



## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N Water STE 300  
Wichita KS 67202

ATTN: Robert Hendrix

**Mary Ann #2-1**

**1-1s-35w Rawlins,KS**

Start Date: 2013.08.02 @ 12:45:00

End Date: 2013.08.02 @ 19:37:00

Job Ticket #: 53412                      DST #: 1

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

Printed: 2013.08.09 @ 09:16:31



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

Murfin Drilling Co.

**1-1s-35w Rawlins,KS**

250 N Water STE 300  
Wichita KS 67202

**Mary Ann #2-1**

Job Ticket: 53412

**DST#: 1**

ATTN: Robert Hendrix

Test Start: 2013.08.02 @ 12:45:00

## GENERAL INFORMATION:

Formation: **Foraker**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 14:54:45

Time Test Ended: 19:37:00

Test Type: Conventional Bottom Hole (Initial)

Tester: Wilbur Steinbeck

Unit No: 44

**Interval: 3588.00 ft (KB) To 3633.00 ft (KB) (TVD)**

Reference Elevations: 3095.00 ft (KB)

Total Depth: 3633.00 ft (KB) (TVD)

3085.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 10.00 ft

**Serial #: 8353 Outside**

Press @ Run Depth: 36.45 psig @ 3589.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2013.08.02

End Date: 2013.08.02

Last Calib.: 2013.08.02

Start Time: 12:45:15

End Time: 19:37:00

Time On Btm: 2013.08.02 @ 14:54:15

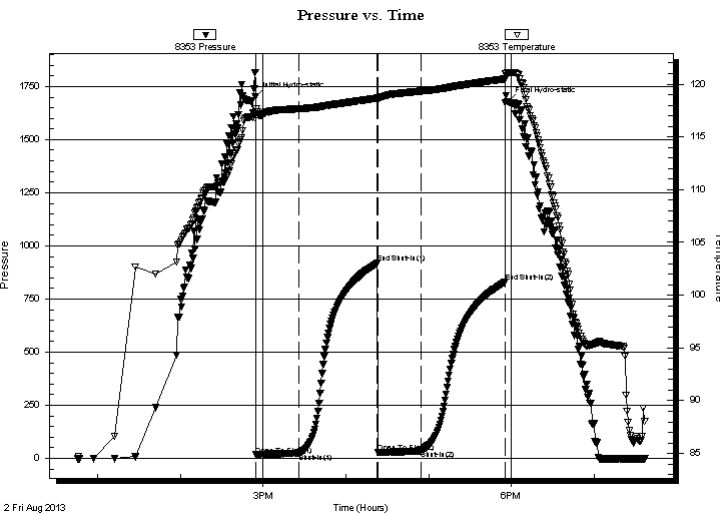
Time Off Btm: 2013.08.02 @ 17:57:45

TEST COMMENT: 30 IF; Built to 1/4"

60 ISI; No Blow

30 FF; No Blow

60 FSI; No Blow



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1702.26	117.11	Initial Hydro-static
1	16.50	117.63	Open To Flow (1)
32	24.90	117.67	Shut-In(1)
89	918.64	118.68	End Shut-In(1)
89	28.05	118.58	Open To Flow (2)
120	36.45	119.33	Shut-In(2)
181	828.89	120.49	End Shut-In(2)
184	1677.72	121.09	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
10.00	OCM 25%O 75%M	0.05

## Gas Rates

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



# TRILOBITE TESTING, INC.

## DRILL STEM TEST REPORT

Murfin Drilling Co.

**1-1s-35w Rawlins,KS**

250 N Water STE 300  
Wichita KS 67202

**Mary Ann #2-1**

ATTN: Robert Hendrix

Job Ticket: 53412 **DST#: 1**

Test Start: 2013.08.02 @ 12:45:00

### GENERAL INFORMATION:

Formation: **Foraker**

Deviated: No Whipstock: ft (KB) Test Type: Conventional Bottom Hole (Initial)

Time Tool Opened: 14:54:45 Tester: Wilbur Steinbeck

Time Test Ended: 19:37:00 Unit No: 44

**Interval: 3588.00 ft (KB) To 3633.00 ft (KB) (TVD)** Reference Elevations: 3095.00 ft (KB)

Total Depth: 3633.00 ft (KB) (TVD) 3085.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair KB to GR/CF: 10.00 ft

**Serial #: 8360 Inside**

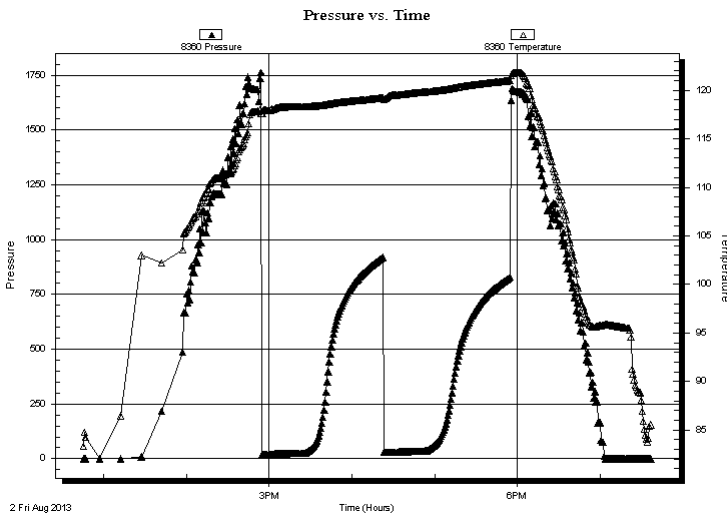
Press @RunDepth: psig @ 3589.00 ft (KB) Capacity: 8000.00 psig

Start Date: 2013.08.02 End Date: 2013.08.02 Last Calib.: 2013.08.02

Start Time: 12:45:15 End Time: 19:37:00 Time On Btm:

Time Off Btm:

**TEST COMMENT:** 30 IF; Built to 1/4"  
60 ISI; No Blow  
30 FF; No Blow  
60 FSI; No Blow



### PRESSURE SUMMARY

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

### Recovery

Length (ft)	Description	Volume (bbl)
10.00	OCM 25%O 75%M	0.05

### Gas Rates

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



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drilling Co.

**1-1s-35w Rawlins,KS**

250 N Water STE 300  
Wichita KS 67202

**Mary Ann #2-1**

Job Ticket: 53412

**DST#: 1**

ATTN: Robert Hendrix

Test Start: 2013.08.02 @ 12:45:00

## Tool Information

Drill Pipe:	Length: 3045.00 ft	Diameter: 3.80 inches	Volume: 42.71 bbl	Tool Weight: 25000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 535.00 ft	Diameter: 2.25 inches	Volume: 2.63 bbl	Weight to Pull Loose: 80000.00 lb
			<u>Total Volume: 45.34 bbl</u>	Tool Chased 14.00 ft
Drill Pipe Above KB:	19.00 ft			String Weight: Initial 63000.00 lb
Depth to Top Packer:	3588.00 ft			Final 63000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	45.00 ft			
Tool Length:	72.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		
Tool Comments:				

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
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Shut In Tool	5.00			3566.00	
Hydraulic tool jars	5.00			3571.00	
safety Joint	3.00			3576.00	
Packer	5.00			3584.00	27.00 Bottom Of Top Packer
Packer	4.00			3588.00	
Stubb	1.00			3589.00	
Recorder	0.00	8360	Inside	3589.00	
Recorder	0.00	8353	Outside	3589.00	
Perforations	7.00			3596.00	
Change Over Sub	1.00			3597.00	
Blank Spacing	32.00			3629.00	
Change Over Sub	1.00			3630.00	
Bullnose	3.00			3633.00	45.00 Bottom Packers & Anchor

**Total Tool Length: 72.00**



**TRILOBITE  
TESTING, INC.**

**DRILL STEM TEST REPORT**

**FLUID SUMMARY**

Murfin Drilling Co.

**1-1s-35w Rawlins,KS**

250 N Water STE 300  
Wichita KS 67202

**Mary Ann #2-1**

Job Ticket: 53412

**DST#: 1**

ATTN: Robert Hendrix

Test Start: 2013.08.02 @ 12:45:00

**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: 5.98 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 500.00 ppm

Filter Cake: inches

**Recovery Information**

Recovery Table

Length ft	Description	Volume bbl
10.00	OCM 25%O 75%M	0.049

Total Length: 10.00 ft      Total Volume: 0.049 bbl

Num Fluid Samples: 0

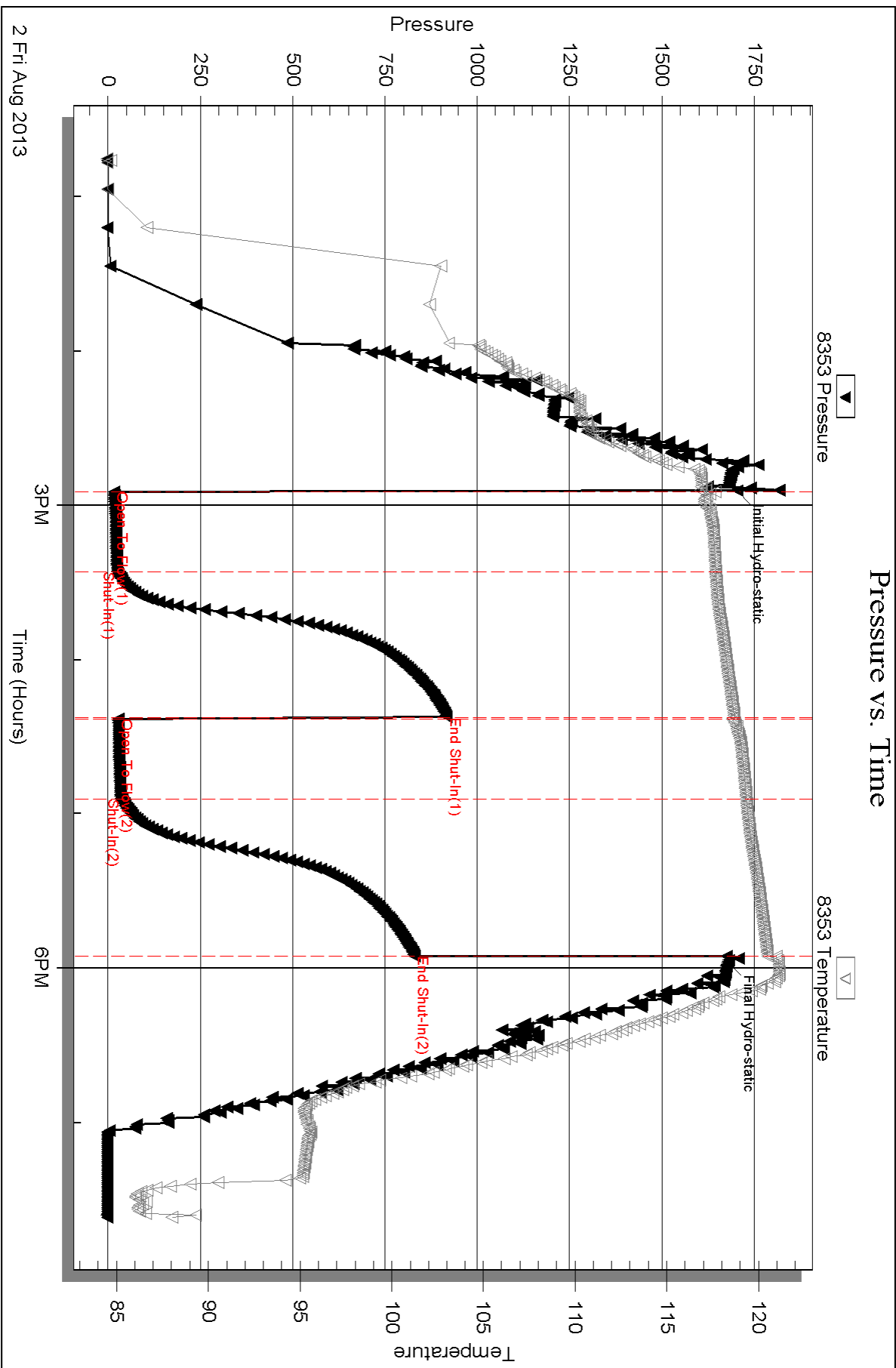
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



