Top Packer
Packer	5.00			4154.00	
Stubb	1.00			4155.00	
Recorder	0.00	8368	Inside	4155.00	
Recorder	0.00	6753	Inside	4155.00	
Perforations	14.00			4169.00	
Change Over Sub	1.00			4170.00	
Drill Pipe	31.00			4201.00	
Change Over Sub	1.00			4202.00	
Bullnose	4.00			4206.00	52.00 Bottom Packers & Anchor

**Total Tool Length: 79.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

Murfin Drilling Co

**23 1s 37w Cheyenne KS**

250 N Water STE 300  
Wichita KS. 67202

**Stec #1-23**

Job Ticket: 55207

**DST#: 2**

ATTN: Steve Miller

Test Start: 2014.04.11 @ 17:00:00

### 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: 75.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.39 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
6.00	OSM - 100M - Oil Spots	0.030

Total Length: 6.00 ft      Total Volume: 0.030 bbl

Num Fluid Samples: 0

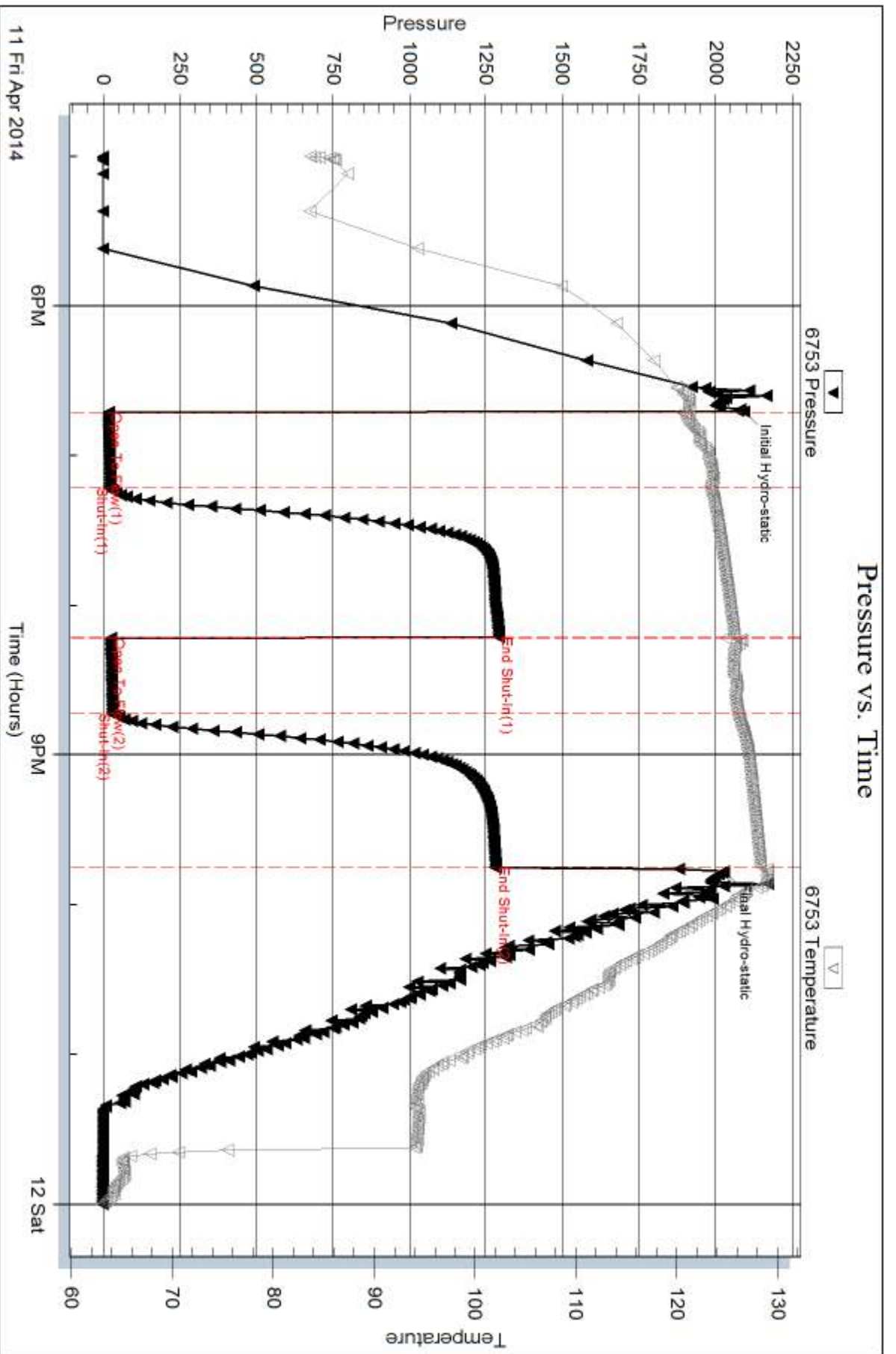
Num Gas Bombs: 0

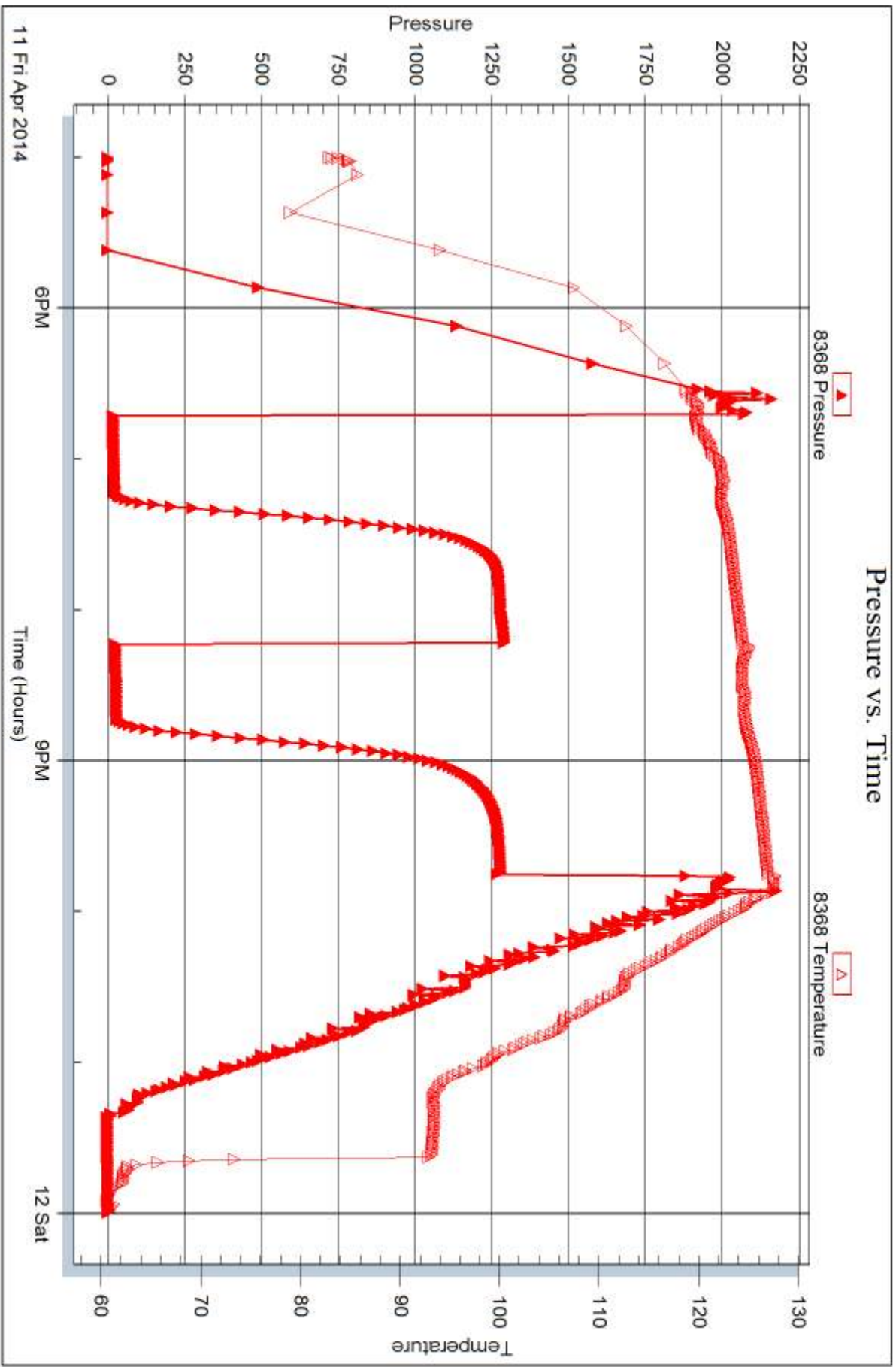
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:







## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co**

250 N Water STE 300  
Wichita KS. 67202

ATTN: Steve Miller

### **Stec #1-23**

#### **23 1s 37w Cheyenne KS**

Start Date: 2014.04.12 @ 11:18:00

End Date: 2014.04.12 @ 18:18:00

Job Ticket #: 55208                      DST #: 3

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

Printed: 2014.04.16 @ 10:06:45

Murfin Drilling Co  
23 1s 37w Cheyenne KS  
Stec #1-23  
DST # 3  
LKC G  
2014.04.12



