

## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling**

250 N Water Suite 300  
Wichita, KS. 67202

ATTN: Vern Schrag

### **Thornburg #2-6**

#### **6-8s-14w Osborne,KS**

Start Date: 2012.07.29 @ 09:53:12

End Date: 2012.07.29 @ 15:44:27

Job Ticket #: 47838                      DST #: 1

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

Printed: 2012.08.03 @ 11:02:08



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

Murfin Drilling  
250 N Water Suite 300  
Wichita, KS. 67202  
ATTN: Vern Schrag

**6-8s-14w Osborne, KS**  
**Thornburg #2-6**  
Job Ticket: 47838 **DST#: 1**  
Test Start: 2012.07.29 @ 09:53:12

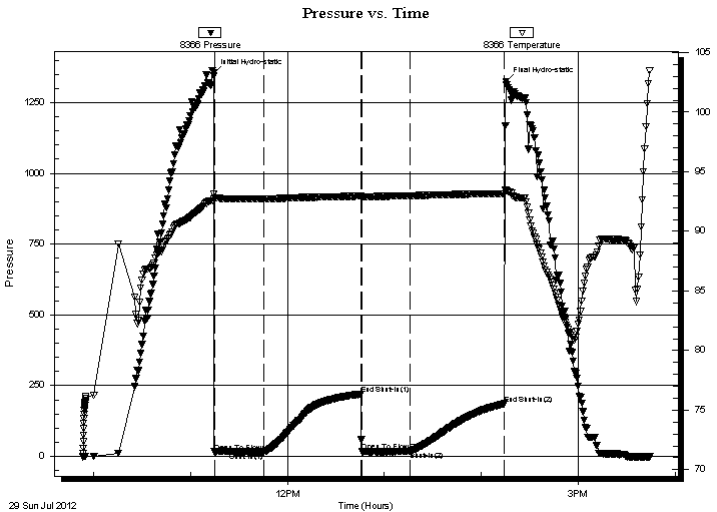
## GENERAL INFORMATION:

Formation: **Topeka**  
Deviated: No Whipstock: 0.00 ft (KB)  
Time Tool Opened: 11:14:42  
Time Test Ended: 15:44:27  
Interval: **2800.00 ft (KB) To 2825.00 ft (KB) (TVD)**  
Total Depth: 2825.00 ft (KB) (TVD)  
Hole Diameter: 7.88 inches Hole Condition: Good  
Test Type: Conventional Bottom Hole (Initial)  
Tester: Jason McLemore  
Unit No: 54  
Reference Elevations: 1857.00 ft (KB)  
1852.00 ft (CF)  
KB to GR/CF: 5.00 ft

**Serial #: 8366** **Inside**  
Press @ Run Depth: 17.17 psig @ 2802.00 ft (KB) Capacity: 8000.00 psig  
Start Date: 2012.07.29 End Date: 2012.07.29 Last Calib.: 2012.07.29  
Start Time: 09:53:14 End Time: 15:44:27 Time On Btm: 2012.07.29 @ 11:14:27  
Time Off Btm: 2012.07.29 @ 14:15:27

TEST COMMENT: IFP-Dead  
ISI-Dead  
FFP-Dead  
FSI-Dead

## PRESSURE SUMMARY



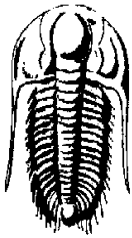
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1353.92	93.16	Initial Hydro-static
1	15.74	92.67	Open To Flow (1)
31	15.73	92.72	Shut-In(1)
91	219.98	92.96	End Shut-In(1)
92	16.46	92.88	Open To Flow (2)
122	17.17	92.99	Shut-In(2)
180	185.65	93.17	End Shut-In(2)
181	1323.30	93.42	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
2.00	Mud W/Oil Spots	0.01