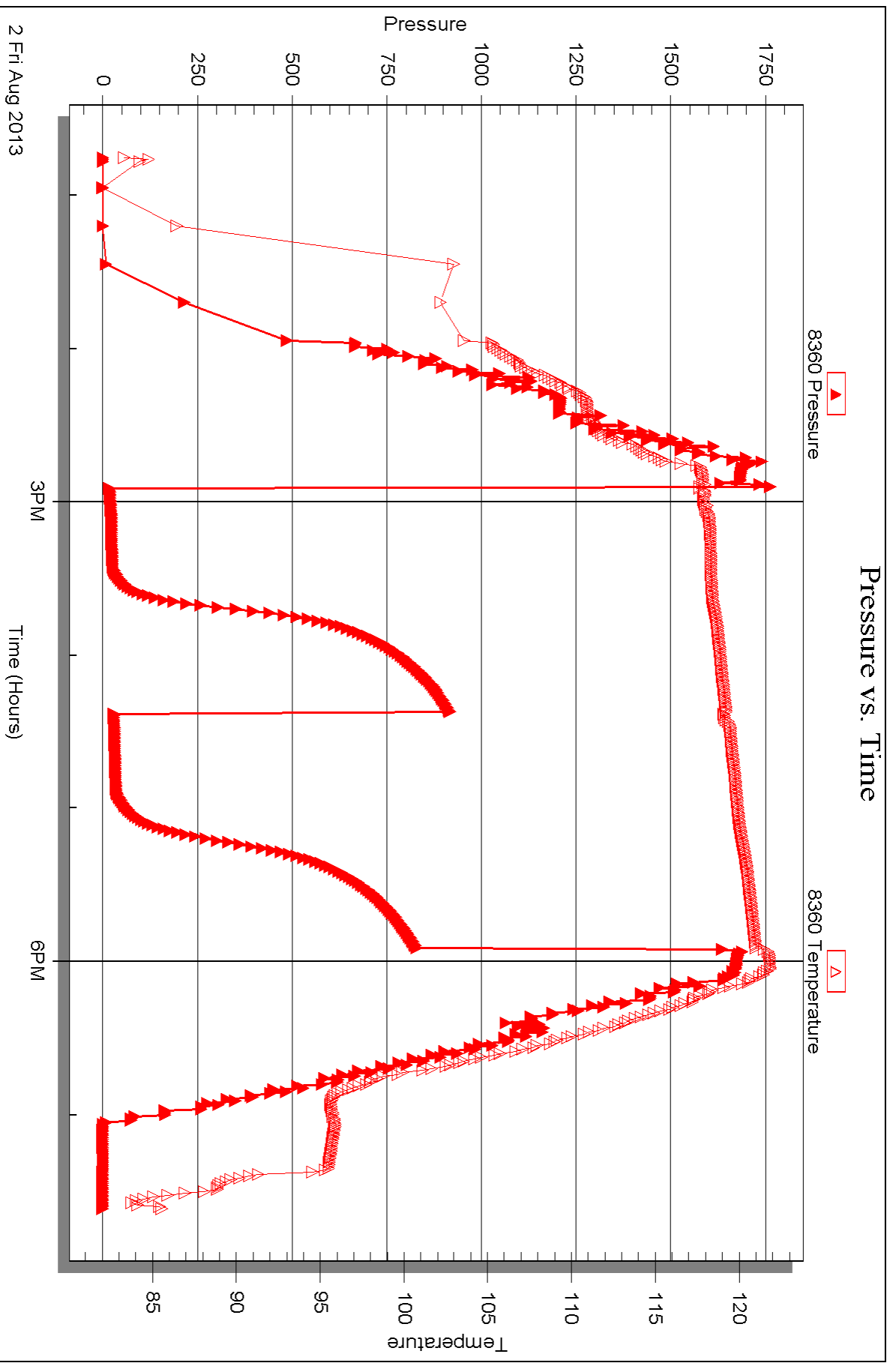
Serial #: 8360

Inside

Murfin Drilling Co.

Mary Ann #2-1

DST Test Number: 1





## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N Water STE 300  
Wichita KS 67202

ATTN: Robert Hendrix

**Mary Ann #2-1**

**1-1s-35w Rawlins,KS**

Start Date: 2013.08.03 @ 16:38:00

End Date: 2013.08.04 @ 00:31:45

Job Ticket #: 53413                      DST #: 2

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

Printed: 2013.08.09 @ 09:15:51





**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Murfin Drilling Co.

**1-1s-35w Rawlins,KS**

250 N Water STE 300  
Wichita KS 67202

**Mary Ann #2-1**

Job Ticket: 53413

**DST#: 2**

ATTN: Robert Hendrix

Test Start: 2013.08.03 @ 16:38:00

## GENERAL INFORMATION:

Formation: **Oread**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 18:46:30

Time Test Ended: 00:31:45

Test Type: Conventional Bottom Hole (Reset)

Tester: Wilbur Steinbeck

Unit No: 44

**Interval: 3902.00 ft (KB) To 3960.00 ft (KB) (TVD)**

Reference Elevations: 3095.00 ft (KB)

Total Depth: 3960.00 ft (KB) (TVD)

3085.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 10.00 ft

**Serial #: 8353 Outside**

Press @ Run Depth: 219.03 psig @ 3903.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2013.08.03

End Date:

2013.08.04

Last Calib.: 2013.08.04

Start Time: 16:38:15

End Time:

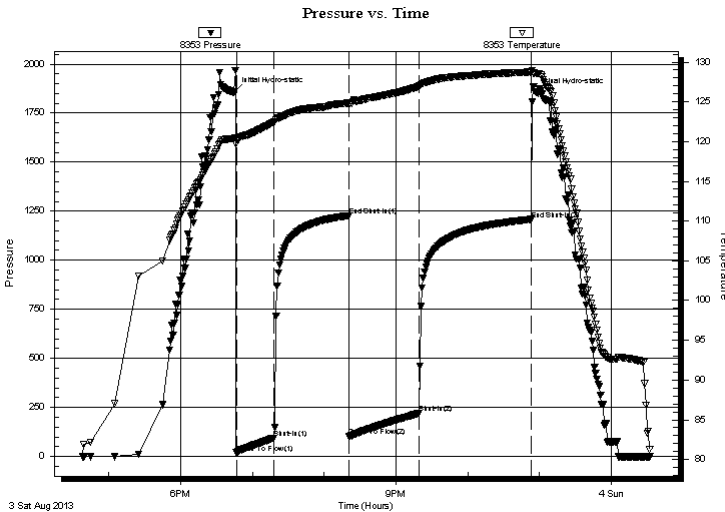
00:31:45

Time On Btm: 2013.08.03 @ 18:45:00

Time Off Btm: 2013.08.03 @ 22:57:00

**TEST COMMENT:** 30 IF; Built to 7"  
60 ISI; No Blow  
60 FF; Built to 9"  
90 FSI; No Blow

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1857.73	120.37	Initial Hydro-static
2	17.84	119.74	Open To Flow (1)
33	94.91	122.45	Shut-In(1)
96	1227.44	124.88	End Shut-In(1)
96	103.35	124.71	Open To Flow (2)
154	219.03	126.91	Shut-In(2)
248	1207.85	128.75	End Shut-In(2)
252	1854.52	128.57	Final Hydro-static

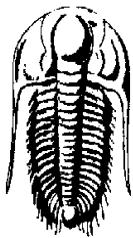
## Recovery

Length (ft)	Description	Volume (bbl)
368.00	MCW 40%M 60%W	1.81
45.00	OCM 5%O 95%M	0.22

## Gas Rates

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

\* Recovery from multiple tests



# TRILOBITE TESTING, INC.

## DRILL STEM TEST REPORT

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

**1-1s-35w Rawlins, KS**  
**Mary Ann #2-1**  
Job Ticket: 53413 **DST#: 2**  
Test Start: 2013.08.03 @ 16:38:00

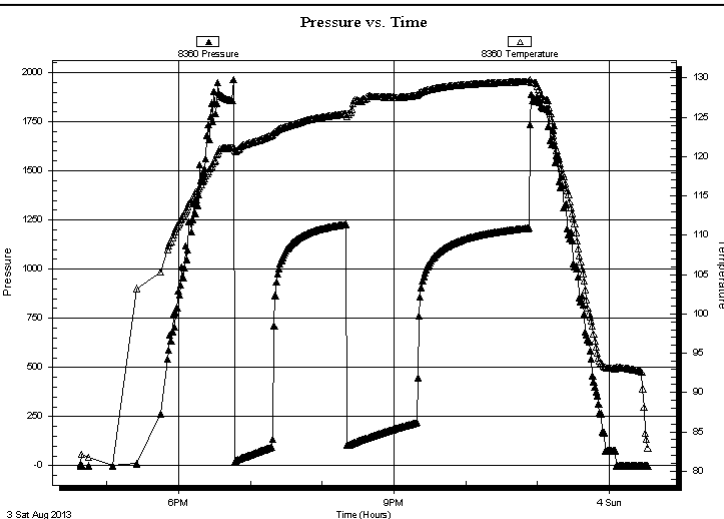
### GENERAL INFORMATION:

Formation: <b>Oread</b>		Test Type: Conventional Bottom Hole (Reset)
Deviated: No Whipstock:	ft (KB)	Tester: Wilbur Steinbeck
Time Tool Opened: 18:46:30		Unit No: 44
Time Test Ended: 00:31:45		Reference Elevations: 3095.00 ft (KB)
<b>Interval: 3902.00 ft (KB) To 3960.00 ft (KB) (TVD)</b>		3085.00 ft (CF)
Total Depth: 3960.00 ft (KB) (TVD)		KB to GR/CF: 10.00 ft
Hole Diameter: 7.88 inches Hole Condition: Fair		

### Serial #: 8360 Inside

Press @ Run Depth: psig @ 3903.00 ft (KB)	Capacity: 8000.00 psig
Start Date: 2013.08.03	End Date: 2013.08.04
Start Time: 16:38:15	End Time: 00:31:45
	Last Calib.: 2013.08.04
	Time On Btm:
	Time Off Btm:

**TEST COMMENT:** 30 IF; Built to 7"  
60 ISI; No Blow  
60 FF; Built to 9"  
90 FSI; No Blow



### PRESSURE SUMMARY

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

### Recovery

Length (ft)	Description	Volume (bbl)
368.00	MCW 40%M 60%W	1.81
45.00	OCM 5%O 95%M	0.22

### Gas Rates

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

\* Recovery from multiple tests



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drilling Co.

**1-1s-35w Rawlins,KS**

250 N Water STE 300  
Wichita KS 67202

**Mary Ann #2-1**

Job Ticket: 53413

**DST#: 2**

ATTN: Robert Hendrix

Test Start: 2013.08.03 @ 16:38:00

## Tool Information

Drill Pipe:	Length: 3362.00 ft	Diameter: 3.80 inches	Volume: 47.16 bbl	Tool Weight: 25000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 535.00 ft	Diameter: 2.25 inches	Volume: 2.63 bbl	Weight to Pull Loose: 78000.00 lb
			<u>Total Volume: 49.79 bbl</u>	Tool Chased 10.00 ft
Drill Pipe Above KB:	22.00 ft			String Weight: Initial 66000.00 lb
Depth to Top Packer:	3902.00 ft			Final 68000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	58.00 ft			
Tool Length:	85.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
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Shut In Tool	5.00			3880.00	
Hydraulic tool jars	5.00			3885.00	
safety Joint	3.00			3890.00	
Packer	5.00			3893.00	
					27.00 Bottom Of Top Packer
Packer	4.00			3898.00	
Stubb	1.00			3902.00	
Recorder	0.00	8360	Inside	3903.00	
Recorder	0.00	8353	Outside	3903.00	
Perforations	20.00			3923.00	
Change Over Sub	1.00			3924.00	
Blank Spacing	32.00			3925.00	
Change Over Sub	1.00			3956.00	
Bullnose	3.00			3957.00	
					58.00 Bottom Packers & Anchor

**Total Tool Length: 85.00**



**TRILOBITE  
TESTING, INC.**

**DRILL STEM TEST REPORT**

**FLUID SUMMARY**

Murfin Drilling Co.

**1-1s-35w Rawlins,KS**

250 N Water STE 300  
Wichita KS 67202

**Mary Ann #2-1**

Job Ticket: 53413

**DST#: 2**

ATTN: Robert Hendrix

Test Start: 2013.08.03 @ 16:38:00

**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: 5.19 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 500.00 ppm

Filter Cake: inches

**Recovery Information**

Recovery Table

Length ft	Description	Volume bbl
368.00	MCW 40%M 60%W	1.810
45.00	OCM 5%O 95%M	0.221

Total Length: 413.00 ft      Total Volume: 2.031 bbl

Num Fluid Samples: 0

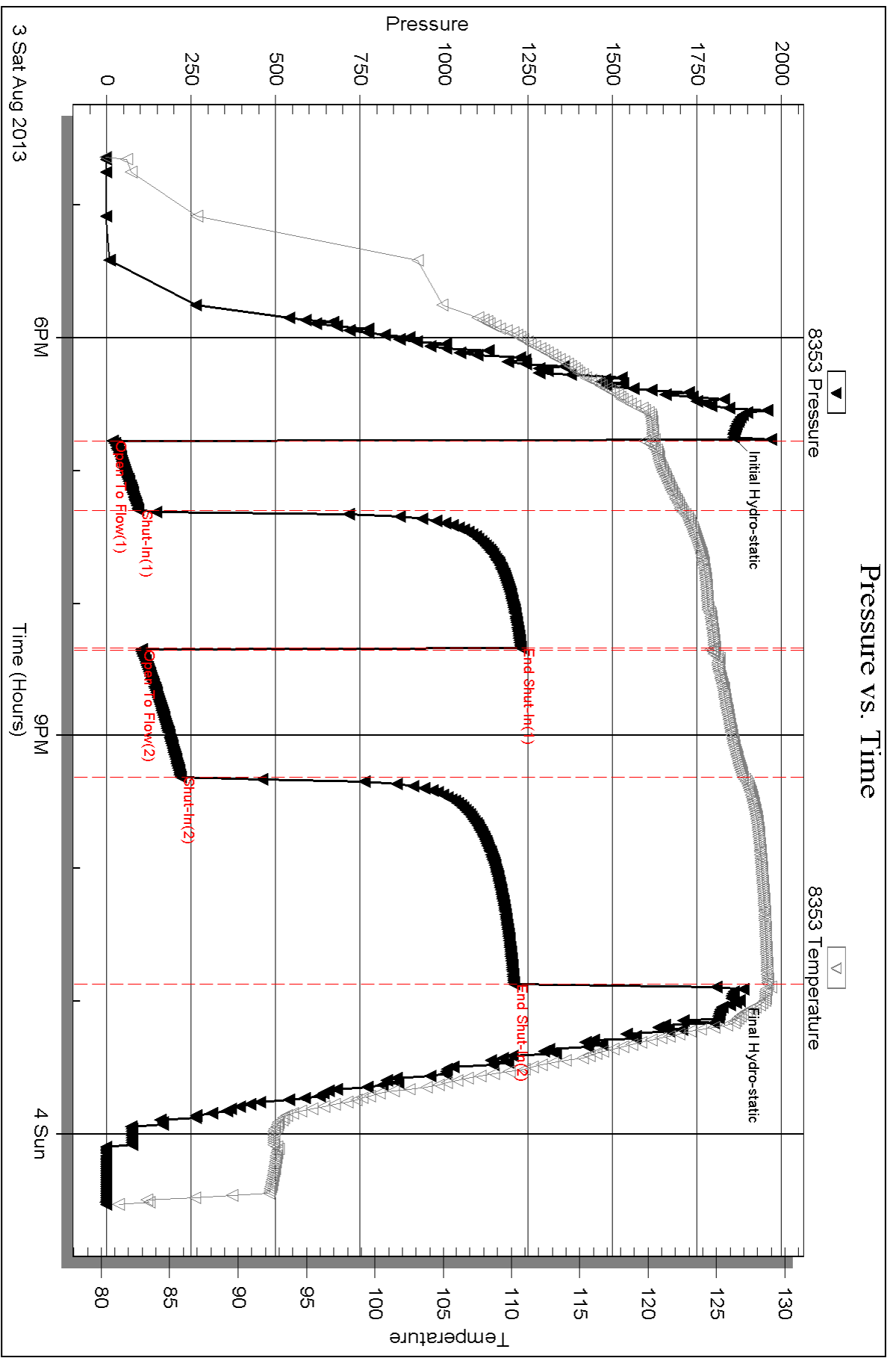
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: RW .220@69 DEG F=31,000 ppm



