



## DRILL STEM TEST REPORT

Prepared For: **Palmer Oil, Inc.**

PO Box 399  
Garden City, KS 67846

ATTN: Wyatt Urban

**Willis #23-7**

**23-32s-37w Stevens, KS**

Start Date: 2014.02.09 @ 11:54:27

End Date: 2014.02.09 @ 20:53:12

Job Ticket #: 51931                      DST #: 1

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

Printed: 2014.02.14 @ 15:34:24

Palmer Oil, Inc.  
23-32s-37w Stevens, KS  
Willis #23-7  
DST # 1  
Morrow Sand  
2014.02.09



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Palmer Oil, Inc.  
PO Box 399  
Garden City, KS 67846  
ATTN: Wyatt Urban

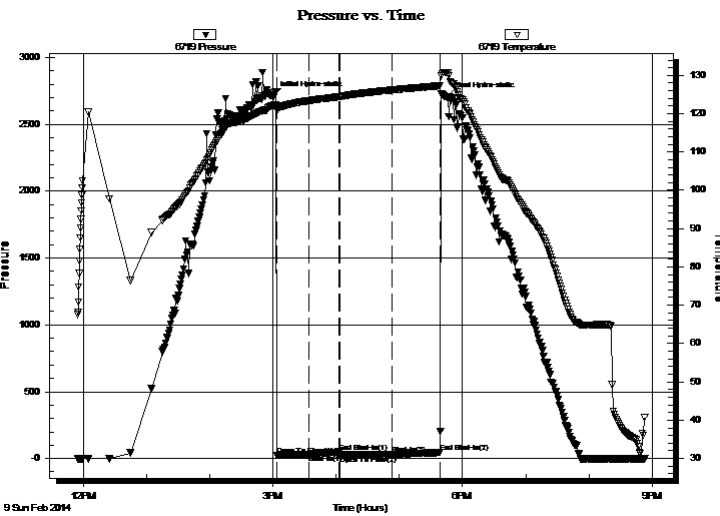
**23-32s-37w Stevens, KS**  
**Willis #23-7**  
Job Ticket: 51931      **DST#: 1**  
Test Start: 2014.02.09 @ 11:54:27

## GENERAL INFORMATION:

Formation: **Morrow Sand**  
Deviated: No Whipstock:                      ft (KB)  
Time Tool Opened: 15:03:57  
Time Test Ended: 20:53:12  
Interval: **5595.00 ft (KB) To 5670.00 ft (KB) (TVD)**  
Total Depth: 5670.00 ft (KB) (TVD)  
Hole Diameter: 7.88 inches Hole Condition: Fair  
Test Type: Conventional Bottom Hole (Initial)  
Tester: Leal Cason  
Unit No: 53  
Reference Elevations: 3117.00 ft (KB)  
3104.00 ft (CF)  
KB to GR/CF: 13.00 ft

**Serial #: 6719      Outside**  
Press@RunDepth: 30.04 psig @ 5596.00 ft (KB)      Capacity: 8000.00 psig  
Start Date: 2014.02.09      End Date: 2014.02.09      Last Calib.: 2014.02.09  
Start Time: 11:54:32      End Time: 20:53:12      Time On Btm: 2014.02.09 @ 15:01:12  
Time Off Btm: 2014.02.09 @ 17:44:57

TEST COMMENT: IF: Weak blow . Surf., - 3 1/2 ".  
IS: No blow .  
FF: Weak blow . Surf., - 3/4 ".  
FS: No blow .



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2713.10	122.23	Initial Hydro-static
3	23.16	120.88	Open To Flow (1)
34	29.70	123.41	Shut-In(1)
62	49.41	124.41	End Shut-In(1)
63	25.54	124.44	Open To Flow (2)
112	30.04	126.19	Shut-In(2)
158	45.21	127.29	End Shut-In(2)
164	2704.78	130.66	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
10.00	drig mud	0.05

## Gas Rates

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





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Palmer Oil, Inc.  
PO Box 399  
Garden City, KS 67846  
ATTN: Wyatt Urban

**23-32s-37w Stevens,KS**  
**Willis #23-7**  
Job Ticket: 51931      **DST#: 1**  
Test Start: 2014.02.09 @ 11:54:27

**Tool Information**

Drill Pipe:	Length: 5406.00 ft	Diameter: 3.80 inches	Volume: 75.83 bbl	Tool Weight:	2400.00 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: 180.00 ft	Diameter: 2.25 inches	Volume: 0.89 bbl	Weight to Pull Loose:	90000.00 lb
			<u>Total Volume: 76.72 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	19.00 ft			String Weight: Initial	85000.00 lb
Depth to Top Packer:	5595.00 ft			Final	85000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	75.00 ft				
Tool Length:	103.00 ft				
Number of Packers:	2	Diameter: 6.75 inches			