## Gas Rates

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



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TESTING, INC.**

**DRILL STEM TEST REPORT**

Murfin Drilling  
250 N Water Suite 300  
Wichita, KS. 67202  
ATTN: Vern Schrag

**6-8s-14w Osborne, KS**  
**Thornburg #2-6**  
Job Ticket: 47838      **DST#: 1**  
Test Start: 2012.07.29 @ 09:53:12

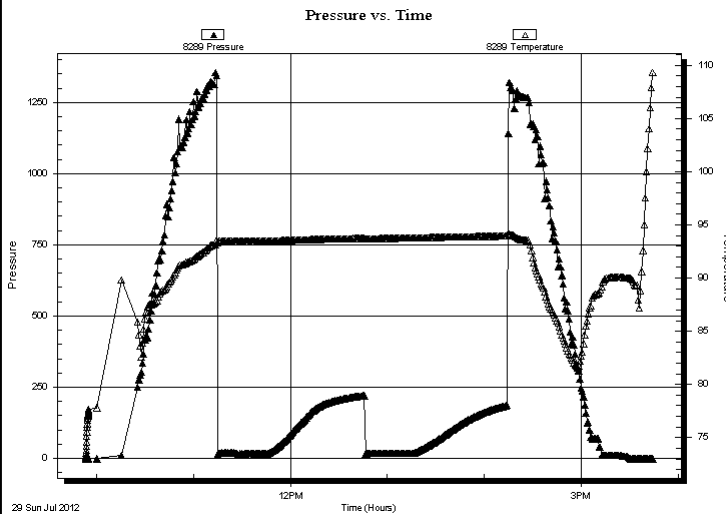
**GENERAL INFORMATION:**

Formation: **Topeka**  
Deviated: No Whipstock: 0.00 ft (KB)  
Time Tool Opened: 11:14:42  
Time Test Ended: 15:44:27  
Interval: **2800.00 ft (KB) To 2825.00 ft (KB) (TVD)**  
Total Depth: 2825.00 ft (KB) (TVD)  
Hole Diameter: 7.88 inches Hole Condition: Good  
Test Type: Conventional Bottom Hole (Initial)  
Tester: Jason McLemore  
Unit No: 54  
Reference Elevations: 1857.00 ft (KB)  
1852.00 ft (CF)  
KB to GR/CF: 5.00 ft

**Serial #: 8289      Outside**

Press @ Run Depth:          psig @ 2802.00 ft (KB)          Capacity: 8000.00 psig  
Start Date: 2012.07.29      End Date: 2012.07.29      Last Calib.: 2012.07.29  
Start Time: 09:53:14      End Time: 15:44:42      Time On Btm:  
Time Off Btm:

TEST COMMENT: IFP-Dead  
ISI-Dead  
FFP-Dead  
FSI-Dead



**PRESSURE SUMMARY**

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

**Recovery**

Length (ft)	Description	Volume (bbl)
2.00	Mud W/Oil Spots	0.01

**Gas Rates**

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



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drilling  
250 N Water Suite 300  
Wichita, KS. 67202  
ATTN: Vern Schrag

**6-8s-14w Osborne, KS**  
**Thornburg #2-6**  
Job Ticket: 47838      **DST#: 1**  
Test Start: 2012.07.29 @ 09:53:12

**Tool Information**

Drill Pipe:	Length: 2756.00 ft	Diameter: 3.80 inches	Volume: 38.66 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.70 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 30.00 ft	Diameter: 2.25 inches	Volume: 0.15 bbl	Weight to Pull Loose: 42000.00 lb
			<u>Total Volume: 38.81 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	14.00 ft			String Weight: Initial 40000.00 lb
Depth to Top Packer:	2800.00 ft			Final 40000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	25.00 ft			
Tool Length:	53.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

<b>Tool Description</b>	<b>Length (ft)</b>	<b>Serial No.</b>	<b>Position</b>	<b>Depth (ft)</b>	<b>Accum. Lengths</b>
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Change Over Sub	1.00			2773.00	
Shut In Tool	5.00			2778.00	
Hydraulic tool	5.00			2783.00	
Jars	5.00			2788.00	
Safety Joint	2.00			2790.00	
Packer	5.00			2795.00	28.00      Bottom Of Top Packer
Packer	5.00			2800.00	
Stubb	1.00			2801.00	
Perforations	1.00			2802.00	
Recorder	0.00	8366	Inside	2802.00	
Recorder	0.00	8289	Outside	2802.00	
Perforations	20.00			2822.00	
Bullnose	3.00			2825.00	25.00      Bottom Packers & Anchor

**Total Tool Length: 53.00**



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling  
250 N Water Suite 300  
Wichita, KS. 67202  
ATTN: Vern Schrag

**6-8s-14w Osborne, KS**  
**Thornburg #2-6**  
Job Ticket: 47838      **DST#: 1**  
Test Start: 2012.07.29 @ 09:53:12

## 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: bbl		
Water Loss: 6.79 in <sup>3</sup>	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 2000.00 ppm			
Filter Cake: inches			

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
2.00	Mud W/Oil Spots	0.010

Total Length: 2.00 ft      Total Volume: 0.010 bbl  
 Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:  
 Laboratory Name:      Laboratory Location:  
 Recovery Comments:

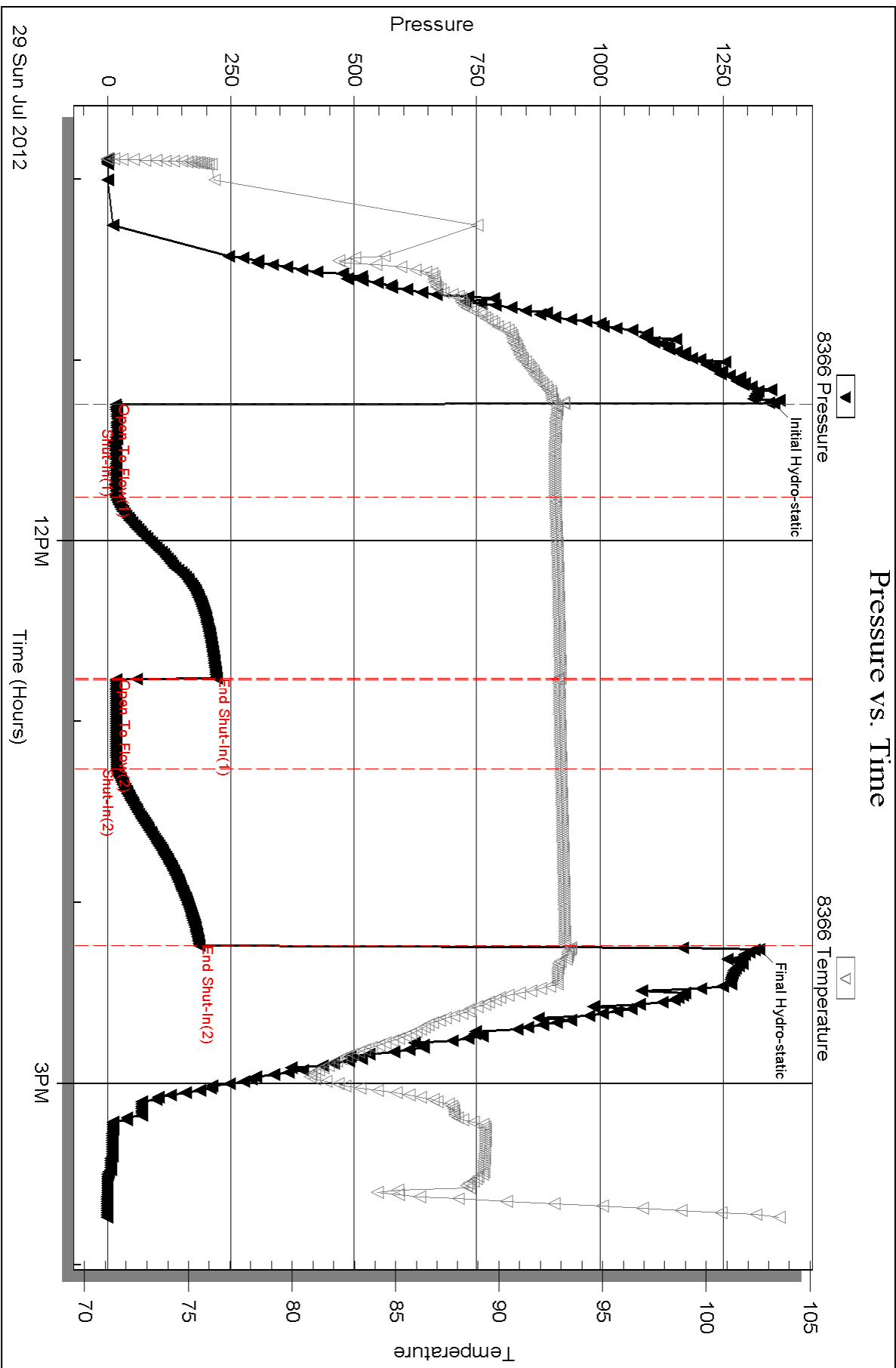
Serial #: 8366

Inside

Murfin Drilling

Thorburn #2-6

DST Test Number: 1



29 Sun Jul 2012

Triobite Testing, Inc

Ref. No: 47838

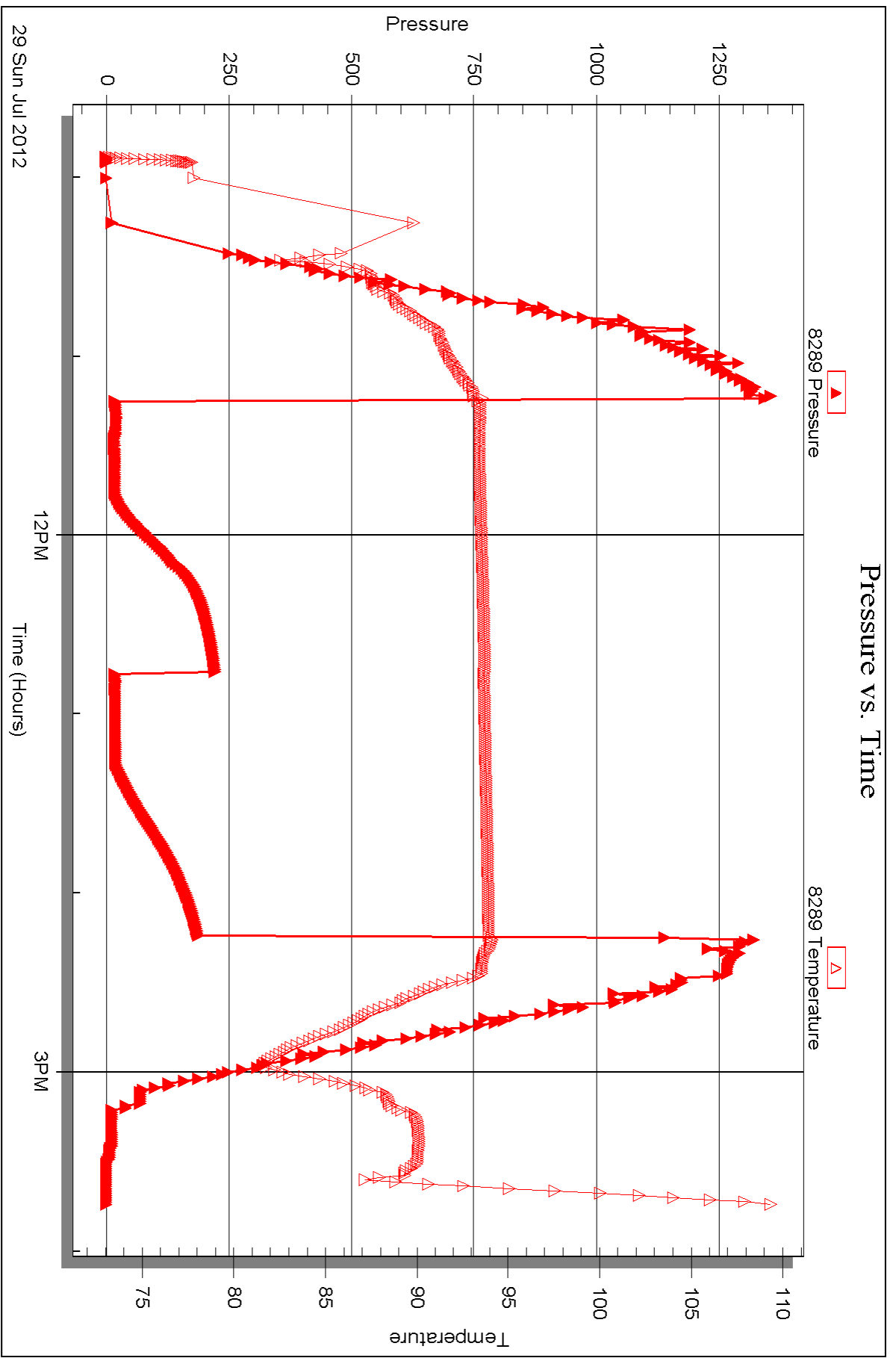
Printed: 2012.08.03 @ 11:02:11

Serial #: 8289

Outside Murfin Drilling

Thorburg #2-6

DST Test Number: 1



Triobite Testing, Inc

Ref. No: 47838

Printed: 2012.08.03 @ 11:02:11



## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling**

250 N Water Suite 300  
Wichita, KS. 67202

ATTN: Vern Schrag

### **Thornburg #2-6**

#### **6-8s-14w Osborne,KS**

Start Date: 2012.07.30 @ 11:03:37

End Date: 2012.07.30 @ 19:03:37

Job Ticket #: 47839                      DST #: 2

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

Printed: 2012.08.03 @ 11:00:34

Murfin Drilling  
6-8s-14w Osborne,KS  