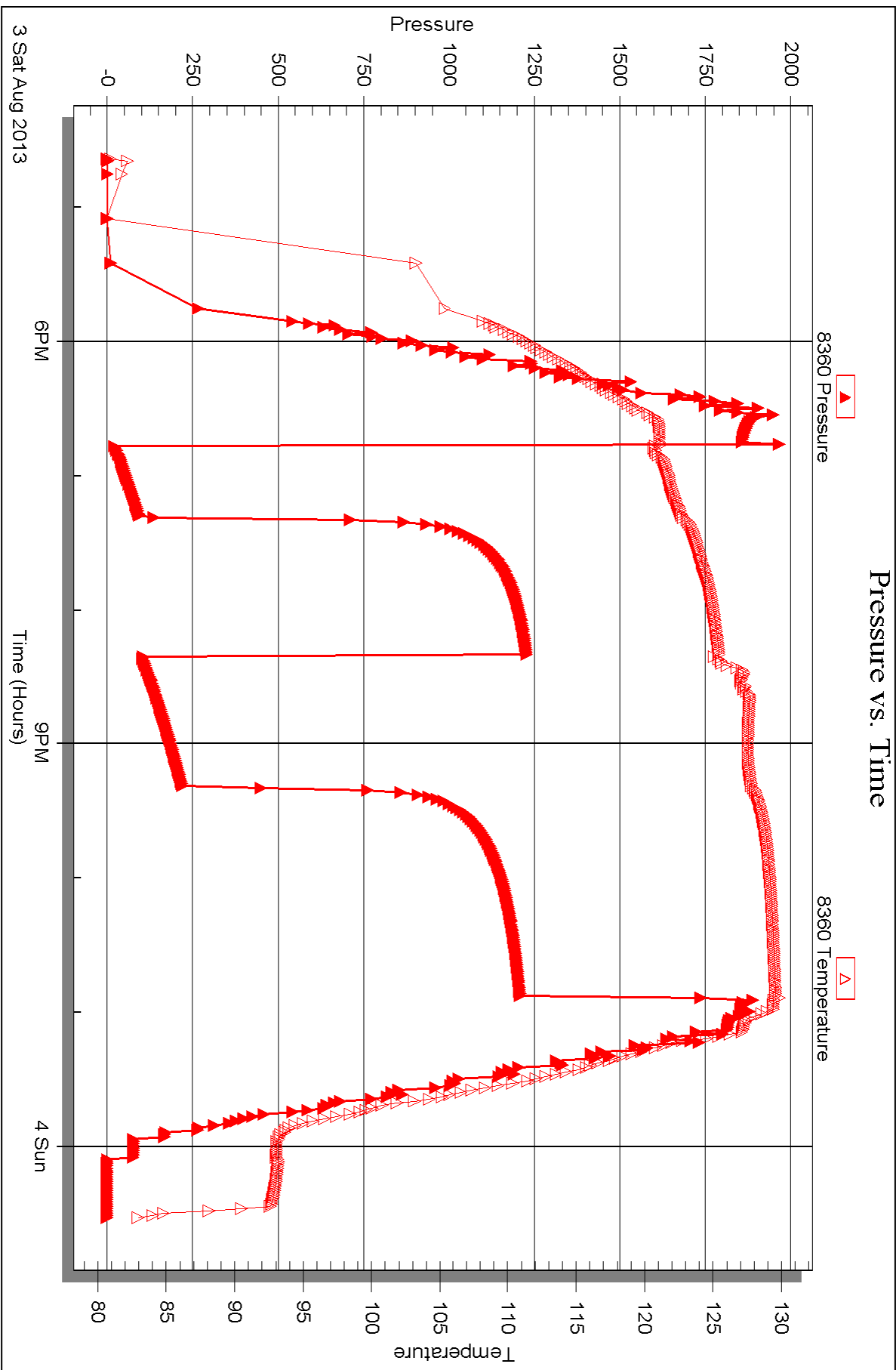
Serial #: 8360

Inside

Murfin Drilling Co.

Mary Ann #2-1

DST Test Number: 2





## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N Water STE 300  
Wichita KS 67202

ATTN: Robert Hendrix

**Mary Ann #2-1**

**1-1s-35w Rawlins,KS**

Start Date: 2013.08.04 @ 14:10:00

End Date: 2013.08.04 @ 20:56:30

Job Ticket #: 43414                      DST #: 3

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

Printed: 2013.08.09 @ 09:15:17



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

Murfin Drilling Co.

**1-1s-35w Rawlins,KS**

250 N Water STE 300  
Wichita KS 67202

**Mary Ann #2-1**

ATTN: Robert Hendrix

Job Ticket: 43414

**DST#: 3**

Test Start: 2013.08.04 @ 14:10:00

## GENERAL INFORMATION:

Formation: **LKC A**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 16:13:15

Time Test Ended: 20:56:30

Test Type: Conventional Bottom Hole (Reset)

Tester: Wilbur Steinbeck

Unit No: 44

**Interval: 3976.00 ft (KB) To 4075.00 ft (KB) (TVD)**

Reference Elevations: 3095.00 ft (KB)

Total Depth: 4075.00 ft (KB) (TVD)

3085.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 10.00 ft

**Serial #: 8353 Outside**

Press @ Run Depth: 53.97 psig @ 3977.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2013.08.04

End Date:

2013.08.04

Last Calib.:

2013.08.04

Start Time: 14:10:15

End Time:

20:56:30

Time On Btm:

2013.08.04 @ 16:12:45

Time Off Btm:

2013.08.04 @ 19:16:15

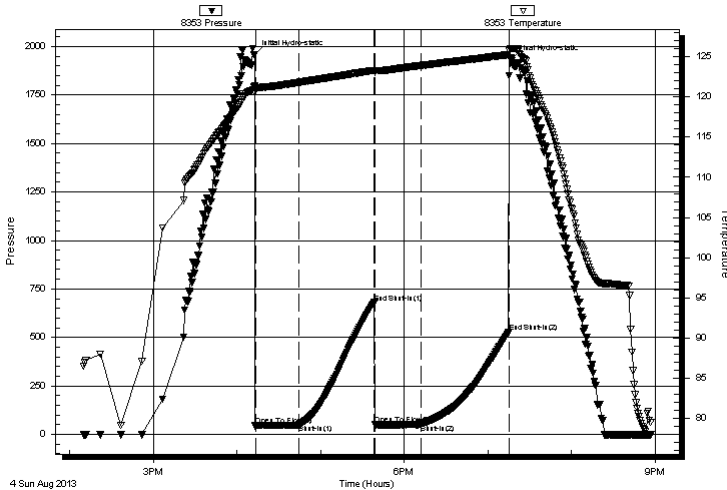
**TEST COMMENT:** 30 IF; Surge blow died in 7 min

60 IS; No Blow

30 FF; No Blow

60 FS; No Blow

Pressure vs. Time



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1958.42	121.35	Initial Hydro-static
1	45.14	121.11	Open To Flow (1)
32	50.26	121.83	Shut-In(1)
86	679.30	123.32	End Shut-In(1)
86	49.58	123.11	Open To Flow (2)
119	53.97	123.92	Shut-In(2)
182	527.31	125.28	End Shut-In(2)
184	1934.71	126.03	Final Hydro-static

## Recovery

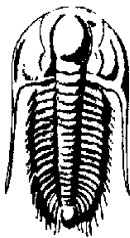
Length (ft)	Description	Volume (bbl)
30.00	Mud	0.15

## Gas Rates

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

\* Recovery from multiple tests





**TRILOBITE  
TESTING, INC.**

## DRILL STEM TEST REPORT

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

**1-1s-35w Rawlins,KS**

**Mary Ann #2-1**

Job Ticket: 43414

**DST#: 3**

Test Start: 2013.08.04 @ 14:10:00

### GENERAL INFORMATION:

Formation: **LKC A**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 16:13:15

Time Test Ended: 20:56:30

**Interval: 3976.00 ft (KB) To 4075.00 ft (KB) (TVD)**

Total Depth: 4075.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Test Type: Conventional Bottom Hole (Reset)

Tester: Wilbur Steinbeck

Unit No: 44

Reference Elevations: 3095.00 ft (KB)

3085.00 ft (CF)

KB to GR/CF: 10.00 ft

**Serial #: 8360 Inside**

Press @ Run Depth: psig @ 3977.00 ft (KB)

Start Date: 2013.08.04

End Date:

2013.08.04

Capacity: 8000.00 psig

Last Calib.:

2013.08.04

Start Time:

14:10:15

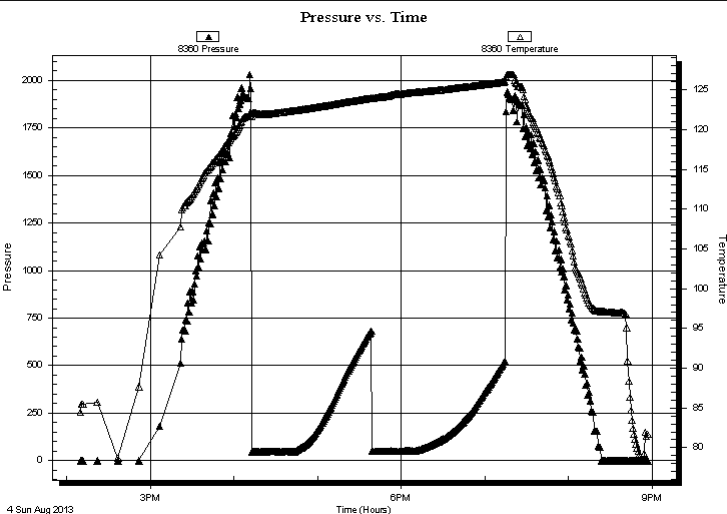
End Time:

20:56:30

Time On Btm:

Time Off Btm:

**TEST COMMENT:** 30 IF; Surge blow died in 7 min  
60 ISl; No Blow  
30 FF; No Blow  
60 FSl; No Blow



### PRESSURE SUMMARY

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

### Recovery

Length (ft)	Description	Volume (bbl)
30.00	Mud	0.15

### Gas Rates

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

\* Recovery from multiple tests



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drilling Co.

**1-1s-35w Rawlins,KS**

250 N Water STE 300  
Wichita KS 67202

**Mary Ann #2-1**

Job Ticket: 43414

**DST#: 3**

ATTN: Robert Hendrix

Test Start: 2013.08.04 @ 14:10:00

## Tool Information

Drill Pipe:	Length: 3424.00 ft	Diameter: 3.80 inches	Volume: 48.03 bbl	Tool Weight: 25000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 535.00 ft	Diameter: 2.25 inches	Volume: 2.63 bbl	Weight to Pull Loose: 80000.00 lb
			<u>Total Volume: 50.66 bbl</u>	Tool Chased 15.00 ft
Drill Pipe Above KB:	10.00 ft			String Weight: Initial 65000.00 lb
Depth to Top Packer:	3976.00 ft			Final 65000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	99.00 ft			
Tool Length:	126.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
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Shut In Tool	5.00			3954.00	
Hydraulic tool	5.00			3959.00	
jars	5.00			3964.00	
safety Joint	3.00			3967.00	
Packer	5.00			3972.00	27.00 Bottom Of Top Packer
Packer	4.00			3976.00	
Stubb	1.00			3977.00	
Recorder	0.00	8360	Inside	3977.00	
Recorder	0.00	8353	Outside	3977.00	
Perforations	29.00			4006.00	
Change Over Sub	1.00			4007.00	
Blank Spacing	64.00			4071.00	
Change Over Sub	1.00			4072.00	
Bullnose	3.00			4075.00	99.00 Bottom Packers & Anchor

**Total Tool Length: 126.00**



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling Co.