Tool Comments: Shale Packer on Bottom

<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			5568.00	
Shut In Tool	5.00			5573.00	
Hydraulic tool	5.00			5578.00	
Jars	5.00			5583.00	
Safety Joint	3.00			5586.00	
Packer	4.00			5590.00	28.00      Bottom Of Top Packer
Packer	5.00			5595.00	
Stubb	1.00			5596.00	
Recorder	0.00	6719	Outside	5596.00	
Recorder	0.00	6773	Outside	5596.00	
Perforations	5.00			5601.00	
Change Over Sub	1.00			5602.00	
Drill Pipe	64.00			5666.00	
Change Over Sub	1.00			5667.00	
Bullnose	3.00			5670.00	75.00      Bottom Packers & Anchor

**Total Tool Length: 103.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Palmer Oil, Inc.  
PO Box 399  
Garden City, KS 67846  
ATTN: Wyatt Urban

**23-32s-37w Stevens,KS**  
**Willis #23-7**  
Job Ticket: 51931      **DST#: 1**  
Test Start: 2014.02.09 @ 11:54:27

## 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:	3000 ppm
Viscosity: 58.00 sec/qt	Cushion Volume: bbl		
Water Loss: 6.39 in <sup>3</sup>	Gas Cushion Type:		
Resistivity: 0.00 ohm.m	Gas Cushion Pressure: psig		
Salinity: 3000.00 ppm			
Filter Cake: 0.20 inches			

## Recovery Information

Recovery Table

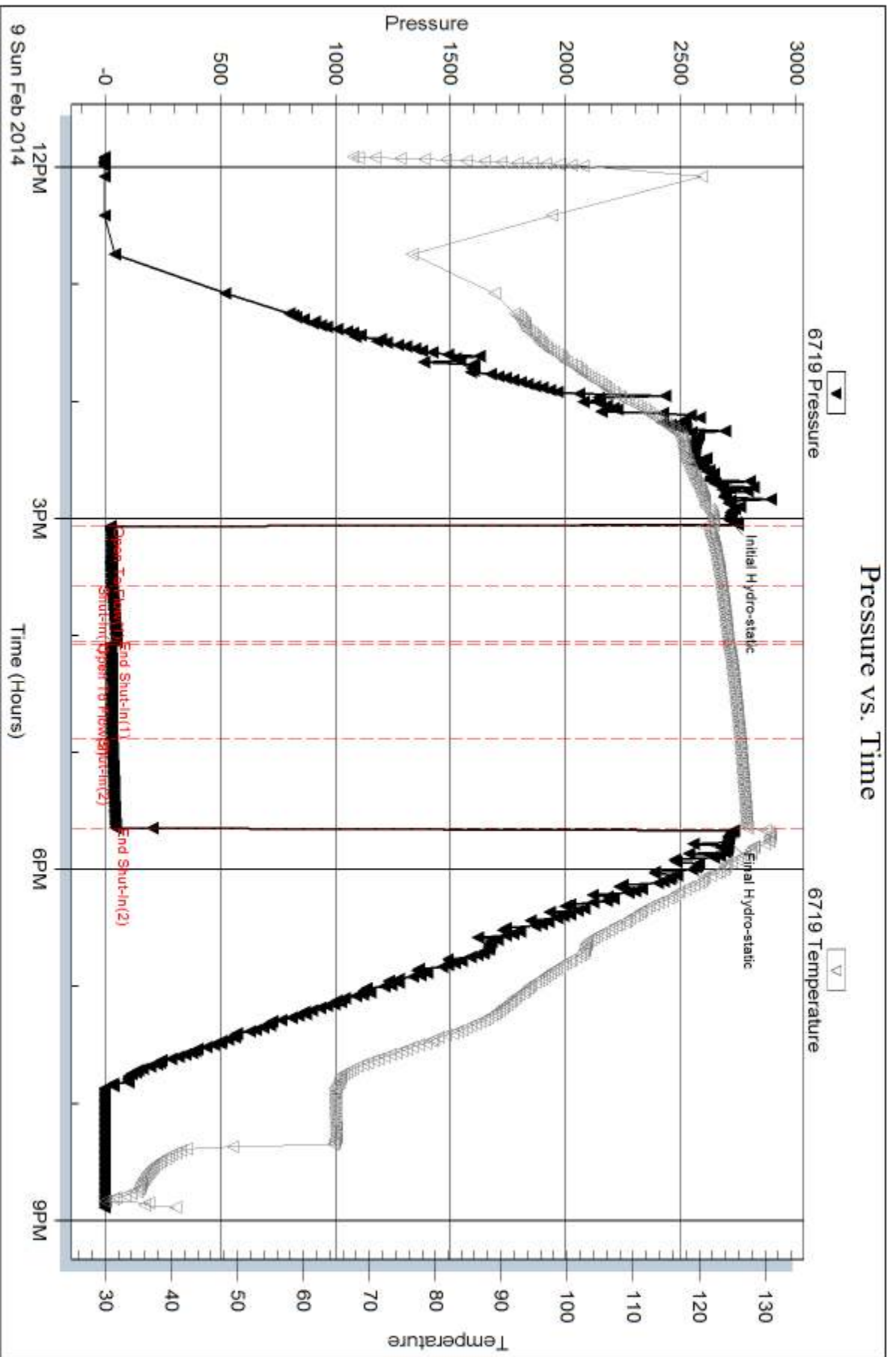
Length ft	Description	Volume bbl
10.00	drig mud	0.049

