

Confidentiality Requested:

Yes  No

KANSAS CORPORATION COMMISSION  
OIL & GAS CONSERVATION DIVISION

Form ACO-1

January 2018

Form must be Typed

Form must be Signed

All blanks must be Filled

WELL COMPLETION FORM  
WELL HISTORY - DESCRIPTION OF WELL & LEASE

OPERATOR: License # \_\_\_\_\_

Name: \_\_\_\_\_

Address 1: \_\_\_\_\_

Address 2: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_ + \_\_\_\_\_

Contact Person: \_\_\_\_\_

Phone: ( \_\_\_\_\_ ) \_\_\_\_\_

CONTRACTOR: License # \_\_\_\_\_

Name: \_\_\_\_\_

Wellsite Geologist: \_\_\_\_\_

Purchaser: \_\_\_\_\_

Designate Type of Completion:

New Well  Re-Entry  Workover

Oil  WSW  SWD

Gas  DH  EOR

OG  GSW

CM (Coal Bed Methane)

Cathodic  Other (Core, Expl., etc.): \_\_\_\_\_

If Workover/Re-entry: Old Well Info as follows:

Operator: \_\_\_\_\_

Well Name: \_\_\_\_\_

Original Comp. Date: \_\_\_\_\_ Original Total Depth: \_\_\_\_\_

Deepening  Re-perf.  Conv. to EOR  Conv. to SWD

Plug Back  Liner  Conv. to GSW  Conv. to Producer

Commingled Permit #: \_\_\_\_\_

Dual Completion Permit #: \_\_\_\_\_

SWD Permit #: \_\_\_\_\_

EOR Permit #: \_\_\_\_\_

GSW Permit #: \_\_\_\_\_

Spud Date or Date Reached TD Completion Date or Recompletion Date

API No.: \_\_\_\_\_

Spot Description: \_\_\_\_\_

\_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ Sec. \_\_\_\_\_ Twp. \_\_\_\_\_ S. R. \_\_\_\_\_  East  West

\_\_\_\_\_ Feet from  North /  South Line of Section

\_\_\_\_\_ Feet from  East /  West Line of Section

Footages Calculated from Nearest Outside Section Corner:

NE  NW  SE  SW

GPS Location: Lat: \_\_\_\_\_, Long: \_\_\_\_\_  
(e.g. xx.xxxxx) (e.g. -xxx.xxxxx)

Datum:  NAD27  NAD83  WGS84

County: \_\_\_\_\_

Lease Name: \_\_\_\_\_ Well #: \_\_\_\_\_

Field Name: \_\_\_\_\_

Producing Formation: \_\_\_\_\_

Elevation: Ground: \_\_\_\_\_ Kelly Bushing: \_\_\_\_\_

Total Vertical Depth: \_\_\_\_\_ Plug Back Total Depth: \_\_\_\_\_

Amount of Surface Pipe Set and Cemented at: \_\_\_\_\_ Feet

Multiple Stage Cementing Collar Used?  Yes  No

If yes, show depth set: \_\_\_\_\_ Feet

If Alternate II completion, cement circulated from: \_\_\_\_\_

feet depth to: \_\_\_\_\_ w/ \_\_\_\_\_ sx cmt.

Drilling Fluid Management Plan

(Data must be collected from the Reserve Pit)

Chloride content: \_\_\_\_\_ ppm Fluid volume: \_\_\_\_\_ bbls

Dewatering method used: \_\_\_\_\_

Location of fluid disposal if hauled offsite:

Operator Name: \_\_\_\_\_

Lease Name: \_\_\_\_\_ License #: \_\_\_\_\_

Quarter \_\_\_\_\_ Sec. \_\_\_\_\_ Twp. \_\_\_\_\_ S. R. \_\_\_\_\_  East  West

County: \_\_\_\_\_ Permit #: \_\_\_\_\_

AFFIDAVIT

I am the affiant and I hereby certify that all requirements of the statutes, rules and regulations promulgated to regulate the oil and gas industry have been fully complied with and the statements herein are complete and correct to the best of my knowledge.

Submitted Electronically

KCC Office Use ONLY

Confidentiality Requested

Date: \_\_\_\_\_

Confidential Release Date: \_\_\_\_\_

Wireline Log Received  Drill Stem Tests Received

Geologist Report / Mud Logs Received

UIC Distribution

ALT  I  II  III Approved by: \_\_\_\_\_ Date: \_\_\_\_\_

Operator Name: \_\_\_\_\_ Lease Name: \_\_\_\_\_ Well #: \_\_\_\_\_

Sec. \_\_\_\_\_ Twp. \_\_\_\_\_ S. R. \_\_\_\_\_  East  West County: \_\_\_\_\_

**INSTRUCTIONS:** Show important tops of formations penetrated. Detail all cores. Report all final copies of drill stems tests giving interval tested, time tool open and closed, flowing and shut-in pressures, whether shut-in pressure reached static level, hydrostatic pressures, bottom hole temperature, fluid recovery, and flow rates if gas to surface test, along with final chart(s). Attach extra sheet if more space is needed.

Final Radioactivity Log, Final Logs run to obtain Geophysical Data and Final Electric Logs must be emailed to [kcc-well-logs@kcc.ks.gov](mailto:kcc-well-logs@kcc.ks.gov). Digital electronic log files must be submitted in LAS version 2.0 or newer AND an image file (TIFF or PDF).

Drill Stem Tests Taken <input type="checkbox"/> Yes <input type="checkbox"/> No <i>(Attach Additional Sheets)</i>  Samples Sent to Geological Survey <input type="checkbox"/> Yes <input type="checkbox"/> No  Cores Taken <input type="checkbox"/> Yes <input type="checkbox"/> No Electric Log Run <input type="checkbox"/> Yes <input type="checkbox"/> No Geologist Report / Mud Logs <input type="checkbox"/> Yes <input type="checkbox"/> No  List All E. Logs Run:	<input type="checkbox"/> Log Formation (Top), Depth and Datum <input type="checkbox"/> Sample  Name Top Datum
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CASING RECORD <input type="checkbox"/> New <input type="checkbox"/> Used							
Report all strings set-conductor, surface, intermediate, production, etc.							
Purpose of String	Size Hole Drilled	Size Casing Set (In O.D.)	Weight Lbs. / Ft.	Setting Depth	Type of Cement	# Sacks Used	Type and Percent Additives

ADDITIONAL CEMENTING / SQUEEZE RECORD				
Purpose:	Depth Top Bottom	Type of Cement	# Sacks Used	Type and Percent Additives
<input type="checkbox"/> Perforate <input type="checkbox"/> Protect Casing <input type="checkbox"/> Plug Back TD <input type="checkbox"/> Plug Off Zone				

1. Did you perform a hydraulic fracturing treatment on this well?  Yes  No *(If No, skip questions 2 and 3)*
2. Does the volume of the total base fluid of the hydraulic fracturing treatment exceed 350,000 gallons?  Yes  No *(If No, skip question 3)*
3. Was the hydraulic fracturing treatment information submitted to the chemical disclosure registry?  Yes  No *(If No, fill out Page Three of the ACO-1)*

Date of first Production/Injection or Resumed Production/Injection:	Producing Method: <input type="checkbox"/> Flowing <input type="checkbox"/> Pumping <input type="checkbox"/> Gas Lift <input type="checkbox"/> Other <i>(Explain)</i> _____			
Estimated Production Per 24 Hours	Oil Bbls.	Gas Mcf	Water Bbls.	Gas-Oil Ratio Gravity

DISPOSITION OF GAS: <input type="checkbox"/> Vented <input type="checkbox"/> Sold <input type="checkbox"/> Used on Lease <i>(If vented, Submit ACO-18.)</i>	METHOD OF COMPLETION: <input type="checkbox"/> Open Hole <input type="checkbox"/> Perf. <input type="checkbox"/> Dually Comp. <input type="checkbox"/> Commingled <i>(Submit ACO-5)</i> <i>(Submit ACO-4)</i>	PRODUCTION INTERVAL: Top Bottom
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Shots Per Foot	Perforation Top	Perforation Bottom	Bridge Plug Type	Bridge Plug Set At	Acid, Fracture, Shot, Cementing Squeeze Record <i>(Amount and Kind of Material Used)</i>

TUBING RECORD:	Size:	Set At:	Packer At:	
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PO Box 466  
Ness City, KS 67560  
Off: 785-798-2300

TICKET CONTINUATION

TICKET No. # 31246

CUSTOMER Palmer - O-1

WELL W-1115 # 1-20

DATE 2-24-18

PAGE 2 OF 2

PRICE REFERENCE	SECONDARY REFERENCE/ PART NUMBER	ACCOUNTING			TIME	DESCRIPTION	WELL				DATE	UNIT PRICE	AMOUNT		
		LOC	ACCT	DF			QTY	U/M	QTY	U/M					
325		1				Standard Cement									
279		1				Bentonite Gel	2	%	41	sls		30.00	120.00		
283		1				Salt	10	%	1100	lbs		00.20	220.00		
292		1				Helcol 302	3	%	150	lbs		8.00	120.00		
276		1				Floccle	1	lb	50	lbs		2.50	125.00		
281		1				Mud Flush			500	gal		1.50	750.00		
221		1				Liquid HCL			2	gal		25.00	50.00		
581		1				SERVICE CHARGE			200			1.75	350.00		
583		1				MILEAGE CHARGE			100			00.85	87.10		
							CUBIC FEET								
							TON MILES								
							LOADED MILES								
							TOTAL WEIGHT								
							CHARGE								
												CONTINUATION TOTAL	6286.25		

280  
281

1072  
200  
CO 82  
132  
251  
320

5881.32

331  
331  
331  
331  
331  
332

Flour  
Flour  
Flour  
HPT 200  
200  
Bourbon  
Stouffville

301  
250  
200  
100  
1100  
1100  
300

3200  
100  
500  
800  
1500  
550  
130  
300

Flour 01

301

3-21-8

TICKET CONTINUATION

31241



JOB LOG

SWIFT Services, Inc.