**1-1s-35w Rawlins,KS**

250 N Water STE 300  
Wichita KS 67202

**Mary Ann #2-1**

Job Ticket: 43414

**DST#: 3**

ATTN: Robert Hendrix

Test Start: 2013.08.04 @ 14:10:00

## Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 62.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.58 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 800.00 ppm

Filter Cake: inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
30.00	Mud	0.148

Total Length: 30.00 ft      Total Volume: 0.148 bbl

Num Fluid Samples: 0

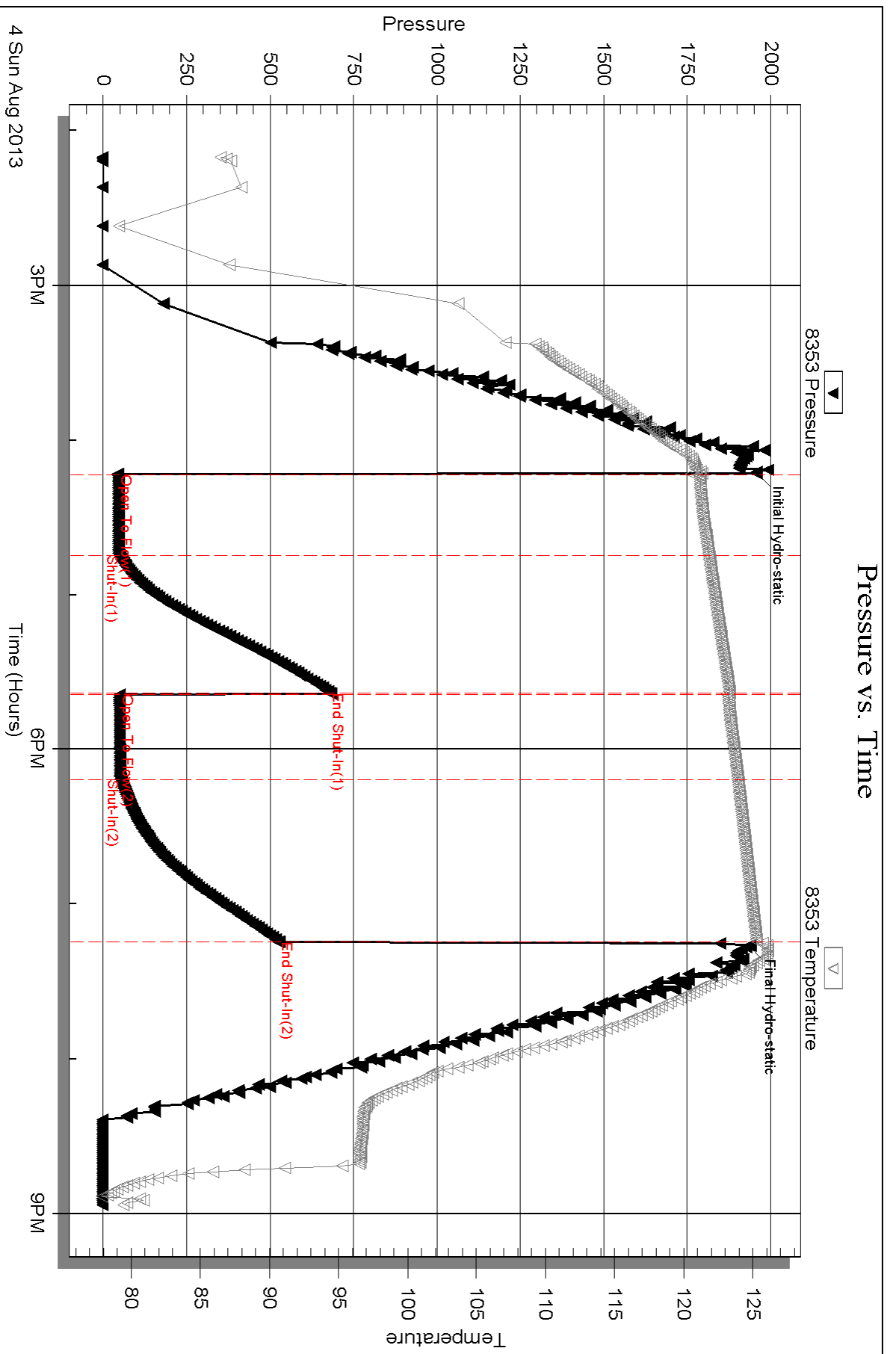
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



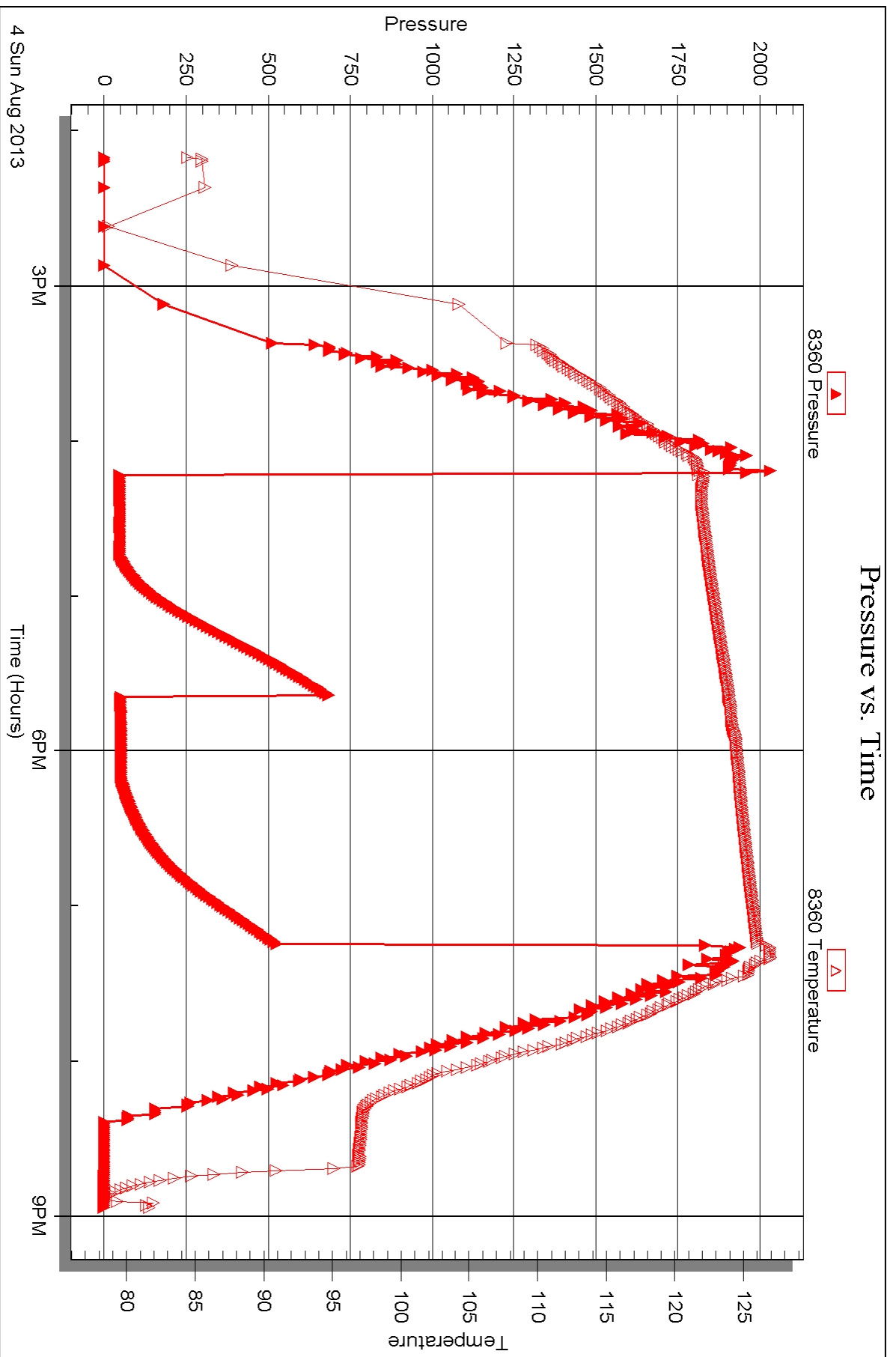
Serial #: 8360

Inside

Murfin Drilling Co.

Mary Ann #2-1

DST Test Number: 3





## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N Water STE 300  
Wichita KS 67202

ATTN: Robert Hendrix

**Mary Ann #2-1**

**1-1s-35w Rawlins,KS**

Start Date: 2013.08.05 @ 05:52:00

End Date: 2013.08.05 @ 15:49:45

Job Ticket #: 53415                      DST #: 4

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

Printed: 2013.08.09 @ 09:14:43



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Murfin Drilling Co.

**1-1s-35w Rawlins,KS**

250 N Water STE 300  
Wichita KS 67202

**Mary Ann #2-1**

ATTN: Robert Hendrix

Job Ticket: 53415

**DST#: 4**

Test Start: 2013.08.05 @ 05:52:00

## GENERAL INFORMATION:

Formation: **LKC D**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 07:55:45  
 Time Test Ended: 15:49:45  
 Interval: **4061.00 ft (KB) To 4101.00 ft (KB) (TVD)**  
 Total Depth: 4101.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Fair  
 Test Type: Conventional Bottom Hole (Reset)  
 Tester: Wilbur Steinbeck  
 Unit No: 44  
 Reference Elevations: 3095.00 ft (KB)  
 3085.00 ft (CF)  
 KB to GR/CF: 10.00 ft

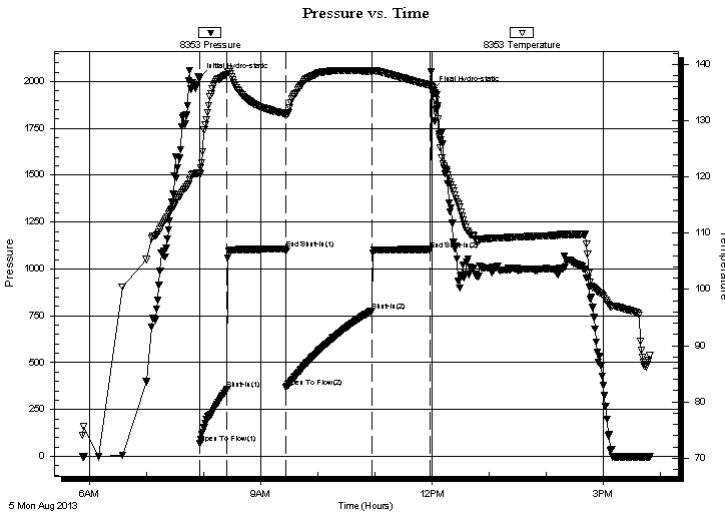
## Serial #: 8353

**Outside**

Press @ Run Depth: 777.27 psig @ 4062.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2013.08.05 End Date: 2013.08.05 Last Calib.: 2013.08.05  
 Start Time: 05:52:15 End Time: 15:49:45 Time On Btm: 2013.08.05 @ 07:55:00  
 Time Off Btm: 2013.08.05 @ 12:00:15

**TEST COMMENT:** 30 IF; BOB in 1 min  
 60 IS; BOB in 3 min  
 90 FF; BOB in 2 min Gas to surface in 20 min  
 60 FS; BOB in 3 min

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2018.55	120.65	Initial Hydro-static
1	71.80	120.48	Open To Flow (1)
30	358.84	138.21	Shut-In(1)
91	1105.29	131.25	End Shut-In(1)
92	368.95	130.88	Open To Flow (2)
182	777.27	138.75	Shut-In(2)
243	1103.69	136.32	End Shut-In(2)
246	1951.16	135.88	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
96.00	GMCO 20%G 35%M 45%O	0.47
1720.00	Dropped bar Reversed out GO 30%G 70%O	20.13
192.00	OG 30%O 70%G	2.69

\* Recovery from multiple tests

## Gas Rates

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



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Murfin Drilling Co.

**1-1s-35w Rawlins,KS**

250 N Water STE 300  
Wichita KS 67202

**Mary Ann #2-1**

Job Ticket: 53415

**DST#: 4**

ATTN: Robert Hendrix

Test Start: 2013.08.05 @ 05:52:00

## GENERAL INFORMATION:

Formation: **LKC D**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 07:55:45

Time Test Ended: 15:49:45

Test Type: Conventional Bottom Hole (Reset)

Tester: Wilbur Steinbeck

Unit No: 44

**Interval: 4061.00 ft (KB) To 4101.00 ft (KB) (TVD)**

Reference Elevations: 3095.00 ft (KB)

Total Depth: 4101.00 ft (KB) (TVD)

3085.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 10.00 ft

**Serial #: 8360 Inside**

Press @ Run Depth: psig @ 4062.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2013.08.05 End Date: 2013.08.05

Last Calib.: 2013.08.05

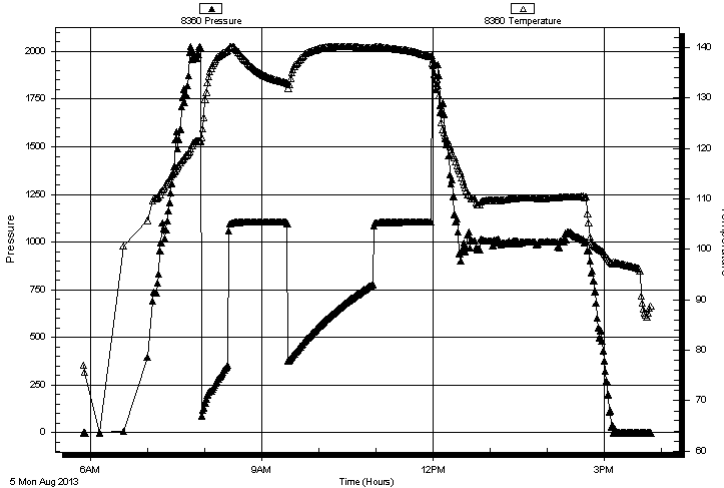
Start Time: 05:52:15 End Time: 15:49:45

Time On Btm:

Time Off Btm:

**TEST COMMENT:** 30 IF; BOB in 1 min  
60 IS; BOB in 3 min  
90 FF; BOB in 2 min Gas to surface in 20 min  
60 FS; BOB in 3 min

Pressure vs. Time



## PRESSURE SUMMARY

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

Length (ft)	Description	Volume (bbl)
96.00	GMCO 20%G 35%M 45%O	0.47
1720.00	Dropped bar Reversed out GO 30%G 70%O	20.13
192.00	OG 30%O 70%G	2.69

## Gas Rates

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

\* Recovery from multiple tests





**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drilling Co.

**1-1s-35w Rawlins,KS**

250 N Water STE 300  
Wichita KS 67202

**Mary Ann #2-1**

Job Ticket: 53415

**DST#: 4**

ATTN: Robert Hendrix

Test Start: 2013.08.05 @ 05:52:00

## Tool Information

Drill Pipe:	Length: 3522.00 ft	Diameter: 3.80 inches	Volume: 49.40 bbl	Tool Weight: 25000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 535.00 ft	Diameter: 2.25 inches	Volume: 2.63 bbl	Weight to Pull Loose: 85000.00 lb
			<u>Total Volume: 52.03 bbl</u>	Tool Chased 2.00 ft
Drill Pipe Above KB:	23.00 ft			String Weight: Initial 65000.00 lb
Depth to Top Packer:	4061.00 ft			Final 75000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	40.00 ft			
Tool Length:	67.00 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			4039.00	
Hydraulic tool	5.00			4044.00	
jars	5.00			4049.00	
safety Joint	3.00			4052.00	
Packer	5.00			4057.00	27.00 Bottom Of Top Packer
Packer	4.00			4061.00	
Stubb	1.00			4062.00	
Recorder	0.00	8360	Inside	4062.00	
Recorder	0.00	8353	Outside	4062.00	
Perforations	36.00			4098.00	
Bullnose	3.00			4101.00	40.00 Bottom Packers & Anchor

**Total Tool Length: 67.00**



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling Co.