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:

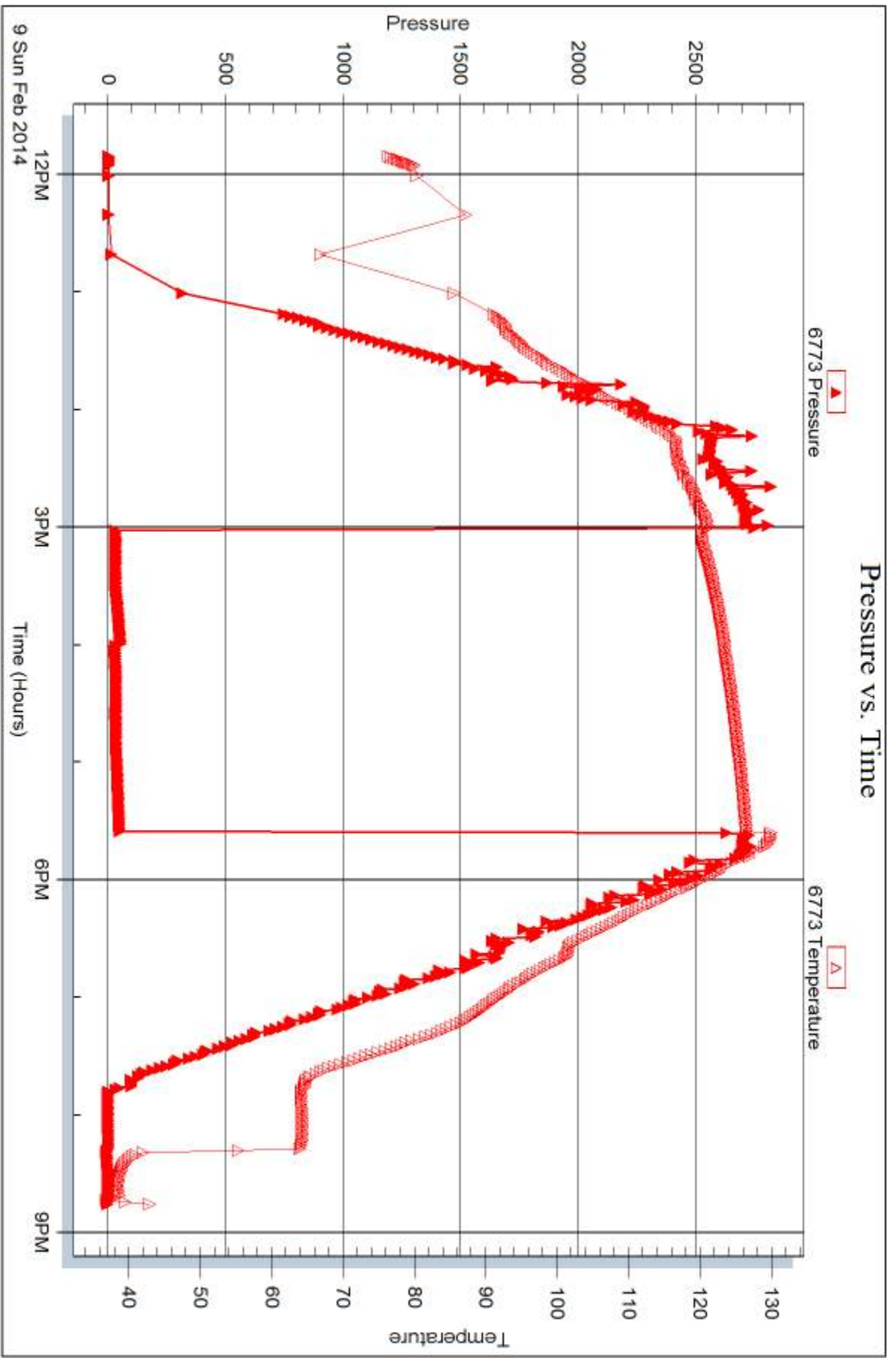


Serial #: 6773

Outside Palmer Oil, Inc.

