



## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co., Inc.**

250 N Water STE 300  
Wichita KS 67202

ATTN: Keith Reavis

### **Erickson A #1-36**

#### **36-4s-31w Rawling,KS**

Start Date: 2014.09.22 @ 16:34:00

End Date: 2014.09.23 @ 04:28:19

Job Ticket #: 57467                      DST #: 1

Trilobite Testing, Inc  
1515 Commerce Parkway Hays, KS 67601  
ph: 785-625-4778 fax: 785-625-5620

Printed: 2014.09.30 @ 10:23:14

Murfin Drilling Co., Inc.

36-4s-31w Rawling,KS

Erickson A #1-36

DST # 1

Toronto - Lansing

2014.09.22



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

**36-4s-31w Rawling, KS**

250 N Water STE 300  
Wichita KS 67202

**Erickson A #1-36**

Job Ticket: 57467

**DST#: 1**

ATTN: Keith Reavis

Test Start: 2014.09.22 @ 16:34:00

## GENERAL INFORMATION:

Formation: **Toronto - Lansing**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 20:56:30

Time Test Ended: 04:28:19

Test Type: Conventional Bottom Hole (Initial)

Tester: Justin Harris

Unit No: 61

**Interval: 3810.00 ft (KB) To 3900.00 ft (KB) (TVD)**

Reference Elevations: 2845.00 ft (KB)

Total Depth: 3900.00 ft (KB) (TVD)

2841.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Poor

KB to GR/CF: 4.00 ft

**Serial #: 8357**

**Inside**

Press@RunDepth: 453.92 psig @ 3811.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.09.22

End Date:

2014.09.23

Last Calib.: 2014.09.23

Start Time: 16:34:02

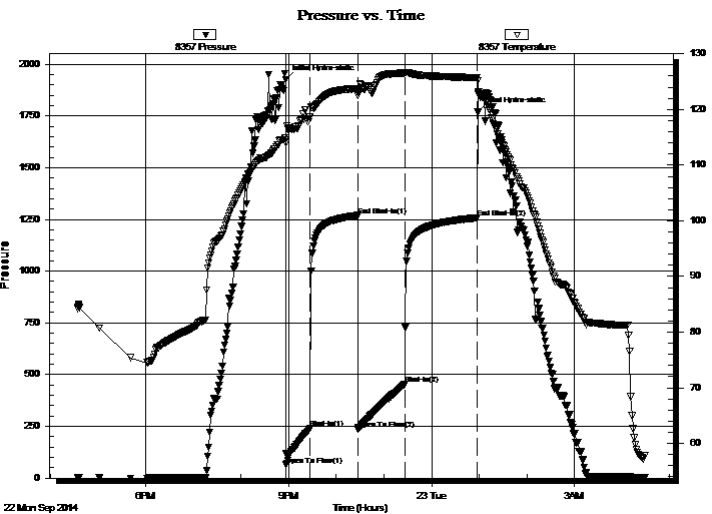
End Time:

04:28:19

Time On Btm: 2014.09.22 @ 20:56:10

Time Off Btm: 2014.09.23 @ 00:58:10

TEST COMMENT: 30: B.O.B in 8 mins.  
60: No Return.  
60: B.O.B in 12 min.  
90: No Return.



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1924.63	114.86	Initial Hydro-static
1	64.59	114.58	Open To Flow (1)
31	239.87	118.64	Shut-In(1)
91	1269.01	123.73	End Shut-In(1)
91	236.38	122.50	Open To Flow (2)
151	453.92	126.54	Shut-In(2)
242	1258.01	125.75	End Shut-In(2)
242	1769.08	125.22	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
187.00	MCW 40%M 60%W	0.92
703.00	MCW 20%M 80%W	9.86

## Gas Rates

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





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drilling Co., Inc.

**36-4s-31w Rawling,KS**

250 N Water STE 300  
Wichita KS 67202

**Erickson A #1-36**

Job Ticket: 57467

**DST#: 1**

ATTN: Keith Reavis

Test Start: 2014.09.22 @ 16:34:00

## Tool Information

Drill Pipe:	Length: 3609.50 ft	Diameter: 3.80 inches	Volume: 50.63 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: inches	Volume: 0.00 bbl	Weight set on Packer: 30000.00 lb
Drill Collar:	Length: 187.00 ft	Diameter: 2.25 inches	Volume: 0.92 bbl	Weight to Pull Loose: 70000.00 lb
			<u>Total Volume: 51.55 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	14.00 ft			String Weight: Initial 60000.00 lb
Depth to Top Packer:	3810.00 ft			Final 62000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	90.00 ft			
Tool Length:	117.50 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			3783.50	
Shut In Tool	5.00			3788.50	
Hydraulic tool	5.00			3793.50	
Jars	5.00			3798.50	
Safety Joint	2.50			3801.00	
Packer	5.00			3806.00	27.50 Bottom Of Top Packer
Packer	4.00			3810.00	
Stubb	1.00			3811.00	
Recorder	0.00	8357	Inside	3811.00	
Recorder	0.00	6751	Outside	3811.00	
Perforations	20.00			3831.00	
Change Over Sub	1.00			3832.00	
Drill Pipe	64.00			3896.00	
Change Over Sub	1.00			3897.00	
Bullnose	3.00			3900.00	90.00 Bottom Packers & Anchor

**Total Tool Length: 117.50**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

Murfin Drilling Co., Inc.

**36-4s-31w Rawling,KS**

250 N Water STE 300  
Wichita KS 67202

**Erickson A #1-36**

Job Ticket: 57467

**DST#: 1**

ATTN: Keith Reavis

Test Start: 2014.09.22 @ 16:34:00

### Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

0 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

35000 ppm

Viscosity: 58.00 sec/qt

Cushion Volume:

bbbl

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

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 600.00 ppm

Filter Cake: 2.00 inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
187.00	MCW 40%M 60%W	0.920
703.00	MCW 20%M 80%W	9.861

Total Length: 890.00 ft      Total Volume: 10.781 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

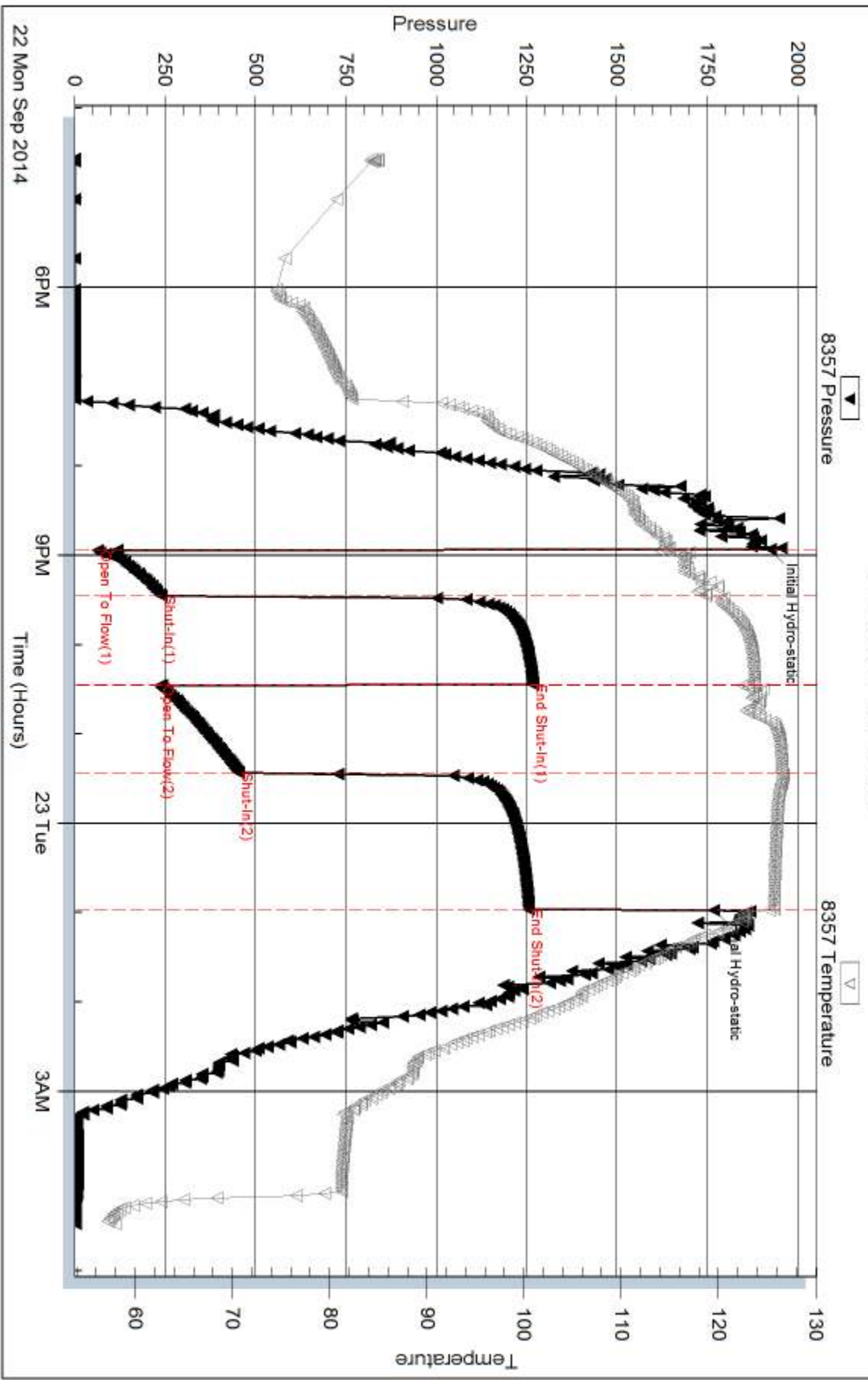
Serial #:

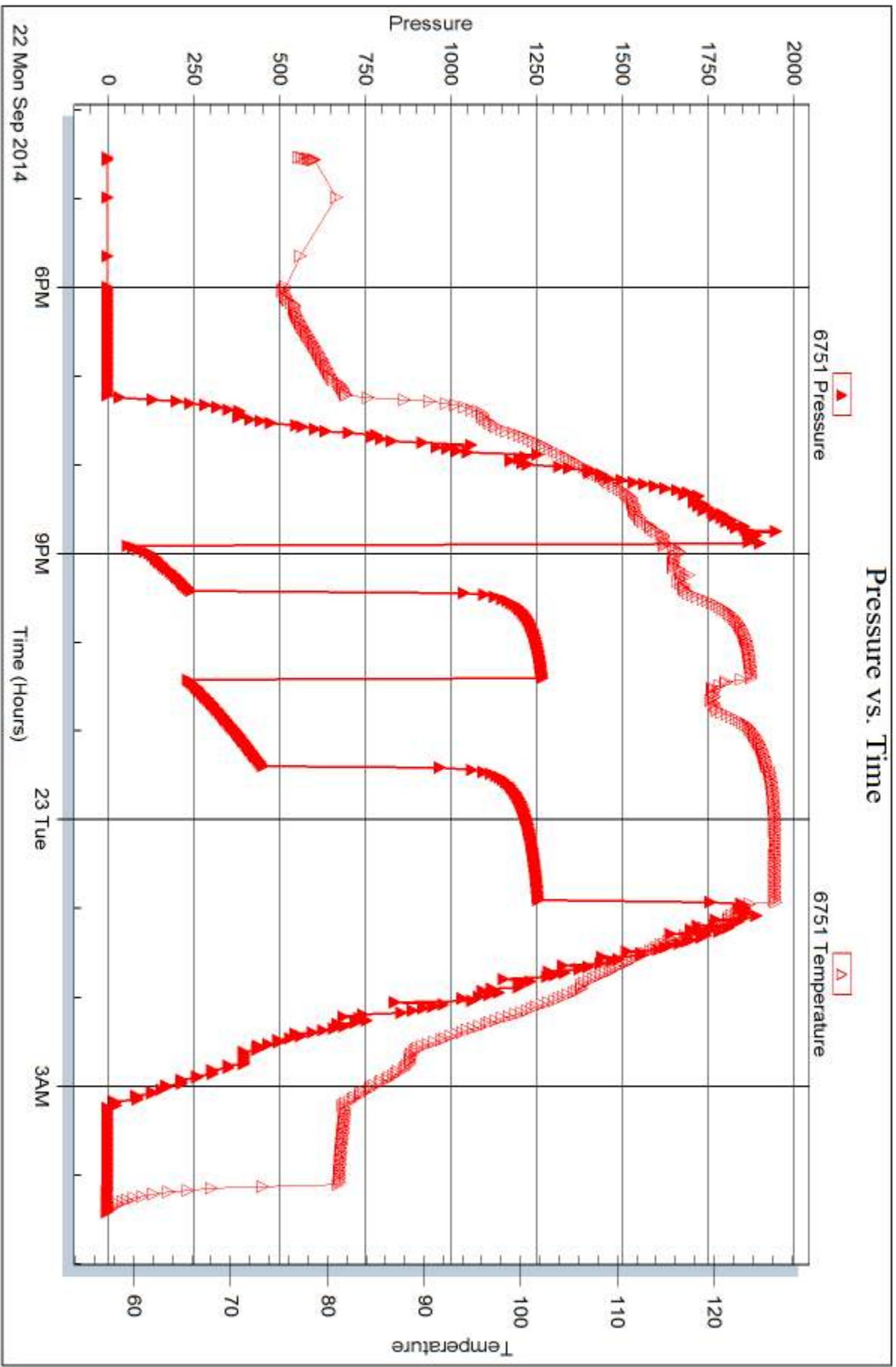
Laboratory Name:

Laboratory Location:

Recovery Comments: API RW .16 @62 F CHLORIDES 35000

### Pressure vs. Time







## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co., Inc.**

250 N Water STE 300  
Wichita KS 67202

ATTN: Keith Reavis

### **Erickson A #1-36**

#### **36-4s-31w Rawling,KS**

Start Date: 2014.09.23 @ 16:30:00

End Date: 2014.09.24 @ 00:44:20

Job Ticket #: 57390                      DST #: 2

Trilobite Testing, Inc  
1515 Commerce Parkway Hays, KS 67601  
ph: 785-625-4778 fax: 785-625-5620

Printed: 2014.09.30 @ 10:22:50





**TRILOBITE TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

**36-4s-31w Rawling, KS**

250 N Water STE 300  
Wichita KS 67202

**Erickson A #1-36**

Job Ticket: 57390

**DST#: 2**

ATTN: Keith Reavis

Test Start: 2014.09.23 @ 16:30:00

## GENERAL INFORMATION:

Formation: **LKC 'D-G'**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 18:36:10

Time Test Ended: 00:44:20

Test Type: Conventional Bottom Hole (Reset)

Tester: Chuck Smith

Unit No: 61

**Interval: 3909.00 ft (KB) To 3954.00 ft (KB) (TVD)**

Reference Elevations: 2845.00 ft (KB)

Total Depth: 3954.00 ft (KB) (TVD)

2841.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 4.00 ft

**Serial #: 8357**

**Inside**

Press@RunDepth: 118.57 psig @ 3910.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.09.23

End Date:

2014.09.24

Last Calib.:

2014.09.24

Start Time: 16:30:02

End Time:

00:44:19

Time On Btm:

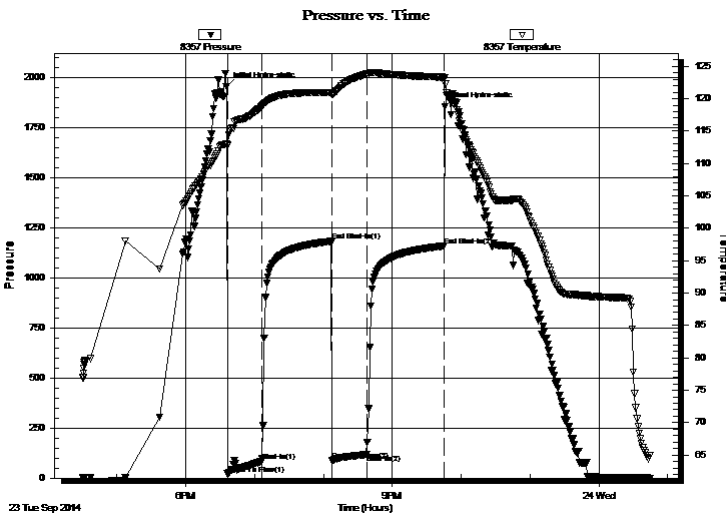
2014.09.23 @ 18:35:10

Time Off Btm:

2014.09.23 @ 21:46:00

TEST COMMENT: 30- 6" Blow .  
60- No return.  
30- 4" Blow .  
60- No return.

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1954.88	113.03	Initial Hydro-static
1	21.40	112.81	Open To Flow (1)
31	82.98	118.76	Shut-In(1)
92	1181.51	120.96	End Shut-In(1)
93	87.41	120.61	Open To Flow (2)
123	118.57	123.80	Shut-In(2)
191	1158.37	123.31	End Shut-In(2)
191	1854.75	123.25	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
187.00	OSMW 30m 70w	0.92
28.00	OSWM 45w 55m	0.39
2.00	GO 10g 90o	0.03

\* 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., Inc.

