



## DRILL STEM TEST REPORT

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

250 N. Water STE. 300  
Wichita KS. 67202

ATTN: Keith Reavis

### **Patricia #1-16**

#### **16-1s-37w Cheyenne,KS**

Start Date: 2014.02.07 @ 13:18:00

End Date: 2014.02.08 @ 01:33:00

Job Ticket #: 55166                      DST #: 1

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

Printed: 2014.02.14 @ 10:03:05



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

**16-1s-37w Cheyenne,KS**

250 N. Water STE. 300  
Wichita KS. 67202

**Patricia #1-16**

Job Ticket: 55166

**DST#: 1**

ATTN: Keith Reavis

Test Start: 2014.02.07 @ 13:18:00

## GENERAL INFORMATION:

Formation: **Pawnee**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 19:16:15

Time Test Ended: 01:33:00

Test Type: Conventional Bottom Hole (Initial)

Tester: Royal Fisher

Unit No: #54

**Interval: 4594.00 ft (KB) To 4640.00 ft (KB) (TVD)**

Reference Elevations: 3260.00 ft (KB)

Total Depth: 4640.00 ft (KB) (TVD)

3247.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 13.00 ft

**Serial #: 8879 Outside**

Press@RunDepth: 26.04 psig @ 4595.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.02.07

End Date:

2014.02.08

Last Calib.:

2014.02.08

Start Time:

13:18:05

End Time:

01:33:00

Time On Btm:

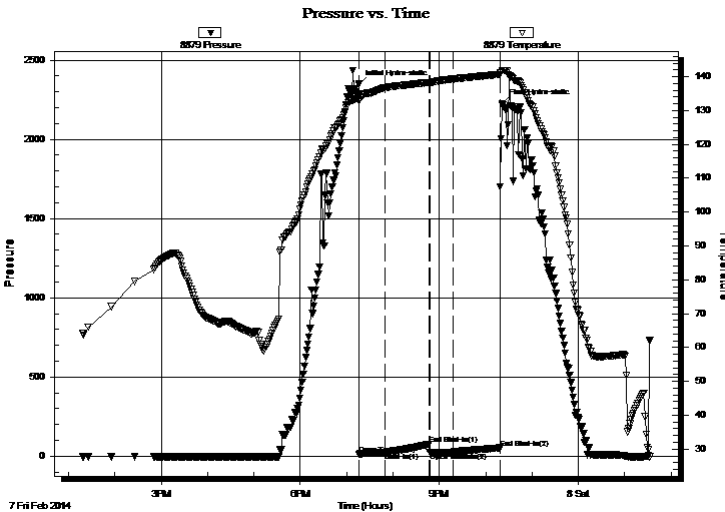
2014.02.07 @ 19:16:00

Time Off Btm:

2014.02.07 @ 22:21:30

TEST COMMENT: 30 - IF - No Surface 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	2346.82	133.82	Initial Hydro-static
1	13.49	132.90	Open To Flow (1)
34	21.12	136.68	Shut-In(1)
91	75.82	138.30	End Shut-In(1)
92	26.21	138.37	Open To Flow (2)
122	26.04	139.26	Shut-In(2)
183	51.82	140.65	End Shut-In(2)
186	2224.34	141.81	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
5.00	OSM - 95M - 5o	0.02