DATE 2-24-18 PAGE NO. 1

CUSTOMER Palmer Oil		WELL NO. #1-20		LEASE Willis		JOB TYPE Longstring		TICKET NO. #31246	
CHART NO.	TIME	RATE (BPM)	VOLUME (BBL) (GAL)	PUMPS		PRESSURE (PSI)		DESCRIPTION OF OPERATION AND MATERIALS	
				T	C	TUBING	CASING		
	1930							on location	5 1/2" 15.5"
								RTD-5400'	LTD-5400'
								TP-5380'	SS- #1 23.61
								cont- #1 #3 #5 #7 #9 #11 #13 #15 #17 #19	
								Basket- #5	
	2115							Start 5 1/2" 15.5" casing in well	
	2315							Drop Ball Circulate	
	2345	6 1/2	12		✓	400		Pump 500 gal Mud Flush	
		6 1/2	20		✓	400		Pump 20 bbl KCL Flush	
			7-5					Plug RH-MH (30-20)	
2-25-18	0000	4 1/2	37		✓	250		mix 150 sks STD cement @ 14.9 ppg	
								wash out Pump + Lines	
								Release Latch Down Plug	
	0030	6 1/2	0		✓	100		Start Displacement	
		6 1/2	95		✓	300		lift Pressure	
		6 1/2	126		✓	800		max lift Pressure	
	0045	6 1/2	127.5		✓	1800		Land Latch Down Plug	
								Release Pressure * Plug Hold *	
								wash up truck	
	0115							Job Complete	
								Thank You	
								Dave Preston Kirby	







TICKET 0311159

PAGE 1 OF 2

CHARGE TO: Palmer Oil  
 ADDRESS:  
 CITY, STATE, ZIP CODE:

SERVICE LOCATIONS  
 1. New City KS WELL/PROJECT NO. 1-20 LEASE Willis COUNTY/PARISH Finney CITY Garden City STATE KS DATE 13 Feb 18 OWNER  
 2. TICKET TYPE  SERVICE  SALES CONTRACTOR  
 3. WELL TYPE Oil WELL CATEGORY Development RIG NAME/NO. 5 DELIVERED TO location ORDER NO.  
 4. WELL PERMIT NO. 20-26-33 WELL LOCATION

PRICE REFERENCE	SECONDARY REFERENCE/PART NUMBER	ACCOUNTING		DESCRIPTION	QTY.	U/M	QTY.	U/M	UNIT PRICE	AMOUNT
		LOC	ACCT							
575		1			100	mi.			5.00	500.00
576D		1		MILEAGE TRK 114						
330		1		PumpCharge Deep Surface	1	ea			1300.00	1300.00
274		1		SMB cement	700	sk			16.75	11375.00
290		1		Flare	175	lb			2.50	437.50
281		1		D-air	4	gal			42.00	168.00
221		1		med flush	500	gal			1.50	750.00
325		1		Rch liquid	2	gal			25.00	50.00
278		1		standard cement	30	sk			13.00	390.00
194		1		calcium chloride	2	sk		3%	40.00	80.00
				Play container rental	88	in		1 ea	200.00	200.00

LEGAL TERMS: Customer hereby acknowledges and agrees to the terms and conditions on the reverse side hereof which include, but are not limited to, **PAYMENT, RELEASE, INDEMNITY, and LIMITED WARRANTY** provisions.

MUST BE SIGNED BY CUSTOMER OR CUSTOMER'S AGENT PRIOR TO START OF WORK OR DELIVERY OF GOODS.

**X** DATE SIGNED: 1/16 TIME SIGNED:  A.M.  P.M.

CUSTOMER ACCEPTANCE OF MATERIALS AND SERVICES: AK

REMIT PAYMENT TO:  
 SWIFT SERVICES, INC.  
 P.O. BOX 466  
 NESS CITY, KS 67560  
 785-798-2300

SURVEY:  OUR EQUIPMENT PERFORMED WITHOUT BREAKDOWN?  DISAGREE  
 WE UNDERSTOOD AND MET YOUR NEEDS?  
 OUR SERVICE WAS PERFORMED WITHOUT DELAY?  
 WE OPERATED THE EQUIPMENT AND PERFORMED JOB CALCULATIONS SATISFACTORILY?  
 ARE YOU SATISFIED WITH OUR SERVICE?  YES  NO  CUSTOMER DID NOT WISH TO RESPOND

PAGE TOTAL: 15,250.50  
5509.51  
20,760.01

Finney TAX 7.65% 1098 96  
 TOTAL: 21858.97

SWIFT OPERATOR: AK APPROVAL: AK

CUSTOMER ACCEPTANCE OF MATERIALS AND SERVICES: The customer hereby acknowledges receipt of the materials and services listed on this ticket.

Thank You!







PO Box 466  
Ness City, KS 67560  
Off: 785-798-2300

TICKET CONTINUATION

TICKET No. 31159

DATE 13 Feb 18 PAGE 2 OF 2

CUSTOMER Palmer O. J. WELL Willis 1-20

PRICE REFERENCE	SECONDARY REFERENCE/ PART NUMBER	ACCOUNTING		TIME	DESCRIPTION	QTY		U/M		UNIT PRICE	AMOUNT
		LOC	ACCT			DF	QTY	U/M	QTY		
400		1			Grade shoe	1 ea		8 3/8 in		350.00	350.00
401		1			Insert float w/ AUTO FILL	1 ea		8 3/8 in		250.00	250.00
402	409	1			<del>Generator</del> Turbogizer	3 ea		8 3/8 in		105.00	315.00
583											
581											
582											
SERVICE CHARGE						79282.16		3964.13	T/M	0.85	3369.51
MILEAGE CHARGE						700	SK			1.75	1225.00
TOTAL WEIGHT						6165					
TAXED MILES						100					
TOTAL MILES						3972.85					

CONTINUATION TOTAL 5509.51

1200 21  
1132 20  
1381 21

1193 10 1394 8 LW

1193 10 1394 8 LW

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**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Palmer Oil Inc  
3118 N Cummings Rd  
Garden City, Ks 67846  
ATTN: Luke Thomson

**20-26s-33w Finney, Ks**  
**Willis 1-20**  
Job Ticket: 64300      **DST#: 1**  
Test Start: 2018.02.19 @ 03:13:25

## 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:	0 ppm
Viscosity: 51.00 sec/qt	Cushion Volume: bbl		
Water Loss: 7.60 in <sup>3</sup>	Gas Cushion Type:		
Resistivity: 0.00 ohm.m	Gas Cushion Pressure: psig		
Salinity: 2650.00 ppm			
Filter Cake: 1.00 inches			

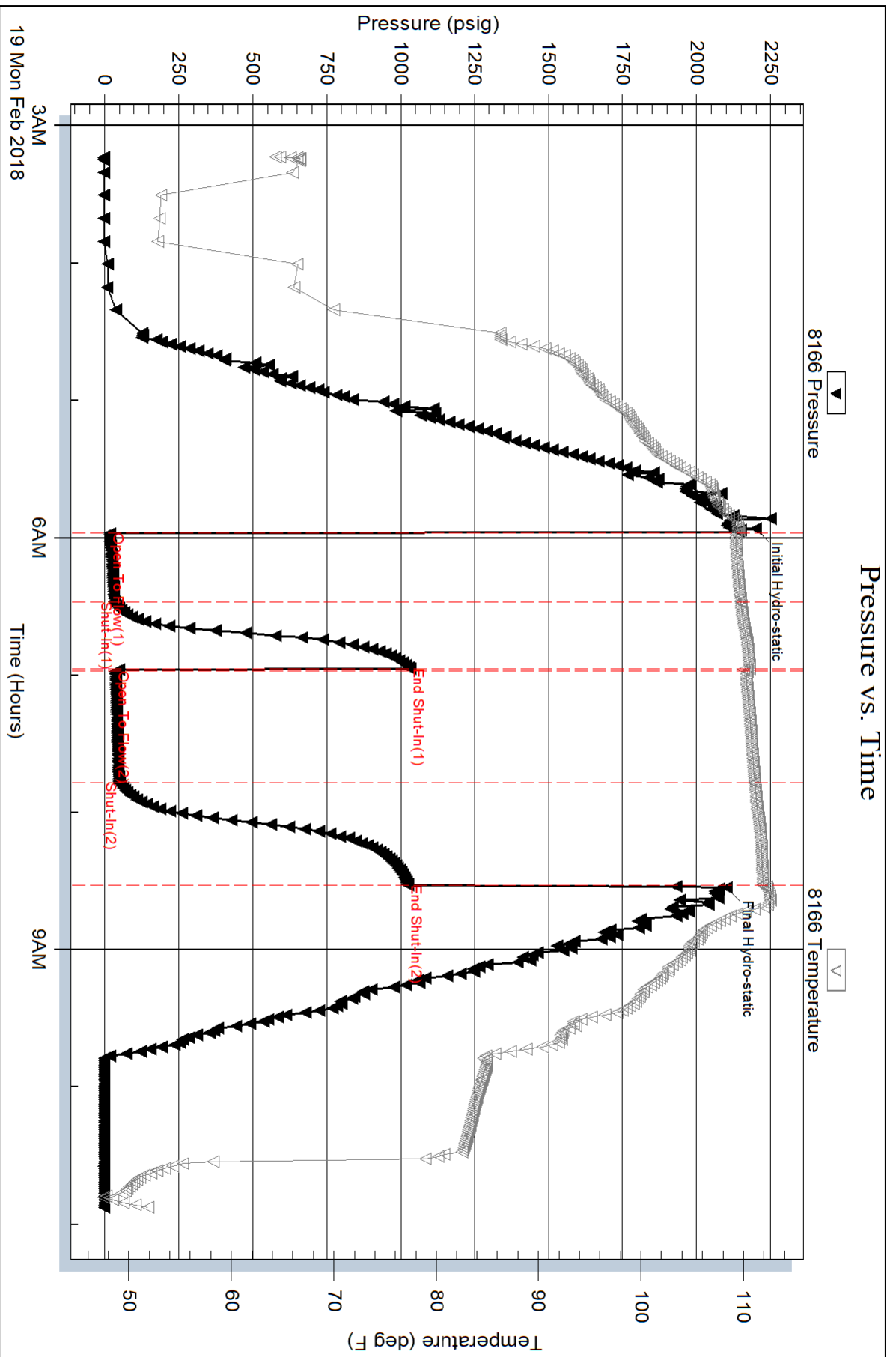
## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
60.00	gocm 5%g 15%o 80%m	0.295
30.00	gocm 10%g 40%o 50%m	0.148
0.00	120 GIP	0.000

Total Length: 90.00 ft      Total Volume: 0.443 bbl  
 Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:  
 Laboratory Name:      Laboratory Location:  
 Recovery Comments:





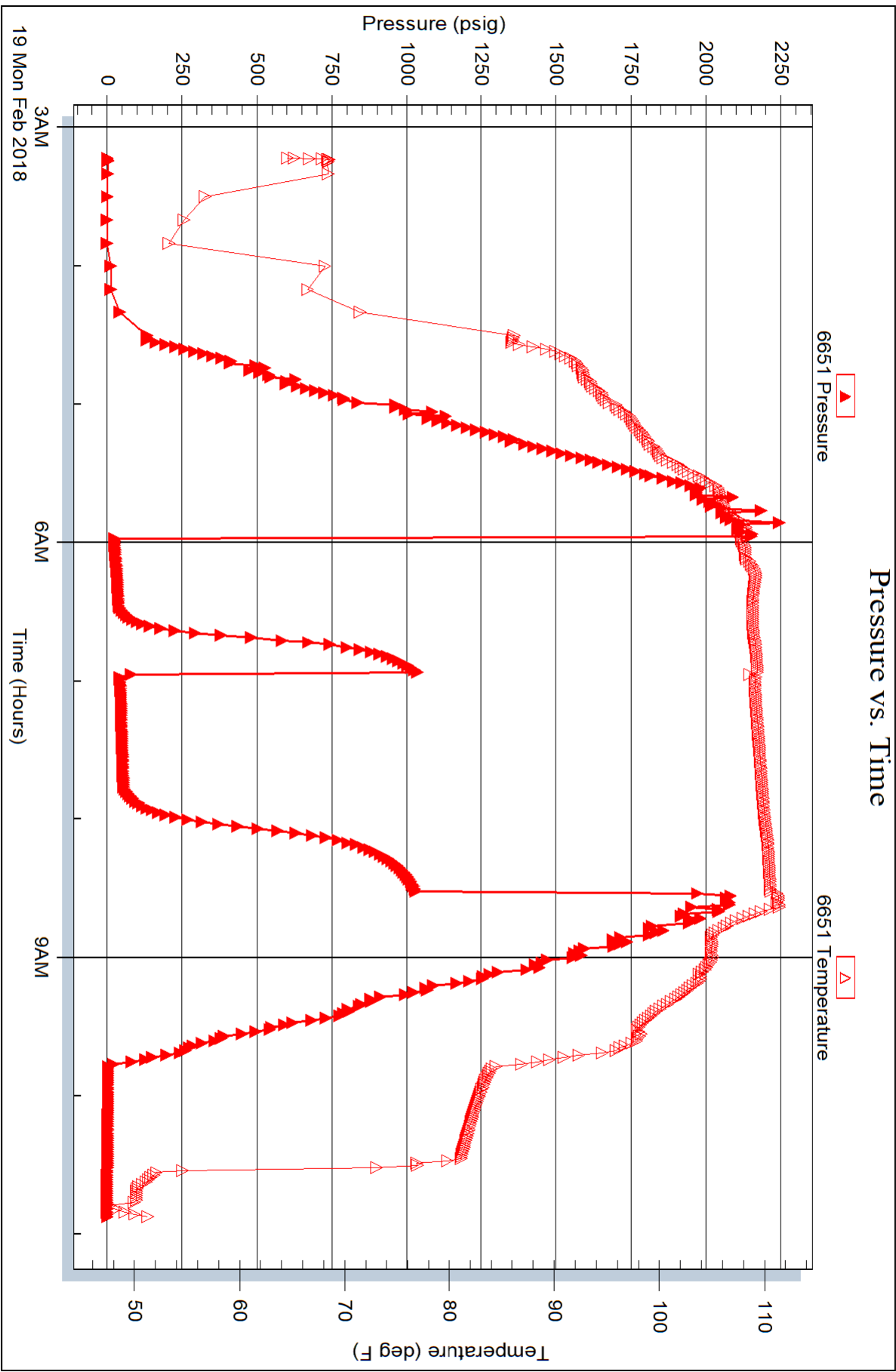
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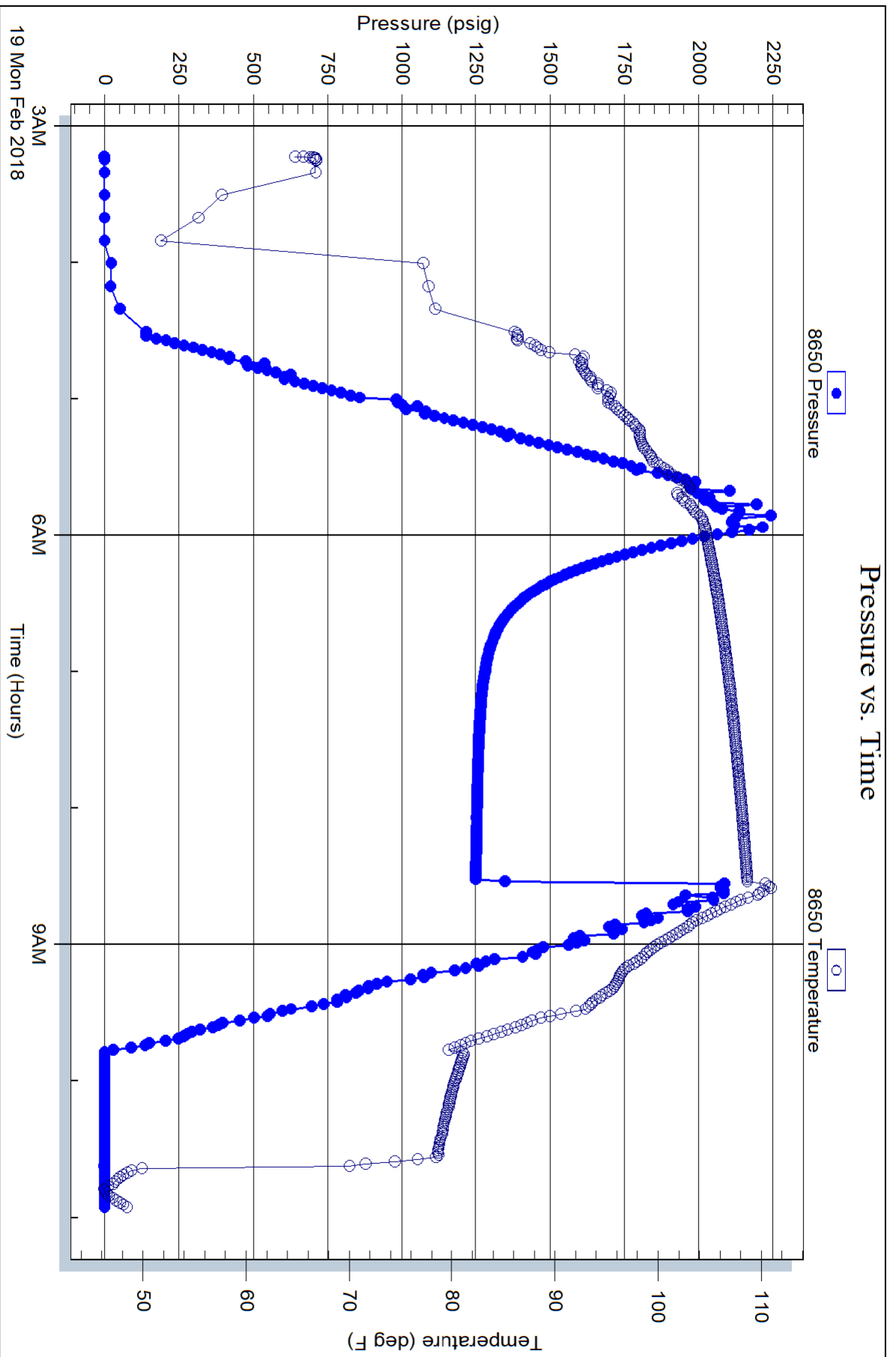
Inside

Palmer Oil Inc

Wells 1-20

DST Test Number: 1







## DRILL STEM TEST REPORT

Prepared For: **Palmer Oil Inc**

3118 N Cummings Rd  
Garden City, KS 67846

ATTN: Luke Thomson

**Willis #1-20**

**20-26s-33w Finney,KS**

Start Date: 2018.02.19 @ 03:13:25

End Date: 2018.02.19 @ 10:52:25

Job Ticket #: 64300                      DST #: 1

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

Printed: 2018.02.27 @ 11:29:40



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

Palmer Oil Inc  
3118 N Cummings Rd  
Garden City, KS 67846  
ATTN: Luke Thomson

**20-26s-33w Finney, KS**

**Willis #1-20**

Job Ticket: 64300

**DST#: 1**

Test Start: 2018.02.19 @ 03:13:25

## GENERAL INFORMATION:

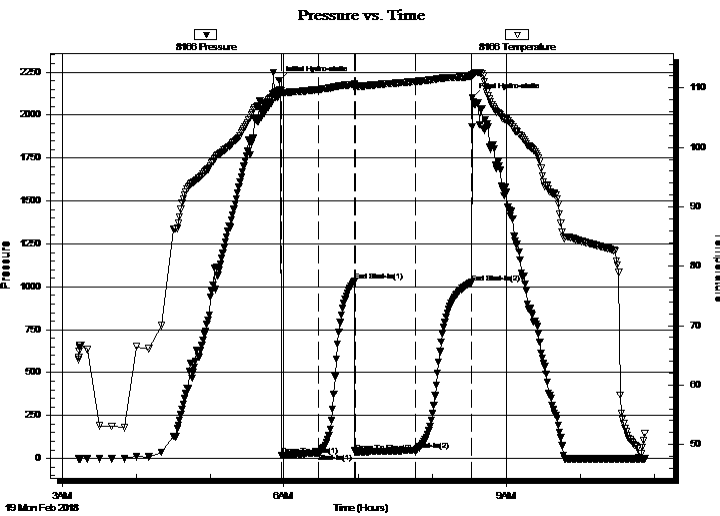
Formation: **Lansing**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 05:57:55  
 Time Test Ended: 10:52:25  
 Interval: **4254.00 ft (KB) To 4274.00 ft (KB) (TVD)**  
 Total Depth: 4462.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Good  
 Test Type: Conventional Bottom Hole (Initial)  
 Tester: Brandon Turley  
 Unit No: 79  
 Reference Elevations: 2937.00 ft (KB)  
 2926.00 ft (CF)  
 KB to GR/CF: 11.00 ft

## Serial #: 8166

**Outside**

Press@RunDepth: 48.60 psig @ 4255.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2018.02.19 End Date: 2018.02.19 Last Calib.: 2018.02.19  
 Start Time: 03:13:30 End Time: 10:52:24 Time On Btm: 2018.02.19 @ 05:55:55  
 Time Off Btm: 2018.02.19 @ 08:32:55

TEST COMMENT: IF: Surface blow built to 1"  
 IS: No return.  
 FF: Surface blow built to 3"  
 FS: No return.



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2200.09	109.50	Initial Hydro-static
2	18.15	109.19	Open To Flow (1)
32	32.56	109.73	Shut-In(1)
61	1031.77	110.62	End Shut-In(1)
62	36.82	110.41	Open To Flow (2)
111	48.60	111.09	Shut-In(2)
156	1024.98	111.88	End Shut-In(2)
157	2101.20	112.19	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
60.00	gocm 5%g 15%o 80%m	0.30
30.00	gocm 10%g 40%o 50%m	0.15
0.00	120 GIP	0.00

## Gas Rates

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









**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Palmer Oil Inc  
3118 N Cummings Rd  
Garden City, KS 67846  
  
ATTN: Luke Thomson

**20-26s-33w Finney,KS**  
**Willis #1-20**  
Job Ticket: 64300      **DST#: 1**  
Test Start: 2018.02.19 @ 03:13:25

**Tool Information**

Drill Pipe:	Length: 4017.00 ft	Diameter: 3.80 inches	Volume: 56.35 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: 25000.00 lb
Drill Collar:	Length: 239.00 ft	Diameter: 2.25 inches	Volume: 1.18 bbl	Weight to Pull Loose: 90000.00 lb
			<u>Total Volume: 57.53 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	24.00 ft			String Weight: Initial 78000.00 lb
Depth to Top Packer:	4254.00 ft			Final 78000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	208.00 ft			
Tool Length:	230.00 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>
-------------------------	--------------------	-------------------	-----------------	-------------------	-----------------------

Stubb	1.00			4233.00	
Shut In Tool	5.00			4238.00	
Hydraulic tool	5.00			4243.00	
Safety Joint	2.00			4245.00	
Packer	5.00			4250.00	22.00      Bottom Of Top Packer
Packer	4.00			4254.00	
Stubb	1.00			4255.00	
Recorder	0.00	6651	Inside	4255.00	
Recorder	0.00	8166	Outside	4255.00	
Perforations	14.00			4269.00	
Blank Off Sub	1.00			4270.00	
Packer - Shale	4.00			4274.00	
Stubb	1.00			4275.00	
Perforations	1.00			4276.00	
Change Over Sub	1.00			4277.00	
Recorder	0.00	8650	Below	4277.00	
Drill Pipe	185.00			4462.00	208.00      Bottom Packers & Anchor
<b>Total Tool Length:</b>	<b>230.00</b>				