**36-4s-31w Rawling, KS**

250 N Water STE 300  
Wichita KS 67202

**Erickson A #1-36**

Job Ticket: 57390

**DST#: 2**

ATTN: Keith Reavis

Test Start: 2014.09.23 @ 16:30:00

## Tool Information

Drill Pipe:	Length: 3706.00 ft	Diameter: 3.80 inches	Volume: 51.99 bbl	Tool Weight: 2300.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 187.00 ft	Diameter: 2.25 inches	Volume: 0.92 bbl	Weight to Pull Loose: 70000.00 lb
			<u>Total Volume: 52.91 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	11.50 ft			String Weight: Initial 60000.00 lb
Depth to Top Packer:	3909.00 ft			Final 61000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	45.00 ft			
Tool Length:	72.50 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
Change Over Sub	1.00			3882.50	
Shut In Tool	5.00			3887.50	
Hydraulic tool	5.00			3892.50	
Jars	5.00			3897.50	
Safety Joint	2.50			3900.00	
Packer	5.00			3905.00	27.50 Bottom Of Top Packer
Packer	4.00			3909.00	
Stubb	1.00			3910.00	
Recorder	0.00	8357	Inside	3910.00	
Recorder	0.00	6751	Outside	3910.00	
Perforations	8.00			3918.00	
Change Over Sub	1.00			3919.00	
Drill Pipe	31.00			3950.00	
Change Over Sub	1.00			3951.00	
Bullnose	3.00			3954.00	45.00 Bottom Packers & Anchor

**Total Tool Length: 72.50**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling Co., Inc.

**36-4s-31w Rawling,KS**

250 N Water STE 300  
Wichita KS 67202

**Erickson A #1-36**

Job Ticket: 57390

**DST#: 2**

ATTN: Keith Reavis

Test Start: 2014.09.23 @ 16:30:00

## Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

29 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

70000 ppm

Viscosity: 55.00 sec/qt

Cushion Volume:

bbbl

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

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1600.00 ppm

Filter Cake: 2.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
187.00	OSMW 30m 70w	0.920
28.00	OSWM 45w 55m	0.393
2.00	GO 10g 90o	0.028

Total Length: 217.00 ft      Total Volume: 1.341 bbl

Num Fluid Samples: 0

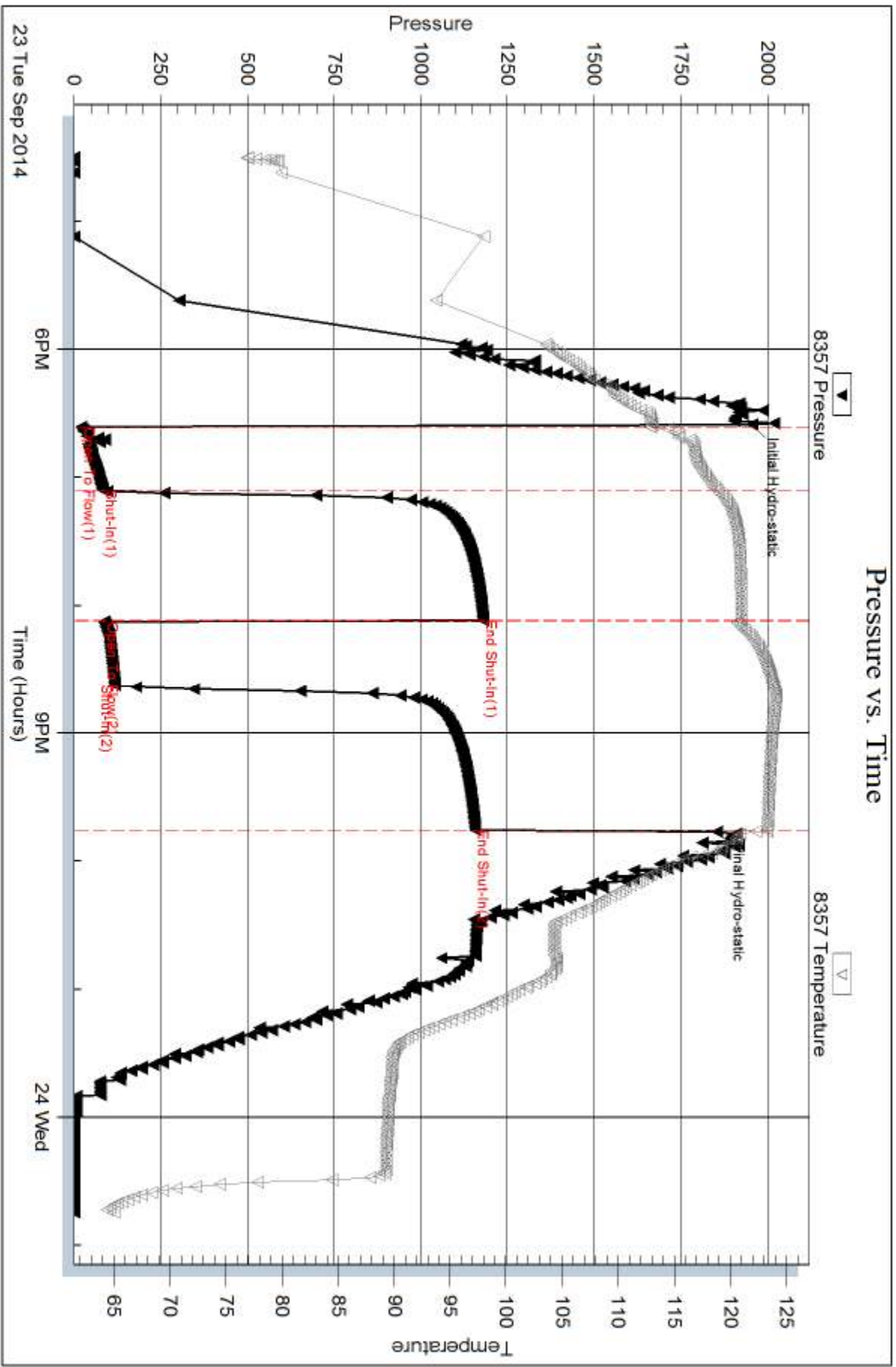
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: API: 30 @ 70 Degrees F = 29. RW: .130 @ 59 Degrees F = 70000 PPM

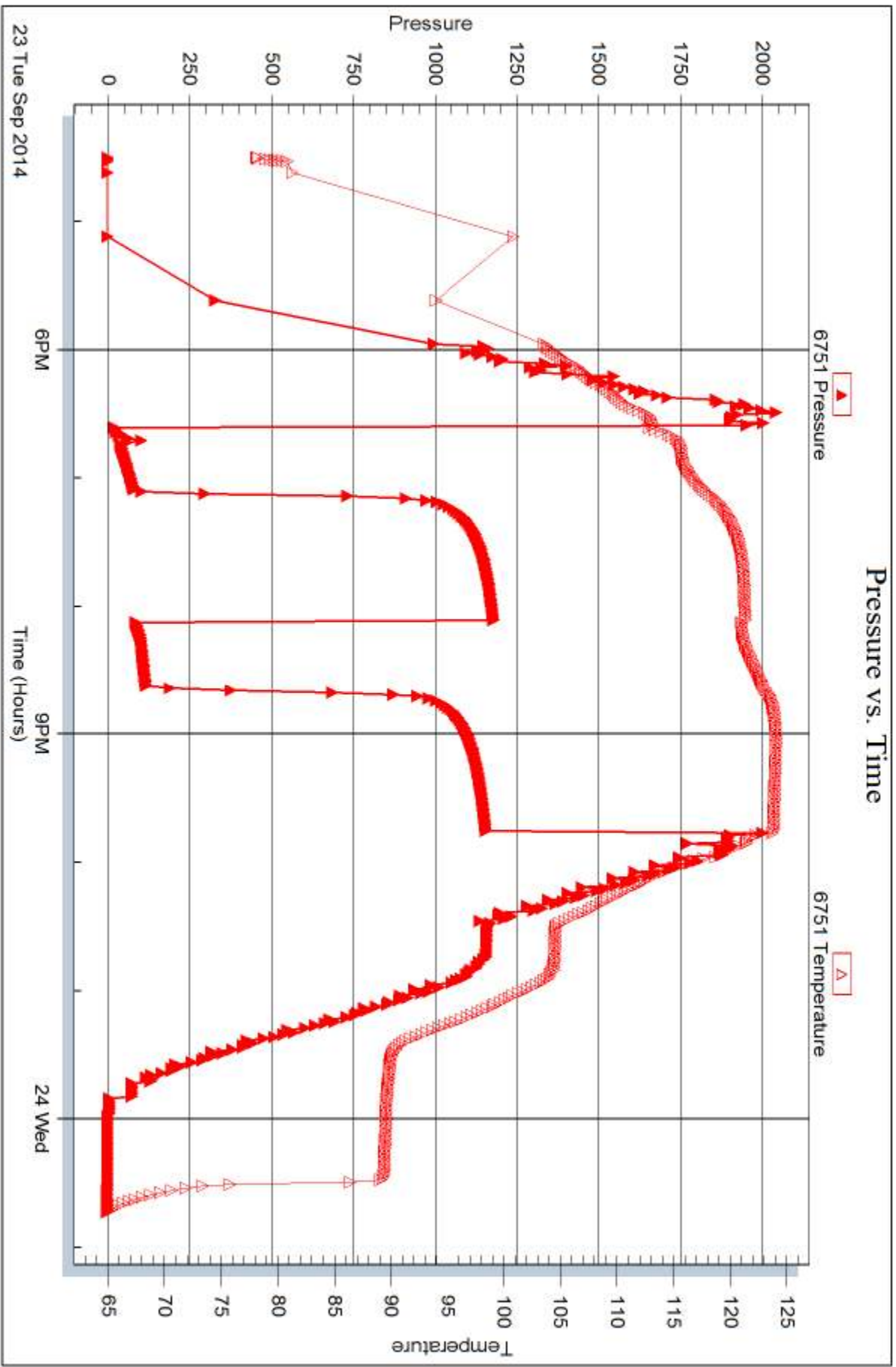


Serial #: 6751

Outside Murfin Drilling Co., Inc.