## Gas Rates

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





**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drilling Co., Inc.

**16-1s-37w Cheyenne,KS**

250 N. Water STE. 300  
Wichita KS. 67202

**Patricia #1-16**

Job Ticket: 55166

**DST#: 1**

ATTN: Keith Reavis

Test Start: 2014.02.07 @ 13:18:00

## Tool Information

Drill Pipe:	Length: 4005.00 ft	Diameter: 3.80 inches	Volume: 56.18 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: 589.00 ft	Diameter: 2.25 inches	Volume: 2.90 bbl	Weight to Pull Loose: 95000.00 lb
			<u>Total Volume: 59.08 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	27.00 ft			String Weight: Initial 70000.00 lb
Depth to Top Packer:	4594.00 ft			Final 72000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	46.00 ft			
Tool Length:	73.00 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			4572.00	
Hydraulic tool	5.00			4577.00	
Jars	5.00			4582.00	
Safety Joint	3.00			4585.00	
Packer	4.00			4589.00	27.00 Bottom Of Top Packer
Packer	5.00			4594.00	
Stubb	1.00			4595.00	
Recorder	0.00	6669	Inside	4595.00	
Recorder	0.00	8879	Outside	4595.00	
Perforations	9.00			4604.00	
Change Over Sub	1.00			4605.00	
Drill Pipe	31.00			4636.00	
Change Over Sub	1.00			4637.00	
Bullnose	3.00			4640.00	46.00 Bottom Packers & Anchor

**Total Tool Length: 73.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling Co., Inc.

**16-1s-37w Cheyenne,KS**

250 N. Water STE. 300  
Wichita KS. 67202

**Patricia #1-16**

Job Ticket: 55166

**DST#: 1**

ATTN: Keith Reavis

Test Start: 2014.02.07 @ 13:18:00

## 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: 66.00 sec/qt

Cushion Volume:

bbbl

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

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 1000.00 ppm

Filter Cake: 2.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
5.00	OSM - 95M - 5o	0.025

Total Length: 5.00 ft      Total Volume: 0.025 bbl

Num Fluid Samples: 0

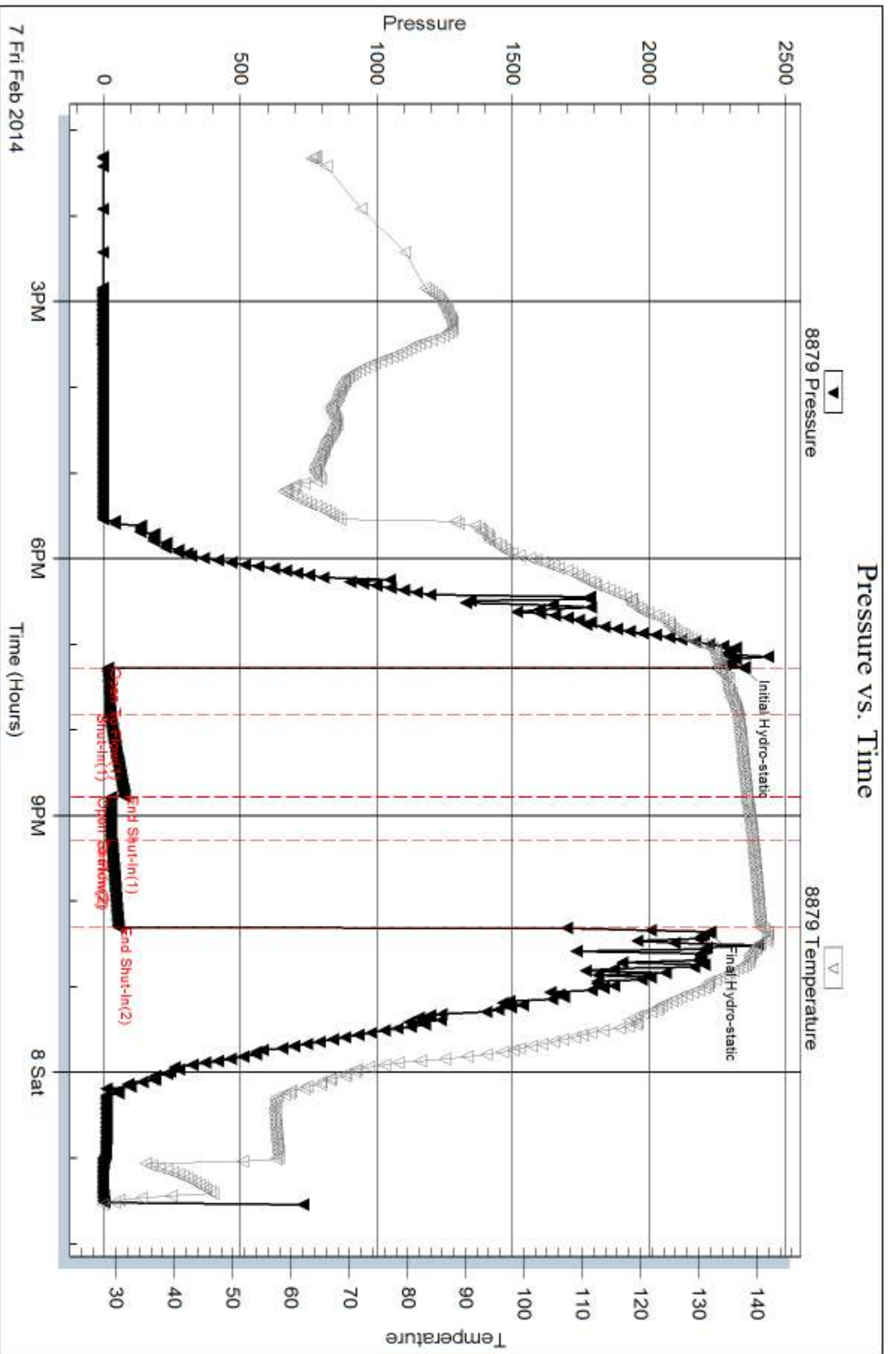
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