**1-1s-35w Rawlins,KS**

250 N Water STE 300  
Wichita KS 67202

**Mary Ann #2-1**

Job Ticket: 53415

**DST#: 4**

ATTN: Robert Hendrix

Test Start: 2013.08.05 @ 05:52:00

## Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

33.4 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 62.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.59 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 800.00 ppm

Filter Cake: inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
96.00	GMCO 20%G 35%M 45%O	0.472
1720.00	Dropped bar Reversed out GO 30%G 70%O	20.128
192.00	OG 30%O 70%G	2.693

Total Length: 2008.00 ft      Total Volume: 23.293 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

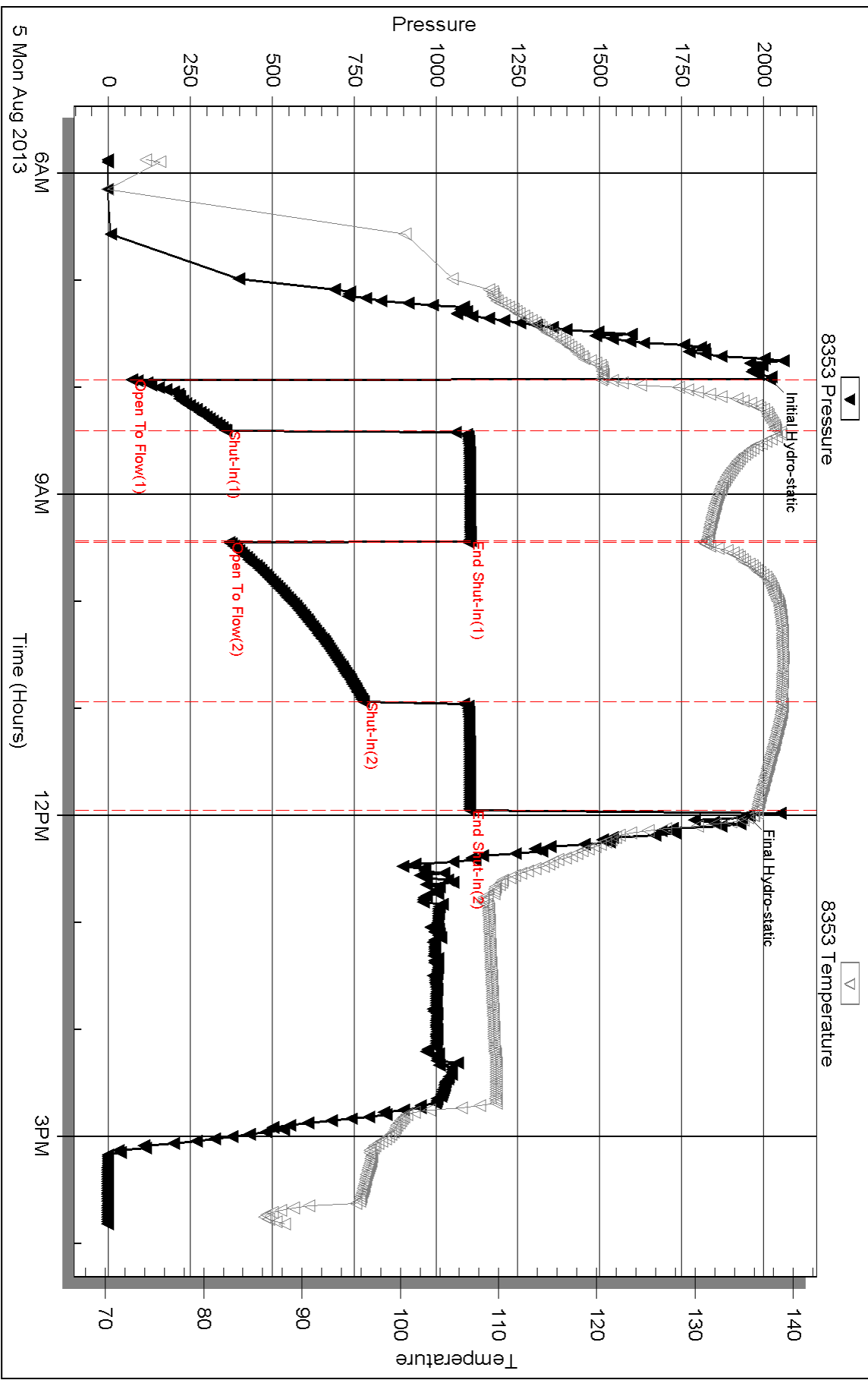
Laboratory Name:

Laboratory Location:

Recovery Comments: Gravity 37.4@100 DEG F=33.4

Dropped bar and reversed fluid out

### Pressure vs. Time



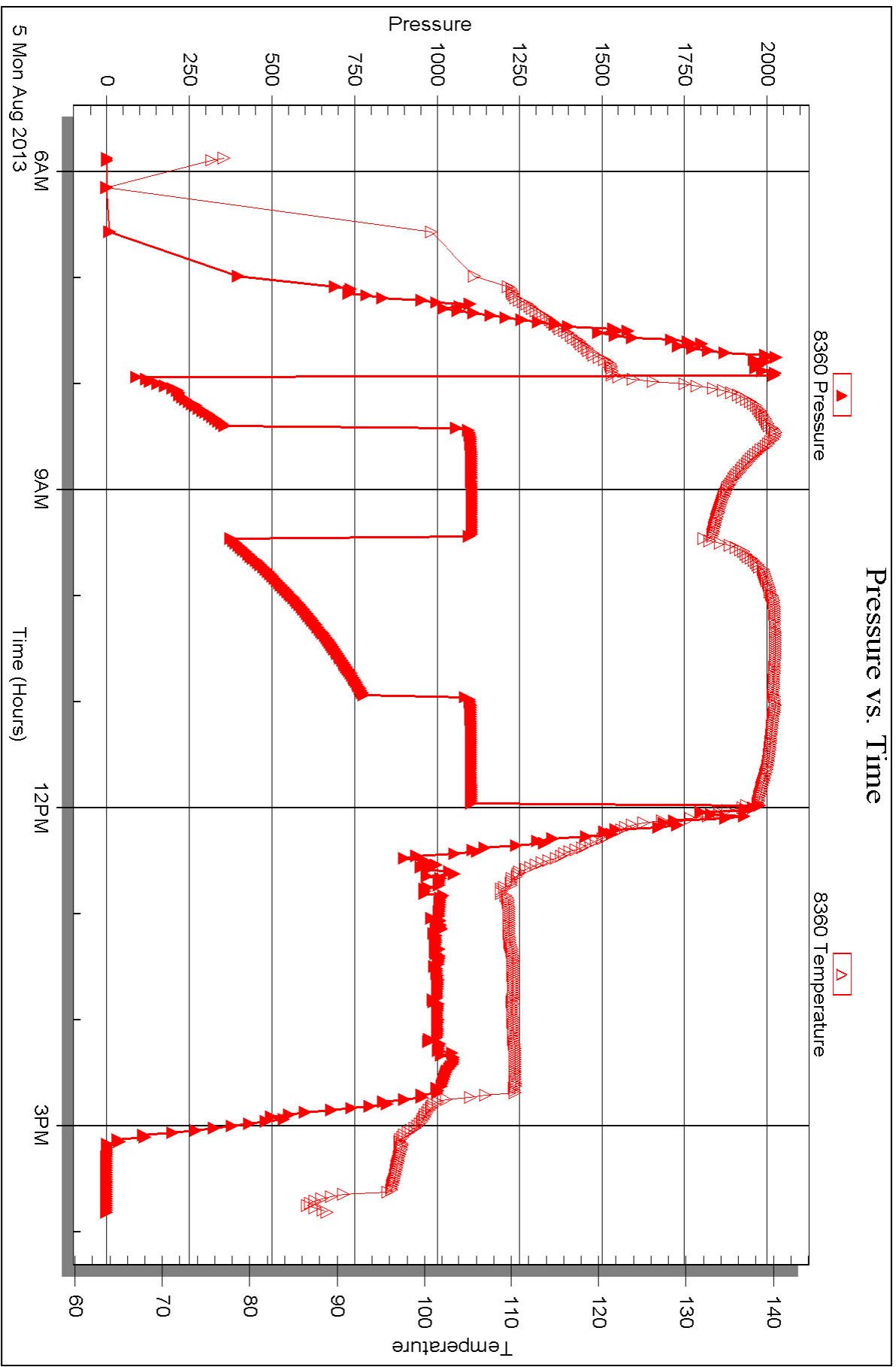
Serial #: 8360

Inside

Murfin Drilling Co.

Mary Ann #2-1

DST Test Number: 4





## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N Water STE 300  
Wichita KS 67202

ATTN: Robert Hendrix

**Mary Ann #2-1**

**1-1s-35w Rawlins,KS**

Start Date: 2013.08.06 @ 10:00:00

End Date: 2013.08.06 @ 16:55:30

Job Ticket #: 53416                      DST #: 5

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

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

Printed: 2013.08.09 @ 09:14:03

Murfin Drilling Co. 1-1s-35w Rawlins,KS Mary Ann #2-1 DST # 5 LKC G,H,I 2013.08.06



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Murfin Drilling Co.

**1-1s-35w Rawlins,KS**

250 N Water STE 300  
Wichita KS 67202

**Mary Ann #2-1**

Job Ticket: 53416

**DST#: 5**

ATTN: Robert Hendrix

Test Start: 2013.08.06 @ 10:00:00

## GENERAL INFORMATION:

Formation: **LKC G,H,I**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 12:05:30

Time Test Ended: 16:55:30

Test Type: Conventional Bottom Hole (Reset)

Tester: Wilbur Steinbeck

Unit No: 44

**Interval: 4113.00 ft (KB) To 4233.00 ft (KB) (TVD)**

Reference Elevations: 3095.00 ft (KB)

Total Depth: 4233.00 ft (KB) (TVD)

3085.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 10.00 ft

**Serial #: 8353 Outside**

Press @ Run Depth: 24.88 psig @ 4114.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2013.08.06

End Date: 2013.08.06

Last Calib.: 2013.08.06

Start Time: 10:00:15

End Time: 16:55:30

Time On Btm: 2013.08.06 @ 12:04:30

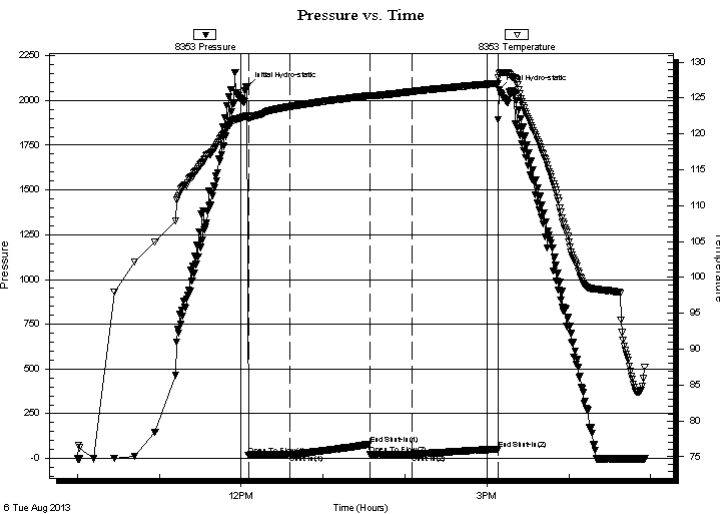
Time Off Btm: 2013.08.06 @ 15:09:00

**TEST COMMENT:** 30 IF; Built to 1/4"

60 IS; No Blow

30 FF; No Blow

60 FS; No Blow



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2076.67	122.52	Initial Hydro-static
1	19.17	122.32	Open To Flow (1)
31	21.95	123.81	Shut-In(1)
90	79.77	125.34	End Shut-In(1)
90	22.95	125.35	Open To Flow (2)
121	24.88	125.90	Shut-In(2)
184	52.18	127.07	End Shut-In(2)
185	2058.90	128.42	Final Hydro-static

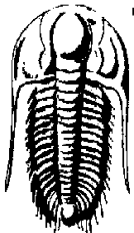
## Recovery

Length (ft)	Description	Volume (bbl)
5.00	Mud	0.02

\* 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: Robert Hendrix

**1-1s-35w Rawlins,KS**

**Mary Ann #2-1**

Job Ticket: 53416

**DST#: 5**

Test Start: 2013.08.06 @ 10:00:00

### GENERAL INFORMATION:

Formation: **LKC G,H,I**

Deviated: No Whipstock:                      ft (KB)

Time Tool Opened: 12:05:30

Time Test Ended: 16:55:30

Test Type: Conventional Bottom Hole (Reset)

Tester: Wilbur Steinbeck

Unit No: 44

Interval: **4113.00 ft (KB) To 4233.00 ft (KB) (TVD)**

Total Depth: 4233.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 3095.00 ft (KB)

3085.00 ft (CF)

KB to GR/CF: 10.00 ft

**Serial #: 8360**

**Inside**

Press @ Run Depth:                      psig @ 4114.00 ft (KB)

Start Date: 2013.08.06

End Date:

Capacity: 8000.00 psig

Last Calib.:

2013.08.06

Start Time: 10:00:15

End Time:

2013.08.06

Time On Btm:

16:55:30

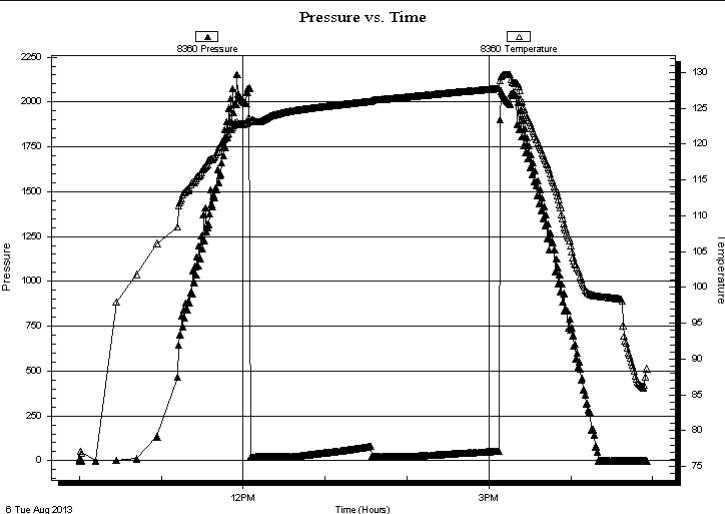
Time Off Btm:

TEST COMMENT: 30 IF; Built to 1/4"

60 ISl; No Blow

30 FF; No Blow

60 FSl; No Blow



### PRESSURE SUMMARY

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

### Recovery

Length (ft)	Description	Volume (bbl)
5.00	Mud	0.02

\* 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.