Thornburg #2-6  
DST # 2  
Lansing  
2012.07.30





**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Murfin Drilling  
 250 N Water Suite 300  
 Wichita, KS. 67202  
 ATTN: Vern Schrag

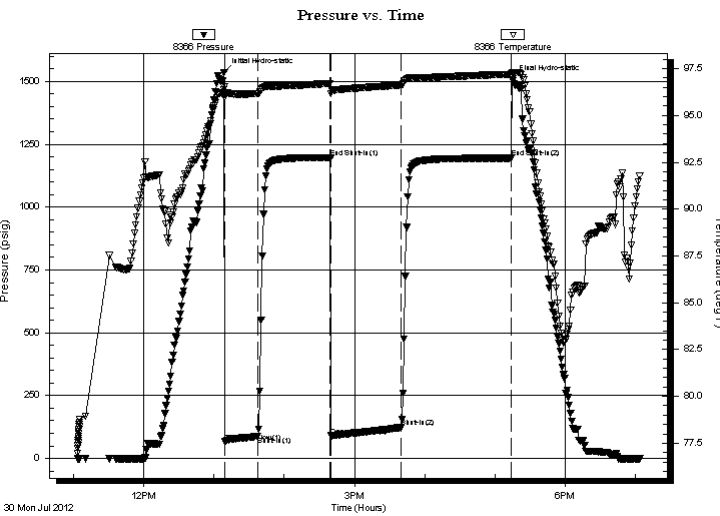
**6-8s-14w Osborne, KS**  
**Thornburg #2-6**  
 Job Ticket: 47839 **DST#: 2**  
 Test Start: 2012.07.30 @ 11:03:37

## GENERAL INFORMATION:

Formation: **Lansing**  
 Deviated: No Whipstock: 0.00 ft (KB)  
 Time Tool Opened: 13:09:07  
 Time Test Ended: 19:03:37  
 Interval: **3011.00 ft (KB) To 3125.00 ft (KB) (TVD)**  
 Total Depth: 3125.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Good  
 Test Type: Conventional Bottom Hole (Reset)  
 Tester: Jason McLemore  
 Unit No: 54  
 Reference Elevations: 1857.00 ft (KB)  
 1852.00 ft (CF)  
 KB to GR/CF: 5.00 ft