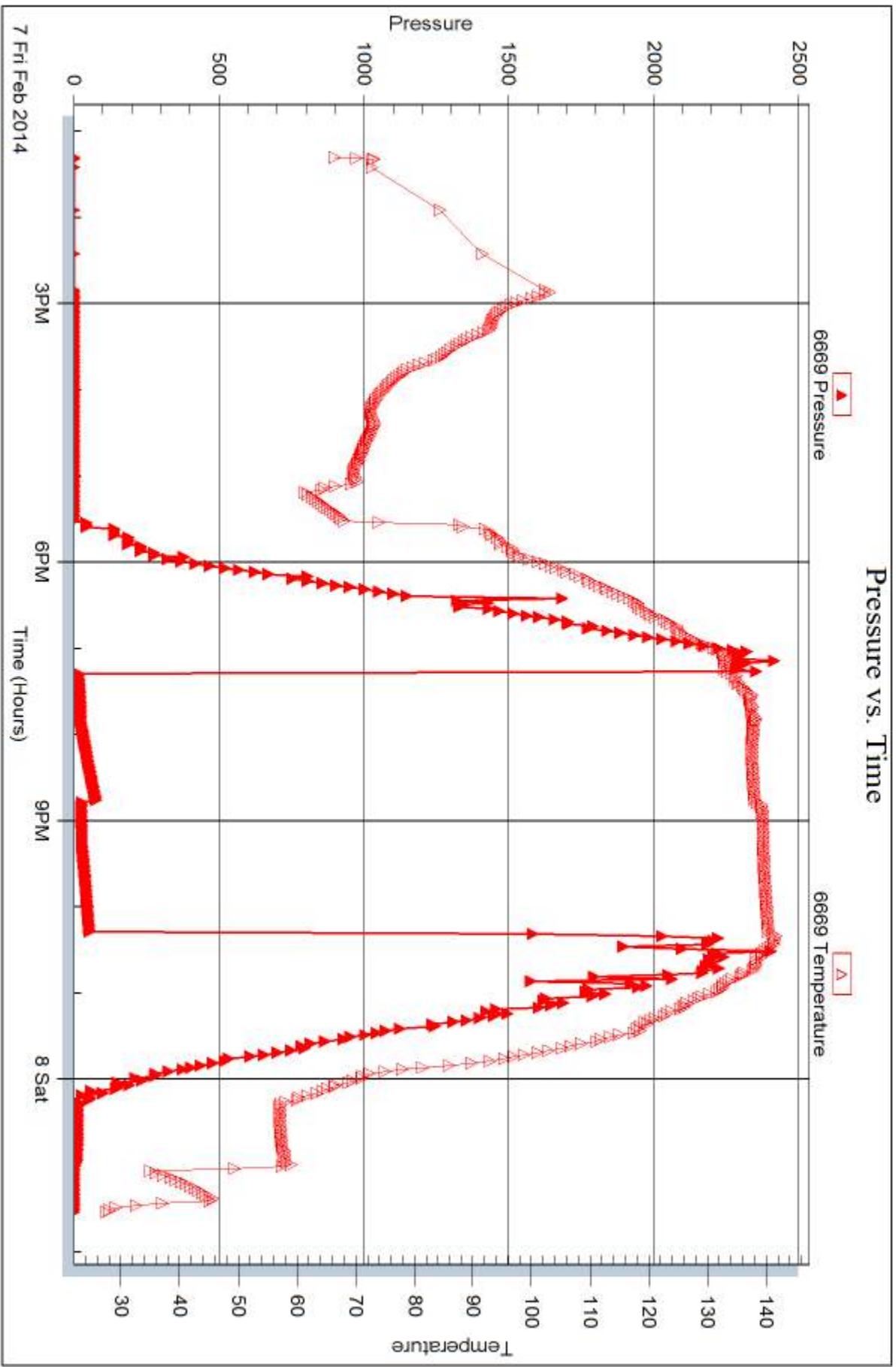
Serial #: 6669

Inside

Murfin Drilling Co., Inc.

Patricia #1-16

DST Test Number: 1



Tribble Testing, Inc

Ref. No: 55166

Printed: 2014.02.14 @ 10:03:07



## DRILL STEM TEST REPORT

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

250 N. Water STE. 300  
Wichita KS. 67202

ATTN: Keith Reavis

### **Patricia #1-16**

### **16-1s-37w Cheyenne,KS**

Start Date: 2014.02.08 @ 14:07:00

End Date: 2014.02.08 @ 21:54:45

Job Ticket #: 55167                      DST #: 2

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

Printed: 2014.02.14 @ 10:02:03

Murfin Drilling Co., Inc. 16-1s-37w Cheyenne,KS Patricia #1-16 DST # 2 Cherokee 2014.02.08





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

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

**16-1s-37w Cheyenne,KS**

**Patricia #1-16**

Job Ticket: 55167