**1-1s-35w Rawlins,KS**

250 N Water STE 300  
Wichita KS 67202

**Mary Ann #2-1**

Job Ticket: 53416

**DST#: 5**

ATTN: Robert Hendrix

Test Start: 2013.08.06 @ 10:00:00

## Tool Information

Drill Pipe:	Length: 3581.00 ft	Diameter: 3.80 inches	Volume: 50.23 bbl	Tool Weight: 25000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 535.00 ft	Diameter: 2.25 inches	Volume: 2.63 bbl	Weight to Pull Loose: 80000.00 lb
			<u>Total Volume: 52.86 bbl</u>	Tool Chased 2.00 ft
Drill Pipe Above KB:	30.00 ft			String Weight: Initial 68000.00 lb
Depth to Top Packer:	4113.00 ft			Final 68000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	120.00 ft			
Tool Length:	147.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
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Shut In Tool	5.00			4091.00	
Hydraulic tool	5.00			4096.00	
jars	5.00			4101.00	
safety Joint	3.00			4104.00	
Packer	5.00			4109.00	27.00 Bottom Of Top Packer
Packer	4.00			4113.00	
Stubb	1.00			4114.00	
Recorder	0.00	8360	Inside	4114.00	
Recorder	0.00	8353	Outside	4114.00	
Perforations	18.00			4132.00	
Change Over Sub	1.00			4133.00	
Blank Spacing	96.00			4229.00	
Change Over Sub	1.00			4230.00	
Bullnose	3.00			4233.00	120.00 Bottom Packers & Anchor

**Total Tool Length: 147.00**





**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling Co.

**1-1s-35w Rawlins,KS**

250 N Water STE 300  
Wichita KS 67202

**Mary Ann #2-1**

Job Ticket: 53416

**DST#: 5**

ATTN: Robert Hendrix

Test Start: 2013.08.06 @ 10:00:00

## 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: 57.00 sec/qt

Cushion Volume:

bbbl

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

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 500.00 ppm

Filter Cake: inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
5.00	Mud	0.025

Total Length: 5.00 ft      Total Volume: 0.025 bbl

Num Fluid Samples: 0

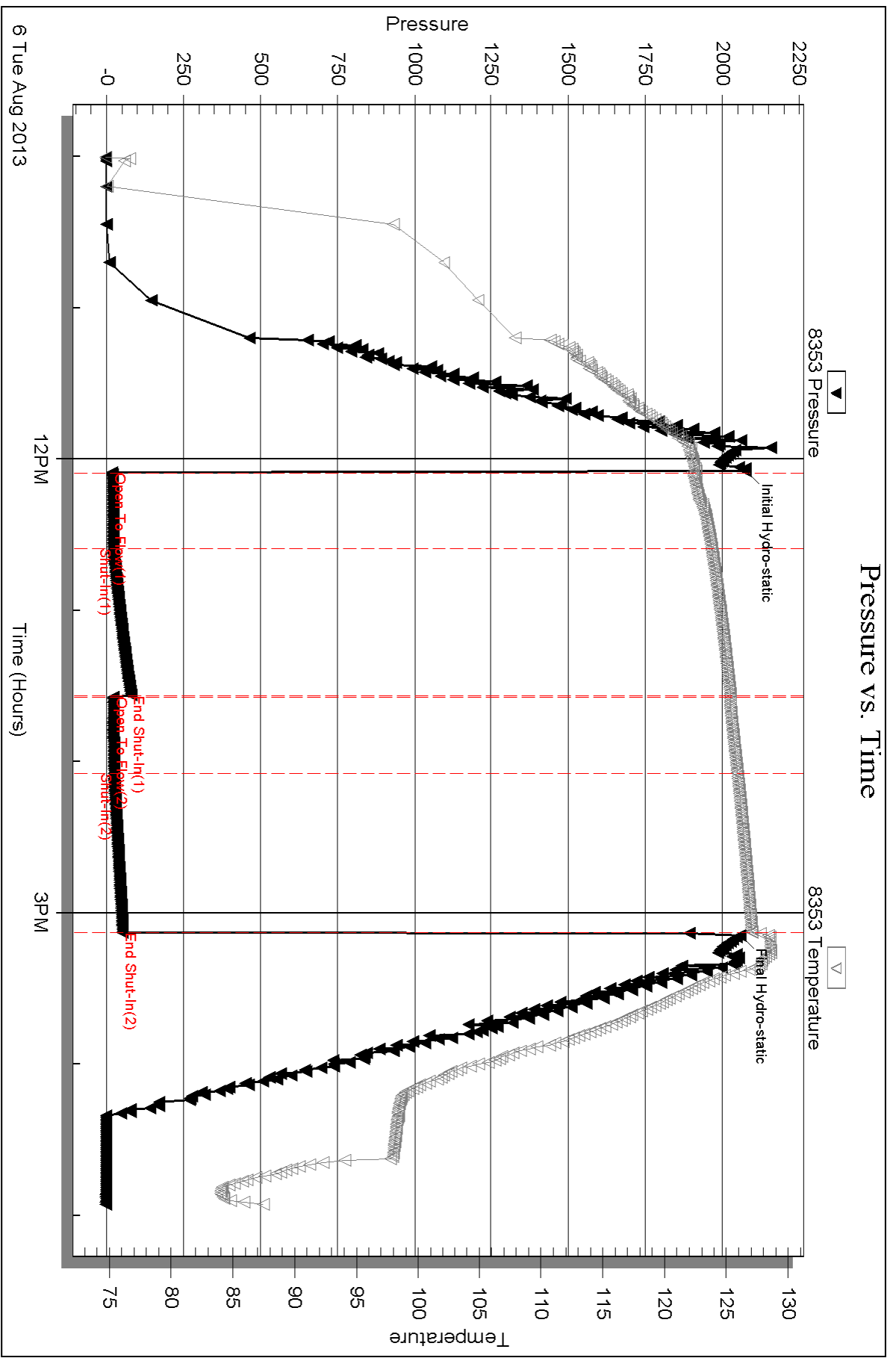
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



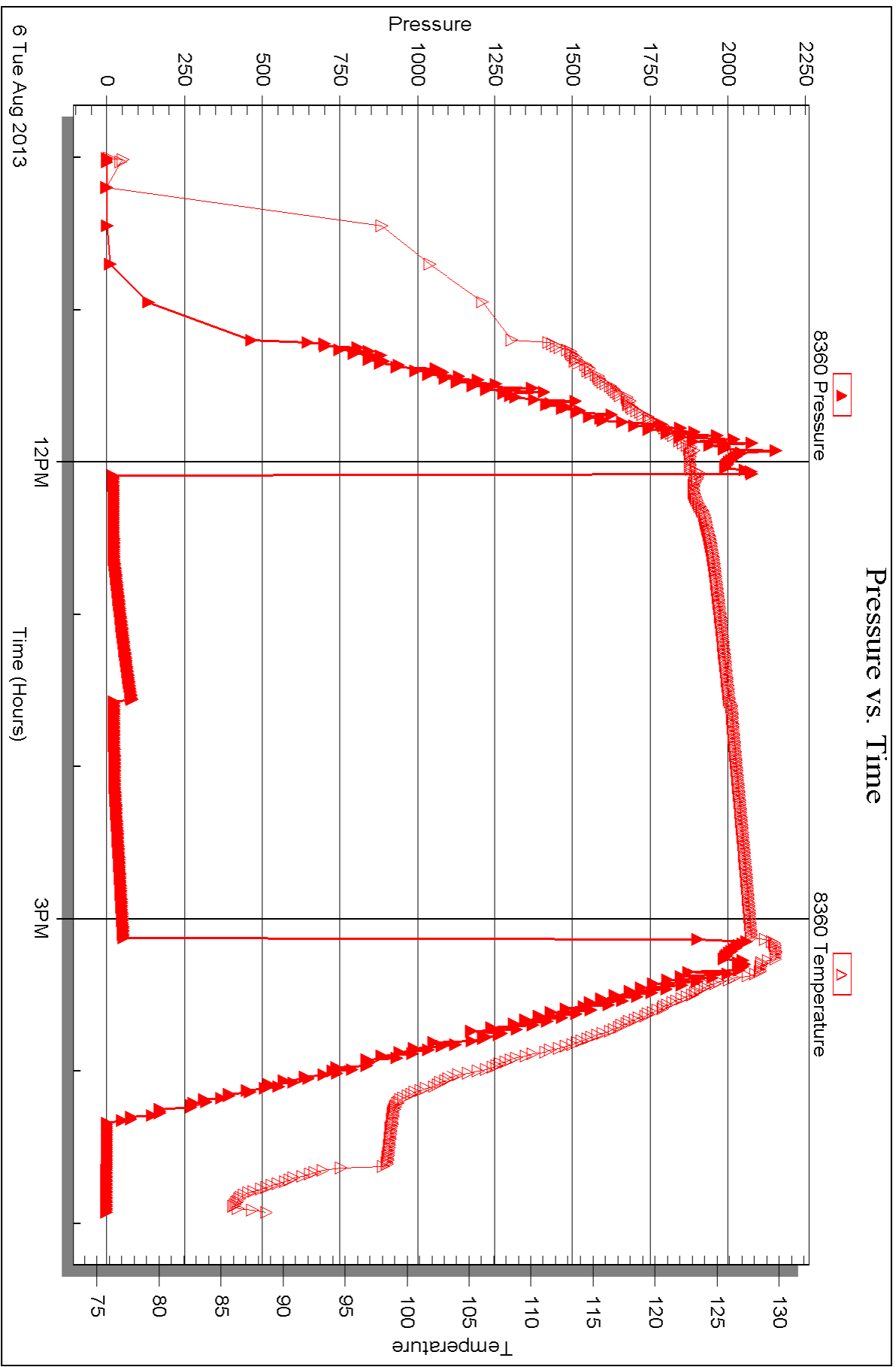
Serial #: 8360

Inside

Murfin Drilling Co.

Mary Ann #2-1

DST Test Number: 5





## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N Water STE 300  
Wichita KS 67202

ATTN: Robert Hendrix

**Mary Ann #2-1**

**1-1s-35w Rawlins,KS**

Start Date: 2013.08.07 @ 00:10:00

End Date: 2013.08.07 @ 09:48:30

Job Ticket #: 53417                      DST #: 6

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

Printed: 2013.08.09 @ 09:13:19



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

Murfin Drilling Co.