**TRILOBITE TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drilling Co  
 250 N Water STE 300  
 Wichita KS. 67202  
 ATTN: Steve Miller

**23 1s 37w Cheyenne KS**

**Stec #1-23**

Job Ticket: 55208

**DST#: 3**

Test Start: 2014.04.12 @ 11:18:00

## GENERAL INFORMATION:

Formation: **LKC G**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 13:13:30  
 Time Test Ended: 18:18:00  
 Interval: **4209.00 ft (KB) To 4264.00 ft (KB) (TVD)**  
 Total Depth: 4264.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Good  
 Test Type: Conventional Bottom Hole (Initial)  
 Tester: Royal Fisher  
 Unit No: #54  
 Reference Elevations: 3174.00 ft (KB)  
 3163.00 ft (CF)  
 KB to GR/CF: 11.00 ft

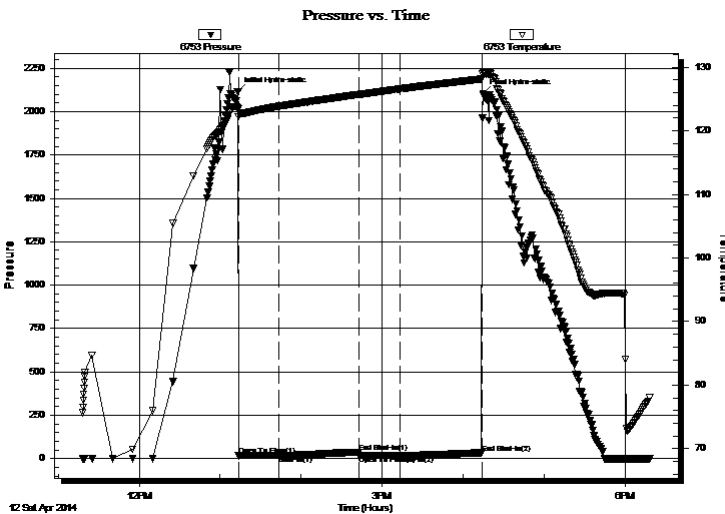
## Serial #: 6753

Inside

Press@RunDepth: 18.79 psig @ 4210.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2014.04.12 End Date: 2014.04.12 Last Calib.: 2014.04.12  
 Start Time: 11:18:05 End Time: 18:17:59 Time On Btm: 2014.04.12 @ 13:13:15  
 Time Off Btm: 2014.04.12 @ 16:14:45

TEST COMMENT: 30 - IF - Surface blow stayed at a weak blow  
 60 - ISI - No Return  
 30 - FF - No Surface blow  
 60 - FSI - No Return

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2116.57	123.49	Initial Hydro-static
1	16.51	122.22	Open To Flow (1)
30	17.77	123.84	Shut-In(1)
90	36.86	125.72	End Shut-In(1)
90	18.04	125.71	Open To Flow (2)
120	18.79	126.58	Shut-In(2)
181	33.00	128.14	End Shut-In(2)
182	2102.71	129.18	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
2.00	OSM - 100M - Oil spots	0.01