Wells #23-7

DST Test Number: 1



Trilobite Testing, Inc

Ref. No: 51931

Printed: 2014.02.14 @ 15:34:27



## DRILL STEM TEST REPORT

Prepared For: **Palmer Oil, Inc.**

PO Box 399  
Garden City, KS 67846

ATTN: Wyatt Urban

**Willis #23-7**

**23-32s-37w Stevens, KS**

Start Date: 2014.02.11 @ 22:15:03

End Date: 2014.02.12 @ 10:55:43

Job Ticket #: 51932                      DST #: 2

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

Printed: 2014.02.14 @ 15:32:42





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Palmer Oil, Inc.  
PO Box 399  
Garden City, KS 67846  
ATTN: Wyatt Urban

**23-32s-37w Stevens, KS**

**Willis #23-7**

Job Ticket: 51932 **DST#: 2**

Test Start: 2014.02.11 @ 22:15:03

## GENERAL INFORMATION:

Formation: **St. Louis**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 02:05:43  
 Time Test Ended: 10:55:43  
 Interval: **6325.00 ft (KB) To 6385.00 ft (KB) (TVD)**  
 Total Depth: 6385.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition:  
 Test Type: Conventional Bottom Hole (Reset)  
 Tester: Matt Smith  
 Unit No: 53  
 Reference Elevations: 3117.00 ft (KB)  
 3104.00 ft (CF)  
 KB to GR/CF: 13.00 ft

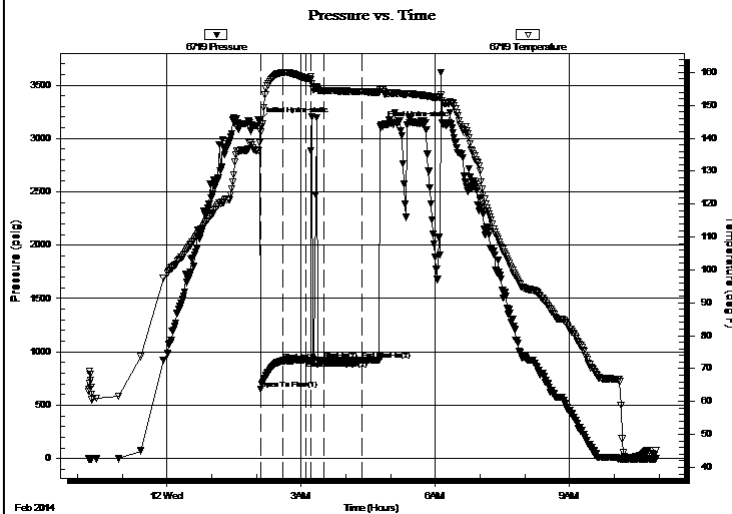
## Serial #: 6719

**Outside**

Press@RunDepth: 921.61 psig @ 6326.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2014.02.11 End Date: 2014.02.12 Last Calib.: 2014.02.12  
 Start Time: 22:15:03 End Time: 10:55:43 Time On Btm: 2014.02.12 @ 02:04:13  
 Time Off Btm: 2014.02.12 @ 04:46:58

TEST COMMENT: IF: Strong blow . B.O.B. in 2 mins.  
 IS: No blow .  
 FF: No blow .  
 FS: No blow .

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	3161.50	138.61	Initial Hydro-static
2	652.07	141.82	Open To Flow (1)
32	917.18	159.96	Shut-In(1)
62	920.68	158.29	End Shut-In(1)
69	920.87	157.82	Open To Flow (2)
86	921.61	154.48	Shut-In(2)
138	920.89	154.15	End Shut-In(2)
163	3123.22	154.76	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
180.00	MCW 42% <sub>m</sub> 58% <sub>w</sub>	0.89
1420.00	V SLI MW 2% <sub>m</sub> 98% <sub>w</sub>	19.92

\* Recovery from multiple tests

## Gas Rates

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



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Palmer Oil, Inc.  
 PO Box 399  
 Garden City, KS 67846  
 ATTN: Wyatt Urban