Ericson A #1-36

DST Test Number: 2



Trilobite Testing, Inc

Ref. No: 57390

Printed: 2014.09.30 @ 10:22:52



## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co., Inc.**

250 N Water STE 300  
Wichita KS 67202

ATTN: Keith Reavis

### **Erickson A #1-36**

#### **36-4s-31w Rawling,KS**

Start Date: 2014.09.24 @ 12:27:00

End Date: 2014.09.24 @ 21:03:30

Job Ticket #: 57391                      DST #: 3

Trilobite Testing, Inc  
1515 Commerce Parkway Hays, KS 67601  
ph: 785-625-4778 fax: 785-625-5620

Printed: 2014.09.30 @ 10:22:17



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

**36-4s-31w Rawling, KS**

250 N Water STE 300  
Wichita KS 67202

**Erickson A #1-36**

Job Ticket: 57391

**DST#: 3**

ATTN: Keith Reavis

Test Start: 2014.09.24 @ 12:27:00

## GENERAL INFORMATION:

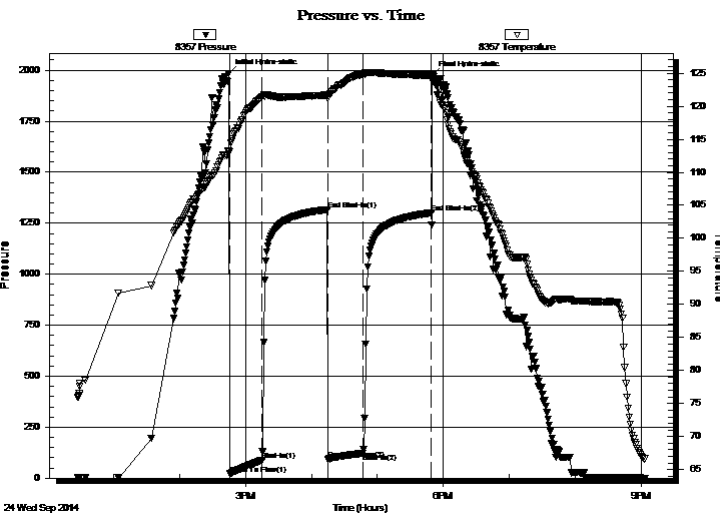
Formation: **LKC 'H-J'**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 14:45:20  
 Time Test Ended: 21:03:30  
 Interval: **3985.00 ft (KB) To 4027.00 ft (KB) (TVD)**  
 Total Depth: 4027.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Good  
 Test Type: Conventional Bottom Hole (Reset)  
 Tester: Chuck Smith  
 Unit No: 61  
 Reference Elevations: 2845.00 ft (KB)  
 2841.00 ft (CF)  
 KB to GR/CF: 4.00 ft

## Serial #: 8357

Inside

Press@RunDepth: 122.42 psig @ 3986.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2014.09.24 End Date: 2014.09.24 Last Calib.: 2014.09.24  
 Start Time: 12:27:02 End Time: 21:03:30 Time On Btm: 2014.09.24 @ 14:44:10  
 Time Off Btm: 2014.09.24 @ 17:50:00

TEST COMMENT: 30- 7" Blow .  
 60- No return.  
 30- 7" Blow  
 60 Weak return died @ 10 min.



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1984.75	113.08	Initial Hydro-static
2	20.23	113.11	Open To Flow (1)
31	87.17	121.42	Shut-In(1)
91	1316.94	121.67	End Shut-In(1)
91	91.04	121.20	Open To Flow (2)
123	122.42	124.86	Shut-In(2)
185	1300.60	124.71	End Shut-In(2)
186	1974.23	124.55	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
187.00	OSMW 10m 90w	0.92
30.00	OCMW 10o 20m 70w	0.42
15.00	GO 5g 95o	0.21
0.00	75' Weak GIP	0.00

\* Recovery from multiple tests

## Gas Rates

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







**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drilling Co., Inc.

**36-4s-31w Rawling,KS**

250 N Water STE 300  
Wichita KS 67202

**Erickson A #1-36**

Job Ticket: 57391

**DST#: 3**

ATTN: Keith Reavis

Test Start: 2014.09.24 @ 12:27:00

## Tool Information

Drill Pipe:	Length: 3801.00 ft	Diameter: 3.80 inches	Volume: 53.32 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 187.00 ft	Diameter: 2.25 inches	Volume: 0.92 bbl	Weight to Pull Loose: 70000.00 lb
			<u>Total Volume: 54.24 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	30.50 ft			String Weight: Initial 61000.00 lb
Depth to Top Packer:	3985.00 ft			Final 62000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	42.00 ft			
Tool Length:	69.50 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			3958.50	
Shut In Tool	5.00			3963.50	
Hydraulic tool	5.00			3968.50	
Jars	5.00			3973.50	
Safety Joint	2.50			3976.00	
Packer	5.00			3981.00	27.50 Bottom Of Top Packer
Packer	4.00			3985.00	
Stubb	1.00			3986.00	
Recorder	0.00	8357	Inside	3986.00	
Recorder	0.00	6751	Outside	3986.00	
Perforations	5.00			3991.00	
Change Over Sub	1.00			3992.00	
Drill Pipe	31.00			4023.00	
Change Over Sub	1.00			4024.00	
Bullnose	3.00			4027.00	42.00 Bottom Packers & Anchor

**Total Tool Length: 69.50**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling Co., Inc.

**36-4s-31w Rawling,KS**

250 N Water STE 300  
Wichita KS 67202

**Erickson A #1-36**

Job Ticket: 57391

**DST#: 3**

ATTN: Keith Reavis

Test Start: 2014.09.24 @ 12:27:00

## 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:

67000 ppm

Viscosity: 48.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.19 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1800.00 ppm

Filter Cake: 2.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
187.00	OSMW 10m 90w	0.920
30.00	OCMW 10o 20m 70w	0.421
15.00	GO 5g 95o	0.210
0.00	75' Weak GIP	0.000

Total Length: 232.00 ft

Total Volume: 1.551 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

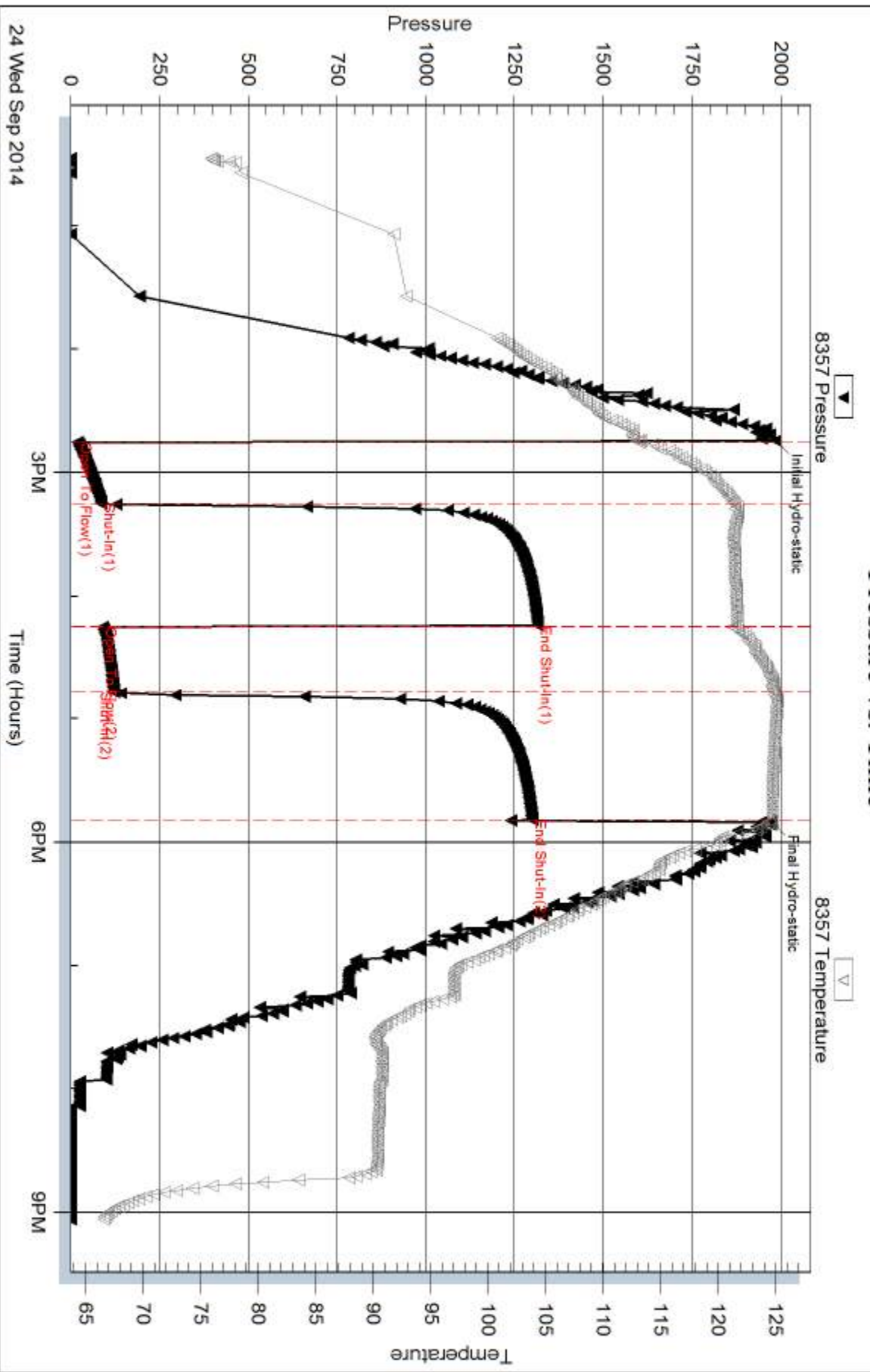
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: API: 40 @ 70 Degrees F = 39. RW: .135 @ 61 Degrees F = 67000 PPM