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Palmer Oil Inc  
3118 N Cummings Rd  
Garden City, KS 67846  
ATTN: Luke Thomson

**20-26s-33w Finney,KS**  
**Willis #1-20**  
Job Ticket: 64300      **DST#: 1**  
Test Start: 2018.02.19 @ 03:13:25

## Mud and Cushion Information

Mud Type: Gel Chem	Cushion Type:	Oil API:	0 deg API
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Water Loss: 7.59 in <sup>3</sup>	Gas Cushion Type:		
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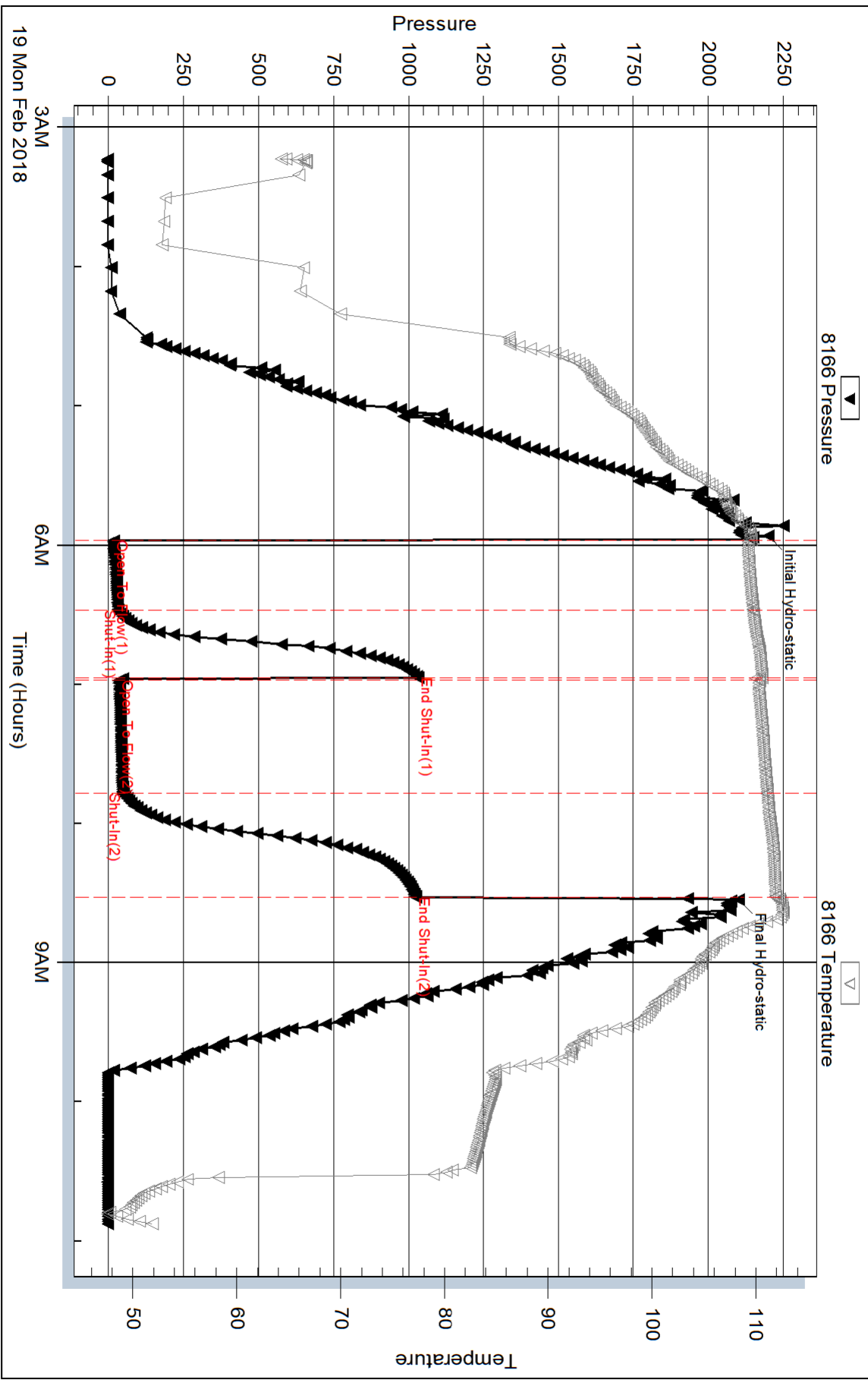
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0.00	120 GIP	0.000

Total Length: 90.00 ft      Total Volume: 0.443 bbl  
 Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:  
 Laboratory Name:      Laboratory Location:  
 Recovery Comments:

# Pressure vs. Time



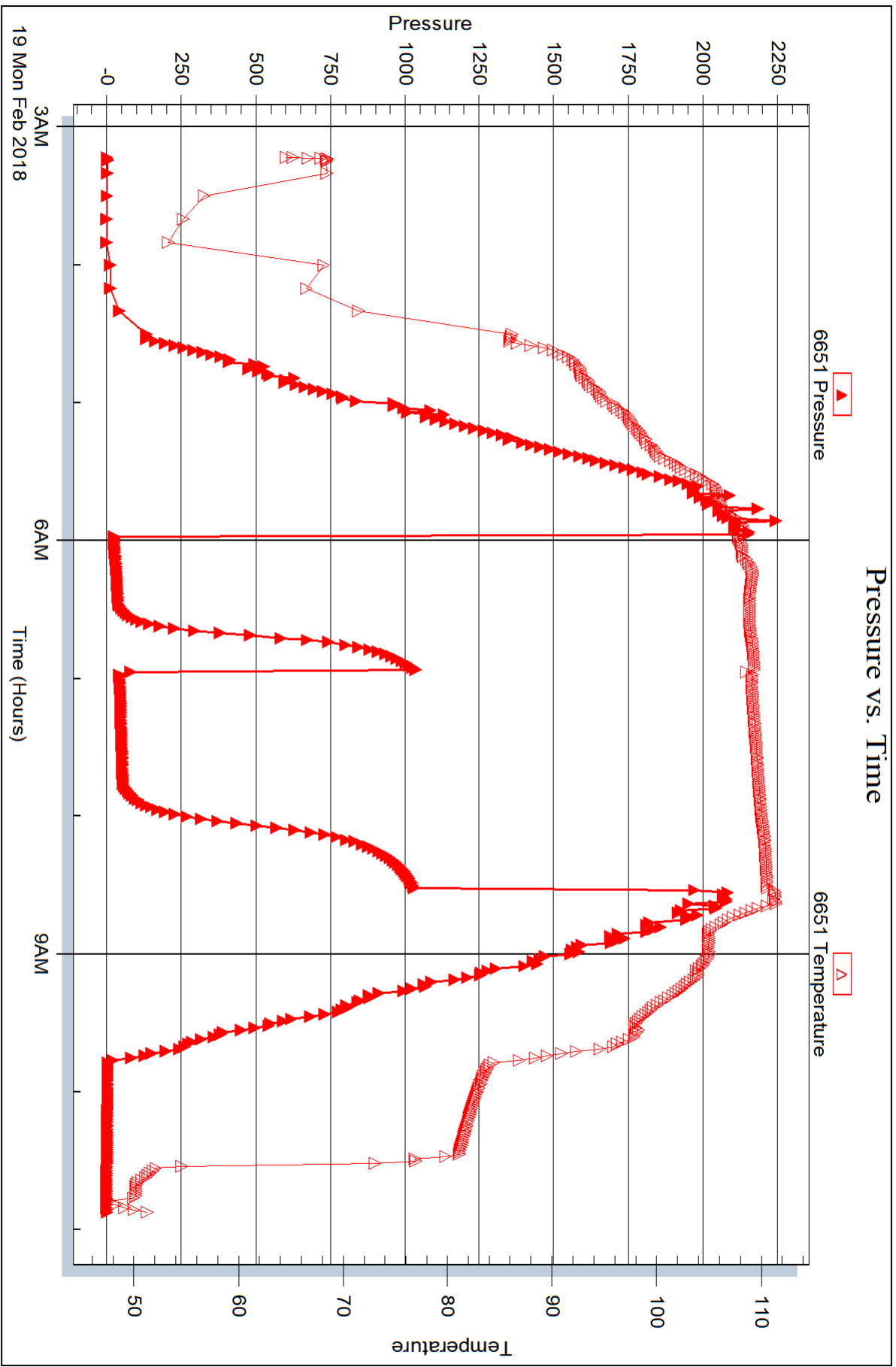
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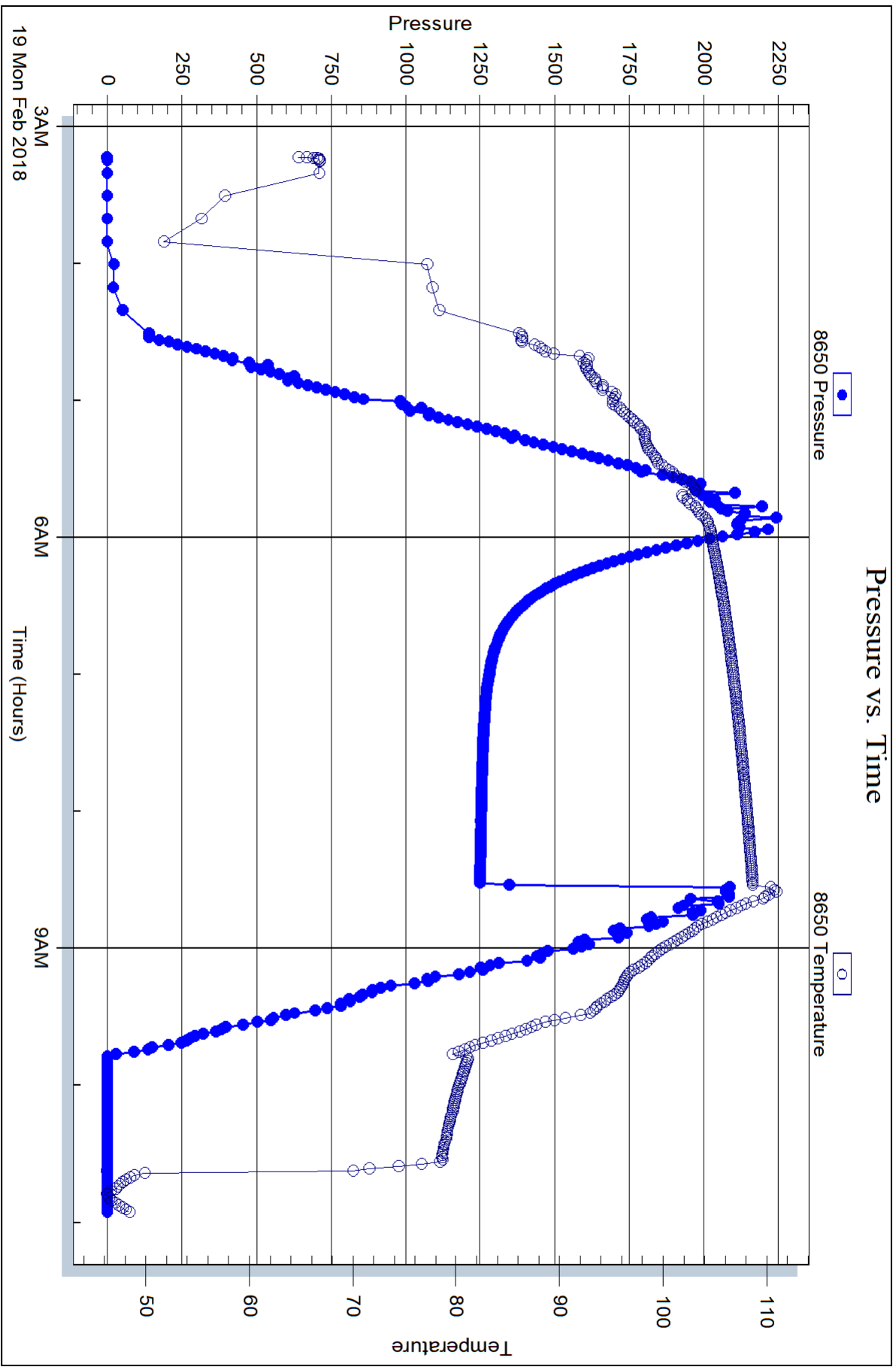
Inside