## 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: Steve Miller

**23 1s 37w Cheyenne KS**

**Stec #1-23**

Job Ticket: 55208

**DST#: 3**

Test Start: 2014.04.12 @ 11:18:00

## GENERAL INFORMATION:

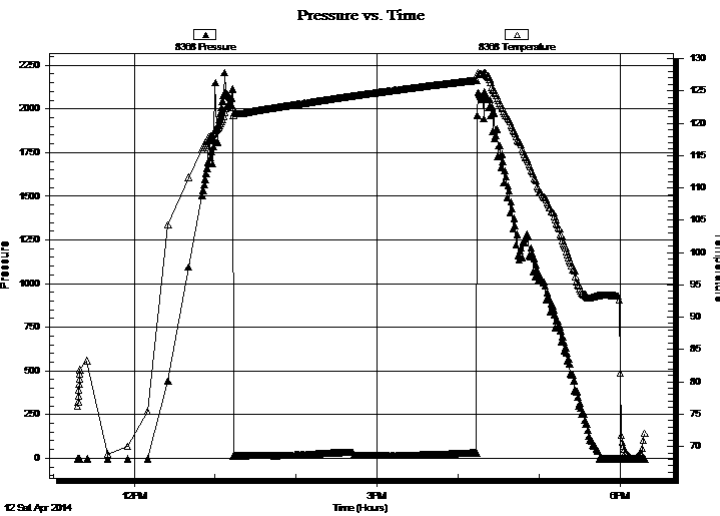
Formation: **LKC G**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 13:13:30  
 Time Test Ended: 18:18:00  
 Test Type: Conventional Bottom Hole (Initial)  
 Tester: Royal Fisher  
 Unit No: #54  
 Interval: **4209.00 ft (KB) To 4264.00 ft (KB) (TVD)**  
 Total Depth: 4264.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches  
 Hole Condition: Good  
 Reference Elevations: 3174.00 ft (KB)  
 3163.00 ft (CF)  
 KB to GR/CF: 11.00 ft

**Serial #: 8368**

**Inside**

Press@RunDepth: psig @ 4210.00 ft (KB)  
 Capacity: 8000.00 psig  
 Start Date: 2014.04.12 End Date: 2014.04.12 Last Calib.: 2014.04.12  
 Start Time: 11:18:05 End Time: 18:17:59 Time On Btm:  
 Time Off Btm:

**TEST COMMENT:** 30 - IF - Surface blow stayed at a weak blow  
 60 - ISI - No Return  
 30 - FF - No Surface blow  
 60 - FSI - No Return



## PRESSURE SUMMARY

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

## Recovery

Length (ft)	Description	Volume (bbl)
2.00	OSM - 100M - Oil spots	0.01

## Gas Rates

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



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drilling Co

**23 1s 37w Cheyenne KS**

250 N Water STE 300  
Wichita KS. 67202

**Stec #1-23**

Job Ticket: 55208

**DST#: 3**

ATTN: Steve Miller

Test Start: 2014.04.12 @ 11:18:00

## Tool Information

Drill Pipe:	Length: 4011.05 ft	Diameter: 3.80 inches	Volume: 56.26 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: 182.60 ft	Diameter: 2.25 inches	Volume: 0.90 bbl	Weight to Pull Loose: 78000.00 lb
			<u>Total Volume: 57.16 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	11.65 ft			String Weight: Initial 68000.00 lb
Depth to Top Packer:	4209.00 ft			Final 68000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	55.00 ft			
Tool Length:	82.00 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			4187.00	
Hydraulic tool	5.00			4192.00	
Jars	5.00			4197.00	
Safety Joint	3.00			4200.00	
Packer	4.00			4204.00	27.00 Bottom Of Top Packer
Packer	5.00			4209.00	
Stubb	1.00			4210.00	
Recorder	0.00	8368	Inside	4210.00	
Recorder	0.00	6753	Inside	4210.00	
Perforations	17.00			4227.00	
Change Over Sub	1.00			4228.00	
Drill Pipe	31.00			4259.00	
Change Over Sub	1.00			4260.00	
Bullnose	4.00			4264.00	55.00 Bottom Packers & Anchor

**Total Tool Length: 82.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

Murfin Drilling Co

**23 1s 37w Cheyenne KS**

250 N Water STE 300  
Wichita KS. 67202

**Stec #1-23**

Job Ticket: 55208

**DST#: 3**

ATTN: Steve Miller

Test Start: 2014.04.12 @ 11:18:00

### 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: 53.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.59 in<sup>3</sup>

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 700.00 ppm

Filter Cake: 2.00 inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
2.00	OSM - 100M - Oil spots	0.010