**DST#: 2**

Test Start: 2014.02.08 @ 14:07:00

## GENERAL INFORMATION:

Formation: **Cherokee**  
 Deviated: No Whipstock: ft (KB)  
 Test Type: Conventional Bottom Hole (Initial)  
 Time Tool Opened: 16:10:45  
 Tester: Royal Fisher  
 Time Test Ended: 21:54:45  
 Unit No: #54  
 Interval: **4694.00 ft (KB) To 4735.00 ft (KB) (TVD)**  
 Reference Elevations: 3260.00 ft (KB)  
 Total Depth: 4735.00 ft (KB) (TVD)  
 3247.00 ft (CF)  
 Hole Diameter: 7.88 inches  
 Hole Condition: Good  
 KB to GR/CF: 13.00 ft

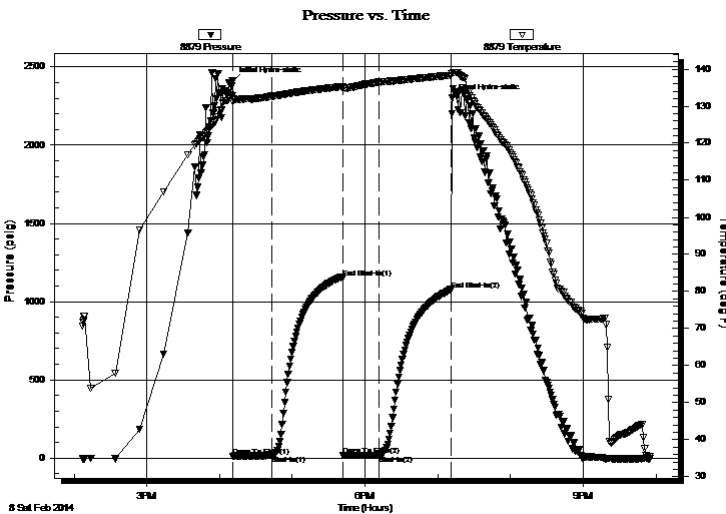
## Serial #: 8879

**Outside**

Press@RunDepth: 20.41 psig @ 4695.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2014.02.08 End Date: 2014.02.08 Last Calib.: 2014.02.08  
 Start Time: 14:07:05 End Time: 21:54:44 Time On Btm: 2014.02.08 @ 16:10:30  
 Time Off Btm: 2014.02.08 @ 19:11:30