Palmer Oil Inc

Wells #-1-20

DST Test Number: 1







## DRILL STEM TEST REPORT

Prepared For: **Palmer Oil Inc**

3118 N Cummings Rd  
Garden City, KS 67846

ATTN: Luke Thomson

**Willis #1-20**

**20-26s-33w Finney,KS**

Start Date: 2018.02.22 @ 04:51:00

End Date: 2018.02.22 @ 11:10:20

Job Ticket #: 63553                      DST #: 2

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

Printed: 2018.02.27 @ 11:28:28





**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

Palmer Oil Inc  
3118 N Cummings Rd  
Garden City, KS 67846  
ATTN: Luke Thomson

**20-26s-33w Finney, KS**

**Willis #1-20**

Job Ticket: 63553

**DST#: 2**

Test Start: 2018.02.22 @ 04:51:00

## GENERAL INFORMATION:

Formation: **Morrow**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 07:01:40

Time Test Ended: 11:10:20

Test Type: Conventional Bottom Hole (Initial)

Tester: Chris Hagman

Unit No: 71

**Interval: 4956.00 ft (KB) To 5060.00 ft (KB) (TVD)**

Reference Elevations: 2937.00 ft (KB)

Total Depth: 5060.00 ft (KB) (TVD)

2926.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 11.00 ft

**Serial #: 6772**

**Inside**

Press@RunDepth: 41.27 psig @ 4957.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2018.02.22

End Date:

2018.02.22

Last Calib.: 1899.12.30

Start Time: 04:51:01

End Time:

11:10:20

Time On Btm: 2018.02.22 @ 07:01:20

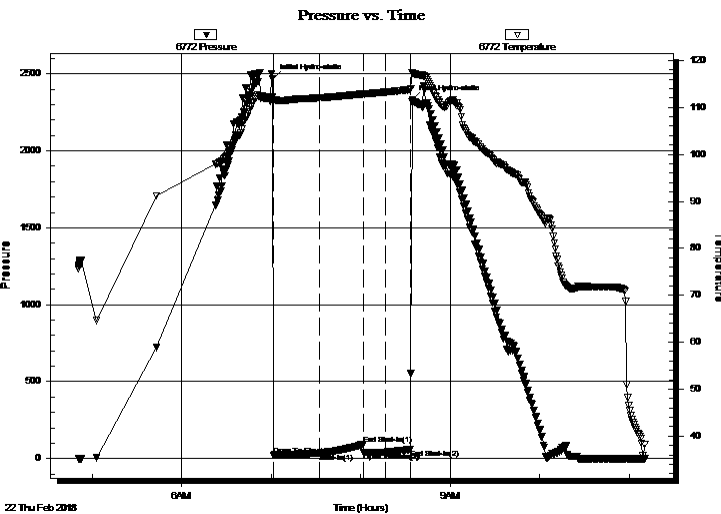
Time Off Btm: 2018.02.22 @ 08:34:40

TEST COMMENT: IF: Weak surface blow

IS: No blow back

FF: Died 4 min.

FS: No blow back



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2467.71	112.18	Initial Hydro-static
1	22.77	111.66	Open To Flow (1)
32	33.44	112.05	Shut-In(1)
61	92.71	112.86	End Shut-In(1)
61	38.99	112.85	Open To Flow (2)
76	41.27	113.25	Shut-In(2)
92	59.51	113.78	End Shut-In(2)
94	2330.15	117.27	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
5.00	oil spotted mud 100%M	0.02

## Gas Rates

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





**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Palmer Oil Inc  
3118 N Cummings Rd  
Garden City, KS 67846  
ATTN: Luke Thomson

**20-26s-33w Finney,KS**  
**Willis #1-20**  
Job Ticket: 63553      **DST#: 2**  
Test Start: 2018.02.22 @ 04:51:00

**Tool Information**

Drill Pipe:	Length: 4703.00 ft	Diameter: 3.80 inches	Volume: 65.97 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: 240.00 ft	Diameter: 2.25 inches	Volume: 1.18 bbl	Weight to Pull Loose:	85000.00 lb
			<u>Total Volume: 67.15 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	15.00 ft			String Weight: Initial	83000.00 lb
Depth to Top Packer:	4956.00 ft			Final	83000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	104.00 ft				
Tool Length:	132.00 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			4929.00	
Shut In Tool	5.00			4934.00	
Hydraulic tool	5.00			4939.00	
Jars	5.00			4944.00	
Safety Joint	3.00			4947.00	
Packer	5.00			4952.00	28.00      Bottom Of Top Packer
Packer	4.00			4956.00	
Stubb	1.00			4957.00	
Recorder	0.00	6769	Outside	4957.00	
Recorder	0.00	6772	Inside	4957.00	
Perforations	3.00			4960.00	
Change Over Sub	1.00			4961.00	
Drill Pipe	93.00			5054.00	
Change Over Sub	1.00			5055.00	
Bullnose	5.00			5060.00	104.00      Bottom Packers & Anchor

**Total Tool Length: 132.00**



**TRILOBITE  
TESTING, INC.**

**DRILL STEM TEST REPORT**

**FLUID SUMMARY**

Palmer Oil Inc  
3118 N Cummings Rd  
Garden City, KS 67846  
ATTN: Luke Thomson

**20-26s-33w Finney,KS**  
**Willis #1-20**  
Job Ticket: 63553      **DST#: 2**  
Test Start: 2018.02.22 @ 04:51:00

**Mud and Cushion Information**

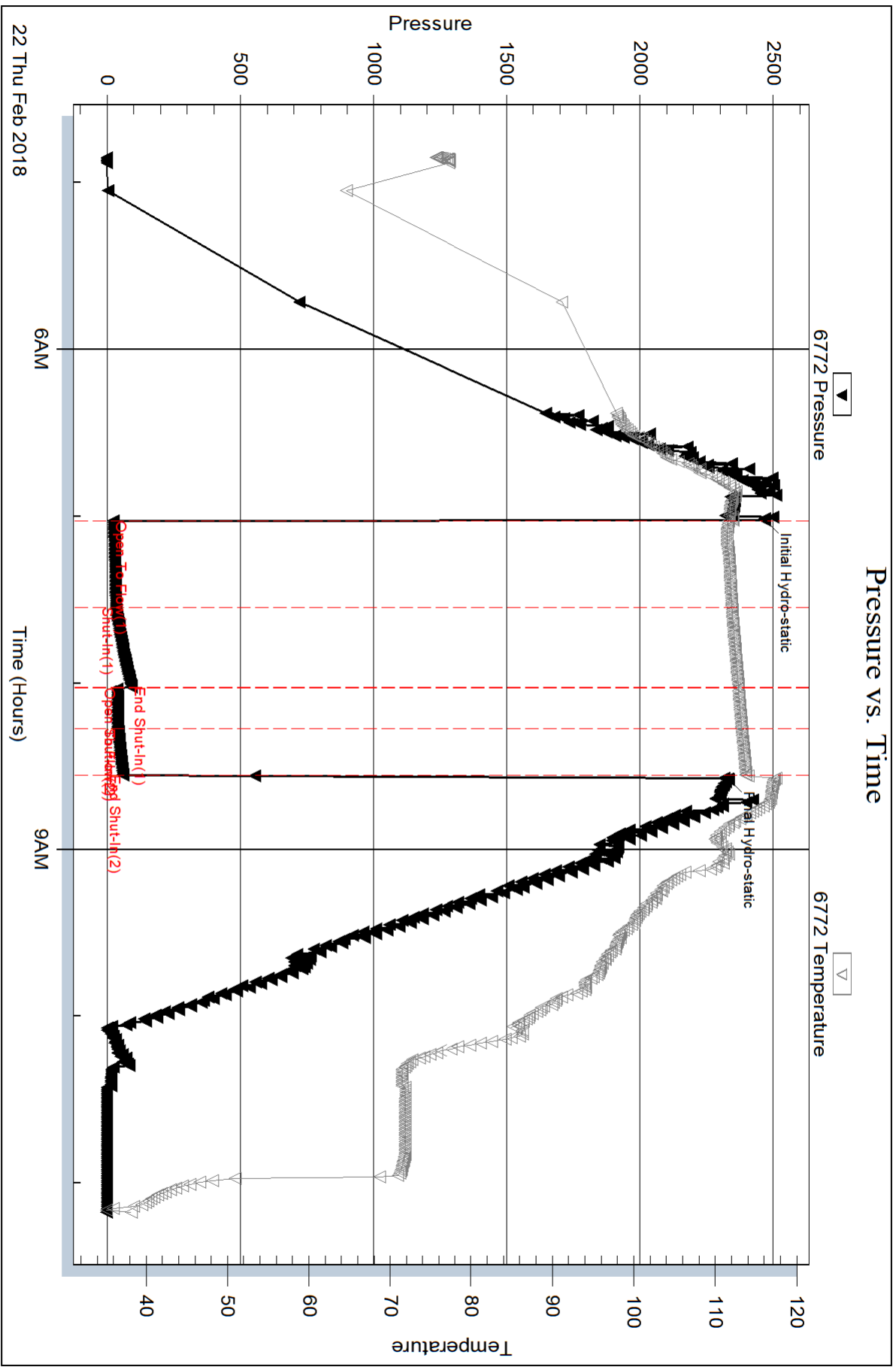
Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	ppm
Viscosity: 57.00 sec/qt	Cushion Volume: bbl		
Water Loss: 7.59 in <sup>3</sup>	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 1650.00 ppm			
Filter Cake: inches			