**Serial #: 8366 Inside**  
 Press @ Run Depth: 122.60 psig @ 3112.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2012.07.30 End Date: 2012.07.30 Last Calib.: 2012.07.30  
 Start Time: 11:03:39 End Time: 19:03:37 Time On Btm: 2012.07.30 @ 13:08:52  
 Time Off Btm: 2012.07.30 @ 17:14:22

TEST COMMENT: IFP-Weak Blow , Built to 2 1/4"  
 ISI-Dead  
 FFP-Weak Blow , Built to 3"  
 FSI-Dead



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1536.21	96.53	Initial Hydro-static
1	65.75	95.93	Open To Flow (1)
29	87.53	96.17	Shut-In(1)
91	1197.57	96.71	End Shut-In(1)
91	89.69	96.18	Open To Flow (2)
151	122.60	96.62	Shut-In(2)
245	1195.08	97.20	End Shut-In(2)
246	1508.64	97.30	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
120.00	Muddy Water-95%W-5%M	1.41
2.00	Free Oil	0.03

\* Recovery from multiple tests

## Gas Rates

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



# TRILOBITE TESTING, INC.

## DRILL STEM TEST REPORT

Murfin Drilling  
250 N Water Suite 300  
Wichita, KS. 67202  
ATTN: Vern Schrag

6-8s-14w Osborne, KS

Thornburg #2-6

Job Ticket: 47839

DST#: 2

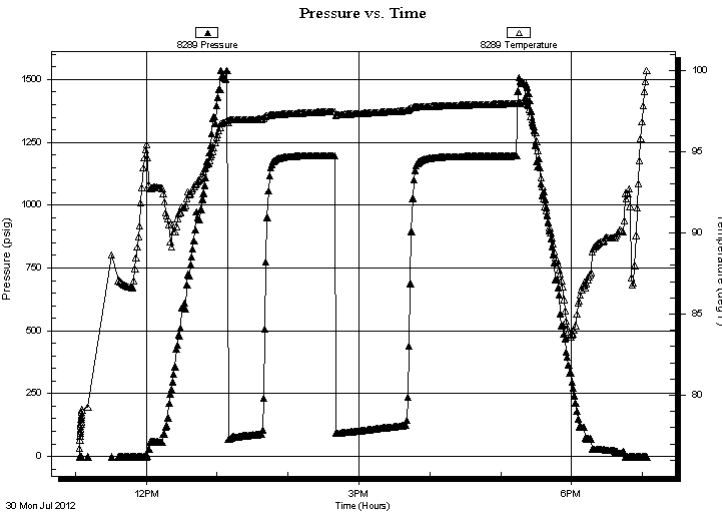
Test Start: 2012.07.30 @ 11:03:37

### GENERAL INFORMATION:

Formation: **Lansing**  
Deviated: No Whipstock: 0.00 ft (KB)  
Time Tool Opened: 13:09:07  
Time Test Ended: 19:03:37  
Interval: **3011.00 ft (KB) To 3125.00 ft (KB) (TVD)**  
Total Depth: 3125.00 ft (KB) (TVD)  
Hole Diameter: 7.88 inches Hole Condition: Good  
Test Type: Conventional Bottom Hole (Reset)  
Tester: Jason McLemore  
Unit No: 54  
Reference Elevations: 1857.00 ft (KB)  
1852.00 ft (CF)  
KB to GR/CF: 5.00 ft

**Serial #: 8289 Outside**  
Press @ Run Depth: psig @ 3112.00 ft (KB) Capacity: 8000.00 psig  
Start Date: 2012.07.30 End Date: 2012.07.30 Last Calib.: 2012.07.30  
Start Time: 11:03:38 End Time: 19:03:51 Time On Btm:  
Time Off Btm:

TEST COMMENT: IFP-Weak Blow , Built to 2 1/4"  
ISI-Dead  
FFP-Weak Blow , Built to 3"  
FSI-Dead



### PRESSURE SUMMARY

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

### Recovery

Length (ft)	Description	Volume (bbl)
120.00	Muddy Water-95%W-5%M	1.41
2.00	Free Oil	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  
250 N Water Suite 300  
Wichita, KS. 67202  
ATTN: Vern Schrag

**6-8s-14w Osborne, KS**  
**Thornburg #2-6**  
Job Ticket: 47839      **DST#: 2**  
Test Start: 2012.07.30 @ 11:03:37

**Tool Information**

Drill Pipe:	Length: 2977.00 ft	Diameter: 3.80 inches	Volume: 41.76 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.70 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 30.00 ft	Diameter: 2.25 inches	Volume: 0.15 bbl	Weight to Pull Loose: 46000.00 lb
			<u>Total Volume: 41.91 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	24.00 ft			String Weight: Initial 44000.00 lb
Depth to Top Packer:	3011.00 ft			Final 44000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	114.00 ft			
Tool Length:	142.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