TEST COMMENT: 30 - IF - Weak Surface 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	2409.82	132.77	Initial Hydro-static
1	11.65	131.06	Open To Flow (1)
33	16.26	132.66	Shut-In(1)
92	1152.91	135.31	End Shut-In(1)
92	17.38	134.72	Open To Flow (2)
122	20.41	136.45	Shut-In(2)
181	1077.77	138.33	End Shut-In(2)
181	2300.40	138.88	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
6.00	Mud - 100M	0.03

## Gas Rates

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





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drilling Co., Inc.

**16-1s-37w Cheyenne,KS**

250 N. Water STE. 300  
Wichita KS. 67202

**Patricia #1-16**

Job Ticket: 55167

**DST#: 2**

ATTN: Keith Reavis

Test Start: 2014.02.08 @ 14:07:00

## Tool Information

Drill Pipe:	Length: 4098.00 ft	Diameter: 3.80 inches	Volume: 57.48 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: 589.00 ft	Diameter: 2.25 inches	Volume: 2.90 bbl	Weight to Pull Loose: 80000.00 lb
			<u>Total Volume: 60.38 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	20.00 ft			String Weight: Initial 70000.00 lb
Depth to Top Packer:	4694.00 ft			Final 70000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	41.00 ft			
Tool Length:	68.00 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			4672.00	
Hydraulic tool	5.00			4677.00	
Jars	5.00			4682.00	
Safety Joint	3.00			4685.00	
Packer	4.00			4689.00	27.00 Bottom Of Top Packer
Packer	5.00			4694.00	
Stubb	1.00			4695.00	
Recorder	0.00	6669	Inside	4695.00	
Recorder	0.00	8879	Outside	4695.00	
Perforations	37.00			4732.00	
Bullnose	3.00			4735.00	41.00 Bottom Packers & Anchor

**Total Tool Length: 68.00**



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# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling Co., Inc.

**16-1s-37w Cheyenne,KS**

250 N. Water STE. 300  
Wichita KS. 67202

**Patricia #1-16**

Job Ticket: 55167

**DST#: 2**

ATTN: Keith Reavis

Test Start: 2014.02.08 @ 14:07:00

## 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: 48.00 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: 900.00 ppm

Filter Cake: 2.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
6.00	Mud - 100M	0.030