### Pressure vs. Time

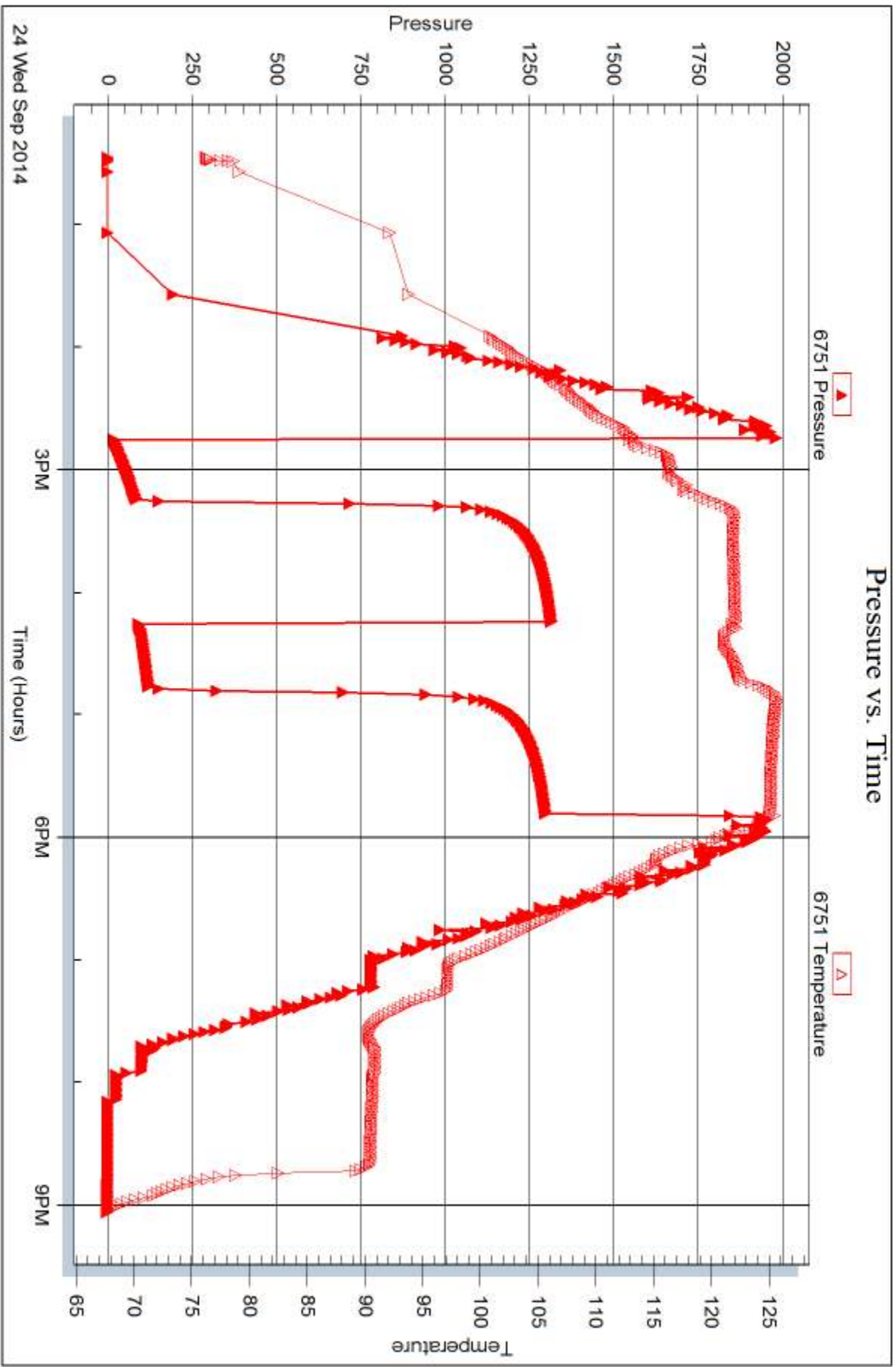


Serial #: 6751

Outside Murfin Drilling Co., Inc.

Ericson A #1-36

DST Test Number: 3



Trilobite Testing, Inc

Ref. No: 57391

Printed: 2014.09.30 @ 10:22:18



## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co., Inc.**

250 N Water STE 300  
Wichita KS 67202

ATTN: Keith Reavis

### **Erickson A #1-36**

#### **36-4s-31w Rawling,KS**

Start Date: 2014.09.25 @ 19:18:00

End Date: 2014.09.26 @ 01:27:45

Job Ticket #: 60020                      DST #: 4

Trilobite Testing, Inc  
1515 Commerce Parkway Hays, KS 67601  
ph: 785-625-4778 fax: 785-625-5620

Printed: 2014.09.30 @ 10:21:42









**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drilling Co., Inc.

**36-4s-31w Rawling, KS**

250 N Water STE 300  
Wichita KS 67202

**Erickson A #1-36**

Job Ticket: 60020

**DST#: 4**

ATTN: Keith Reavis

Test Start: 2014.09.25 @ 19:18:00

## Tool Information

Drill Pipe:	Length: 3990.00 ft	Diameter: 3.80 inches	Volume: 55.97 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:	2500.00 lb
Drill Collar:	Length: 187.00 ft	Diameter: 2.25 inches	Volume: 0.92 bbl	Weight to Pull Loose:	65000.00 lb
			<u>Total Volume: 56.89 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	7.00 ft			String Weight: Initial	62000.00 lb
Depth to Top Packer:	4197.00 ft			Final	63000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	107.00 ft				
Tool Length:	134.00 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			4171.00	
Shut In Tool	5.00			4176.00	
Hydraulic tool	5.00			4181.00	
Jars	5.00			4186.00	
Safety Joint	2.00			4188.00	
Packer	5.00			4193.00	27.00 Bottom Of Top Packer
Packer	4.00			4197.00	
Packer - Shale	0.00			4197.00	
Stubb	1.00			4198.00	
Recorder	0.00	6752	Inside	4198.00	
Recorder	0.00	8322	Outside	4198.00	
Perforations	7.00			4205.00	
Blank Spacing	96.00			4301.00	
Bullnose	3.00			4304.00	107.00 Bottom Packers & Anchor

**Total Tool Length: 134.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling Co., Inc.

**36-4s-31w Rawling, KS**

250 N Water STE 300  
Wichita KS 67202

**Erickson A #1-36**

Job Ticket: 60020

**DST#: 4**

ATTN: Keith Reavis

Test Start: 2014.09.25 @ 19:18:00

## 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: 50.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.79 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1500.00 ppm

Filter Cake: 2.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
250.00	Mud	1.803

Total Length: 250.00 ft      Total Volume: 1.803 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