**Recovery Information**

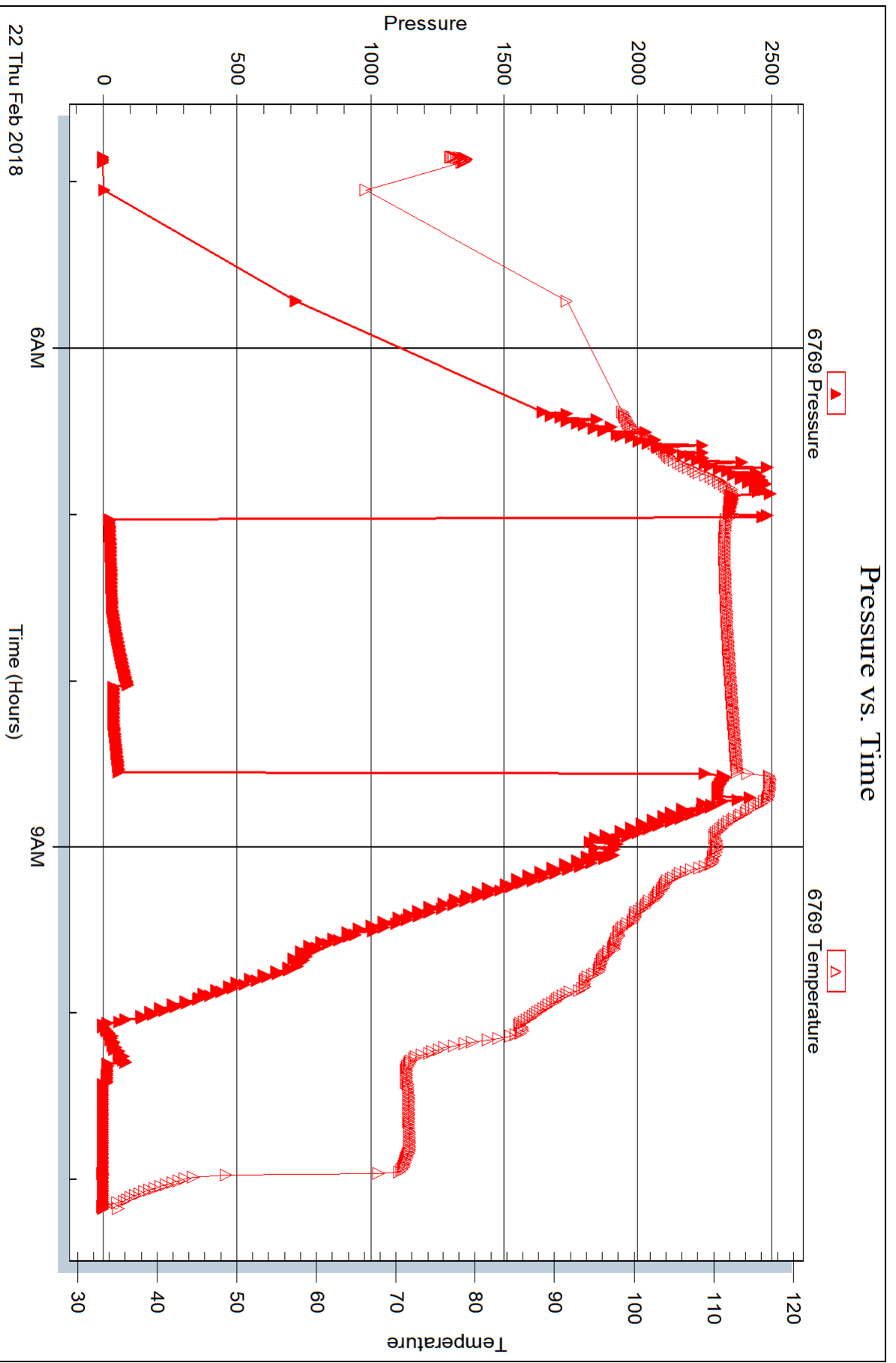
Recovery Table

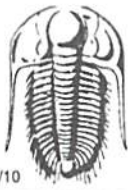
Length ft	Description	Volume bbl
5.00	oil spotted mud 100%M	0.025

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:









# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. **64300**

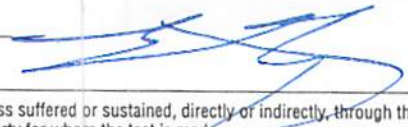
Well Name & No. Willis 1-20 Test No. 1 Date 2-19-18  
 Company Palmer oil inc Elevation 2937 KB 2926 GL  
 Address 3118 N Cummings Rd Garden city, KS 67846  
 Co. Rep / Geo. Luke Thompson Rig Duke 5  
 Location: Sec. 20 Twp. 26<sup>S</sup> Rge. 33<sup>W</sup> Co. Finney State KS

Interval Tested 4254 4274 Zone Tested Lansing  
 Anchor Length 20 Drill Pipe Run \_\_\_\_\_ Mud Wt. 9.25  
 Top Packer Depth 4254 Drill Collars Run 239 Vis 51  
 Bottom Packer Depth 4274 Wt. Pipe Run \_\_\_\_\_ WL 7.6  
 Total Depth 4462 Chlorides 2650 ppm System LCM 3  
 Blow Description IF: surface blow built to 1.  
IS: No return.  
FF: surface blow built to 3.  
FSI: No return.

Rec	Feet of	%gas	%oil	%water	%mud
<u>30</u>	<u>90cm</u>	<u>10</u>	<u>40</u>	<u>50</u>	
<u>60</u>	<u>90cm</u>	<u>5</u>	<u>15</u>	<u>80</u>	
Rec	Feet of <u>120 GFP</u>	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 90 BHT \_\_\_\_\_ Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm

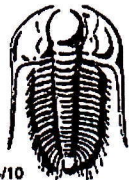
(A) Initial Hydrostatic 2200  Test 1150 T-On Location 1:45  
 (B) First Initial Flow 18  Jars 250 T-Started 3:13  
 (C) First Final Flow 32  Safety Joint 75 T-Open 5:57  
 (D) Initial Shut-In 1031  Circ Sub N/C T-Pulled 8:27  
 (E) Second Initial Flow 36  Hourly Standby \_\_\_\_\_ T-Out 10:55  
 (F) Second Final Flow 48  Mileage 120 - 120 Comments \_\_\_\_\_  
 (G) Final Shut-In 1024  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 2101  Straddle 600  Ruined Shale Packer \_\_\_\_\_  
 Shale Packer 250  Ruined Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  Extra Copies \_\_\_\_\_  
 Extra Recorder \_\_\_\_\_ Sub Total 0  
 Day Standby \_\_\_\_\_ Total 2445  
 Accessibility \_\_\_\_\_ MP/DST Disc't \_\_\_\_\_  
 Sub Total 2445

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. **63553**

Well Name & No. Willis 1-20 Test No. 2 Date 2-22-18  
 Company Palmer Oil Inc. Elevation 2937 KB 2926 GL  
 Address 3118 N Cummings Rd. Garden City, KS 67846  
 Co. Rep / Geo. Luke Thompson Rig Duke #5  
 Location: Sec. 20 Twp 26 S Rge. 33 W Co. Finney, KS State KS

Interval Tested 4956-5060 Zone Tested Morrow  
 Anchor Length 104' Drill Pipe Run 4703 Mud Wt. ~~8.9~~ 8.9  
 Top Packer Depth 4951 Drill Collars Run 240 Vis 57  
 Bottom Packer Depth 4956 Wt. Pipe Run NA WL 7.6  
 Total Depth 5060 Chlorides 1650 ppm System LCM 7.5 #

Blow Description IF: weak surface blow  
BSI: No blow back  
FF: Died 4 m.h.  
FST: No blow back

Rec	Feet of	%gas	%oil	%water	%mud
<u>5</u>	<u>oil spotted mud</u>		<u>spot</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 113 Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm

(A) Initial Hydrostatic 2468  Test conv. 1250 T-On Location 0400  
 (B) First Initial Flow 23  Jars 250 T-Started 0445  
 (C) First Final Flow 33  Safety Joint 75 T-Open 0700  
 (D) Initial Shut-In 93  Circ Sub \_\_\_\_\_ T-Pulled 0830  
 (E) Second Initial Flow 39  Hourly Standby \_\_\_\_\_ T-Out 1100  
 (F) Second Final Flow ~~41~~ 41  Mileage 170 240 Comments Beats on @ 0451  
 (G) Final Shut-In 60  Sampler \_\_\_\_\_ 6769 loaded tools 2/23 pm  
 (H) Final Hydrostatic 2330  Straddle \_\_\_\_\_ 6772

Initial Open 30  Ruined Shale Packer \_\_\_\_\_  
 Initial Shut-In 30  Ruined Packer \_\_\_\_\_  
 Final Flow 15  Extra Packer \_\_\_\_\_  
 Final Shut-In 15  Extra Recorder \_\_\_\_\_ Sub Total 0  
 Day Standby \_\_\_\_\_ Total 1815  
 Accessibility \_\_\_\_\_ MP/DST Disc't \_\_\_\_\_  
 Sub Total 1815

Approved By \_\_\_\_\_ Our Representative Chris Hegman

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.**

# DRILL STEM TEST REPORT

Palmer Oil Inc  
3118 N Cummings Rd  
Garden City, Ks 67846  
ATTN: Luke Thomson

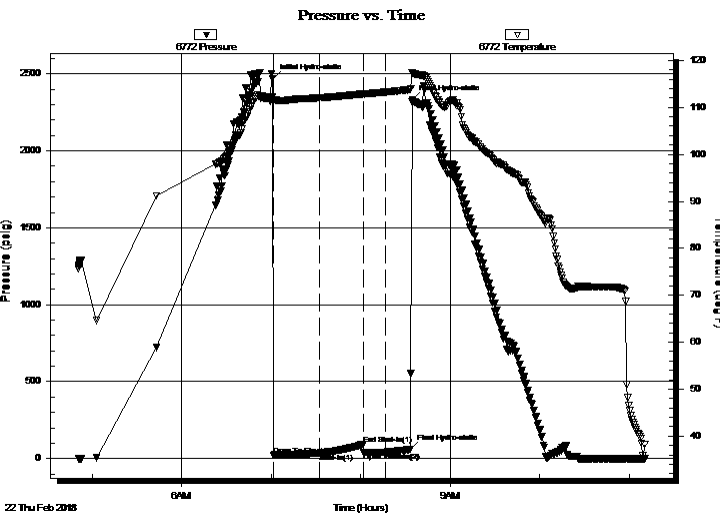
**20-26s-33w Finney, Ks**  
**Willis 1-20**  
Job Ticket: 63553      **DST#: 2**  
Test Start: 2018.02.22 @ 04:51:00

## GENERAL INFORMATION:

Formation: **Morrow**  
Deviated: No Whipstock: ft (KB)  
Time Tool Opened: 07:01:40  
Time Test Ended: 11:10:20  
Interval: **4956.00 ft (KB) To 5060.00 ft (KB) (TVD)**  
Total Depth: 5060.00 ft (KB) (TVD)  
Hole Diameter: 7.88 inches Hole Condition: Good  
Test Type: Conventional Bottom Hole (Initial)  
Tester: Chris Hagman  
Unit No: 71  
Reference Elevations: 2937.00 ft (KB)  
2926.00 ft (CF)  
KB to GR/CF: 11.00 ft

**Serial #: 6772      Inside**  
Press@RunDepth: 33.44 psig @ 4957.00 ft (KB)      Capacity: 8000.00 psig  
Start Date: 2018.02.22      End Date: 2018.02.22      Last Calib.: 1899.12.30  
Start Time: 04:51:01      End Time: 11:10:20      Time On Btm: 2018.02.22 @ 07:01:20  
Time Off Btm: 2018.02.22 @ 08:33:20