**23-32s-37w Stevens, KS**

**Willis #23-7**

Job Ticket: 51932

**DST#: 2**

Test Start: 2014.02.11 @ 22:15:03

## GENERAL INFORMATION:

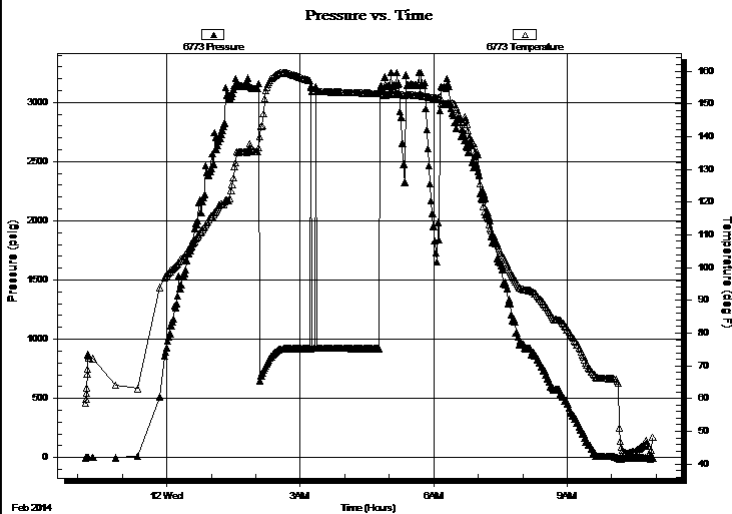
Formation: **St. Louis**  
 Deviated: No Whipstock: ft (KB)  
 Test Type: Conventional Bottom Hole (Reset)  
 Time Tool Opened: 02:05:43  
 Tester: Matt Smith  
 Time Test Ended: 10:55:43  
 Unit No: 53  
 Interval: **6325.00 ft (KB) To 6385.00 ft (KB) (TVD)**  
 Reference Elevations: 3117.00 ft (KB)  
 Total Depth: 6385.00 ft (KB) (TVD)  
 3104.00 ft (CF)  
 Hole Diameter: 7.88 inches  
 Hole Condition: KB to GR/CF: 13.00 ft

## Serial #: 6773

Outside

Press@RunDepth: psig @ 6326.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2014.02.11 End Date: 2014.02.12 Last Calib.: 2014.02.12  
 Start Time: 22:10:30 End Time: 10:55:55 Time On Btm:  
 Time Off Btm:

TEST COMMENT: IF: Strong blow . B.O.B. in 2 mins.  
 IS: No blow .  
 FF: No blow .  
 FS: No blow .



## PRESSURE SUMMARY

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

## Recovery

Length (ft)	Description	Volume (bbl)
180.00	MCW 42% <sub>m</sub> 58% <sub>w</sub>	0.89
1420.00	V SLI MW 2% <sub>m</sub> 98% <sub>w</sub>	19.92

\* Recovery from multiple tests

## Gas Rates

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



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Palmer Oil, Inc.  
PO Box 399  
Garden City, KS 67846  
ATTN: Wyatt Urban

**23-32s-37w Stevens, KS**  
**Willis #23-7**  
Job Ticket: 51932      **DST#: 2**  
Test Start: 2014.02.11 @ 22:15:03

**Tool Information**

Drill Pipe:	Length: 6130.00 ft	Diameter: 3.80 inches	Volume: 85.99 bbl	Tool Weight: 2400.00 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: 180.00 ft	Diameter: 2.25 inches	Volume: 0.89 bbl	Weight to Pull Loose: 130000.0 lb
		Total Volume: 86.88 bbl		Tool Chased 0.00 ft
Drill Pipe Above KB:	13.00 ft			String Weight: Initial 88000.00 lb
Depth to Top Packer:	6325.00 ft			Final 104000.0 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	60.00 ft			
Tool Length:	88.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			6298.00	
Shut In Tool	5.00			6303.00	
Hydraulic tool	5.00			6308.00	
Jars	5.00			6313.00	
Safety Joint	3.00			6316.00	
Packer	4.00			6320.00	28.00      Bottom Of Top Packer
Packer	5.00			6325.00	
Stubb	1.00			6326.00	
Recorder	0.00	6719	Outside	6326.00	
Recorder	0.00	6773	Outside	6326.00	
Perforations	5.00			6331.00	
Change Over Sub	1.00			6332.00	
Drill Pipe	32.00			6364.00	
Change Over Sub	1.00			6365.00	
Perforations	17.00			6382.00	
Bullnose	3.00			6385.00	60.00      Bottom Packers & Anchor
<b>Total Tool Length:</b>		<b>88.00</b>			



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# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Palmer Oil, Inc.  
PO Box 399  
Garden City, KS 67846  
ATTN: Wyatt Urban