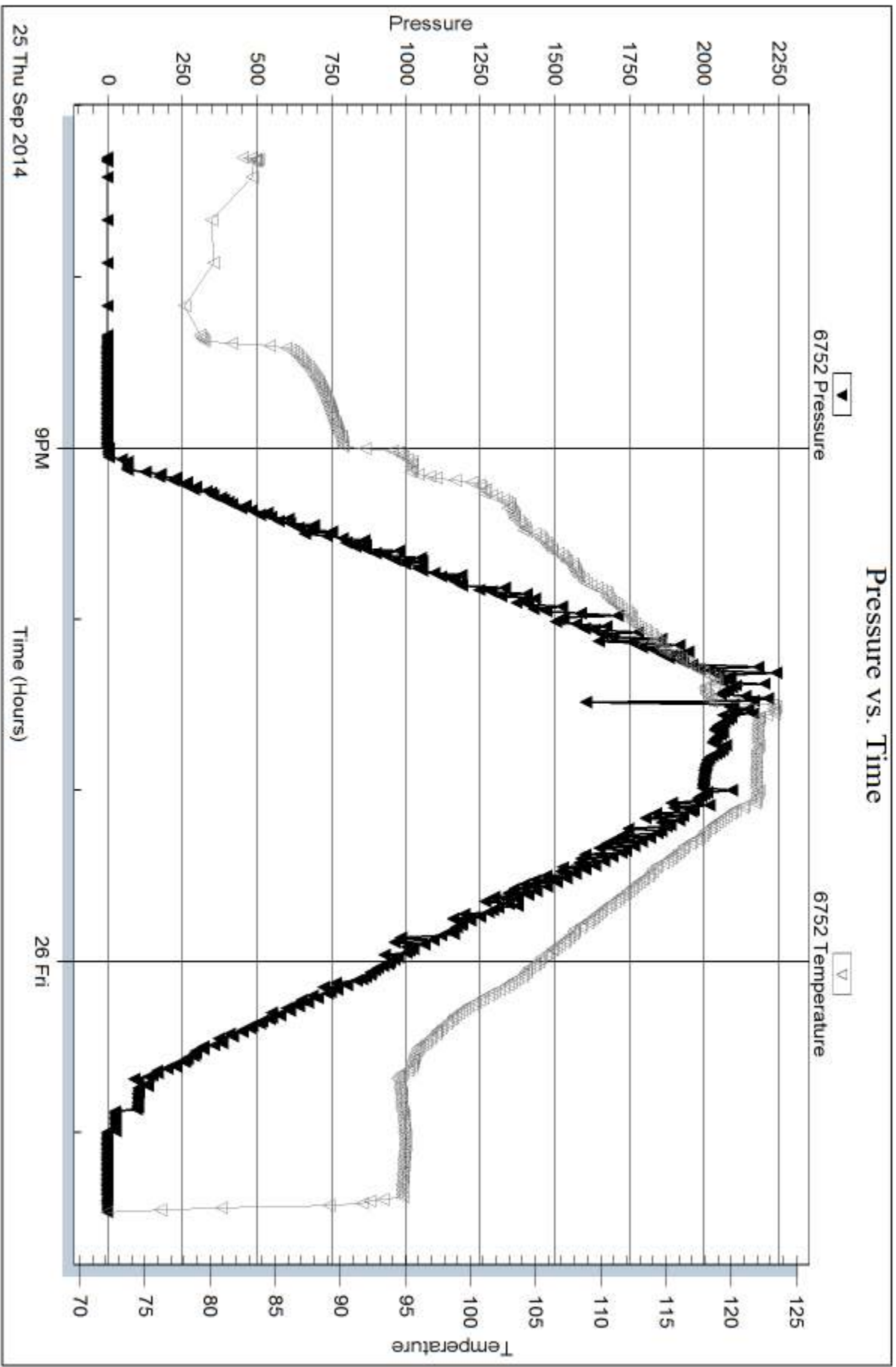
Serial #: 6752

Inside

Murfin Drilling Co., Inc.

Ericson A #1-36

DST Test Number: 4



Trilobite Testing, Inc

Ref. No: 60020

Printed: 2014.09.30 @ 10:21:43





## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co., Inc.**

250 N Water STE 300  
Wichita KS 67202

ATTN: Keith Reavis

### **Erickson A #1-36**

#### **36-4s-31w Rawling,KS**

Start Date: 2014.09.26 @ 01:39:00

End Date: 2014.09.26 @ 10:21:30

Job Ticket #: 60021                      DST #: 5

Trilobite Testing, Inc  
1515 Commerce Parkway Hays, KS 67601  
ph: 785-625-4778 fax: 785-625-5620

Printed: 2014.09.30 @ 10:20:38



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

**36-4s-31w Rawling, KS**

250 N Water STE 300  
Wichita KS 67202

**Erickson A #1-36**

Job Ticket: 60021

**DST#: 5**

ATTN: Keith Reavis

Test Start: 2014.09.26 @ 01:39:00

## GENERAL INFORMATION:

Formation: **Pawnee/Cherokee**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 04:11:15

Time Test Ended: 10:21:30

Test Type: Conventional Bottom Hole (Reset)

Tester: Ryan Nichols

Unit No: 61

**Interval: 4208.00 ft (KB) To 4304.00 ft (KB) (TVD)**

Reference Elevations: 2845.00 ft (KB)

Total Depth: 4304.00 ft (KB) (TVD)

2841.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 4.00 ft

**Serial #: 6752 Inside**

Press@RunDepth: 27.30 psig @ 4209.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.09.26

End Date:

2014.09.26

Last Calib.:

2014.09.26

Start Time: 01:39:05

End Time:

10:21:30

Time On Btm:

2014.09.26 @ 04:11:00

Time Off Btm:

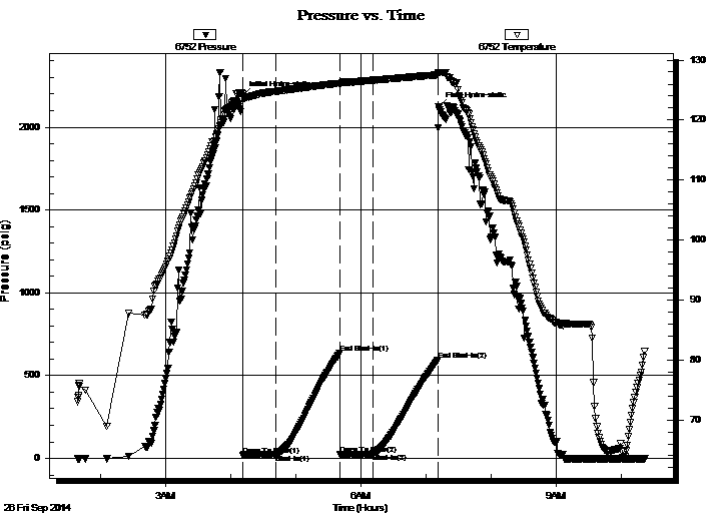
2014.09.26 @ 07:11:30

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

60 ISI - No return

30 FF - No blow

60 FSI - No return



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2192.05	124.34	Initial Hydro-static
1	19.73	123.91	Open To Flow (1)
31	23.48	124.77	Shut-In(1)
90	636.19	126.13	End Shut-In(1)
90	24.33	125.84	Open To Flow (2)
121	27.30	126.64	Shut-In(2)
180	593.65	127.53	End Shut-In(2)
181	2121.81	127.94	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
5.00	Mud - 100%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., Inc.

**36-4s-31w Rawling, KS**

250 N Water STE 300  
Wichita KS 67202

**Erickson A #1-36**

Job Ticket: 60021

**DST#: 5**

ATTN: Keith Reavis

Test Start: 2014.09.26 @ 01:39:00

## Tool Information

Drill Pipe:	Length: 4021.00 ft	Diameter: 3.80 inches	Volume: 56.40 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 187.00 ft	Diameter: 2.25 inches	Volume: 0.92 bbl	Weight to Pull Loose: 65000.00 lb
			<u>Total Volume: 57.32 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	27.00 ft			String Weight: Initial 63000.00 lb
Depth to Top Packer:	4208.00 ft			Final 63000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	96.00 ft			
Tool Length:	123.00 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			4182.00	
Shut In Tool	5.00			4187.00	
Hydraulic tool	5.00			4192.00	
Jars	5.00			4197.00	
Safety Joint	2.00			4199.00	
Packer	5.00			4204.00	27.00 Bottom Of Top Packer
Packer	4.00			4208.00	
Packer - Shale	0.00			4208.00	
Stubb	1.00			4209.00	
Recorder	0.00	6752	Inside	4209.00	
Recorder	0.00	8322	Outside	4209.00	
Perforations	27.00			4236.00	
Blank Spacing	65.00			4301.00	
Bullnose	3.00			4304.00	96.00 Bottom Packers & Anchor

**Total Tool Length: 123.00**





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling Co., Inc.

**36-4s-31w Rawling,KS**

250 N Water STE 300  
Wichita KS 67202

**Erickson A #1-36**

Job Ticket: 60021

**DST#: 5**

ATTN: Keith Reavis

Test Start: 2014.09.26 @ 01:39:00

## 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: 50.00 sec/qt

Cushion Volume:

bbf

Water Loss: 6.79 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1500.00 ppm

Filter Cake: 2.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbf
5.00	Mud - 100%M	0.025

Total Length: 5.00 ft      Total Volume: 0.025 bbf

Num Fluid Samples: 0

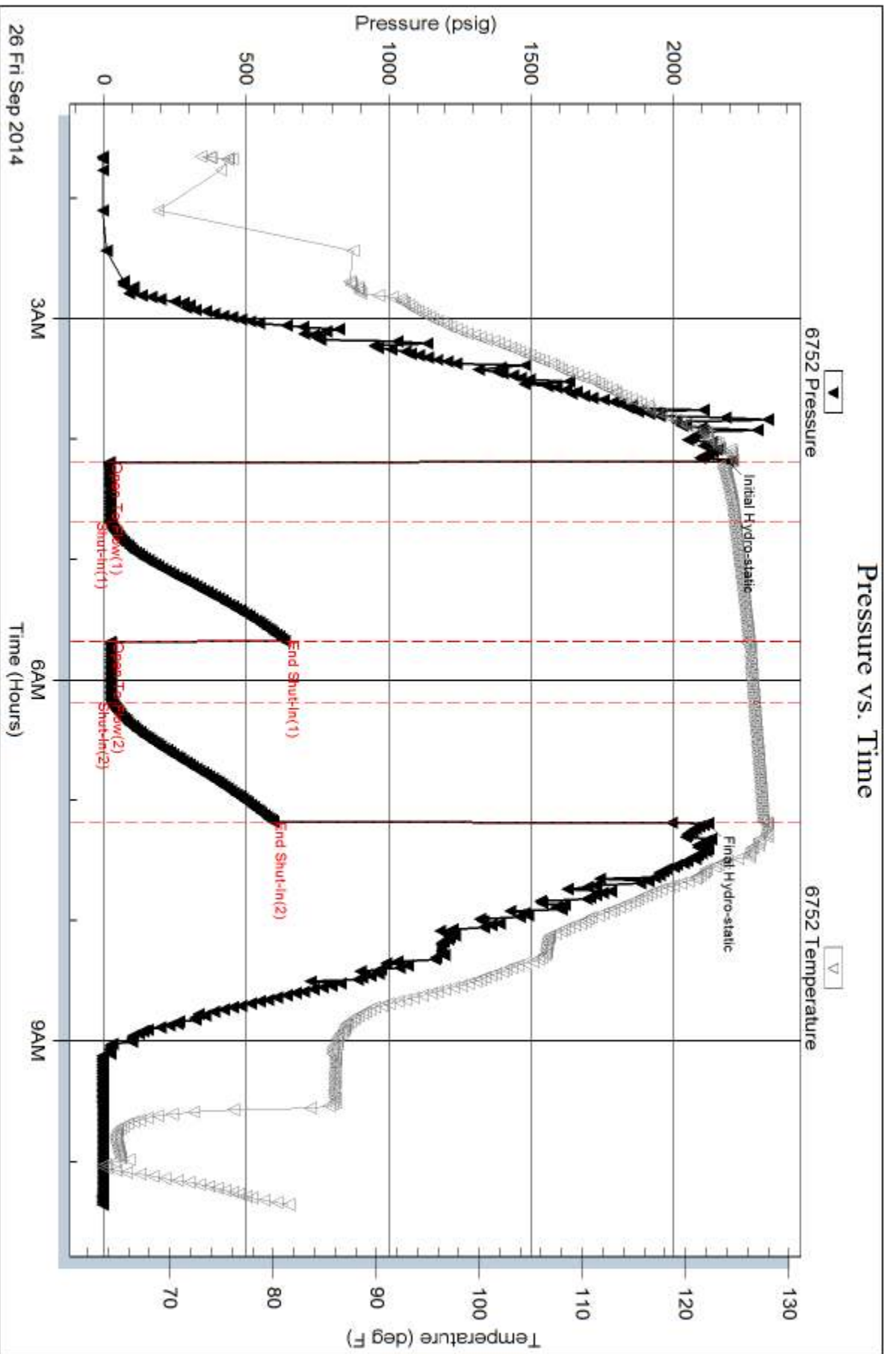
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