Total Length: 6.00 ft      Total Volume: 0.030 bbl

Num Fluid Samples: 0

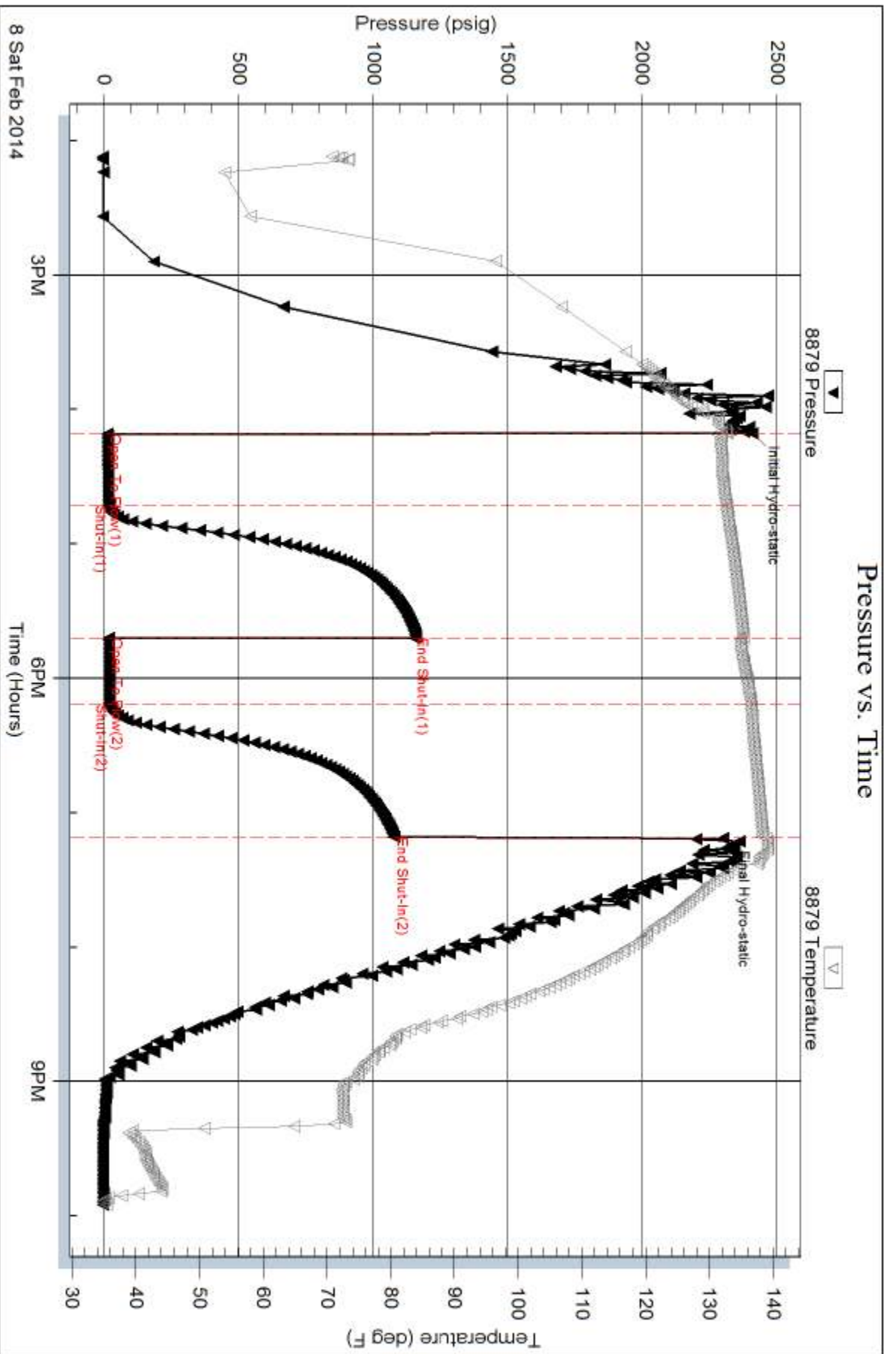
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