TEST COMMENT: IF: Weak surface blow  
IS: No blow back  
FF: Died 4 min.  
FS: No blow back



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2467.71	112.18	Initial Hydro-static
1	22.77	111.66	Open To Flow (1)
32	33.44	112.05	Shut-In(1)
61	92.71	112.86	End Shut-In(1)
61	38.99	112.85	Open To Flow (2)
76	41.27	113.25	Shut-In(2)
92	59.51	113.78	Final Hydro-static
94	2330.15	117.27	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
5.00	oil spotted mud	0.02

## Gas Rates

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



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

Palmer Oil Inc  
3118 N Cummings Rd  
Garden City, Ks 67846  
ATTN: Luke Thomson

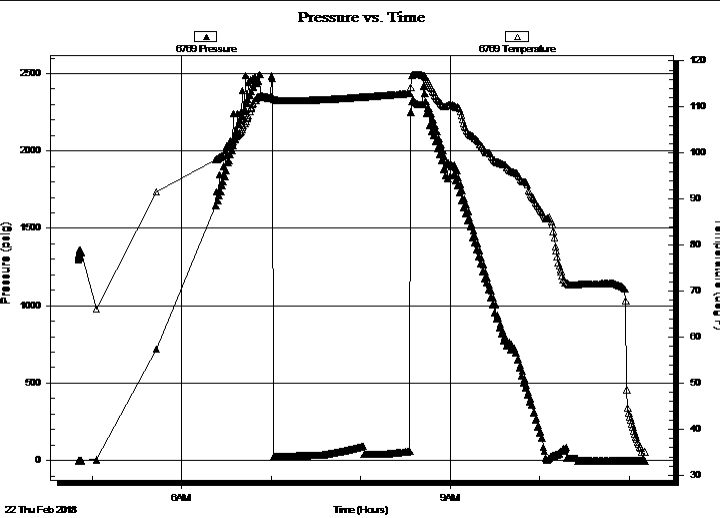
**20-26s-33w Finney, Ks**  
**Willis 1-20**  
Job Ticket: 63553      **DST#: 2**  
Test Start: 2018.02.22 @ 04:51:00

## GENERAL INFORMATION:

Formation: **Morrow**  
Deviated: No Whipstock:                      ft (KB)  
Time Tool Opened: 07:01:40  
Time Test Ended: 11:10:20  
Interval: **4956.00 ft (KB) To 5060.00 ft (KB) (TVD)**  
Total Depth: 5060.00 ft (KB) (TVD)  
Hole Diameter: 7.88 inches Hole Condition: Good  
Test Type: Conventional Bottom Hole (Initial)  
Tester: Chris Hagman  
Unit No: 71  
Reference Elevations: 2937.00 ft (KB)  
2926.00 ft (CF)  
KB to GR/CF: 11.00 ft

**Serial #: 6769      Outside**  
Press@RunDepth:                      psig @ 4957.00 ft (KB)      Capacity: 8000.00 psig  
Start Date: 2018.02.22      End Date: 2018.02.22      Last Calib.: 1899.12.30  
Start Time: 04:51:01      End Time: 11:10:20      Time On Btm:  
Time Off Btm:

TEST COMMENT: IF: Weak surface blow  
IS: No blow back  
FF: Died 4 min.  
FS: No blow back



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

Recovery		
Length (ft)	Description	Volume (bbl)
5.00	oil spotted mud	0.02

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



**TRILOBITE  
TESTING, INC.**

**DRILL STEM TEST REPORT**

**FLUID SUMMARY**

Palmer Oil Inc  
3118 N Cummings Rd  
Garden City, Ks 67846  
ATTN: Luke Thomson

**20-26s-33w Finney, Ks**  
**Willis 1-20**  
Job Ticket: 63553      **DST#: 2**  
Test Start: 2018.02.22 @ 04:51:00

**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: 57.00 sec/qt	Cushion Volume: bbl		
Water Loss: 7.60 in <sup>3</sup>	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 1650.00 ppm			
Filter Cake: inches			

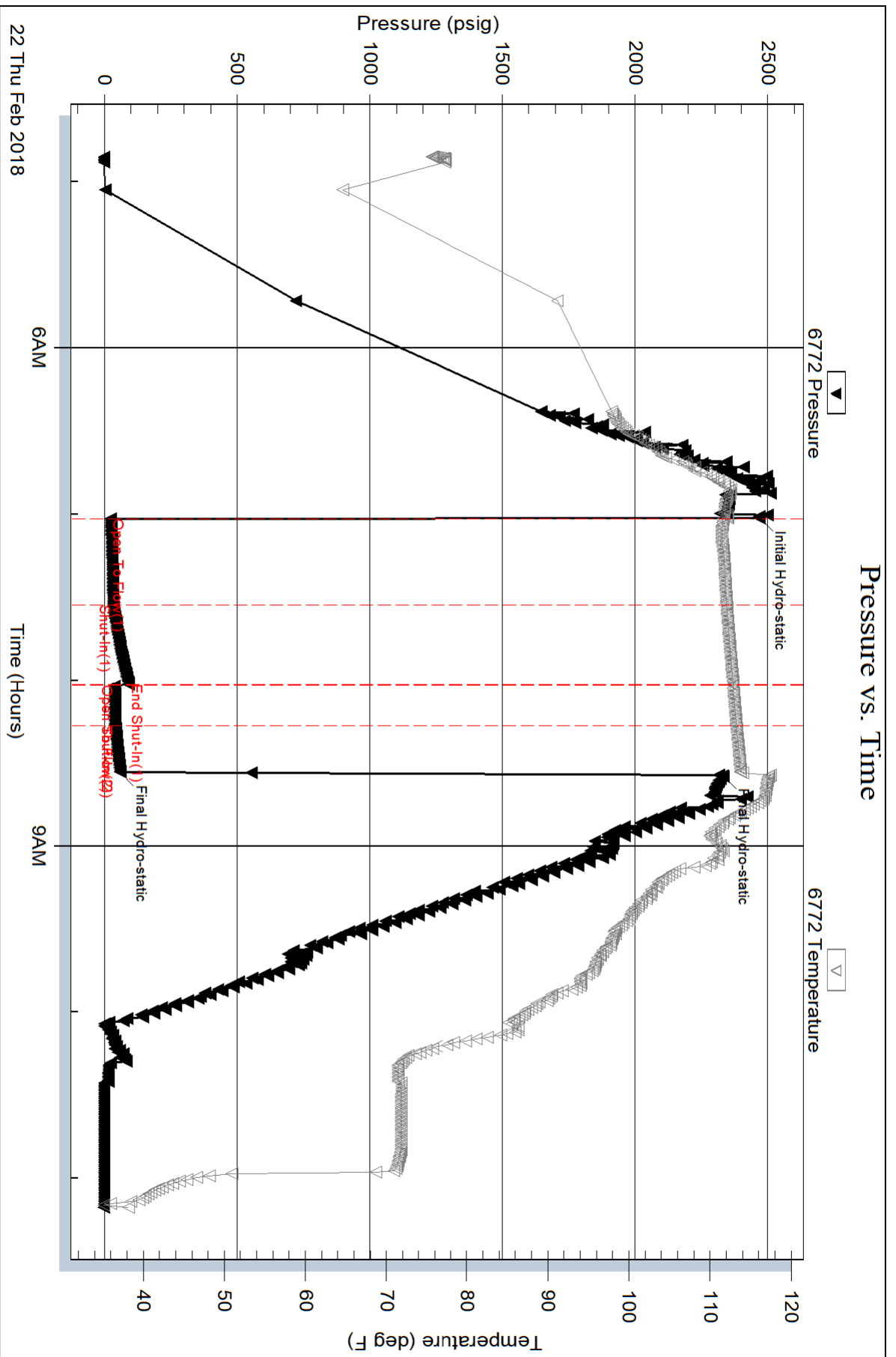
**Recovery Information**

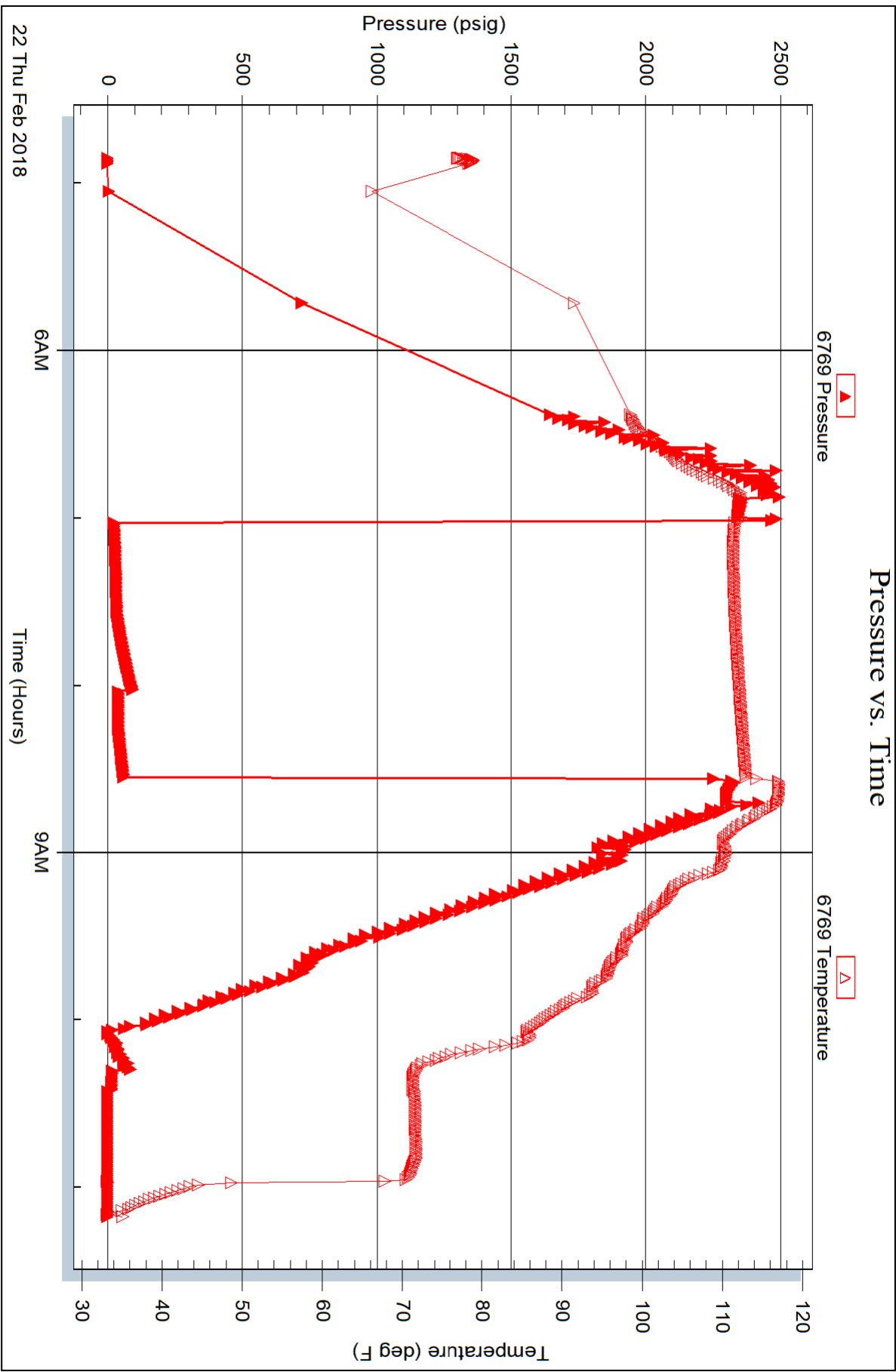
Recovery Table

Length ft	Description	Volume bbl
5.00	oil spotted mud	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:







# **Geological Report**

Palmer Oil, Inc.