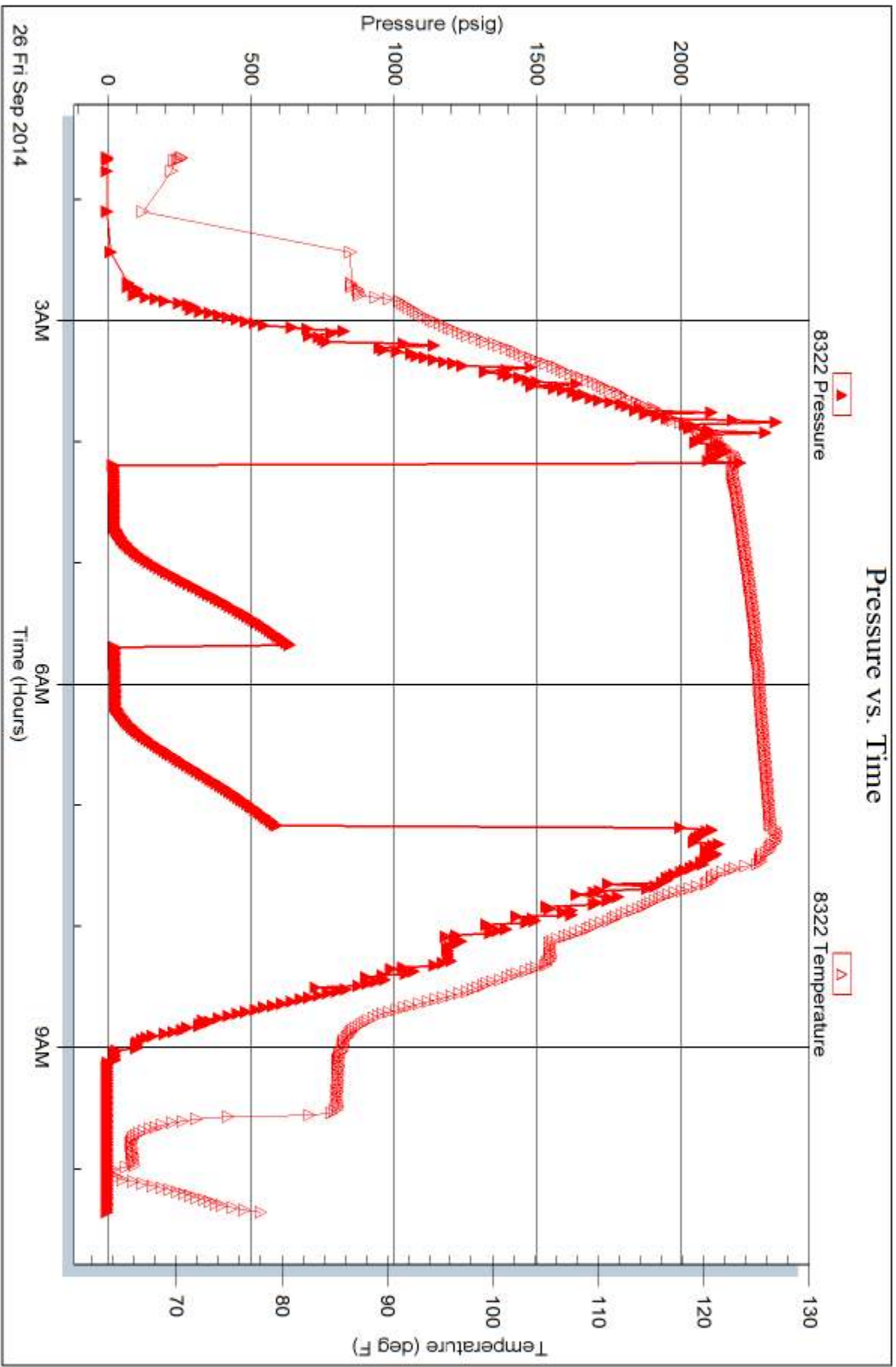


Serial #: 8322

Outside Murfin Drilling Co., Inc.

Ericson A #1-36

DST Test Number: 5



Trilobite Testing, Inc

Ref. No: 60021

Printed: 2014.09.30 @ 10:20:39



# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 57467

Well Name & No. Erickson A # 1-34 Test No. 1 Date 9-22-14  
 Company Murfin Drilling company Inc Elevation 2845 KB 2841 GL  
 Address 250 N Water STE 300 Wichita KS 67202  
 Co. Rep / Geo. Keith Reavis Rig Murfin #7  
 Location: Sec. 34 Twp. 4s Rge. 31w Co. Rawlins State KS

Interval Tested 3810 3900 Zone Tested Toronto - Lansing  
 Anchor Length 90 Drill Pipe Run 3609.5 Mud Wt. 9.0  
 Top Packer Depth 3804 Drill Collars Run 187 Vis 58  
 Bottom Packer Depth 3810 Wt. Pipe Run Ø WL 6.4  
 Total Depth 3900 Chlorides 600 ppm System LCM 4  
 Blow Description 30 B.O.B in 8 min  
60 No Return  
60 B.O.B in 12 min  
90 No Return.

Rec	Feet of	%gas	%oil	%water	%mud
<u>187</u>	<u>mcw</u>			<u>40%</u>	<u>40%</u>
<u>703</u>	<u>mcw</u>			<u>80%</u>	<u>20%</u>
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 890 BHT 124 Gravity — API RW 16 @ 62 °F Chlorides 35000 ppm  
 (A) Initial Hydrostatic 1925  Test 1150 T-On Location 15:15  
 (B) First Initial Flow 65  Jars 250 T-Started 16:32  
 (C) First Final Flow 240  Safety Joint 75 T-Open 20:54  
 (D) Initial Shut-In 1249  Circ Sub N/C T-Pulled 00:54  
 (E) Second Initial Flow 236  Hourly Standby 4 Hours 3h 300 T-Out 4:28  
 (F) Second Final Flow 454  Mileage 186 RT 93  
 (G) Final Shut-In 1258  Sampler  
 (H) Final Hydrostatic 1769  Straddle  Ruined Shale Packer  
 Shale Packer  Ruined Packer  
 Extra Packer  Extra Copies  
 Extra Recorder  
 Day Standby  
 Accessibility  
 Sub Total 1868 MP/DST Disc't  
 Initial Open 30  
 Initial Shut-In 60  
 Final Flow 60  
 Final Shut-In 90

Approved By Keith Reavis 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. 57390

4/10

Well Name & No. Erickson A1-36 Test No. 2 Date 9-23-14  
 Company Murfin Drilling Co, Inc Elevation 2845 KB 2841 GL  
 Address 250 N. Water STE 300 Wichita, Ks 67202  
 Co. Rep / Geo. Keith Reavis Rig MDC #7  
 Location: Sec. 36 Twp. 4s Rge. 3W Co. Rawlin State Ks

Interval Tested 3909-3954 Zone Tested Lansing 'D-G'  
 Anchor Length 45 Drill Pipe Run 3706 Mud Wt. 9.4  
 Top Packer Depth 3905 Drill Collars Run 187 Vis 55  
 Bottom Packer Depth 3909 Wt. Pipe Run 0 WL 6.8  
 Total Depth 3954 Chlorides 1600 ppm System LCM 5"  
 Blow Description 6" Blow.  
No return.  
4" Blow.  
No return.