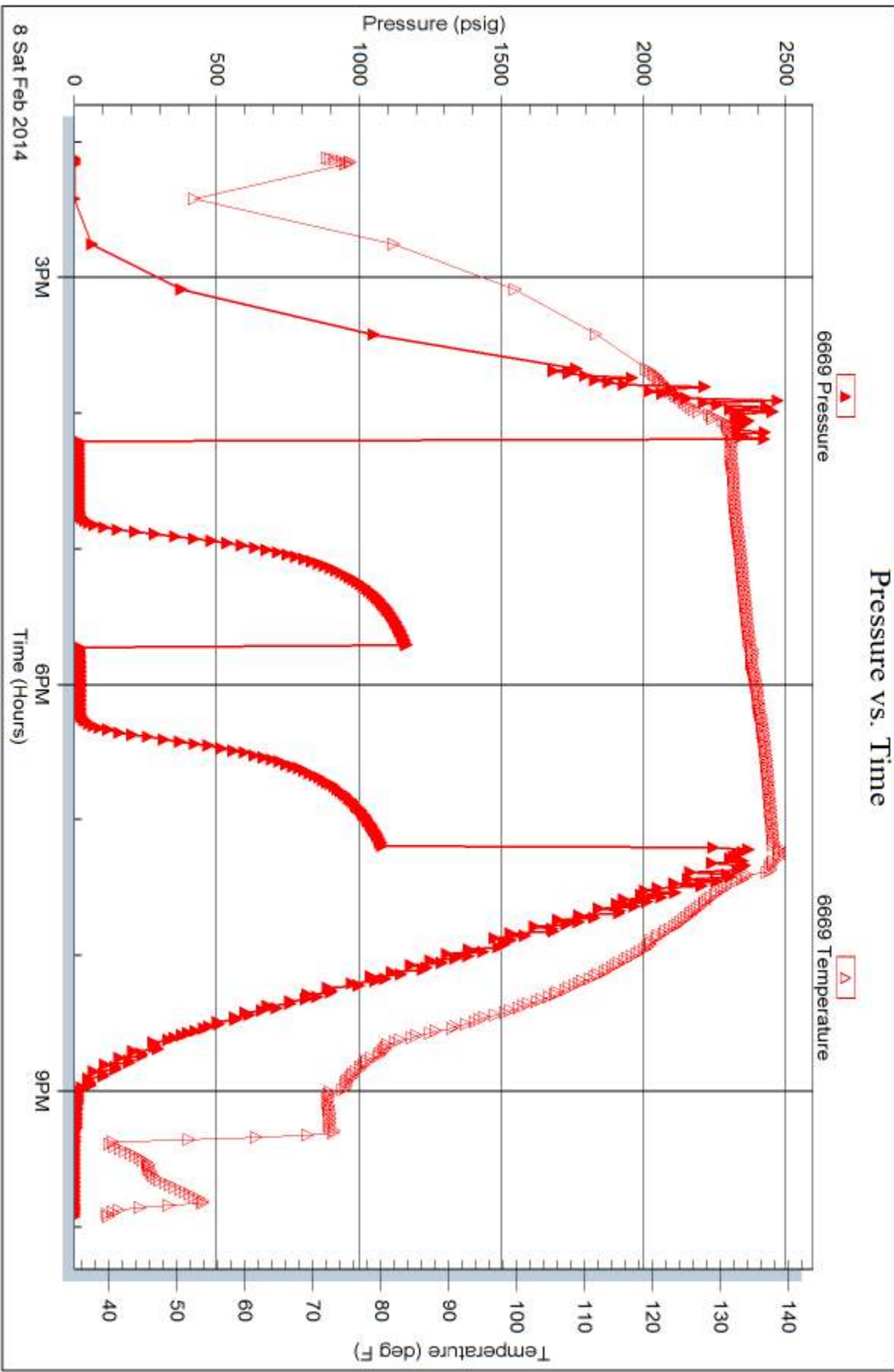
Serial #: 6669

Inside

Murfin Drilling Co., Inc.

Patricia #1-16

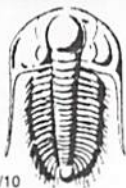
DST Test Number: 2



Trilobite Testing, Inc

Ref. No: 55167

Printed: 2014.02.14 @ 10:02:05



# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 55166

Well Name & No. Patricia #1-16 Test No. 1 Date 2-7-14  
 Company Murkin Drilling Co., Inc. Elevation 3260 KB 3247 GL  
 Address 250 N. Water Ste. 300 Wichita KS 67202  
 Co. Rep / Geo. Keith Heavis Rig Murkin #25  
 Location: Sec. 16 Twp. 1S Rge. 37W Co. Cheyenne State KS

Interval Tested 4594 - 4640 Zone Tested Pawnee  
 Anchor Length 46' Drill Pipe Run 4005 Mud Wt. 9.2  
 Top Packer Depth 4590 Drill Collars Run 589 Vis 666  
 Bottom Packer Depth 4594 Wt. Pipe Run 0 WL 5.6  
 Total Depth 4640 Chlorides 1000 ppm System LCM 6#

