



## DRILL STEM TEST REPORT

Prepared For: **Younger Energy Company**

9415 E Harry Street  
Suite 403 Buiding 400  
Wichita, KS 67207

ATTN: Kent Matson

### **Morrison-Luther #2**

### **5-21s-13w Stafford,KS**

Start Date: 2015.02.03 @ 23:35:00

End Date: 2015.02.04 @ 03:30:30

Job Ticket #: 62044                      DST #: 1

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

Printed: 2015.02.04 @ 13:13:26



**TRILOBITE TESTING, INC**

# DRILL STEM TEST REPORT

Younger Energy Company

**5-21s-13w Stafford,KS**

9415 E Harry Street  
Suite 403 Buiding 400  
Wichita, KS 67207  
ATTN: Kent Matson

**Morrison-Luther #2**

Job Ticket: 62044

**DST#: 1**

Test Start: 2015.02.03 @ 23:35:00

## GENERAL INFORMATION:

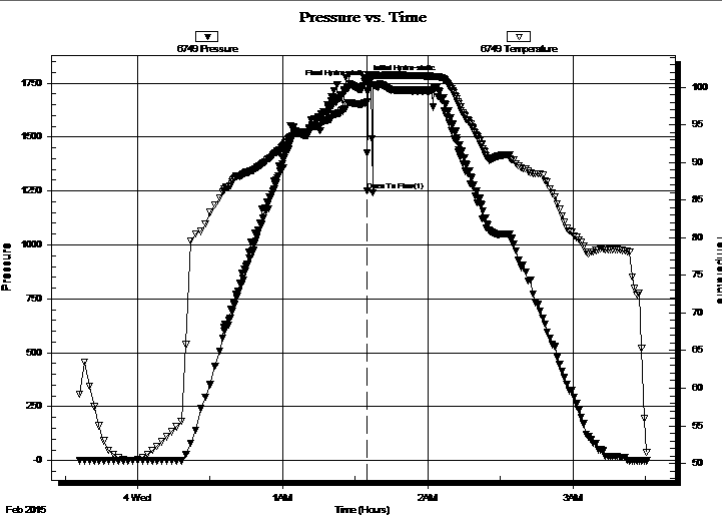
Formation: **Arbuckle**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 01:35:00  
 Time Test Ended: 03:30:30  
 Interval: **3538.00 ft (KB) To 3564.00 ft (KB) (TVD)**  
 Total Depth: 3564.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Fair  
 Test Type: Conventional Bottom Hole (Initial)  
 Tester: Ken Swinney  
 Unit No: S1  
 Reference Elevations: 1904.00 ft (KB)  
 1896.00 ft (CF)  
 KB to GR/CF: 8.00 ft

**Serial #: 6749**

**Inside**

Press@RunDepth: psig @ 3558.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2015.02.03 End Date: 2015.02.04 Last Calib.: 2015.02.04  
 Start Time: 23:36:00 End Time: 03:30:30 Time On Btm: 2015.02.04 @ 01:34:40  
 Time Off Btm: 2015.02.04 @ 01:37:30

TEST COMMENT: Packer fail at open/ Tried setting tool on bottom second time / Packer fail again / Pull test



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1766.03	97.98	Initial Hydro-static
1	1249.60	99.57	Open To Flow (1)
3	1742.22	101.61	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
135.00	Drilling Mud 100%	1.89

## Gas Rates

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



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Younger Energy Company

**5-21s-13w Stafford,KS**

9415 E Harry Street  
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ATTN: Kent Matson

**Morrison-Luther #2**

Job Ticket: 62044

**DST#: 1**

Test Start: 2015.02.03 @ 23:35:00

## GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 01:35:00

Time Test Ended: 03:30:30

Test Type: Conventional Bottom Hole (Initial)

Tester: Ken Swinney

Unit No: S1

**Interval: 3538.00 ft (KB) To 3564.00 ft (KB) (TVD)**

Reference Elevations: 1904.00 ft (KB)

Total Depth: 3564.00 ft (KB) (TVD)

1896.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

**Serial #: 6838 Outside**

Press@RunDepth: psig @ 3559.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2015.02.03

End Date:

2015.02.04

Last Calib.:

2015.02.04

Start Time: 23:36:00

End Time:

03:30:00

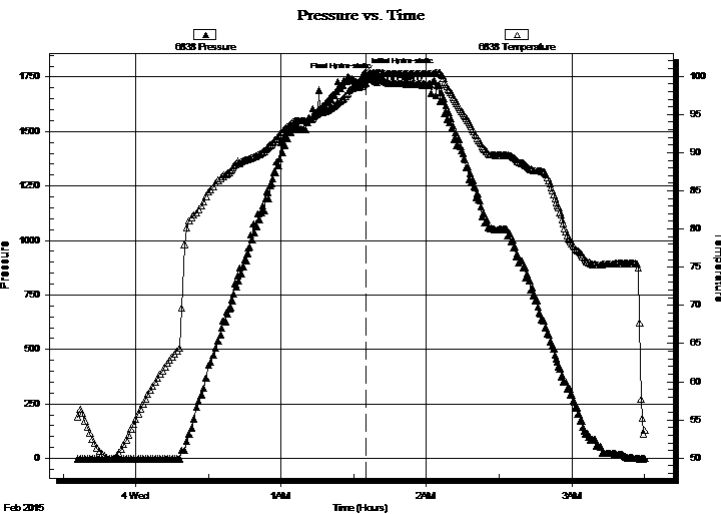
Time On Btm:

2015.02.04 @ 01:34:30

Time Off Btm:

2015.02.04 @ 01:40:00

TEST COMMENT: Packer fail at open/ Tried setting tool on bottom second time / Packer fail again / Pull test



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1769.65	99.00	Initial Hydro-static
1	1724.11	99.04	Open To Flow (1)
6	1745.01	100.42	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
135.00	Drilling Mud 100%	1.89

## Gas Rates

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



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Younger Energy Company

**5-21s-13w Stafford,KS**

9415 E Harry Street  
Suite 403 Buiding 400  
Wichita, KS 67207  
ATTN: Kent Matson

**Morrison-Luther #2**

Job Ticket: 62044

**DST#: 1**

Test Start: 2015.02.03 @ 23:35:00

## Tool Information

Drill Pipe:	Length: 3531.00 ft	Diameter: 3.80 inches	Volume: 49.53 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 20000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight to Pull Loose: 56000.00 lb
			<u>Total Volume: 49.53 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	20.00 ft			String Weight: Initial 54000.00 lb
Depth to Top Packer:	3538.00 ft			Final 54000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	24.00 ft			
Tool Length:	51.00 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			3516.00	
Hydraulic tool	5.00			3521.00	
Jars	5.00			3526.00	
Safety Joint	2.00			3528.00	
Top Packer	5.00			3533.00	
Packer	5.00			3538.00	27.00 Bottom Of Top Packer
Anchor	19.00			3557.00	
Recorder	1.00	6749	Inside	3558.00	
Recorder	1.00	6838	Outside	3559.00	
Bullnose	3.00			3562.00	24.00 Anchor Tool
<b>Total Tool Length:</b>	<b>51.00</b>				



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# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Younger Energy Company

**5-21s-13w Stafford,KS**

9415 E Harry Street  
Suite 403 Buiding 400  
Wichita, KS 67207  
ATTN: Kent Matson

**Morrison-Luther #2**

Job Ticket: 62044

**DST#: 1**

Test Start: 2015.02.03 @ 23:35:00

## Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 49.00 sec/qt

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

Resistivity: ohm.m

Salinity: 4000.00 ppm

Filter Cake: inches

Cushion Type:

Cushion Length: ft

Cushion Volume: bbl

Gas Cushion Type:

Gas Cushion Pressure: psig

Oil API:

Water Salinity: deg API

ppm

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
135.00	Drilling Mud 100%	1.894

Total Length: 135.00 ft      Total Volume: 1.894 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