Total Length: 2.00 ft      Total Volume: 0.010 bbl

Num Fluid Samples: 0

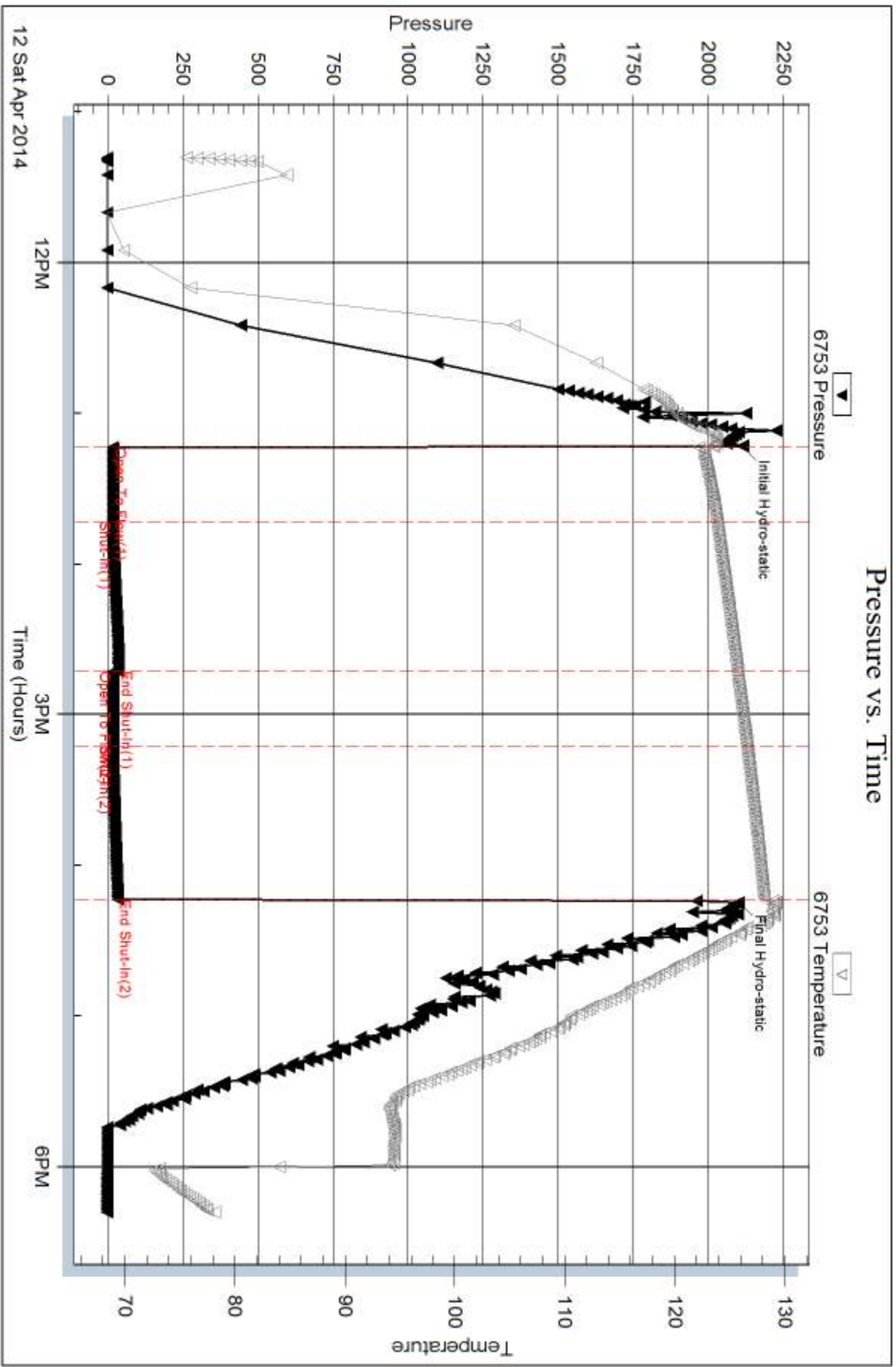
Num Gas Bombs: 0

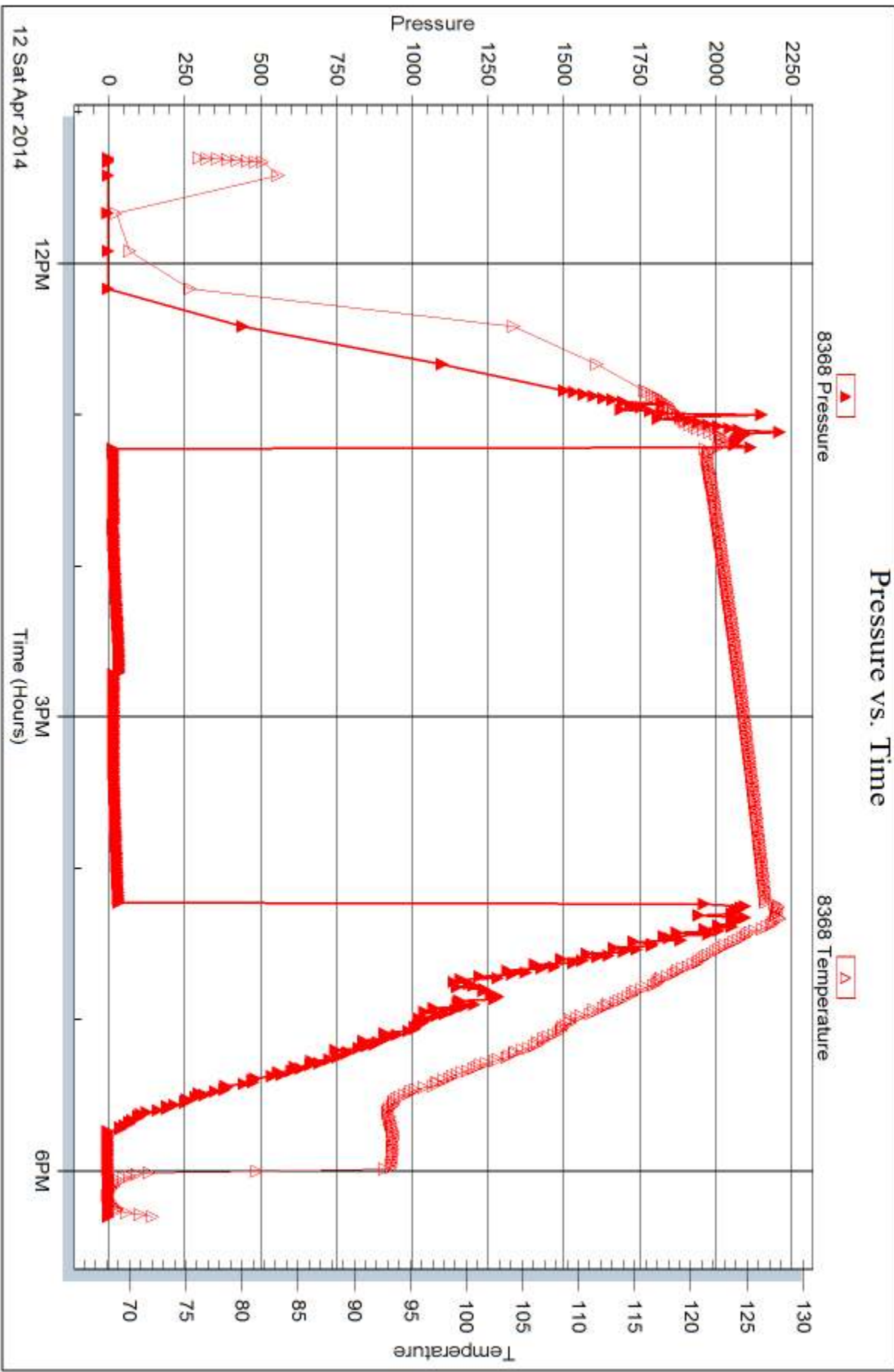
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:







## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co**

250 N Water STE 300  
Wichita KS. 67202

ATTN: Steve Miller

### **Stec #1-23**

#### **23 1s 37w Cheyenne KS**

Start Date: 2014.04.13 @ 08:13:00

End Date: 2014.04.13 @ 16:24:15

Job Ticket #: 55209                      DST #: 4

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

Printed: 2014.04.16 @ 10:05:48



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drilling Co  
250 N Water STE 300  
Wichita KS. 67202  
ATTN: Steve Miller