<b>Tool Description</b>	<b>Length (ft)</b>	<b>Serial No.</b>	<b>Position</b>	<b>Depth (ft)</b>	<b>Accum. Lengths</b>
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Change Over Sub	1.00			2984.00	
Shut In Tool	5.00			2989.00	
Hydraulic tool	5.00			2994.00	
Jars	5.00			2999.00	
Safety Joint	2.00			3001.00	
Packer	5.00			3006.00	28.00      Bottom Of Top Packer
Packer	5.00			3011.00	
Stubb	1.00			3012.00	
Perforations	3.00			3015.00	
Change Over Sub	1.00			3016.00	
Blank Spacing	95.00			3111.00	
Change Over Sub	1.00			3112.00	
Recorder	0.00	8366	Inside	3112.00	
Recorder	0.00	8289	Outside	3112.00	
Perforations	10.00			3122.00	
Bullnose	3.00			3125.00	114.00      Bottom Packers & Anchor
<b>Total Tool Length:</b>	<b>142.00</b>				



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

Murfin Drilling  
250 N Water Suite 300  
Wichita, KS. 67202  
ATTN: Vern Schrag

**6-8s-14w Osborne, KS**  
**Thornburg #2-6**  
Job Ticket: 47839      **DST#: 2**  
Test Start: 2012.07.30 @ 11:03:37

### Mud and Cushion Information

Mud Type: Gel Chem	Cushion Type:	Oil API: 31 deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity: 12000 ppm
Viscosity: 62.00 sec/qt	Cushion Volume: bbl	
Water Loss: 6.78 in <sup>3</sup>	Gas Cushion Type:	
Resistivity: ohm.m	Gas Cushion Pressure: psig	
Salinity: 2000.00 ppm		
Filter Cake: inches		

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
120.00	Muddy Water-95%W-5%M	1.410
2.00	Free Oil	0.028

Total Length: 122.00 ft      Total Volume: 1.438 bbl  
 Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:  
 Laboratory Name:      Laboratory Location:  
 Recovery Comments:

Serial #: 8366

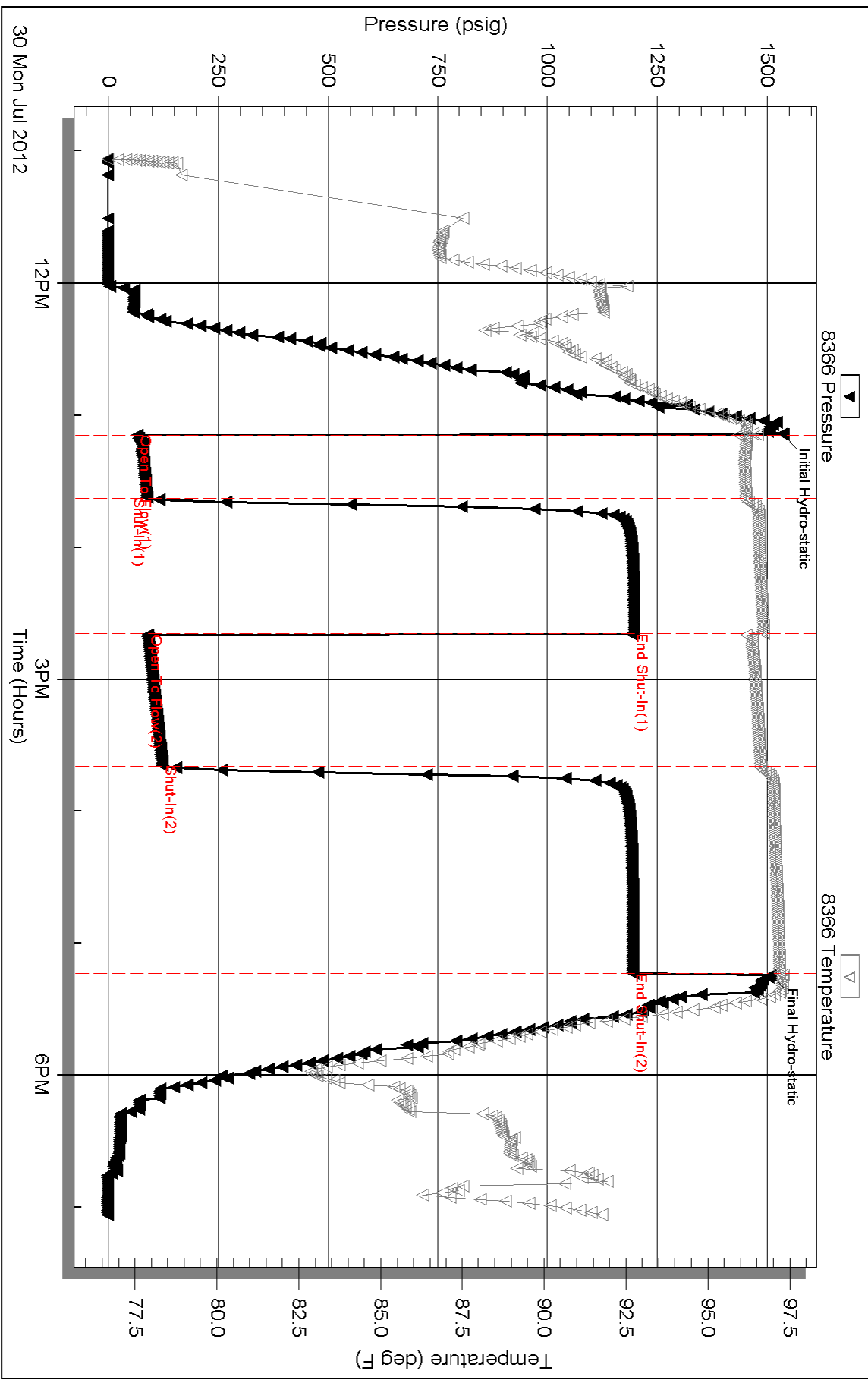
Inside

Murfin Drilling

Thorburg #2-6

DST Test Number: 2

### Pressure vs. Time



Triobite Testing, Inc

Ref. No: 47839

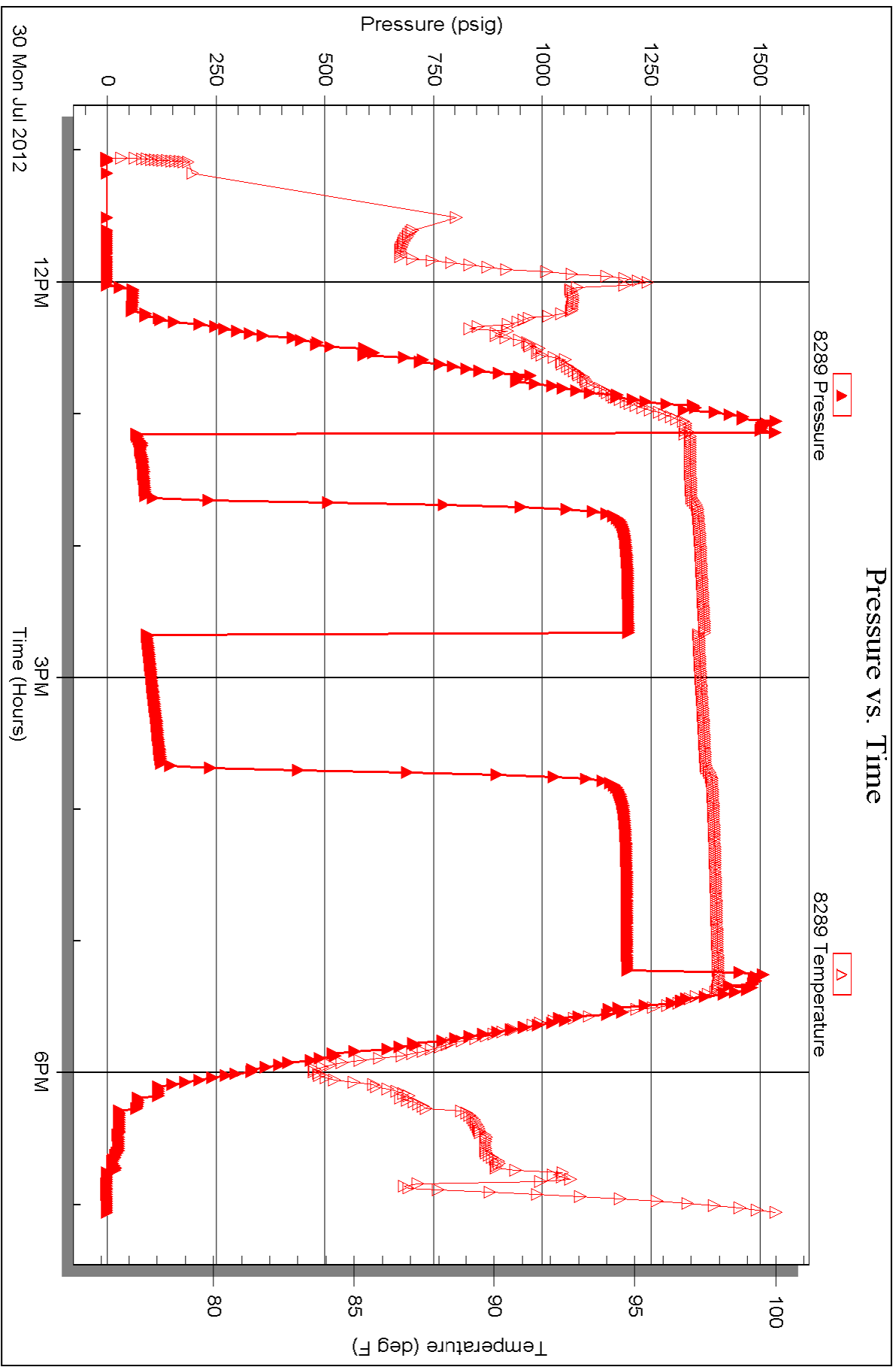
Printed: 2012.08.03 @ 11:00:38

Serial #: 8289

Outside Murfin Drilling

Thorburn #2-6

DST Test Number: 2





# TRILOBITE TESTING INC.

P.O. Box 1733 • Hays, Kansas 67601

## Test Ticket

NO. 47838

Well Name & No. Thorburg #2-6 Test No. 1 Date 7-29-12  
 Company Murfin Drilling, Inc. Elevation 1857 KB. 1852 GL  
 Address 250 N. Water, Suite 300, Wichita, KS. 67202  
 Co. Rep / Geo. Vern Schrag Rig Murfin #16  
 Location: Sec. 6 Twp. 8s Rge. 19w Co. Osborne State KS