**1-1s-35w Rawlins,KS**

250 N Water STE 300  
Wichita KS 67202

**Mary Ann #2-1**

ATTN: Robert Hendrix

Job Ticket: 53417

**DST#: 6**

Test Start: 2013.08.07 @ 00:10:00

## GENERAL INFORMATION:

Formation: **LKC J**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 04:55:00

Time Test Ended: 09:48:30

Test Type: Conventional Bottom Hole (Reset)

Tester: Wilbur Steinbeck

Unit No: 42

**Interval: 4213.00 ft (KB) To 4258.00 ft (KB) (TVD)**

Reference Elevations: 3095.00 ft (KB)

Total Depth: 4258.00 ft (KB) (TVD)

3085.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 10.00 ft

**Serial #: 8353 Outside**

Press @ Run Depth: 29.31 psig @ 4214.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2013.08.07 End Date: 2013.08.07

Last Calib.: 2013.08.07

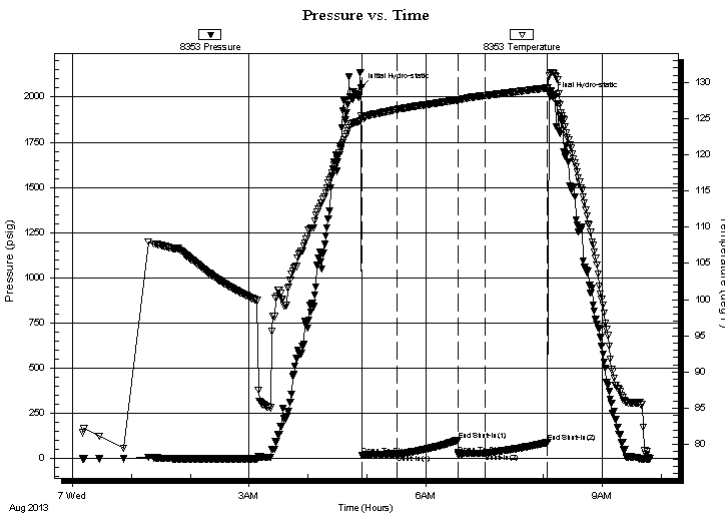
Start Time: 00:10:15 End Time: 09:48:30

Time On Btm: 2013.08.07 @ 04:54:15

Time Off Btm: 2013.08.07 @ 08:07:00

**TEST COMMENT:** 30 IF; Surge blow then died  
60 ISI; No Blow  
30 FF; No Blow  
60 FSI; No Blow

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2053.53	125.38	Initial Hydro-static
1	16.63	125.00	Open To Flow (1)
36	25.04	126.25	Shut-In(1)
99	101.15	127.56	End Shut-In(1)
99	22.76	127.56	Open To Flow (2)
126	29.31	128.17	Shut-In(2)
190	89.10	129.22	End Shut-In(2)
193	2002.97	131.26	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
5.00	OCM 25%O 75%M	0.02

## 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: Robert Hendrix

**1-1s-35w Rawlins,KS**

**Mary Ann #2-1**

Job Ticket: 53417

**DST#: 6**

Test Start: 2013.08.07 @ 00:10:00

### GENERAL INFORMATION:

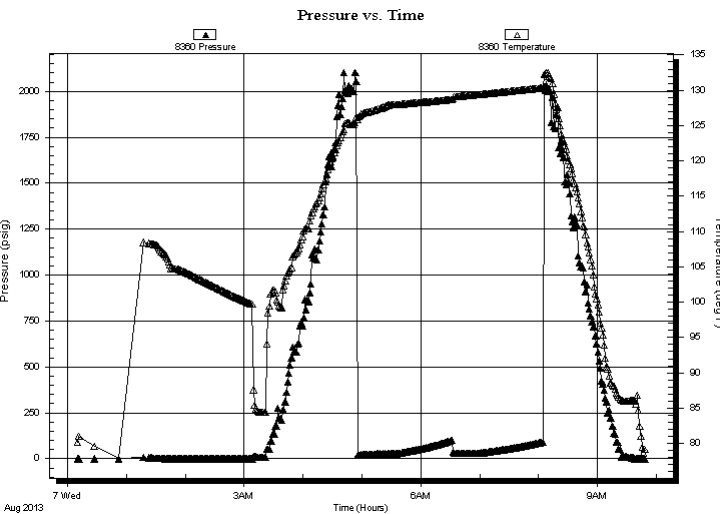
Formation: **LKC J**  
 Deviated: No Whipstock: ft (KB) Test Type: Conventional Bottom Hole (Reset)  
 Time Tool Opened: 04:55:00 Tester: Wilbur Steinbeck  
 Time Test Ended: 09:48:30 Unit No: 42  
**Interval: 4213.00 ft (KB) To 4258.00 ft (KB) (TVD)** Reference Elevations: 3095.00 ft (KB)  
 Total Depth: 4258.00 ft (KB) (TVD) 3085.00 ft (CF)  
 Hole Diameter: 7.88 inches Hole Condition: Fair KB to GR/CF: 10.00 ft

**Serial #: 8360**

**Inside**

Press @ RunDepth: psig @ 4214.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2013.08.07 End Date: 2013.08.07 Last Calib.: 1899.12.30  
 Start Time: 00:10:15 End Time: 09:48:30 Time On Btm:  
 Time Off Btm:

**TEST COMMENT:** 30 IF; Surge blow then died  
 60 IS; No Blow  
 30 FF; No Blow  
 60 FS; No Blow



### PRESSURE SUMMARY

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

### Recovery

Length (ft)	Description	Volume (bbl)
5.00	OCM 25%O 75%M	0.02

\* 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.

**1-1s-35w Rawlins,KS**

250 N Water STE 300  
Wichita KS 67202

**Mary Ann #2-1**

Job Ticket: 53417

**DST#: 6**

ATTN: Robert Hendrix

Test Start: 2013.08.07 @ 00:10:00

## Tool Information

Drill Pipe:	Length: 3681.00 ft	Diameter: 3.80 inches	Volume: 51.63 bbl	Tool Weight: 25000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 535.00 ft	Diameter: 2.25 inches	Volume: 2.63 bbl	Weight to Pull Loose: 80000.00 lb
			<u>Total Volume: 54.26 bbl</u>	Tool Chased 2.00 ft
Drill Pipe Above KB:	30.00 ft			String Weight: Initial 68000.00 lb
Depth to Top Packer:	4213.00 ft			Final 68000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	45.00 ft			
Tool Length:	72.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
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Shut In Tool	5.00			4191.00	
Hydraulic tool jars	5.00			4196.00	
safety Joint	3.00			4201.00	
Packer	5.00			4209.00	27.00 Bottom Of Top Packer
Packer	4.00			4213.00	
Stubb	1.00			4214.00	
Recorder	0.00	8360	Inside	4214.00	
Recorder	0.00	8353	Outside	4214.00	
Perforations	7.00			4221.00	
Change Over Sub	1.00			4222.00	
Blank Spacing	32.00			4254.00	
Change Over Sub	1.00			4255.00	
Bullnose	3.00			4258.00	45.00 Bottom Packers & Anchor

**Total Tool Length: 72.00**



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling Co.

**1-1s-35w Rawlins,KS**

250 N Water STE 300  
Wichita KS 67202

**Mary Ann #2-1**

Job Ticket: 53417

**DST#: 6**

ATTN: Robert Hendrix

Test Start: 2013.08.07 @ 00:10:00

## Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 58.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.59 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 800.00 ppm

Filter Cake: inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
5.00	OCM 25%O 75%M	0.025

Total Length: 5.00 ft      Total Volume: 0.025 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

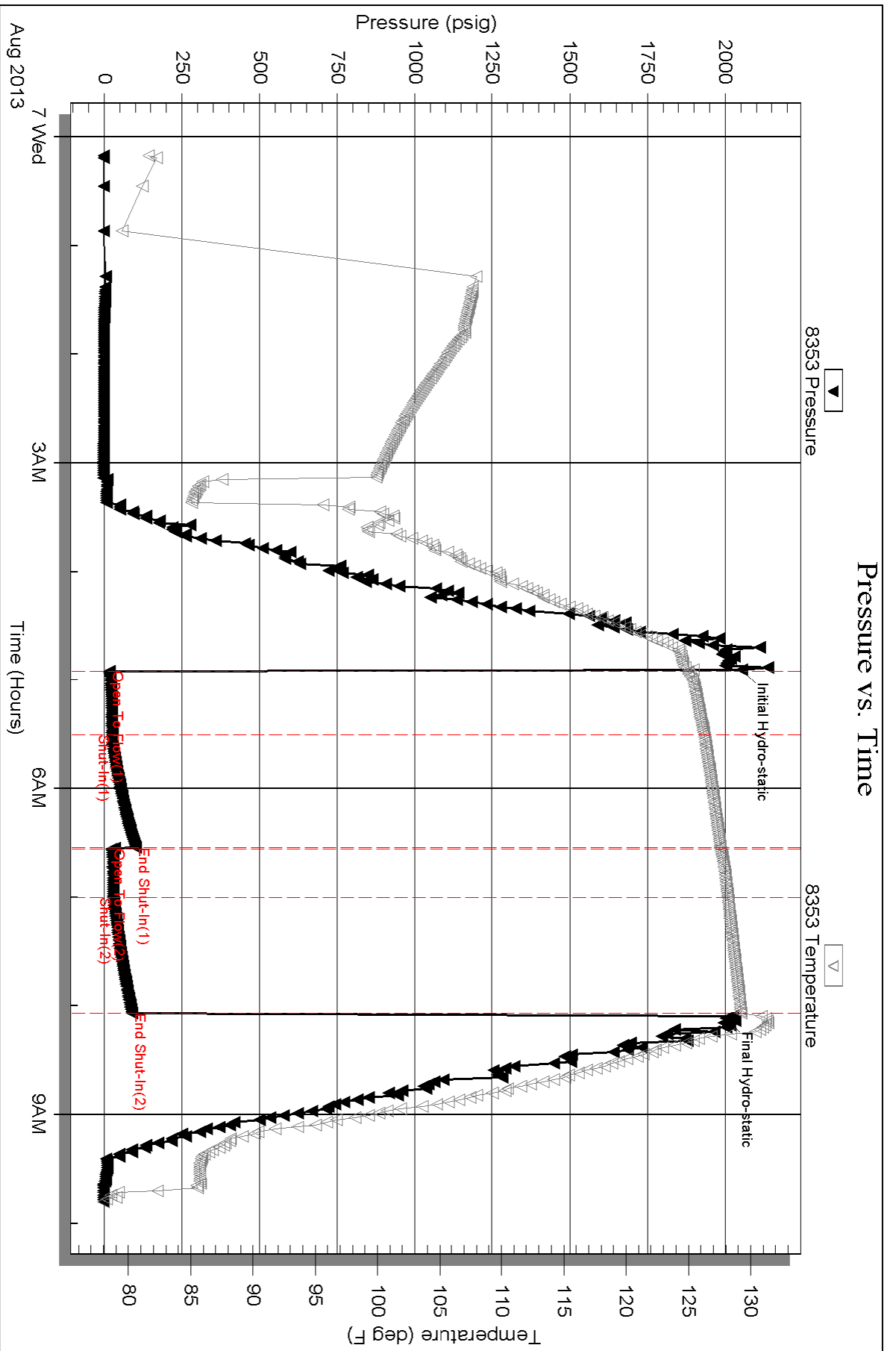
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:





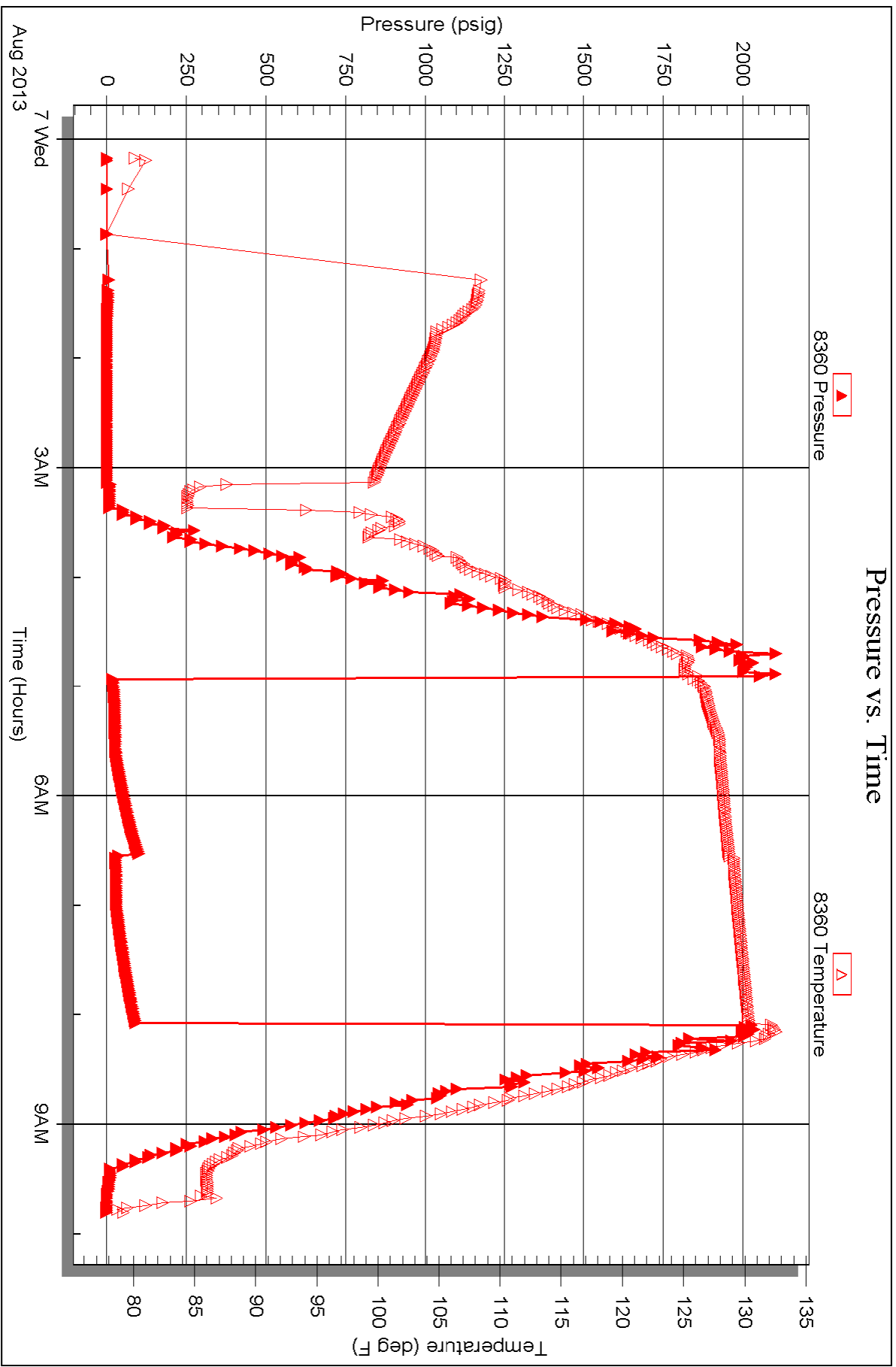
Serial #: 8360

Inside

Murfin Drilling Co.