**23 1s 37w Cheyenne KS**

**Stec #1-23**

Job Ticket: 55209

**DST#: 4**

Test Start: 2014.04.13 @ 08:13:00

## GENERAL INFORMATION:

Formation: **LKC 'J'**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 10:48:00

Time Test Ended: 16:24:15

Test Type: Conventional Bottom Hole (Initial)

Tester: Royal Fisher

Unit No: #54

**Interval: 4262.00 ft (KB) To 4345.00 ft (KB) (TVD)**

Reference Elevations: 3174.00 ft (KB)

Total Depth: 4345.00 ft (KB) (TVD)

3163.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 11.00 ft

**Serial #: 6753**

**Inside**

Press@RunDepth: 25.61 psig @ 4263.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.04.13

End Date:

2014.04.13

Last Calib.:

2014.04.13

Start Time:

08:13:05

End Time:

16:24:14

Time On Btm:

2014.04.13 @ 10:47:45

Time Off Btm:

2014.04.13 @ 13:50:30

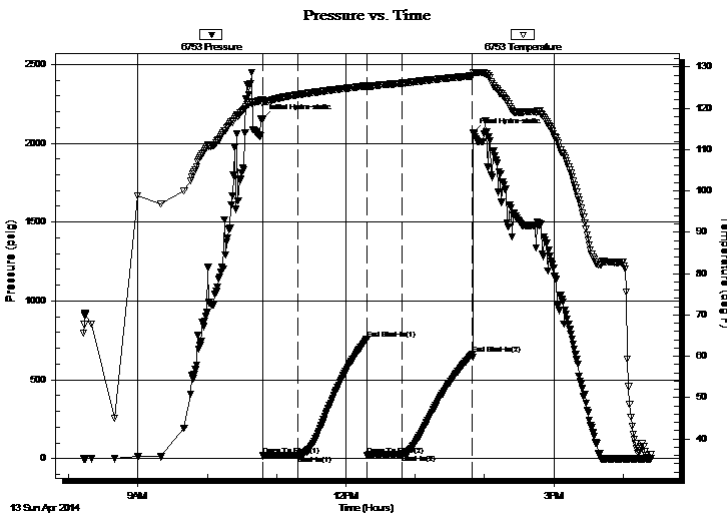
**TEST COMMENT:** 30 - IF - Surface blow built to 1/4" then died to a faint blow

60 - ISI - No Return

30 - FF - No Surface blow

60 - FSI - No Return

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2153.86	122.03	Initial Hydro-static
1	17.90	121.03	Open To Flow (1)
31	20.96	123.23	Shut-In(1)
91	755.97	125.40	End Shut-In(1)
91	22.30	125.03	Open To Flow (2)
121	25.61	126.05	Shut-In(2)
182	661.81	127.82	End Shut-In(2)
183	2065.83	128.54	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
3.00	Mud - 100M	0.01

## Gas Rates

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



**TRILOBITE  
TESTING, INC**

**DRILL STEM TEST REPORT**

Murfin Drilling Co

**23 1s 37w Cheyenne KS**

250 N Water STE 300  
Wichita KS. 67202

**Stec #1-23**

Job Ticket: 55209

**DST#: 4**

ATTN: Steve Miller

Test Start: 2014.04.13 @ 08:13:00

**GENERAL INFORMATION:**

Formation: **LKC 'J'**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 10:48:00

Time Test Ended: 16:24:15

Test Type: Conventional Bottom Hole (Initial)

Tester: Royal Fisher

Unit No: #54

**Interval: 4262.00 ft (KB) To 4345.00 ft (KB) (TVD)**

Reference Elevations: 3174.00 ft (KB)

Total Depth: 4345.00 ft (KB) (TVD)

3163.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 11.00 ft

**Serial #: 8368** Inside

Press@RunDepth: psig @ 4263.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.04.13 End Date: 2014.04.13

Last Calib.: 2014.04.13

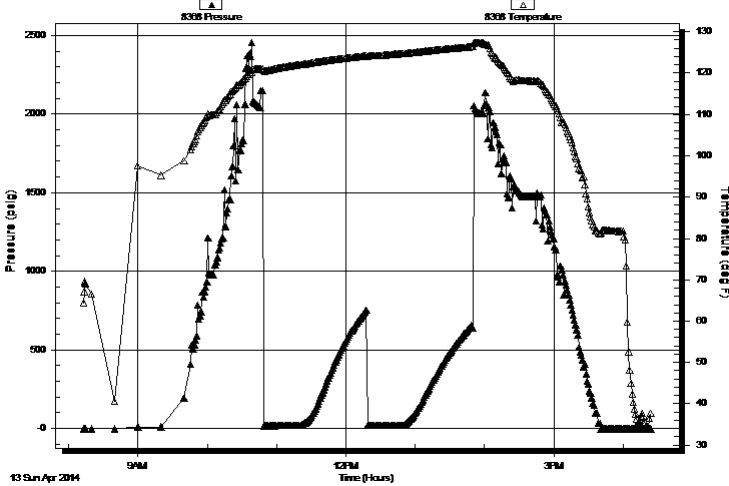
Start Time: 08:13:05 End Time: 16:24:14

Time On Btm:

Time Off Btm:

**TEST COMMENT:** 30 - IF - Surface blow built to 1/4" then died to a faint blow  
60 - ISI - No Return  
30 - FF - No Surface blow  
60 - FSI - No Return

**Pressure vs. Time**



**PRESSURE SUMMARY**

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

**Recovery**

Length (ft)	Description	Volume (bbl)
3.00	Mud - 100M	0.01

**Gas Rates**

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





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drilling Co

**23 1s 37w Cheyenne KS**

250 N Water STE 300  
Wichita KS. 67202

**Stec #1-23**

Job Ticket: 55209

**DST#: 4**

ATTN: Steve Miller

Test Start: 2014.04.13 @ 08:13:00

## Tool Information

Drill Pipe:	Length: 4073.85 ft	Diameter: 3.80 inches	Volume: 57.15 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 182.60 ft	Diameter: 2.25 inches	Volume: 0.90 bbl	Weight to Pull Loose: 70000.00 lb
			<u>Total Volume: 58.05 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	21.45 ft			String Weight: Initial 66000.00 lb
Depth to Top Packer:	4262.00 ft			Final 66000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	83.00 ft			
Tool Length:	110.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