Interval Tested 2800 - 2825 Zone Tested Topeka  
 Anchor Length 25 Drill Pipe Run 2756 Mud Wt. 8.8  
 Top Packer Depth 2795 Drill Collars Run 30 Vis 62  
 Bottom Packer Depth 2800 Wt. Pipe Run 0 WL 6.8  
 Total Depth 2825 Chlorides 2,000 ppm System LCM Ø  
 Blow Description IFP- Dead  
ISI- Dead  
FFP- Dead  
FSI- Dead

Rec	Feet of	%gas	%oil	%water	%mud
<u>2</u>	<u>Oil Specked mud</u>				

Rec Total 2 BHT 93° Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm

(A) Initial Hydrostatic 1354  Test 1150 T-On Location 8:57  
 (B) First Initial Flow 16  Jars 250 T-Started 9:51  
 (C) First Final Flow 16  Safety Joint 75 T-Open 11:14  
 (D) Initial Shut-In 220  Circ Sub \_\_\_\_\_ T-Pulled 14:14  
 (E) Second Initial Flow 16  Hourly Standby \_\_\_\_\_ T-Out 15:43  
 (F) Second Final Flow 17  Mileage 130 + 201.50 Comments \_\_\_\_\_  
 (G) Final Shut-In 186  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 1323  Straddle \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  
 Extra Recorder \_\_\_\_\_  
 Day Standby \_\_\_\_\_  
 Accessibility \_\_\_\_\_

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

Sub Total 1676.50

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

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

Our Representative Jason McJannet Thank you

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.

P.O. Box 1733 • Hays, Kansas 67601

## Test Ticket

NO. 47839

Well Name & No. Thorburg #2-6 Test No. 2 Date 7-30-12  
 Company Murfin Drilling, Inc. Elevation 1857 KB 1852 GL  
 Address 250 N. Water, Suite 300, Wichita, KS. 67202  
 Co. Rep / Geo. Vern Schrag Rig Murfin #16  
 Location: Sec. 6 Twp. 8s Rge. 14w Co. \_\_\_\_\_ State KS

Interval Tested 3011-3125 Zone Tested Lansing  
 Anchor Length 114' Drill Pipe Run 2977 Mud Wt. 8.8  
 Top Packer Depth 3006 Drill Collars Run 30 Vis 62  
 Bottom Packer Depth 3011 Wt. Pipe Run 0 WL 6.8  
 Total Depth 3125 Chlorides 2,000 ppm System LCM 0  
 Blow Description IFP-Weak Blow, Built to 2 1/4"  
ISI-Dead  
FFP-Weak Blow, Built to 3"  
FSI-Dead

Rec	Feet of	%gas	%oil	%water	%mud
<u>2</u>	<u>Free Oil</u>				
<u>120</u>	<u>Muddy Water</u>		<u>95</u>		<u>5</u>
____	____				
____	____				
____	____				

Rec Total 122' BHT 97 Gravity 31 API RW 350 @ 110 °F Chlorides 12,000 ppm

(A) Initial Hydrostatic <u>1536</u>	<input checked="" type="checkbox"/> Test <u>1150</u>	T-On Location <u>10:51</u>
(B) First Initial Flow <u>66</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>11:01</u>
(C) First Final Flow <u>88</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>13:08</u>
(D) Initial Shut-In <u>1198</u>	<input type="checkbox"/> Circ Sub _____	T-Pulled <u>17:08</u>
(E) Second Initial Flow <u>90</u>	<input type="checkbox"/> Hourly Standby _____	T-Out <u>19:02</u>
(F) Second Final Flow <u>123</u>	<input checked="" type="checkbox"/> Mileage <u>201.50</u>	Comments _____
(G) Final Shut-In <u>1195</u>	<input type="checkbox"/> Sampler _____	_____
(H) Final Hydrostatic <u>1509</u>	<input type="checkbox"/> Straddle _____	<input type="checkbox"/> Ruined Shale Packer _____
Initial Open <u>30</u>	<input type="checkbox"/> Shale Packer _____	<input type="checkbox"/> Ruined Packer _____
Initial Shut-In <u>60</u>	<input type="checkbox"/> Extra Packer _____	<input type="checkbox"/> Extra Copies _____
Final Flow <u>60</u>	<input type="checkbox"/> Extra Recorder _____	Sub Total <u>0</u>
Final Shut-In <u>90</u>	<input type="checkbox"/> Day Standby _____	Total <u>1676.50</u>
	<input type="checkbox"/> Accessibility _____	MP/DST Disc't _____
	Sub Total <u>1676.50</u>	

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

Our Representative Jason McJannet Thank you

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.