**23-32s-37w Stevens,KS**  
**Willis #23-7**  
Job Ticket: 51932      **DST#: 2**  
Test Start: 2014.02.11 @ 22:15:03

## Mud and Cushion Information

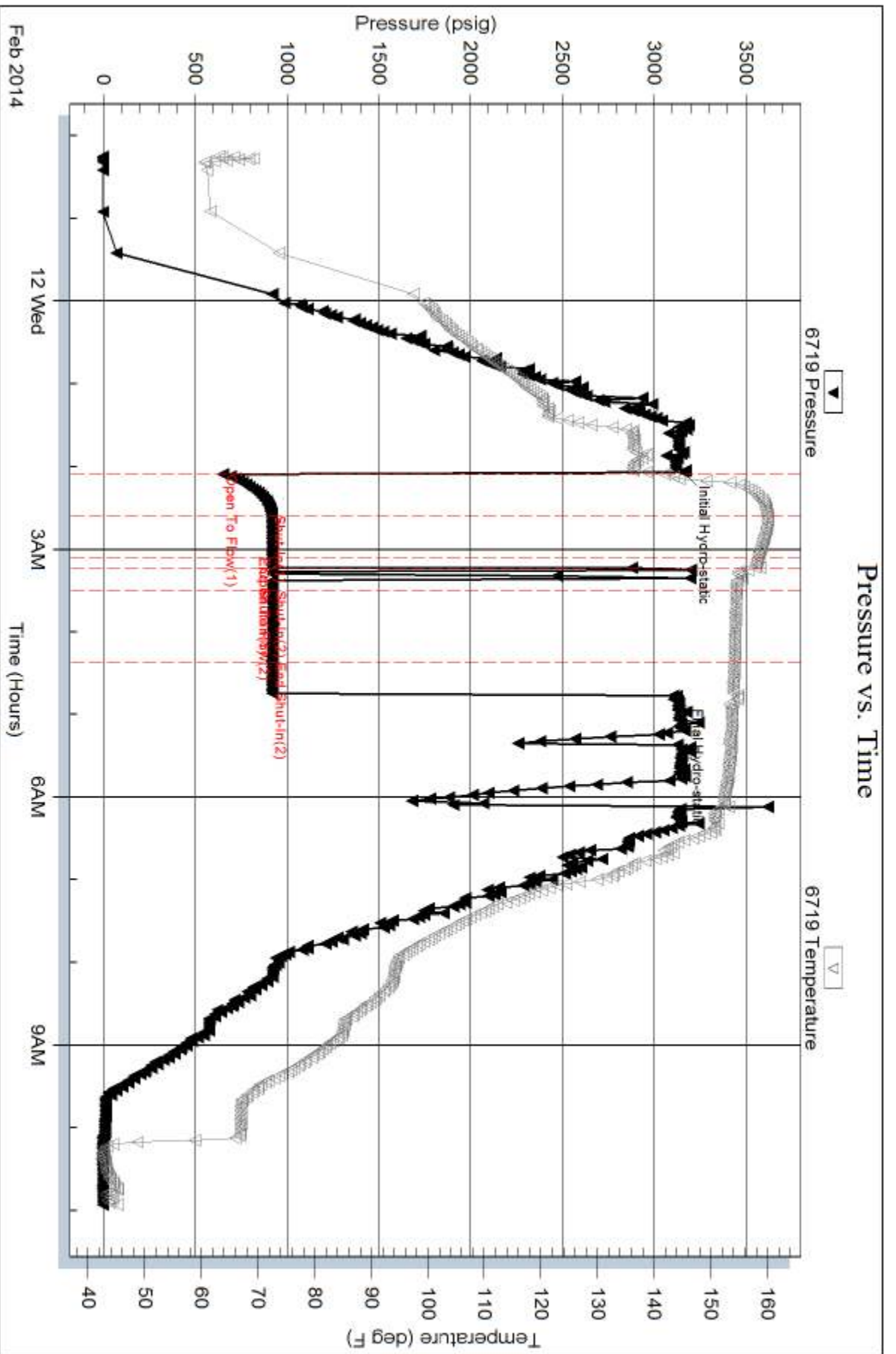
Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	11000 ppm
Viscosity: 50.00 sec/qt	Cushion Volume: bbl		
Water Loss: 7.99 in <sup>3</sup>	Gas Cushion Type:		
Resistivity: 0.00 ohm.m	Gas Cushion Pressure: psig		
Salinity: 1250.00 ppm			
Filter Cake: 0.20 inches			

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
180.00	MCW 42%m 58%w	0.885
1420.00	V SLI MW 2%m 98%w	19.919

Total Length: 1600.00 ft      Total Volume: 20.804 bbl  
 Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #: none  
 Laboratory Name:      Laboratory Location:  
 Recovery Comments:

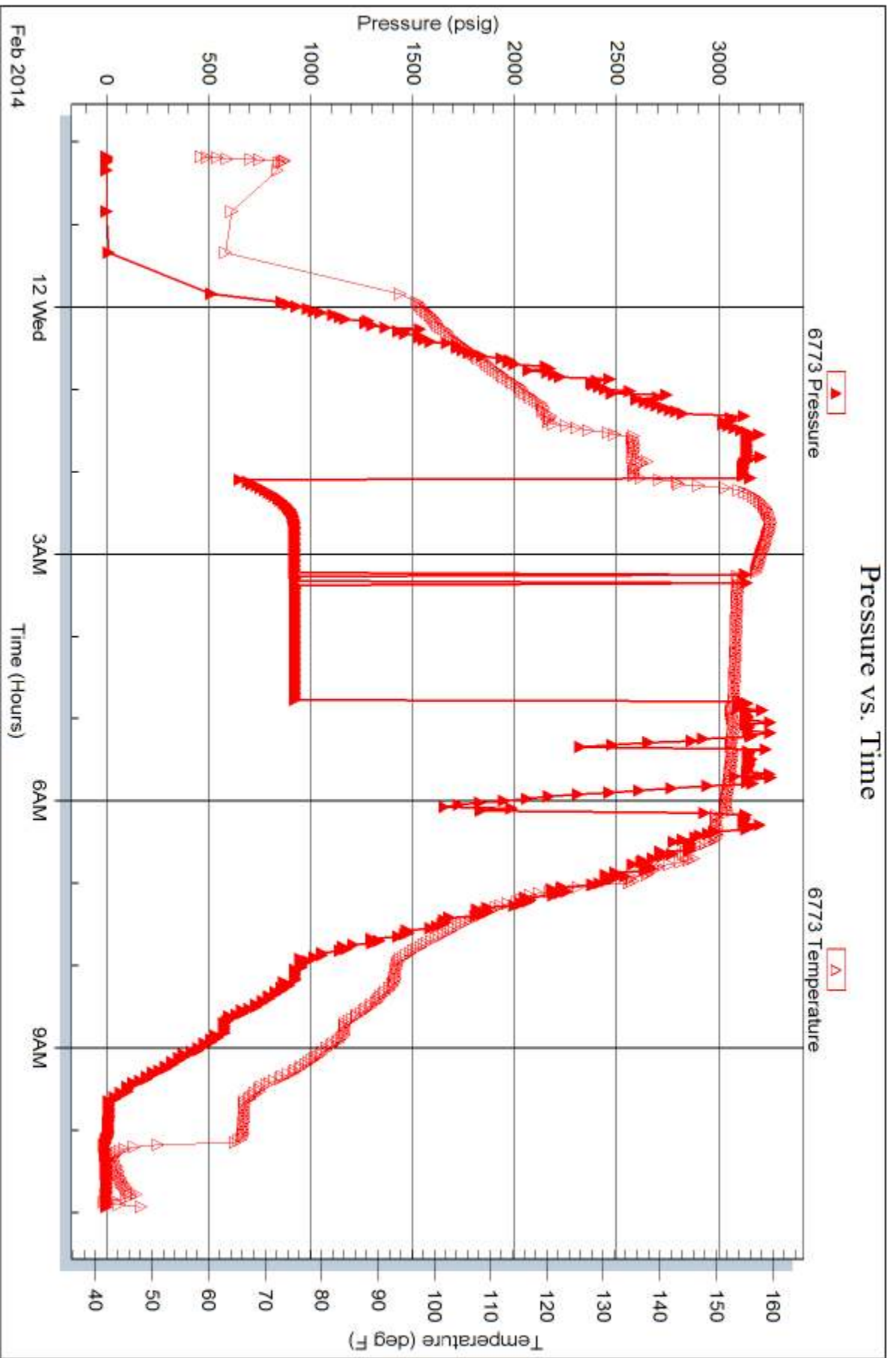


Serial #: 6773

Outside Palmer Oil, Inc.

Wells #23-7

DST Test Number: 2



Trilobite Testing, Inc

Ref. No: 51932

Printed: 2014.02.14 @ 15:32:44



# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 51931

Well Name & No. ~~Willis # 23-7~~ Willis # 23-7 Test No. 1 Date 02/09/14  
 Company Palmer Oil, Inc. Elevation 3117 KB 3104 GL  
 Address 3118 N. Cummings RD. P.O. Box 399 Garden City, Ks. 67846  
 Co. Rep / Geo. Wyatt Urban Rig Duke Drlg Rig #9  
 Location: Sec. 23 Twp. 32s Rge. 37W Co. Stevens, State KS.