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

Shut In Tool	5.00			4240.00	
Hydraulic tool	5.00			4245.00	
Jars	5.00			4250.00	
Safety Joint	3.00			4253.00	
Packer	4.00			4257.00	27.00 Bottom Of Top Packer
Packer	5.00			4262.00	
Stubb	1.00			4263.00	
Recorder	0.00	8368	Inside	4263.00	
Recorder	0.00	6753	Inside	4263.00	
Perforations	13.00			4276.00	
Change Over Sub	1.00			4277.00	
Drill Pipe	63.00			4340.00	
Change Over Sub	1.00			4341.00	
Bullnose	4.00			4345.00	83.00 Bottom Packers & Anchor

**Total Tool Length: 110.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

Murfin Drilling Co

**23 1s 37w Cheyenne KS**

250 N Water STE 300  
Wichita KS. 67202

**Stec #1-23**

Job Ticket: 55209

**DST#: 4**

ATTN: Steve Miller

Test Start: 2014.04.13 @ 08:13:00

### 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: 95.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.79 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
3.00	Mud - 100M	0.015

Total Length: 3.00 ft      Total Volume: 0.015 bbl

Num Fluid Samples: 0

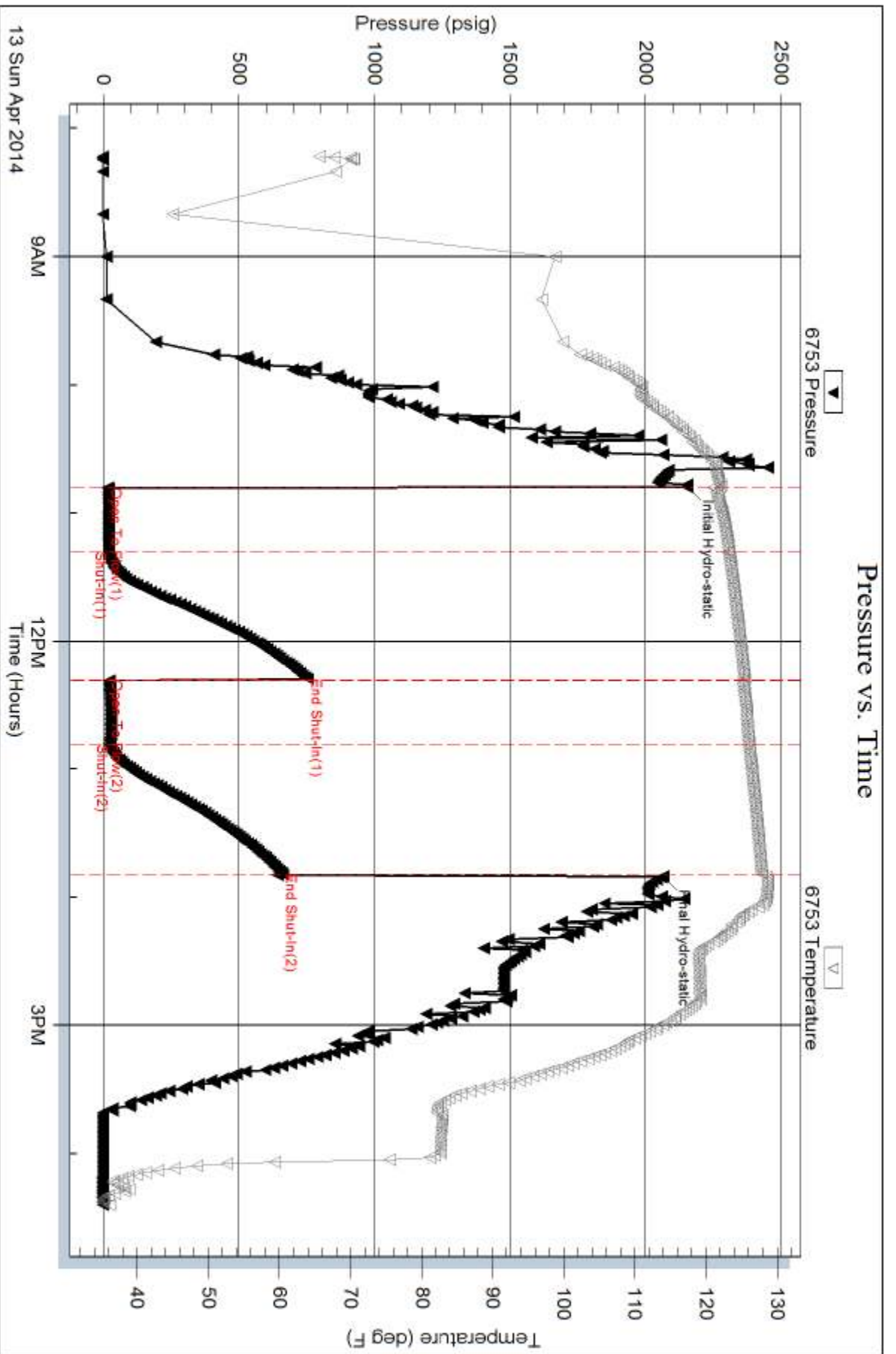
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