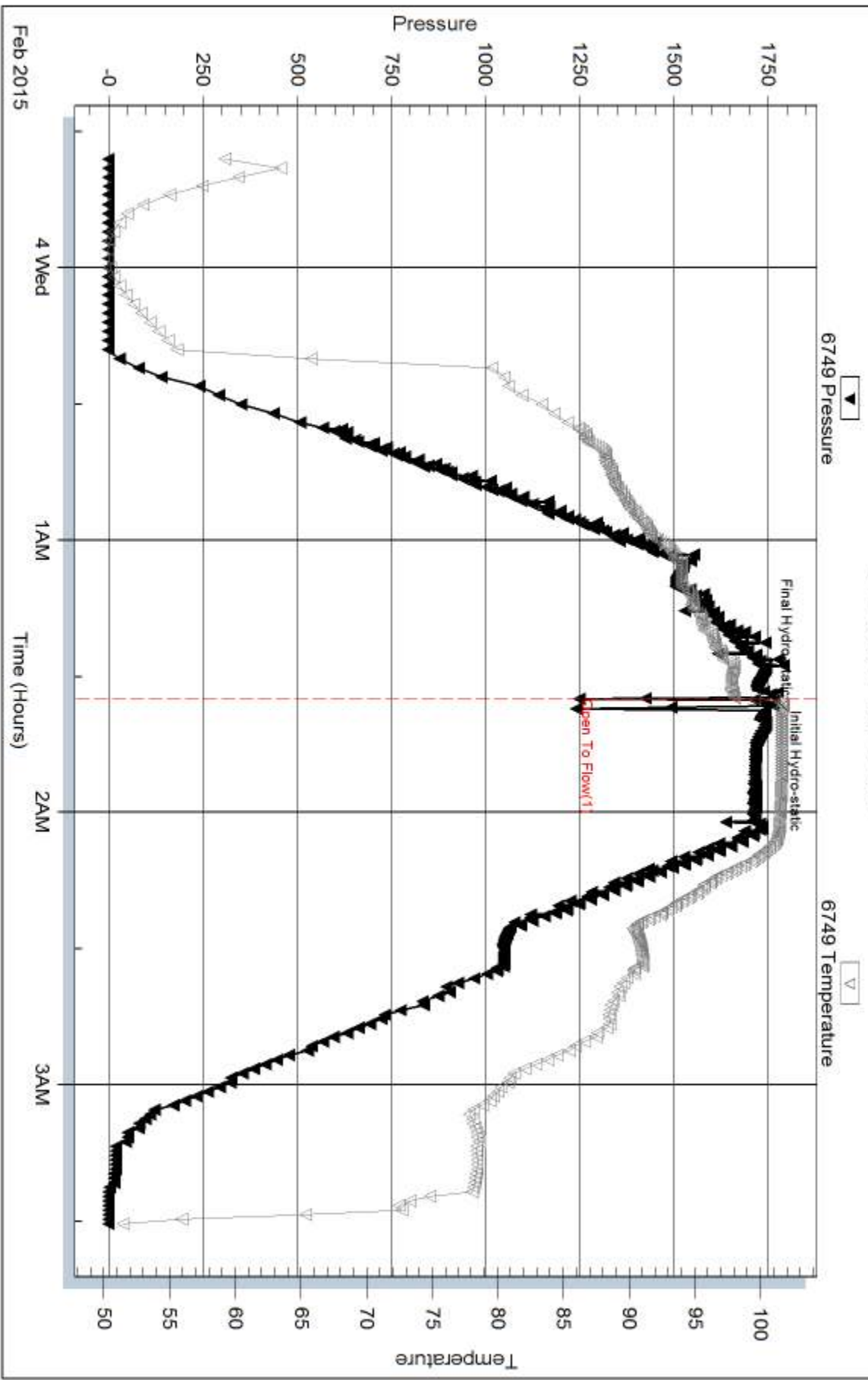
Serial #:

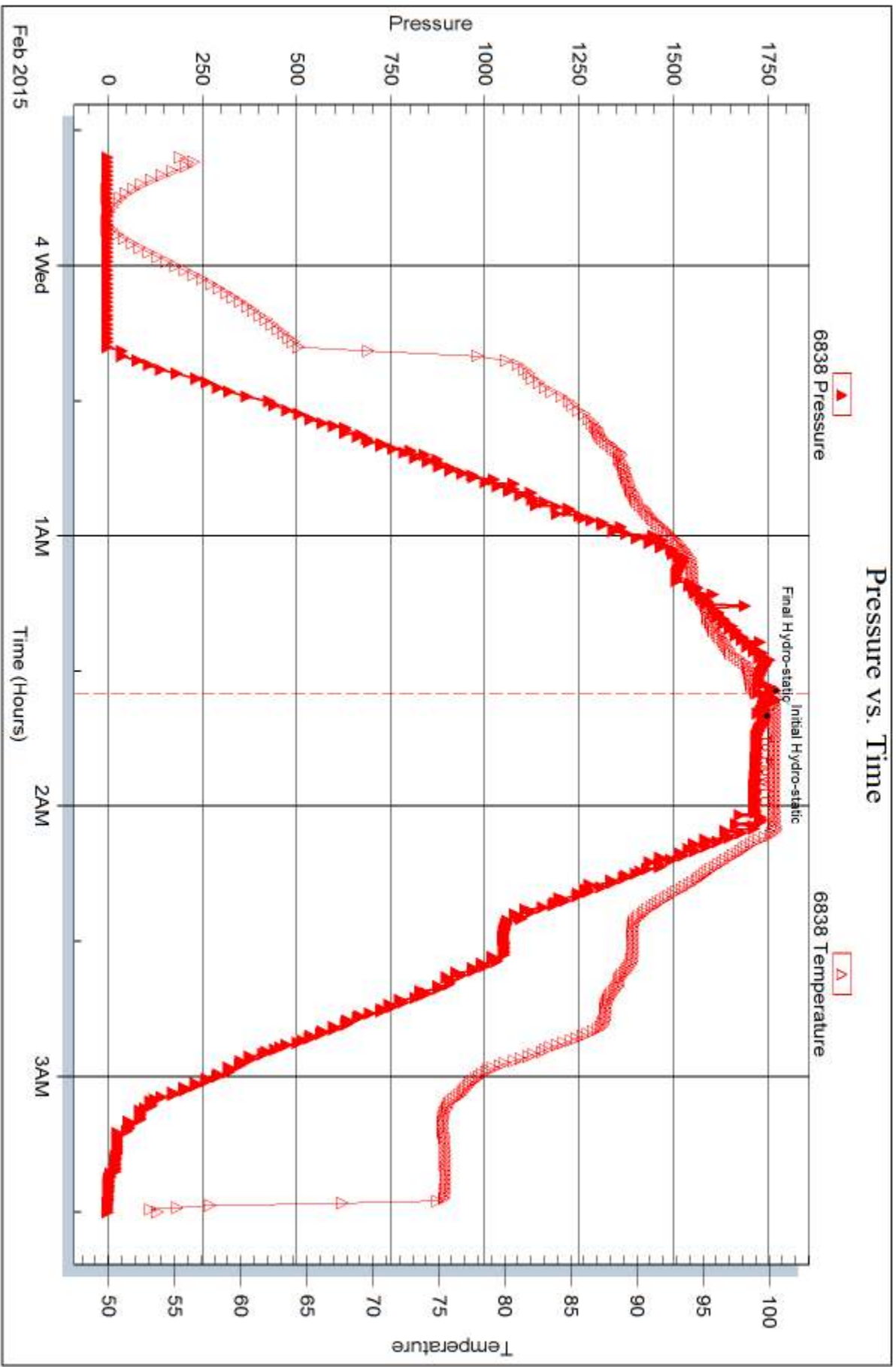
Laboratory Name:

Laboratory Location:

Recovery Comments:

### Pressure vs. Time







## DRILL STEM TEST REPORT

Prepared For: **Younger Energy Company**

9415 E Harry Street  
Suite 403 Buiding 400  
Wichita, KS 67207

ATTN: Kent Matson

### **Morrison-Luther #2**

### **5-21s-13w Stafford,KS**

Start Date: 2015.02.04 @ 03:58:00

End Date: 2015.02.04 @ 10:16:00

Job Ticket #: 62045                      DST #: 2

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

Printed: 2015.02.04 @ 13:12:52





**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Younger Energy Company

**5-21s-13w Stafford, KS**

9415 E Harry Street  
Suite 403 Buiding 400  
Wichita, KS 67207  
ATTN: Kent Matson

**Morrison-Luther #2**

Job Ticket: 62045

**DST#: 2**

Test Start: 2015.02.04 @ 03:58:00

## GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 05:19:00

Time Test Ended: 10:16:00

Test Type: Conventional Bottom Hole (Initial)

Tester: Ken Swinney

Unit No: S1

**Interval: 3510.00 ft (KB) To 3564.00 ft (KB) (TVD)**

Reference Elevations: 1904.00 ft (KB)

Total Depth: 3564.00 ft (KB) (TVD)

1896.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

**Serial #: 6749 Inside**

Press@RunDepth: 56.30 psig @ 3560.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2015.02.04

End Date: 2015.02.04

Last Calib.: 2015.02.04

Start Time: 03:59:00

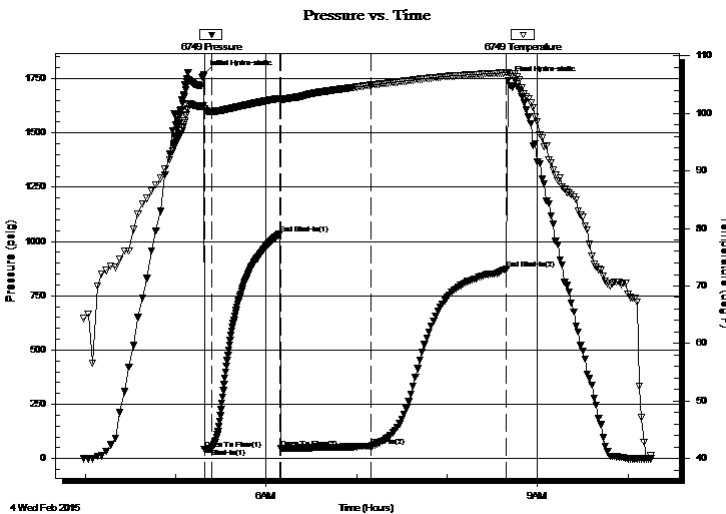
End Time: 10:16:00

Time On Btm: 2015.02.04 @ 05:18:40

Time Off Btm: 2015.02.04 @ 08:40:30

**TEST COMMENT:** IFP 5 Minutes Weak blow built to 1"  
ISI 45 Minutes Weak surface blow back for 15 minutes  
FFP 60 Mintues Weak blow built to 2 3/4"  
FSI 90 Mintues No blow back