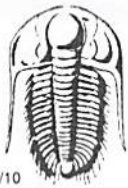
Rec	Feet of	%gas	%oil	%water	%mud
<u>2</u>	<u>60</u>	<u>10</u>	<u>90</u>		
<u>28</u>	<u>OSWM</u>			<u>45</u>	<u>55</u>
<u>187</u>	<u>OSMW</u>			<u>70</u>	<u>30</u>

Rec Total 217 BHT 123 Gravity 29 API RW .130 @ 59 °F Chlorides 70000 ppm

(A) Initial Hydrostatic <u>1955</u>	<input checked="" type="checkbox"/> Test <u>1150</u>	T-On Location <u>16:29</u>
(B) First Initial Flow <u>21</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>16:30</u>
(C) First Final Flow <u>83</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>18:36</u>
(D) Initial Shut-In <u>1182</u>	<input checked="" type="checkbox"/> Circ Sub <u>NIC</u>	T-Pulled <u>21:46</u>
(E) Second Initial Flow <u>87</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>00:44</u>
(F) Second Final Flow <u>119</u>	<input checked="" type="checkbox"/> Mileage <u>93</u>	Comments
(G) Final Shut-In <u>1158</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>1855</u>	<input type="checkbox"/> Straddle	<input type="checkbox"/> Ruined Shale Packer
	<input type="checkbox"/> Shale Packer	<input type="checkbox"/> Ruined Packer
Initial Open <u>30</u>	<input type="checkbox"/> Extra Packer	<input type="checkbox"/> Extra Copies
Initial Shut-In <u>60</u>	<input type="checkbox"/> Extra Recorder	Sub Total <u>0</u>
Final Flow <u>30</u>	<input type="checkbox"/> Day Standby	Total <u>1568</u>
Final Shut-In <u>60</u>	<input type="checkbox"/> Accessibility	MP/DST Disc't
	Sub Total <u>1568</u>	

Approved By Keith Reavis Our Representative Chuck Smith

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 57391

4/10

Well Name & No. Erickson A 1-36 Test No. 3 Date 9-24-14  
 Company Martin Drilling Co., Inc. Elevation 2845 KB 2841 GL  
 Address 250 N. Water STE 300 Wichita, KS 67202  
 Co. Rep / Geo. Keith Reavis Rig M.D.C. # 7  
 Location: Sec. 36 Twp. 4s Rge. 31w Co. Rawlin State KS

Interval Tested 3985-4027 Zone Tested Lansing 'H-J'  
 Anchor Length 42 Drill Pipe Run 3801 Mud Wt. 9.3  
 Top Packer Depth 3981- Drill Collars Run 187 Vis 48  
 Bottom Packer Depth 3985 Wt. Pipe Run 0 WL 7.2  
 Total Depth 4027 Chlorides 1800 ppm System LCM 4"  
 Blow Description 7" Blow  
No return.  
7" Blow.  
Weak return died @ 10 min.

Rec	Feet of	%gas	%oil	%water	%mud
<u>15</u>	<u>G0</u>	<u>5</u>	<u>95</u>		
<u>30</u>	<u>OC MW</u>		<u>10</u>	<u>70</u>	<u>20</u>
<u>187</u>	<u>OS MW</u>			<u>90</u>	<u>10</u>
	<u>75' Weak G-IP</u>				

Rec Total 232 BHT 125 Gravity 39 API RW .135 @ 61 °F Chlorides 67000 ppm

(A) Initial Hydrostatic <u>1985</u>	<input checked="" type="checkbox"/> Test <u>1250</u>	T-On Location <u>12:25</u>
(B) First Initial Flow <u>20</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>12:27</u>
(C) First Final Flow <u>87</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>14:45</u>
(D) Initial Shut-In <u>1316</u>	<input checked="" type="checkbox"/> Circ Sub <u>NIC</u>	T-Pulled <u>17:49</u>
(E) Second Initial Flow <u>91</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>21:04</u>
(F) Second Final Flow <u>122</u>	<input checked="" type="checkbox"/> Mileage <u>93</u>	Comments
(G) Final Shut-In <u>1301</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>1974</u>	<input type="checkbox"/> Straddle	<input type="checkbox"/> Ruined Shale Packer
	<input type="checkbox"/> Shale Packer	<input checked="" type="checkbox"/> Ruined Packer <u>320</u>
	<input type="checkbox"/> Extra Packer	<input type="checkbox"/> Extra Copies
Initial Open <u>30</u>	<input type="checkbox"/> Extra Recorder	Sub Total <u>320</u>
Initial Shut-In <u>60</u>	<input type="checkbox"/> Day Standby	Total <u>1988</u>
Final Flow <u>30</u>	<input type="checkbox"/> Accessibility	MP/DST Disc't
Final Shut-In <u>60</u>	Sub Total <u>1668</u>	

Approved By

*Keith Reavis*

Our Representative

*Chuck Smith*





# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 60020

4/10

Well Name & No. Erickson A #1-36 Test No. 4 Date 9/25/13  
 Company Murfin Drilling Co. Elevation 2945 KB 2940 GL  
 Address 250 N. Water STE 300 Wichita KS 67202  
 Co. Rep / Geo. Keith Reavis Rig Murfin # 97  
 Location: Sec. 36 Twp. 45 Rge. 31W Co. Rawlins State KS

Interval Tested 4197-4304 Zone Tested Pawnee / Cherokee  
 Anchor Length 107' Drill Pipe Run 3990' Mud Wt. 9.3  
 Top Packer Depth 4192 Drill Collars Run 187' Vis 50  
 Bottom Packer Depth 4197 Wt. Pipe Run 0' WL 6.8  
 Total Depth 4304 Chlorides 1500 ppm System LCM 4

Blow Description Packer Failure

Rec	Feet of	%gas	%oil	%water	%mud
<u>250</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 250' BHT \_\_\_\_\_ Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm

- (A) Initial Hydrostatic  Test 1050 T-On Location 18:45
- (B) First Initial Flow  Jars 250 T-Started 19:18
- (C) First Final Flow  Safety Joint 75 T-Open \_\_\_\_\_
- (D) Initial Shut-In  Circ Sub NC T-Pulled \_\_\_\_\_
- (E) Second Initial Flow  Hourly Standby \_\_\_\_\_ T-Out 01:27
- (F) Second Final Flow  Mileage 60 RT 93 Comments \_\_\_\_\_
- (G) Final Shut-In  Sampler \_\_\_\_\_
- (H) Final Hydrostatic  Straddle \_\_\_\_\_

- Shale Packer 250  Ruined Shale Packer \_\_\_\_\_
- Extra Packer \_\_\_\_\_  Ruined Packer \_\_\_\_\_
- Extra Recorder \_\_\_\_\_  Extra Copies \_\_\_\_\_
- Day Standby \_\_\_\_\_ Sub Total 0
- Accessibility \_\_\_\_\_ Total 1718
- Sub Total 1718 MP/DST Disc't \_\_\_\_\_

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

Our Representative Keith Reavis

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 60021

Well Name & No. Erickson A # 1-36 Test No. 5 Date 9/26/14  
 Company Martin Drilling Co. Elevation 2945 KB 2940 GL  
 Address 250 N. Water STE 300 Wichita KS 67202  
 Co. Rep / Geo. Keith Reavis Rig Martin # 7  
 Location: Sec. 36 Twp. 4S Rge. 31W Co. Rawlins State KS

Interval Tested 4208 - 4304 Zone Tested Pawnee / Cherokee  
 Anchor Length 96' Drill Pipe Run 4021' Mud Wt. 9.3  
 Top Packer Depth 4203 Drill Collars Run 187' Vis 50  
 Bottom Packer Depth 4208 Wt. Pipe Run 0' WL 6.8  
 Total Depth 4304 Chlorides 1500 ppm System LCM 4

Blow Description IF - Surface blow built to 1/4"  
ISI - No return  
FF - No blow  
FSE - No return

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	Feet of	%gas	%oil	%water	%mud

Rec Total 5' BHT 128° Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm

(A) Initial Hydrostatic <u>2192</u>	<input checked="" type="checkbox"/> Test <u>1250</u>	T-On Location <u>01:27</u>
(B) First Initial Flow <u>20</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>01:39</u>
(C) First Final Flow <u>23</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>04:10</u>
(D) Initial Shut-In <u>636</u>	<input checked="" type="checkbox"/> Circ Sub <u>NC</u>	T-Pulled <u>07:10</u>
(E) Second Initial Flow <u>24</u>	<input type="checkbox"/> Hourly Standby _____	T-Out <u>10:21</u>
(F) Second Final Flow <u>27</u>	<input type="checkbox"/> Mileage _____	Comments _____
(G) Final Shut-In <u>594</u>	<input type="checkbox"/> Sampler _____	<input type="checkbox"/> Ruined Shale Packer _____
(H) Final Hydrostatic <u>2122</u>	<input checked="" type="checkbox"/> Shale Packer <u>250</u>	<input type="checkbox"/> Ruined Packer _____
Initial Open <u>30</u>	<input type="checkbox"/> Extra Packer _____	<input type="checkbox"/> Extra Copies _____
Initial Shut-In <u>60</u>	<input type="checkbox"/> Extra Recorder _____	Sub Total <u>0</u>
Final Flow <u>30</u>	<input type="checkbox"/> Day Standby _____	Total <u>1825</u>
Final Shut-In <u>60</u>	<input type="checkbox"/> Accessibility _____	MP/DST Disc't _____
	Sub Total <u>1825</u>	

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

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