Mary Ann #2-1

DST Test Number: 6





# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 53412

Well Name & No. Mary Ann 2-1 Test No. 1 Date 8-2-13  
 Company Murkin Drilling Co. Elevation 3095 KB 3085 GL  
 Address 250 N W 30th STE 300 Wichita Ks 67202  
 Co. Rep / Geo. \_\_\_\_\_ Rig Murkin 14  
 Location: Sec. 1 Twp. 15 Rge. 36W Co. Rawlins State Ks

Interval Tested 3588 - 3633 Zone Tested Foraker  
 Anchor Length 45 Drill Pipe Run 3045 Mud Wt. 8.6  
 Top Packer Depth 3583 Drill Collars Run 535 Vis 57  
 Bottom Packer Depth 3588 Wt. Pipe Run 0 WL 60  
 Total Depth 3633 Chlorides 500 ppm System LCM 4

Blow Description IF: Burt to 1/4"  
ISI: No blow  
FF: No blow  
FSI: No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>10</u>	<u>OCM</u>	<u>2.5</u>		<u>7.5</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 10 BHT 129 Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm

(A) Initial Hydrostatic	<u>1702</u>	<input checked="" type="checkbox"/> Test	<u>1150</u>	T-On Location	<u>12:05</u>
(B) First Initial Flow	<u>17</u>	<input checked="" type="checkbox"/> Jars	<u>250</u>	T-Started	<u>12:45</u>
(C) First Final Flow	<u>25</u>	<input checked="" type="checkbox"/> Safety Joint	<u>75</u>	T-Open	<u>12:55</u>
(D) Initial Shut-In	<u>919</u>	<input checked="" type="checkbox"/> Circ Sub	<u>NA</u>	T-Pulled	<u>17:55</u>
(E) Second Initial Flow	<u>28</u>	<input type="checkbox"/> Hourly Standby		T-Out	<u>19:38</u>
(F) Second Final Flow	<u>36</u>	<input checked="" type="checkbox"/> Mileage	<u>120 RT</u> 186	Comments	
(G) Final Shut-In	<u>829</u>	<input type="checkbox"/> Sampler			
(H) Final Hydrostatic	<u>1678</u>	<input type="checkbox"/> Straddle			

Initial Open	<u>30</u>	<input type="checkbox"/> Ruined Shale Packer
Initial Shut-In	<u>60</u>	<input type="checkbox"/> Ruined Packer
Final Flow	<u>30</u>	<input type="checkbox"/> Extra Copies
Final Shut-In	<u>60</u>	Sub Total <u>0</u>
		Total <u>1661</u>
		MP/DST Disc't _____
		Sub Total <u>1661</u>

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

Trilobite Testing Inc. shall not be liable for damaged of any kind of the property or personnel of the one for whom a test is made, or for any loss suffered or sustained, directly or indirectly, through the use of its equipment, or its statements or opinion concerning the results of any test, tools lost or damaged in the hole shall be paid for at cost by the party for whom the test is made.





# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 53413

Well Name & No. Mary Ann #2-1 Test No. 2 Date 8-3-13  
 Company Murfin Drilling Co. Elevation 3095 KB 3085 GL  
 Address 250 N Water STE 300 Wichita KS 67202  
 Co. Rep / Geo. Robert Hendrix Rig Murfin 14  
 Location: Sec. 1 Twp. 15 Rge. 36W Co. Rawlins State KS

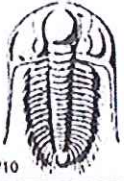
Interval Tested 3902-3960 Zone Tested Orind  
 Anchor Length 58 Drill Pipe Run 3362 Mud Wt. 8.7  
 Top Packer Depth 3897 Drill Collars Run 535 Vis 69  
 Bottom Packer Depth 3902 Wt. Pipe Run 0 WL 5.2  
 Total Depth 3960 Chlorides 500 ppm System LCM 4  
 Blow Description IF: Built to 7"  
IS: No blow  
FF: Built to 9"  
FS: No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>45</u>	Feet of <u>OCM</u>	<u>5</u>		<u>95</u>	
<u>368</u>	Feet of <u>MCLW</u>				
	Feet of				
	Feet of				
	Feet of				

Rec Total 413 BHT 129° Gravity API RW .220 @ 69 °F Chlorides 31,000 ppm  
 (A) Initial Hydrostatic 1,858  Test 1150 T-On Location 16:15  
 (B) First Initial Flow 18  Jars 250 T-Started 16:38  
 (C) First Final Flow 95  Safety Joint 75 T-Open 18:50  
 (D) Initial Shut-In 1227  Circ Sub NA T-Pulled 22:50  
 (E) Second Initial Flow 103  Hourly Standby T-Out 00:33  
 (F) Second Final Flow 219  Mileage 120 RT 186 Comments \_\_\_\_\_  
 (G) Final Shut-In 1208  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 1854  Straddle \_\_\_\_\_  
 Initial Open 30  Shale Packer \_\_\_\_\_  
 Initial Shut-In 60  Shale Packer \_\_\_\_\_  
 Final Flow 60  Extra Packer \_\_\_\_\_  
 Final Shut-In 90  Extra Recorder \_\_\_\_\_  
 Sub Total 0  
 Total 1661  
 MP/DST Disc't \_\_\_\_\_  
 Sub Total 1661

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

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 53414

Well Name & No. Mary Ann 2-1 Test No. 3 Date 8-4-13  
 Company Martin Drilling Co. Elevation 3095 KB 3085 GL  
 Address 250 N Wacker STE 300 Wichita Ks 67202  
 Co. Rep / Geo. Robert Hepervix Rig Martin 14  
 Location: Sec. 1 Twp. 15 Rge. 36w Co. Rawlins State Ks

Interval Tested 3976 4075 Zone Tested Layer A  
 Anchor Length 99 Drill Pipe Run 3424 Mud Wt. 9.0  
 Top Packer Depth 3971 Drill Collars Run 535 Vis 62  
 Bottom Packer Depth 3976 Wt. Pipe Run 0 WL 5.6  
 Total Depth 4075 Chlorides 800 ppm System LCM 4

Blow Description 1F, Force Blow died in 7 min  
151, No Blow  
FF, No Blow  
PSI, No Blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>30</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 30 BHT 126° Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm

(A) Initial Hydrostatic 1958  Test 1250 T-On Location 14:00  
 (B) First Initial Flow 45  Jars 250 T-Started 14:10  
 (C) First Final Flow 50  Safety Joint 75 T-Open 16:10  
 (D) Initial Shut-In 679  Circ Sub NA T-Pulled 19:10  
 (E) Second Initial Flow 50  Hourly Standby T-Out 20:55  
 (F) Second Final Flow 54  Mileage 120 RT 186 Comments \_\_\_\_\_  
 (G) Final Shut-In 527  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 1935  Straddle \_\_\_\_\_

Initial Open 30  Shale Packer \_\_\_\_\_  
 Initial Shut-In 60  Extra Packer \_\_\_\_\_  
 Final Flow 30  Extra Recorder \_\_\_\_\_  
 Final Shut-In 60  Day Standby \_\_\_\_\_  
 Sub Total 1761  Accessibility \_\_\_\_\_  
 MP/DST Disc't \_\_\_\_\_

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

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 53415

Well Name & No. Mary Ann #2-1 Test No. 4 Date 8-5-13  
 Company Murfin Drilling Co. Elevation 3095 KB 3085 GL.  
 Address 250 N Water STE 300 Wichita Ks 67202  
 Co. Rep / Geo. Robert Hendrix Rig Murfin 14  
 Location: Sec. 1 Twp. 1s Rge. 36w Co. Rawlins State Ks

Interval Tested 1061 4101 Zone Tested Ln D  
 Anchor Length 40' Drill Pipe Run 3522 Mud Wt. 9.0  
 Top Packer Depth 4056 Drill Collars Run 535 Vis 62  
 Bottom Packer Depth 4061 Wt. Pipe Run 800 WL 5.6  
 Total Depth 4101 Chlorides 800 ppm System LCM 4

Blow Description 1F; BOB in 1min  
1S1; BOB in 3min  
1F; BOB in 2min Gas to Surface 20min into Flow  
1S1; BOB in 3min

Rec	Feet of	%gas	%oil	%water	%mud
<u>192</u>	<u>OG</u>	<u>70</u>	<u>30</u>		
<u>1720</u>	<u>Reversed flow out OG</u>	<u>30</u>	<u>70</u>		
<u>96</u>	<u>GMCO</u>	<u>20</u>	<u>45</u>	<u>35</u>	
	<u>Gas to Surface 20min into</u>				
	<u>2nd open</u>				

Rec Total 2008 BHT 136° Gravity 3.14 @ 10 = 33.4 API RW @ ° F Chlorides ppm

- (A) Initial Hydrostatic 2019  Test 1250 T-On Location 5:20
- (B) First Initial Flow 72  Jars 250 T-Started 5:52
- (C) First Final Flow 359  Safety Joint 75 T-Open 7:55
- (D) Initial Shut-In 1105  Circ Sub Dropped bar 50 T-Pulled 12:55
- (E) Second Initial Flow 369  Hourly Standby T-Out 3:48
- (F) Second Final Flow 777  Mileage 120 RT 186 Comments Dropped bar
- (G) Final Shut-In 1104  Sampler and Reversed out
- (H) Final Hydrostatic 1951  Straddle fluid

Initial Open 30  Shale Packer  
 Initial Shut-In 60  Shale Packer  
 Final Flow 90  Extra Packer  
 Final Shut-In 120 60  Extra Recorder  
 Day Standby  
 Accessibility  
 Sub Total 1811

Ruined Shale Packer  
 Ruined Packer  
 Extra Copies  
 Sub Total 0  
 Total 1811  
 MP/DST Disc't

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

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 53416

Well Name & No. May Ann #2-1 Test No. 5 Date 8-6-13  
 Company Martin Drilling Co. Elevation 3095 KB 3085 GL  
 Address 250 N. Water St. 300 Wichita Ks 67202  
 Co. Rep / Geo. Robert Hendrix Rig Martin 14  
 Location: Sec. 1 Twp. 6s Rge. 36W Co. Rawlins State Ks

Interval Tested 4113 - 4233 Zone Tested Lon G, H, J  
 Anchor Length 120' Drill Pipe Run 3581 Mud Wt. 9.2  
 Top Packer Depth 4108 Drill Collars Run 535 Vis 58  
 Bottom Packer Depth 4113 Wt. Pipe Run 0 WL 5.6  
 Total Depth 4233 Chlorides 800 ppm System LCM 4

Blow Description 1F, Bpft to 1/4"  
1st, No Blow  
FF, No Blow  
1st, No Blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>5</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 Total 5 BHT 128 Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm

(A) Initial Hydrostatic <u>2,077</u>	<input type="checkbox"/> Test 1250	T-On Location <u>9.15</u>
(B) First Initial Flow <u>19</u>	<input checked="" type="checkbox"/> Jars 250	T-Started <u>10.00</u>
(C) First Final Flow <u>22</u>	<input checked="" type="checkbox"/> Safety Joint <u>NA</u> 75	T-Open <u>12.00</u>
(D) Initial Shut-In <u>80</u>	<input checked="" type="checkbox"/> Circ Sub <u>NA</u>	T-Pulled <u>15.00</u>
(E) Second Initial Flow <u>23</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>16.50</u>
(F) Second Final Flow <u>25</u>	<input checked="" type="checkbox"/> Mileage <u>170KT</u> 186	Comments _____
(G) Final Shut-In <u>52</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>2,059</u>	<input type="checkbox"/> Straddle	<input type="checkbox"/> Ruined Shale Packer

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

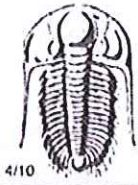
Shale Packer  
 Extra Packer  
 Extra Recorder  
 Day Standby  
 Accessibility

Sub Total 1761

MP/DST Disc't \_\_\_\_\_

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

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 53417

Well Name & No. Mary Ann 2-1 Test No. 6 Date 8.7-13  
 Company Murphy Drilling Co. Elevation 3095 KB 3085 GL  
 Address 250 N Water Ste 300 Wichita KS 67202  
 Co. Rep / Geo. Robert Hendrix Rig Murphy 14  
 Location: Sec. 1 Twp. 15 Rge. 36w Co. Rawlins State KS

Interval Tested 4213 4258 Zone Tested Lan J  
 Anchor Length 45 Drill Pipe Run 3681 Mud Wt. 9.2  
 Top Packer Depth 4208 Drill Collars Run 535 Vis 58  
 Bottom Packer Depth 4213 Wt. Pipe Run 0 WL 5.6  
 Total Depth 4258 Chlorides 800 ppm System LCM 4

Blow Description 1F1 Surge blow then Dry  
1S1, No Blow  
1F1, No Blow  
1S1, No Blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>5</u>	<u>MCO</u>	<u>60</u>		<u>40</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 5 BHT 118° Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm

(A) Initial Hydrostatic <u>2085</u>	<input type="checkbox"/> Test 1250	T-On Location <u>12:00</u>
(B) First Initial Flow <u>27</u>	<input checked="" type="checkbox"/> Jars 250	T-Started <u>12:10</u>
(C) First Final Flow <u>36</u>	<input checked="" type="checkbox"/> Safety Joint 75	T-Open <u>5:00</u>
(D) Initial Shut-In <u>113</u>	<input checked="" type="checkbox"/> Circ Sub <u>NA</u>	T-Pulled <u>8:00</u>
(E) Second Initial Flow <u>47</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>9:48</u>
(F) Second Final Flow <u>42</u>	<input checked="" type="checkbox"/> Mileage <u>120 RT</u> <sup>372</sup>	Comments <u>Loaded tools</u>
(G) Final Shut-In <u>101</u>	<input type="checkbox"/> Sampler	<u>9:15 8-8-13</u>
(H) Final Hydrostatic <u>2041</u>	<input type="checkbox"/> Straddle	

Initial Open <u>30</u>	<input type="checkbox"/> Shale Packer	<input type="checkbox"/> Ruined Shale Packer
Initial Shut-In <u>60</u>	<input type="checkbox"/> Extra Packer	<input type="checkbox"/> Ruined Packer
Final Flow <u>30</u>	<input type="checkbox"/> Extra Recorder	<input type="checkbox"/> Extra Copies
Final Shut-In <u>60</u>	<input type="checkbox"/> Day Standby	Sub Total <u>0</u>
	<input type="checkbox"/> Accessibility	Total <u>1947</u>
	Sub Total <u>1947</u>	MP/DST Disc't _____

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