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1767.25	101.39	Initial Hydro-static
1	42.79	100.78	Open To Flow (1)
6	45.77	100.30	Shut-In(1)
51	1035.80	102.61	End Shut-In(1)
51	47.74	102.34	Open To Flow (2)
111	56.30	104.90	Shut-In(2)
201	873.74	107.04	End Shut-In(2)
202	1741.09	107.11	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
15.00	Clean Oil 100%	0.21
30.00	Oil cut Mud/Oil 5% Mud 95%	0.42

## Gas Rates

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



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Younger Energy Company

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ATTN: Kent Matson

**Morrison-Luther #2**

Job Ticket: 62045

**DST#: 2**

Test Start: 2015.02.04 @ 03:58:00

## GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 05:19:00

Time Test Ended: 10:16:00

Test Type: Conventional Bottom Hole (Initial)

Tester: Ken Swinney

Unit No: S1

**Interval: 3510.00 ft (KB) To 3564.00 ft (KB) (TVD)**

Reference Elevations: 1904.00 ft (KB)

Total Depth: 3564.00 ft (KB) (TVD)

1896.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

**Serial #: 6838 Outside**

Press@RunDepth: 872.46 psig @ 3561.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2015.02.04

End Date: 2015.02.04

Last Calib.: 2015.02.04

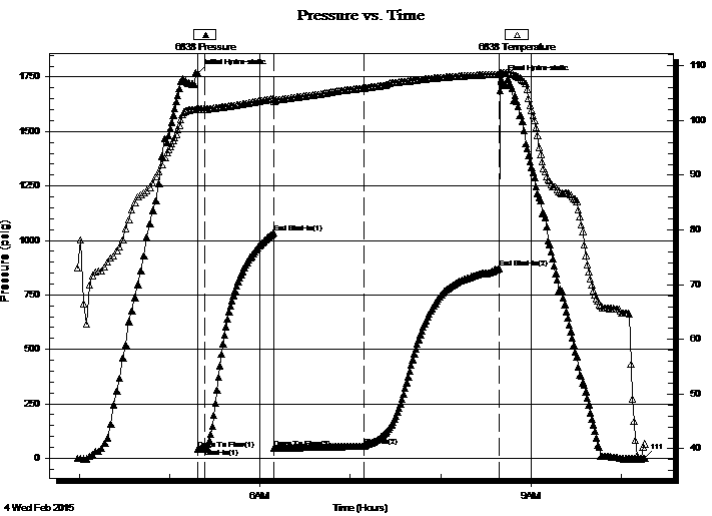
Start Time: 03:59:00

End Time: 10:15:30

Time On Btm: 2015.02.04 @ 05:18:30

Time Off Btm: 2015.02.04 @ 08:40:00

**TEST COMMENT:** IFP 5 Minutes Weak blow built to 1"  
ISI 45 Minutes Weak surface blow back for 15 minutes  
FFP 60 Mintues Weak blow built to 2 3/4"  
FSI 90 Mintues No blow back



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1767.76	102.37	Initial Hydro-static
1	42.96	101.99	Open To Flow (1)
5	45.22	102.08	Shut-In(1)
51	1034.92	103.98	End Shut-In(1)
51	47.78	103.56	Open To Flow (2)
111	55.50	105.94	Shut-In(2)
201	872.46	108.49	End Shut-In(2)
202	1740.35	108.80	Final Hydro-static
297	-1.42	40.87	111

## Recovery

Length (ft)	Description	Volume (bbl)
15.00	Clean Oil 100%	0.21
30.00	Oil cut Mud/Oil 5% Mud 95%	0.42

## Gas Rates

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



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**TOOL DIAGRAM**

Younger Energy Company

**5-21s-13w Stafford,KS**

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Suite 403 Buiding 400  
Wichita, KS 67207  
ATTN: Kent Matson

**Morrison-Luther #2**

Job Ticket: 62045

**DST#: 2**

Test Start: 2015.02.04 @ 03:58:00

## Tool Information

Drill Pipe:	Length: 3500.00 ft	Diameter: 3.80 inches	Volume: 49.10 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 20000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight to Pull Loose: 62000.00 lb
			<u>Total Volume: 49.10 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	18.00 ft			String Weight: Initial 54000.00 lb
Depth to Top Packer:	3510.00 ft			Final 54000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	54.00 ft			
Tool Length:	82.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

## Tool Description

**Length (ft) Serial No. Position Depth (ft) Accum. Lengths**

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Shut-In Tool	5.00			3487.00	
Hydraulic tool	5.00			3492.00	
Jars	6.00			3498.00	
Safety Joint	2.00			3500.00	
Top Packer	5.00			3505.00	
Packer	5.00			3510.00	28.00 Bottom Of Top Packer
Anchor	6.00			3516.00	
Change Over Sub	0.75			3516.75	
Drill Pipe	31.50			3548.25	
Change Over Sub	0.75			3549.00	
Anchor	10.00			3559.00	
Recorder	1.00	6749	Inside	3560.00	
Recorder	1.00	6838	Outside	3561.00	
Bullnose	3.00			3564.00	54.00 Anchor Tool