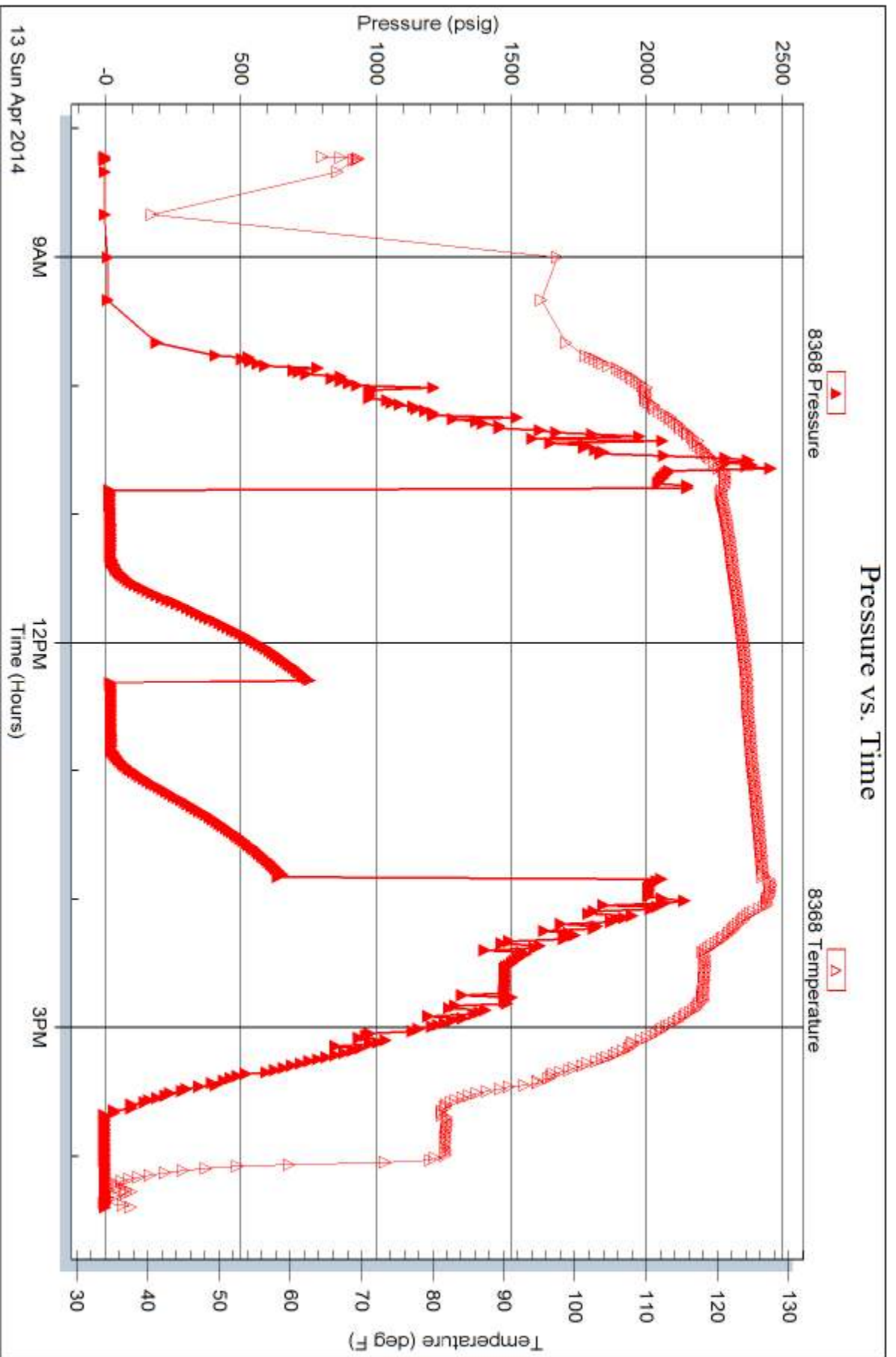
Serial #: 8368

Inside

Murfin Drilling Co

Sec #1-23

DST Test Number: 4

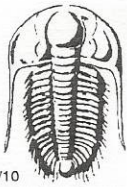


Trilobite Testing, Inc

Ref. No: 55209

Printed: 2014.04.16 @ 10:05:50





# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 55985

Well Name & No. STEC #1-23 Test No. 1 Date \_\_\_\_\_  
 Company Murfin Drilling CO. Elevation 3171 KB 316.3 GL \_\_\_\_\_  
 Address 250 N Water STE 300 Wichita KS, 67202  
 Co. Rep / Geo. Steve Miller Rig Murfin #20  
 Location: Sec. 23 Twp. 1 S Rge. 37 W Co. cheyenne State KS

Interval Tested 4026 - 4074 Zone Tested ORead  
 Anchor Length 48 Drill Pipe Run 3826 Mud Wt. 9.3  
 Top Packer Depth 4021 Drill Collars Run 179 Vis 61  
 Bottom Packer Depth 4026 Wt. Pipe Run 0 WL 6.8  
 Total Depth 4074 Chlorides 500 ppm System LCM 8.0

Blow Description IF - Bob In 9mins  
ISI - NO Return  
FF - Bob In 11mins  
FSI - NO Return

Rec	Feet of	%gas	%oil	%water	%mud
<u>278</u>	<u>wm</u>		<u>30</u>	<u>70</u>	
<u>675</u>	<u>mw</u>		<u>80</u>	<u>20</u>	
Rec _____	Feet of _____	%gas _____	%oil _____	%water _____	%mud _____
Rec _____	Feet of _____	%gas _____	%oil _____	%water _____	%mud _____
Rec _____	Feet of _____	%gas _____	%oil _____	%water _____	%mud _____

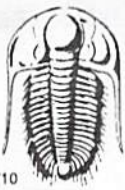
Rec Total 953 BHT 138 Gravity \_\_\_\_\_ API RW .125 @ 54 °F Chlorides 65,000 ppm

(A) Initial Hydrostatic <u>2068</u>	<input checked="" type="checkbox"/> Test <u>1250</u>	T-On Location <u>2:30 PM 4-10</u>
(B) First Initial Flow <u>30</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>3:40 PM 4-10</u>
(C) First Final Flow <u>231</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>6:08 PM 4-10</u>
(D) Initial Shut-In <u>1257</u>	<input type="checkbox"/> Circ Sub _____	T-Pulled <u>10:08 PM 4-10</u>
(E) Second Initial Flow <u>226</u>	<input type="checkbox"/> Hourly Standby _____	T-Out <u>12:48 AM 4-11</u>
(F) Second Final Flow <u>455</u>	<input checked="" type="checkbox"/> Mileage <u>170 RT</u> <u>192.20</u>	Comments _____
(G) Final Shut-In <u>1243</u>	<input type="checkbox"/> Sampler _____	_____
(H) Final Hydrostatic <u>1959</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>60</u>	<input type="checkbox"/> Extra Recorder _____	Sub Total <u>0</u>
Final Shut-In <u>90</u>	<input type="checkbox"/> Day Standby _____	Total <u>1767.20</u>
	<input type="checkbox"/> Accessibility _____	MP/DST Disc't _____

Sub Total 1767.20  
 Approved By [Signature] Our Representative Robert Zochow

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. **55207**

Well Name & No. STEC #1-23 Test No. 2 Date 4-11-14  
 Company Murfin Drilling Co., Inc. Elevation 3174 KB 3163 GL  
 Address 250 N. Water St 300 Wichita KS 67202  
 Co. Rep / Geo. Steve Miller Rig Murfin #20  
 Location: Sec. 23 Twp. 1S Rge. 37 W Co. Cheyenne State KS