Blow Description IF - No Surface blow  
ISI - No Return  
FF - No Surface blow  
FSI - No Return

Rec	Feet of	%gas	%oil	%water	%mud
<u>5'</u>	<u>OCM</u>	<u>5</u>		<u>95</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 140°F Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm

(A) Initial Hydrostatic 2346  Test 1250 T-On Location 11:55am  
 (B) First Initial Flow 13  Jars 250 T-Started 1:18pm  
 (C) First Final Flow 21  Safety Joint 75 T-Open 7:17  
 (D) Initial Shut-In 75  Circ Sub N/C T-Pulled 10:17  
 (E) Second Initial Flow 26  Hourly Standby \_\_\_\_\_ T-Out 1:33  
 (F) Second Final Flow 26  Mileage 146 R/T 226.30 Comments Hydromatic  
 (G) Final Shut-In 51  Sampler \_\_\_\_\_ Froze up.  
 (H) Final Hydrostatic 2224  Straddle \_\_\_\_\_  Ruined Shale Packer \_\_\_\_\_

Initial Open 30  Shale Packer 250  Ruined Packer \_\_\_\_\_  
 Initial Shut-In 60  Extra Packer \_\_\_\_\_  Extra Copies \_\_\_\_\_  
 Final Flow 30  Extra Recorder \_\_\_\_\_ Sub Total 0  
 Final Shut-In 60  Day Standby \_\_\_\_\_ Total 2051.30  
 Accessibility \_\_\_\_\_ MP/DST Disc't \_\_\_\_\_  
 Sub Total 2051.30

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. 55167

Well Name & No. Patricia #1-16 Test No. 2 Date 2-8-14  
 Company Murfin Drilling Co., Inc. Elevation 3260 KB 3247 GL  
 Address 250 N. Water St. 300 Wichita KS 67202  
 Co. Rep / Geo. Keith Reavis Rig Murfin #25  
 Location: Sec. 16 Twp. 1S Rge. 37W Co. Cheyenne State KS

Interval Tested 4694 - 4735 Zone Tested Cherokee  
 Anchor Length 41' Drill Pipe Run 4098 Mud Wt. 9.3  
 Top Packer Depth 4690 Drill Collars Run 589' Vis 48  
 Bottom Packer Depth 4694 Wt. Pipe Run 8 WL 6.4  
 Total Depth 4735 Chlorides 900 ppm System LCM 10#

Blow Description IF - weak surface blow  
ISI - No return  
FF - No surface blow  
FSI - No return

Rec	Feet of	%gas	%oil	%water	%mud
<u>6'</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 6' BHT 138°F Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm

(A) Initial Hydrostatic 2409  Test 1250 T-On Location 1:15pm  
 (B) First Initial Flow 11  Jars 250 T-Started 2:07pm  
 (C) First Final Flow 110  Safety Joint 75 T-Open 4:11pm  
 (D) Initial Shut-In 11.52  Circ Sub N/C T-Pulled 7:11pm  
 (E) Second Initial Flow 17  Hourly Standby \_\_\_\_\_ T-Out 9:55pm  
 (F) Second Final Flow 20  Mileage 146 R/T 452.60 Comments \_\_\_\_\_  
 (G) Final Shut-In 1077  Sampler \_\_\_\_\_ loaded tools 2/9 16:00?  
 (H) Final Hydrostatic 2300  Straddle \_\_\_\_\_  Ruined Shale Packer \_\_\_\_\_

Initial Open 30  Shale Packer 250  Ruined Packer \_\_\_\_\_  
 Initial Shut-In 60  Extra Packer \_\_\_\_\_  Extra Copies \_\_\_\_\_  
 Final Flow 30  Extra Recorder \_\_\_\_\_ Sub Total 0  
 Final Shut-In 60  Day Standby \_\_\_\_\_ Total 2277.60  
 Accessibility \_\_\_\_\_ MP/DST Disc't \_\_\_\_\_  
 Sub Total 2277.60

Approved By \_\_\_\_\_ Our Representative Keith Reavis

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