Interval Tested 5595 - 5670 Zone Tested Morrow Sand  
 Anchor Length 75' Drill Pipe Run 5406 Mud Wt. 9.3  
 Top Packer Depth 5590 Drill Collars Run 180' Vis 58  
 Bottom Packer Depth 5595 Wt. Pipe Run 2 WL 6.4  
 Total Depth 5670 Chlorides 3,000 ppm System LCM 2#

Blow Description IF: Weak blow. Surf. - 3 1/2".  
 ISI: No blows.  
 FF: Weak blow. Surf. - 3/4".  
 FSI: No blow.

Rec	Feet of	drlg mud	%gas	%oil	%water	%mud
10						

Rec Total 10' BHT 130° Gravity API RW @ ° F Chlorides ppm

(A) Initial Hydrostatic 2713	<input checked="" type="checkbox"/> Test 1350	T-On Location 1130
(B) First Initial Flow 23	<input checked="" type="checkbox"/> Jars 250	T-Started 1154
(C) First Final Flow 30	<input checked="" type="checkbox"/> Safety Joint 75	T-Open 1504
(D) Initial Shut-In 49	<input type="checkbox"/> Circ Sub	T-Pulled 1738
(E) Second Initial Flow 25	<input type="checkbox"/> Hourly Standby	T-Out 2053
(F) Second Final Flow 30	<input checked="" type="checkbox"/> Mileage 310 → 208rt 322.40	Comments matt Smith
(G) Final Shut-In 45	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic 2705	<input type="checkbox"/> Straddle	<input type="checkbox"/> Ruined Shale Packer
	<input checked="" type="checkbox"/> Shale Packer 250	<input type="checkbox"/> Ruined Packer
Initial Open 30	<input type="checkbox"/> Extra Packer	<input type="checkbox"/> Extra Copies
Initial Shut-In 30	<input type="checkbox"/> Extra Recorder	Sub Total 0
Final Flow 45	<input type="checkbox"/> Day Standby	Total 2247.40
Final Shut-In 45	<input type="checkbox"/> Accessibility	MP/DST Disc't
	Sub Total 2247.40	

Approved By \_\_\_\_\_ Our Representative

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. 51932

Well Name & No. Willis # 23-7 Test No. 2 Date 02/11/14  
 Company Palmer Oil, Inc. Elevation 3117 KB 3104 GL  
 Address 3118 N. Cummings RD. P.O. Box 399 Garden City, KS. 67846  
 Co. Rep / Geo. Wyatt Urban Rig Duke Delg, Rig #9  
 Location: Sec. 23 Twp. 32s Rge. 37w Co. Stevens State KS

Interval Tested 6325 - 6385 Zone Tested St. Louis  
 Anchor Length 60' Drill Pipe Run 6130 Mud Wt. 9.4  
 Top Packer Depth 6320 Drill Collars Run 180' Vis 50  
 Bottom Packer Depth 6325 Wt. Pipe Run 2 WL 8.0  
 Total Depth 6385 Chlorides 1250 ppm System LCM 1 1/2#

Blow Description IF: Strong blow, B.O.B. in 2 mins.  
ISI: No blow.  
FF: No blow.  
FSI: No blow.

Rec	Feet of	%gas	%oil	%water	%mud
<u>1420</u>	<u>VSLI OCWM</u>			<u>58</u>	<u>42</u>
<u>180</u>	<u>VSLI OCWM</u>			<u>98</u>	<u>2</u>

Rec Total 1600' BHT 154° Gravity N/C API RW 1.0 @ 40 ° F Chlorides 11,000 ppm

(A) Initial Hydrostatic 3162  Test 1450 T-On Location 2130  
 (B) First Initial Flow 652  Jars 250 T-Started 2215  
 (C) First Final Flow 917  Safety Joint 75 T-Open 6205  
 (D) Initial Shut-In 921  Circ Sub \_\_\_\_\_ T-Pulled 0445  
 (E) Second Initial Flow 921  Hourly Standby .75h 75 T-Out 1655  
 (F) Second Final Flow 922  Mileage 310 322.40 Comments \_\_\_\_\_  
 (G) Final Shut-In 921  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 3123  Straddle \_\_\_\_\_

Shale Packer \_\_\_\_\_  
 Shale Packer 320  
 Extra Packer \_\_\_\_\_  
 Extra Recorder \_\_\_\_\_  
 Day Standby 1d 24.5h  
 Accessibility \_\_\_\_\_  
 Sub Total 2172.40  
 Ruined Shale Packer \_\_\_\_\_  
 Ruined Packer \_\_\_\_\_  
 Extra Copies \_\_\_\_\_  
 Sub Total 816.67  
 Total 3309.07  
 MP/DST Disc't \_\_\_\_\_

Approved By \_\_\_\_\_ Our Representative Wyatt Urban

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.