Interval Tested 4154 - 4206 Zone Tested Lansing D'  
 Anchor Length ~~4154~~ 52' Drill Pipe Run 3949.40 Mud Wt. 9.2  
 Top Packer Depth 4149 Drill Collars Run 182.60' Vis 75  
 Bottom Packer Depth 4154 Wt. Pipe Run 0 WL 6.4  
 Total Depth 4206 Chlorides 600 ppm System LCM 8#

Blow Description IF - Surface blow started around 3mins. into and stayed at a weak surface  
ISI - No Return  
FF - No Surface blow  
FST - No Return

Rec	Feet of	%gas	%oil	%water	%mud
<u>6'</u>	<u>OSM</u>	<u>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 6' BHT 128°F Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm

(A) Initial Hydrostatic 2093  Test 1250 T-On Location 4:40 pm  
 (B) First Initial Flow 16  Jars 250 T-Started 5:00 pm  
 (C) First Final Flow 22  Safety Joint 75 T-Open 6:42 pm  
 (D) Initial Shut-In 1293  Circ Sub N/C T-Pulled 9:42 pm  
 (E) Second Initial Flow 24  Hourly Standby \_\_\_\_\_ T-Out 12:00 am  
 (F) Second Final Flow 29  Mileage ~~124~~ 124 R/T Comments \_\_\_\_\_  
 (G) Final Shut-In 1282  Sampler 192.20 \_\_\_\_\_  
 (H) Final Hydrostatic 2028  Straddle \_\_\_\_\_  Ruined Shale Packer \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  Ruined Packer \_\_\_\_\_

Initial Open 30  Extra Packer \_\_\_\_\_  Extra Copies \_\_\_\_\_  
 Initial Shut-In 60  Extra Recorder \_\_\_\_\_ Sub Total 0  
 Final Flow 30  Day Standby \_\_\_\_\_ Total 1767.20  
 Final Shut-In 60  Accessibility \_\_\_\_\_ MP/DST Disc't \_\_\_\_\_  
 Sub Total 1767.20

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

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 55208

Well Name & No. Stec #1-23 Test No. 3 Date 4-12-14  
 Company Murfin Drilling Co, Inc. Elevation 3174 KB 3163 GL  
 Address 250 N. Water, Ste. 300 Wichita KS 67202  
 Co. Rep / Geo. Steve Miller Rig Murfin #20  
 Location: Sec. 23 Twp. 1S Rge. 37W Co. Cheyenne State KS

Interval Tested 4209-4264 Zone Tested Lansing-G  
 Anchor Length 55' Drill Pipe Run 4011.05 Mud Wt. 9.4  
 Top Packer Depth 4204 Drill Collars Run 182.60' Vis 53  
 Bottom Packer Depth 4209 Wt. Pipe Run 0 WL 7.6  
 Total Depth 4264 Chlorides 700 ppm System LCM 8#

Blow Description IF-Surface blow stayed at a weak blow  
ISI-No Return  
FF-No Surface blow  
FSI-No Return

Rec	Feet of	%gas	%oil	%water	%mud
<u>2'</u>	<u>asm</u>	<u>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 2' BHT 128°F Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm

(A) Initial Hydrostatic 2116  Test 1250 T-On Location 10:30 am  
 (B) First Initial Flow 16  Jars 250 T-Started 11:18 am  
 (C) First Final Flow 17  Safety Joint 75 T-Open 1:13 pm  
 (D) Initial Shut-In 36  Circ Sub N/C T-Pulled 4:13 pm  
 (E) Second Initial Flow 18  Hourly Standby \_\_\_\_\_ T-Out 6:18 pm  
 (F) Second Final Flow 18  Mileage 124 R/T 192.20 Comments \_\_\_\_\_  
 (G) Final Shut-In 33  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 2102  Straddle \_\_\_\_\_  Ruined Shale Packer \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  Ruined Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  Extra Copies \_\_\_\_\_  
 Extra Recorder \_\_\_\_\_ Sub Total 0  
 Day Standby \_\_\_\_\_ Total 1767.20  
 Accessibility \_\_\_\_\_ MP/DST Disc't \_\_\_\_\_  
 Sub Total 1767.20

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

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 55209

Well Name & No. Stec #1-23 Test No. 4 Date 4-13-14  
 Company Murfin Drilling Co., Inc. Elevation 3174 KB 3163 GL  
 Address 250 N. Water, Ste 300 Wichita Ks 67202  
 Co. Rep / Geo. Steve Miller Rig Murfin #20  
 Location: Sec. 23 Twp. 1S Rge. 37W Co. Cheyenne State Ks

Interval Tested 4262-4345 Zone Tested J  
 Anchor Length 83' Drill Pipe Run 4073.85 Mud Wt. 9.4  
 Top Packer Depth 4257 Drill Collars Run 182.60' Vis 95  
 Bottom Packer Depth 4262 Wt. Pipe Run 0 WL 6.8  
 Total Depth 4345 Chlorides 600 ppm System LCM 6#  
 Blow Description IF - Surface blow built to 1/4" then died to a faint blow  
ISZ - No Return  
FF - No Surface blow  
FSZ - No Return

Rec	Feet of	%gas	%oil	%water	%mud
<u>3'</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 3' BHT 127°F Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm

(A) Initial Hydrostatic 2153  Test 1250 T-On Location 7:45am  
 (B) First Initial Flow 17  Jars 250 T-Started 8:13am  
 (C) First Final Flow 20  Safety Joint 75 T-Open 10:48am  
 (D) Initial Shut-In 755  Circ Sub N/C T-Pulled 1:48pm  
 (E) Second Initial Flow 22  Hourly Standby \_\_\_\_\_ T-Out 4:24pm  
 (F) Second Final Flow 25  Mileage 124 R/T 384.40 Comments Picked up tool 4-15-14  
 (G) Final Shut-In 661  Sampler \_\_\_\_\_ on location 300pm left at 3:45  
 (H) Final Hydrostatic 2065  Straddle \_\_\_\_\_  Ruined Shale Packer \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  Ruined Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  Extra Copies \_\_\_\_\_  
 Extra Recorder \_\_\_\_\_ Sub Total 800  
 Day Standby 1d 22.5h Total 2759.40  
 Accessibility \_\_\_\_\_ MP/DST Disc't \_\_\_\_\_  
 Sub Total 1959.40

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

Our Representative [Signature]

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