**Total Tool Length: 82.00**



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**FLUID SUMMARY**

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Wichita, KS 67207  
ATTN: Kent Matson

**Morrison-Luther #2**

Job Ticket: 62045

**DST#: 2**

Test Start: 2015.02.04 @ 03:58:00

## Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 49.00 sec/qt

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

Resistivity: ohm.m

Salinity: 4000.00 ppm

Filter Cake: inches

Cushion Type:

Cushion Length: ft

Cushion Volume: bbl

Gas Cushion Type:

Gas Cushion Pressure: psig

Oil API:

Water Salinity: deg API

ppm

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
15.00	Clean Oil 100%	0.210
30.00	Oil cut Mud/Oil 5% Mud 95%	0.421

Total Length: 45.00 ft      Total Volume: 0.631 bbl

Num Fluid Samples: 0

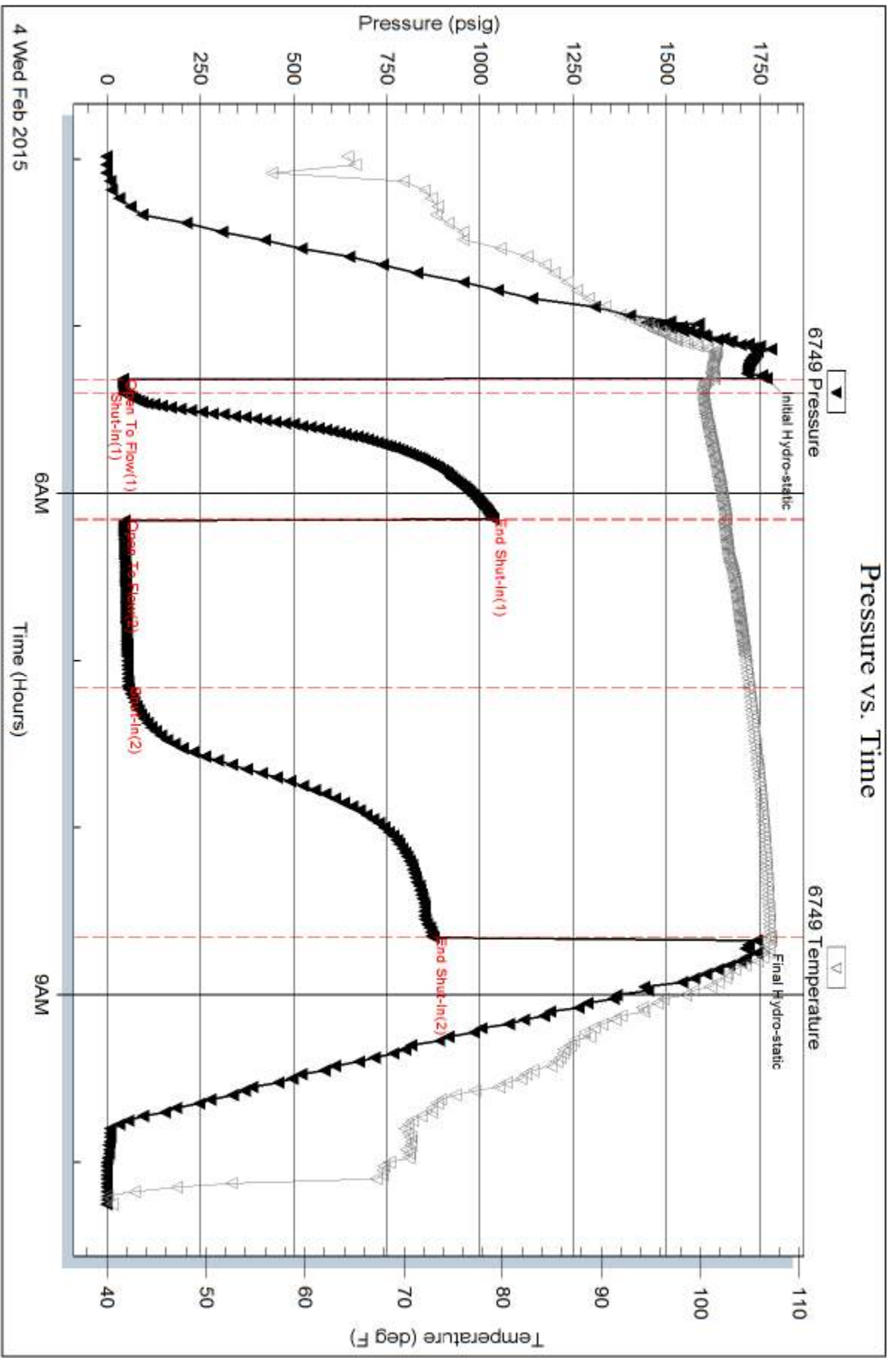
Num Gas Bombs: 0

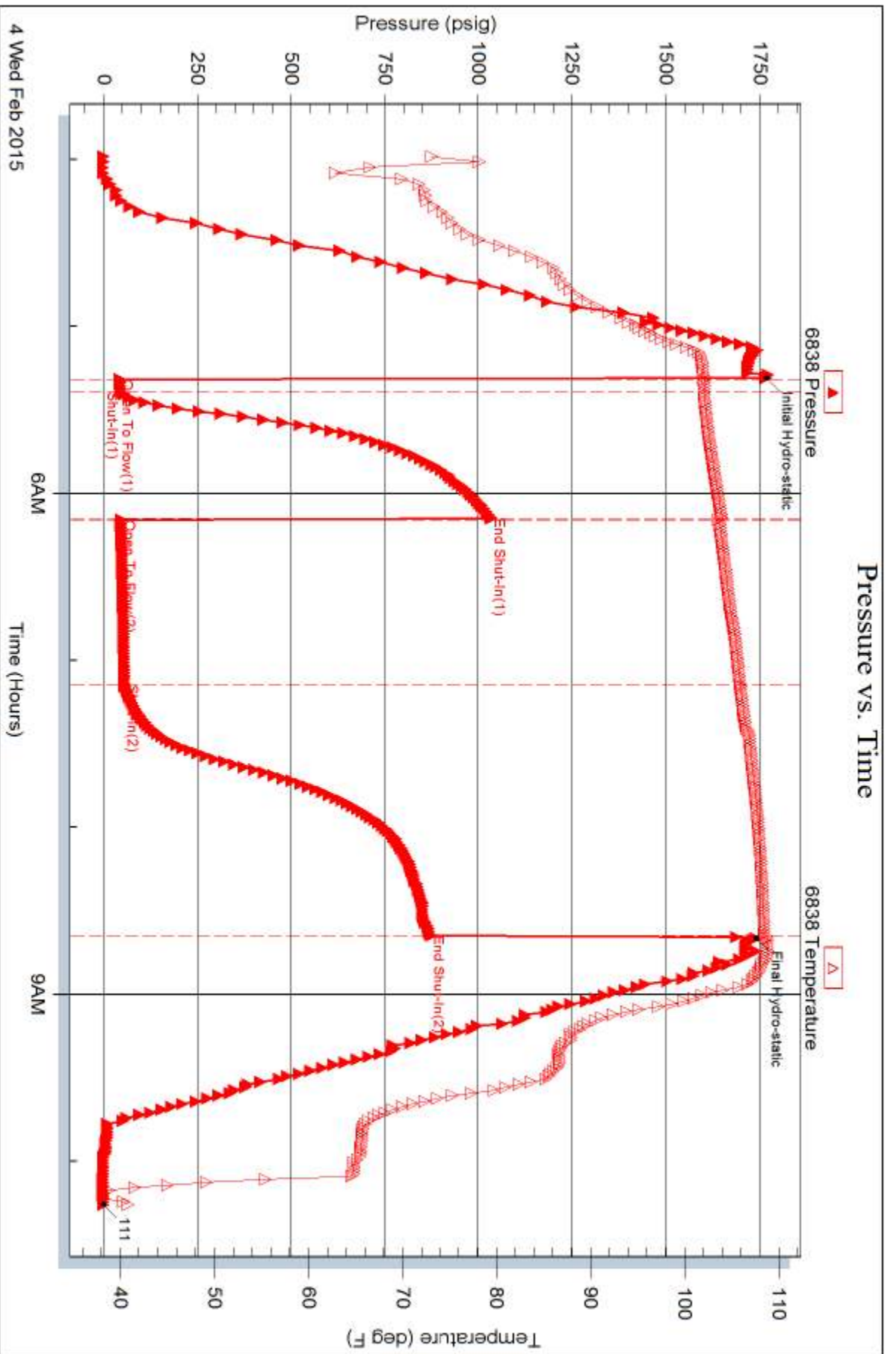
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:







# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 62044

Well Name & No. Morrison-Luther Unit #2 Test No. 1 Date 3 Feb 15  
 Company Younger Energy Company Elevation 1904 KB \_\_\_\_\_ GL \_\_\_\_\_  
 Address 9415 E Harry Street Suite 403 Building 400 Wichita, Kansas 67207  
 Co. Rep / Geo. Kent Matson Rig Duke Rig #2  
 Location: Sec. 5 Twp. 215 Rge. 13W Co. Stafford State KS