**Willis #1-20**

2038' FNL & 737' FEL

Sec 20, T26s, R33w

Finney County, Kansas



**Palmer Oil, Inc.**

## General Data

Well Data: Palmer Oil, Inc.  
Willis #1-20  
2038' FNL & 737' FEL  
Sec. 20, T26s, R33w  
Finney County, Kansas  
API # 15-055-22478-00-00

Drilling Contractor: Duke Drilling Co. Rig #5

Geologist: Luke Thompson

Spud Date: February 11, 2018

Completion Date: February 25, 2018

Elevation 2926' G.L.  
2937' K.B.

Directions: From South side of Garden City, KS at the intersection of Main St. & Fulton St. – Now go 13.3 miles South & SE on Main St./Hwy. 83 business – Now go 4 miles West on TV Rd.– Now go approx. 0.3 miles South on Sandhill Rd to ingress stake SW into.

Casing: 1780' 8 5/8" 23# Surface Casing  
5381' 5 1/2" 15.5# Production Casing

Samples: 3800' to RTD 10' Wet & Dry

Drilling Time: 3750' to RTD

Electric Logs: Pioneer Energy Services "T. Martin"  
Full Suite

Drillstem Tests: Two-Trilobite Testing "Brandon Turley & Chris Hagman"

Problems: Lost Circulation @ 4626'

# Formation Tops

Willis #1-20

Sec. 20, T26s, R33w

2038' FNL & 737' FEL

<b>Heebner</b>	<b>3947</b>	<b>-1010</b>
<b>Toronto</b>	<b>3965</b>	<b>-1028</b>
<b>Lansing</b>	<b>3998</b>	<b>-1061</b>
<b>Stark</b>	<b>4412</b>	<b>-1475</b>
<b>BKC</b>	<b>4543</b>	<b>-1606</b>
<b>Marmaton</b>	<b>4566</b>	<b>-1629</b>
<b>Pawnee</b>	<b>4650</b>	<b>-1713</b>
<b>Fort Scott</b>	<b>4690</b>	<b>-1753</b>
<b>Cherokee</b>	<b>4702</b>	<b>-1765</b>
<b>Morrow</b>	<b>4959</b>	<b>-2022</b>
<b>Chester</b>	<b>5046</b>	<b>-2109</b>
<b>St. Gen</b>	<b>5128</b>	<b>-2191</b>
<b>St. Louis</b>	<b>5160</b>	<b>-2223</b>
<b>RTD</b>	<b>5400</b>	<b>-2463</b>
<b>LTD</b>	<b>5400</b>	<b>-2463</b>

## Sample Zone Descriptions

**Lansing G**                      **(4263', -1326):**                      **Covered in DST #1**

Limestone, cream, sub-crystalline oolitic packstone, slightly chalky, poor oolitic porosity, fair to poor odor, fair stain, poor saturation, poor show of free oil, poor fluorescence, poor slow string cut. Gas 25 units hotwire.

**Morrow**                              **(5038', -2101):**                      **Covered in DST #2**

Sandstone, fine grained, sun round, well sorted, fair to well cemented, tight to fair inter-crystalline porosity, black tarry stain, (50%) fair stain, fair to good saturation, good show of free oil when broke, scattered green fluorescence, good flush to stream cut. Gas 55 units hotwire.

## Drill Stem Tests

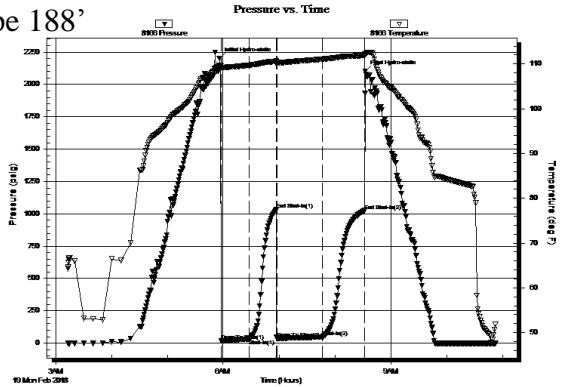
Trilobite Testing  
 “Brandon Turley”

**DST #1**                      **Lansing G (straddle)**

Interval (4254’ – 4274’) Anchor Length 20’; Tail Pipe 188’

- |      |                     |        |
|------|---------------------|--------|
| IHP  | - 2200#             |        |
| IFP  | - 30” – built to 1” | 18-33# |
| ISI  | - 30” – No Return   | 1032#  |
| FFP  | - 45” – built to 3” | 37-49# |
| FSIP | - 45” – No Return   | 1025#  |
| FHP  | - 2101 #            |        |
| BHT  | - 112° F            |        |

**Recovery:**    120’ GIP  
                   30’ GOCM    10%G 40%O  
                   60’ GOCM    5% G 15%O



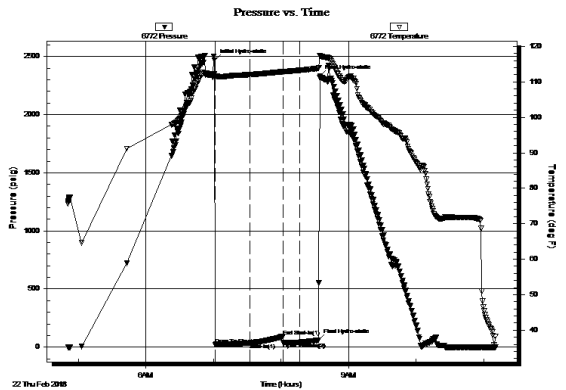
“Chris Hagman”

**DST #2**                      **Morrow**

Interval (4956’ – 5060’) Anchor Length 104’

- |      |                       |        |
|------|-----------------------|--------|
| IHP  | - 2468#               |        |
| IFP  | - 30” – WSB           | 23-33# |
| ISI  | - 30” – No Return     | 93#    |
| FFP  | - 30” – dead in 4 min | 39-41# |
| FSIP | - 15” – no return     | 60#    |
| FHP  | - 2330 #              |        |
| BHT  | - 117° F              |        |

**Recovery:**    5’ OSM





## Structural Comparison

	Palmer Oil, Inc. Willis #1-20 Sec. 20, T26s, R33w 2038' FNL & 737' FEL			Berexco, LLC. Elnora #2-20 Sec. 20, T26s, R33w 940' FNL & 1655' FWL			American Warrior, Inc. Stone #3-21 Sec. 21, T26s, R33w 510' FSL & 1681' FEL	
<u>Formation</u>								
Heebner	3947	-1010	-19	3932	-991	+45	3996	-1055
Lansing	3998	-1061	-19	3983	-1042	+43	4045	-1104
Stark	4412	-1475	-17	4399	-1458	+46	4462	-1521
BKC	4543	-1606	-18	4529	-1588	+45	4592	-1651
Marmaton	4566	-1629	-23	4547	-1606	+42	4612	-1671
Pawnee	4650	-1713	-14	4640	-1699	+52	4706	-1765
Fort Scott	4690	-1753	-17	4677	-1736	+54	4748	-1807
Cherokee	4702	-1765	-13	4693	-1752	+60	4766	-1825
Morrow	4959	-2022	-26	4937	-1996	+65	5028	-2087
Chester	5046	-2109	-4	5046	-2105	+68	5118	-2177
St. Gen	5128	-2191	-17	5115	-2174	+18	5150	-2209
St. Louis	5160	-2223	-7	5157	-2216	+34	5198	-2257

## Summary

The location for the Willis #1-20 well was found via 3-D seismic survey. The new well ran structurally as expected. Two drill stem tests were conducted, one of which recovered commercial quantities of oil. After all the gathered data had been examined, the decision was made to run 5 ½" casing to further evaluate the Willis #1-20 well.

## Perforations

**Primary:** Pawnee (4660' – 4665')

**Secondary:** Marmaton (4566' – 4572')

Lansing G (4258' – 4264')

**Before Abandonment:** Chester (5118' – 5126')

**(Perforate first, will have to frac)**

Respectfully Submitted,

Lukas Thompson  
American Warrior, Inc.





# Palmer Oil, Inc.

**Luke Thompson - Geologist**  
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<b>WELL</b> Willis #1-20	<b>API #:</b> 15-055-22478-00-00	<b>LOCATION:</b> Finney County, KS 2038' FNL & 737' FEL 20-26s-33w	<b>Elevation</b> KB: 2937' GL: 2926'
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**Lithology Key**

	Limestone		Black Shale
	Sandy Limestone		Shale
	Fossil Limestone		Silty Shale
	Cherty Limestone		Siltstone
	Oolitic Limestone		Shaley Sandstone
	Silty Limestone		Sandstone
	Shale Interbed		Cherty Shale
	Limestone Interbed		Dolomite
			CFS

**Curve Data:**

**Left Column:**  
 ROP (min/foot)  
 Gamma Ray

**Right Column:**  
 Gas (units)  
 Density Porosity  
 Neutron Porosity

**Geologist:** Luke Thompson (American Warrior, Inc.)  
**Drilling Contractor:** Duke Rig #5  
**Drilling time from:** 3800' - RTD  
**Samples from:** 3800' - 3750'  
**Geological Supervision from:** 3800' - TD  
**Correlating Log:** Elнора #2-20 (20-26s-33w)  
**Surface Casing:** 1780' 8 5/8" 23#  
**Production Casing:** 5381' 5 1/2" 15.5#  
**RTD:** 5400'  
**LTD:** 5400'

Formation	Top	Log	Top	Sample	Correlating Well	Structural Comparison	Status:
Heebner	3947	-1010	3949	-1012	-19		Oil
Toronto	3965	-1028	3965	-1028	-16		
Lansing	3998	-1061	4000	-1063	-19		
Stark	4412	-1475	4415	-1478	-17		
BKC	4543	-1606	4546	-1609	-18		
Marmaton	4566	-1629	4564	-1627	-23		
Pawnee	4650	-1713	4654	-1717	-14		
Fort Scott	4690	-1753	4691	-1754	-17		
Cherokee	4702	-1765	4704	-1767	-13		
Morrow	4959	-2022	4958	-2021	-26		
Chester	5046	-2109	5048	-2111	-4		
St. Gen	5128	-2191	5126	-2189	-17		
St. Louis	5160	-2223	5161	-2224	-7		
TD	5400	-2463	5400	-2463			

**Conclusion:** The location for the Willis #1-20 was found via 3-D seismic survey. The well was low to the Elнора #2-20 as expected. Two DST's were conducted, one of which recovered commercial quantities of oil. The decision was made to run a 1/2" production casing to further evaluate the Willis #1-20.