Interval Tested 3538-3564 Zone Tested Arbuckle  
 Anchor Length 26' Drill Pipe Run 3531 Mud Wt. 9.3  
 Top Packer Depth 3533 Drill Collars Run — Vis 49  
 Bottom Packer Depth 3538 Wt. Pipe Run — WL 7.2  
 Total Depth 3564 Chlorides 4000 ppm System LCM 1/2 #  
 Blow Description Set tool on bottom / opened tool / packer fail / second attempt to set tool / packer fail / pull tool

Rec	Feet of	%gas	%oil	%water	%mud
<u>135</u>	<u>Drilling 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 135 BHT 100 Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm

(A) Initial Hydrostatic 1766  Test 850 T-On Location 10:50 pm  
 (B) First Initial Flow 1249  Jars 250 T-Started 11:36 pm  
 (C) First Final Flow 174  Safety Joint 75 T-Open 1:34 am  
 (D) Initial Shut-In \_\_\_\_\_  Circ Sub \_\_\_\_\_ T-Pulled 1:37 am  
 (E) Second Initial Flow \_\_\_\_\_  Hourly Standby \_\_\_\_\_ T-Out 3:30 am  
 (F) Second Final Flow \_\_\_\_\_  Mileage 18 18 Comments \_\_\_\_\_  
 (G) Final Shut-In \_\_\_\_\_  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 1742  Straddle \_\_\_\_\_  Ruined Shale Packer \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  Ruined Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  Extra Copies \_\_\_\_\_  
 Extra Recorder \_\_\_\_\_ Sub Total 0  
 Day Standby \_\_\_\_\_ Total 1193  
 Accessibility \_\_\_\_\_ MP/DST Disc't \_\_\_\_\_  
 Sub Total 1193

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. 62045

Well Name & No. Morrison-Luther Unit #2 Test No. 2 Date 4 Feb 15  
 Company Younger Energy Company Elevation 1904 KB 1896 GL  
 Address 9415 E Harry Street Suite 403 Building 400, Wichita, Kansas 67207  
 Co. Rep / Geo. Kent Matson Rig Duke Rig #2  
 Location: Sec. 5 Twp. 21S Rge. 13W Co. Stafford State KS

Interval Tested 3510-3564 Zone Tested Arbuckle  
 Anchor Length 54 Drill Pipe Run 3500 Mud Wt. 9.3  
 Top Packer Depth 3505 Drill Collars Run - Vis 49  
 Bottom Packer Depth 3510 Wt. Pipe Run - WL 7.2  
 Total Depth 3564 Chlorides 4000 ppm System LCM 1/2 #  
 Blow Description Weak blow/ Blow built to 1 inch  
weak surface blow back for 15 minutes  
weak blow/ Blow built to 2 3/4 inches  
No blow back

Rec	Feet of	%gas	%oil	%water	%mud
<u>15</u>	<u>Clean oil</u>	<u>100</u>	<u>0</u>	<u>0</u>	<u>0</u>
<u>30</u>	<u>Oil cut Mud</u>	<u>5</u>	<u>0</u>	<u>0</u>	<u>95</u>
<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>
<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>
<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>

Rec Total    BHT 108 Gravity 39 API RW    @    °F Chlorides    ppm

(A) Initial Hydrostatic <u>1767</u>	<input checked="" type="checkbox"/> Test <u>1050</u>	T-On Location <u>3:30 am</u>
(B) First Initial Flow <u>47</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>3:58 am</u>
(C) First Final Flow <u>45</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>5:18 am</u>
(D) Initial Shut-In <u>1035</u>	<input type="checkbox"/> Circ Sub <u>  </u>	T-Pulled <u>8:38 am</u>
(E) Second Initial Flow <u>47</u>	<input type="checkbox"/> Hourly Standby <u>  </u>	T-Out <u>10:15 am</u>
(F) Second Final Flow <u>56</u>	<input checked="" type="checkbox"/> Mileage <u>18</u>	Comments <u>  </u>
(G) Final Shut-In <u>873</u>	<input type="checkbox"/> Sampler <u>  </u>	<u>  </u>
(H) Final Hydrostatic <u>1741</u>	<input type="checkbox"/> Straddle <u>  </u>	<input type="checkbox"/> Ruined Shale Packer <u>  </u>
Initial Open <u>5</u>	<input checked="" type="checkbox"/> Shale Packer <u>250</u>	<input type="checkbox"/> Ruined Packer <u>  </u>
Initial Shut-In <u>45</u>	<input type="checkbox"/> Extra Packer <u>  </u>	<input type="checkbox"/> Extra Copies <u>  </u>
Final Flow <u>60</u>	<input type="checkbox"/> Extra Recorder <u>  </u>	Sub Total <u>0</u>
Final Shut-In <u>90</u>	<input type="checkbox"/> Day Standby <u>  </u>	Total <u>1625</u>
	<input type="checkbox"/> Accessibility <u>  </u>	MP/DST Disc't <u>  </u>
	Sub Total <u>1625</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.