



## DRILL STEM TEST REPORT

Prepared For: **Larson Engineering , Inc**

562 W. State Rd. 4  
Olmitz , KS 67564-8561

ATTN: Vern Schrag

**1-26s-21w Ford,KS**

**Kersting-Williams #1-1**

Start Date: 2015.10.12 @ 13:45:17

End Date: 2015.10.12 @ 19:08:11

Job Ticket #: 62672                      DST #: 1

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

Printed: 2015.10.14 @ 08:46:36



**TRILOBITE TESTING, INC**

# DRILL STEM TEST REPORT

Larson Engineering, Inc  
 562 W. State Rd. 4  
 Olmitz, KS 67564-8561  
 ATTN: Vern Schrag

**Kersting-Williams #1-1**  
**1-26s-21w Ford,KS**  
 Job Ticket: 62672 **DST#: 1**  
 Test Start: 2015.10.12 @ 13:45:17

## GENERAL INFORMATION:

Formation: **Cher Sd.**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 16:09:27  
 Time Test Ended: 19:08:11  
 Interval: **4634.00 ft (KB) To 4730.00 ft (KB) (TVD)**  
 Total Depth: 4730.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Fair  
 Test Type: Conventional Bottom Hole (Initial)  
 Tester: Ray Schwager  
 Unit No: 70  
 Reference Elevations: 2272.00 ft (KB)  
 2264.00 ft (CF)  
 KB to GR/CF: 8.00 ft

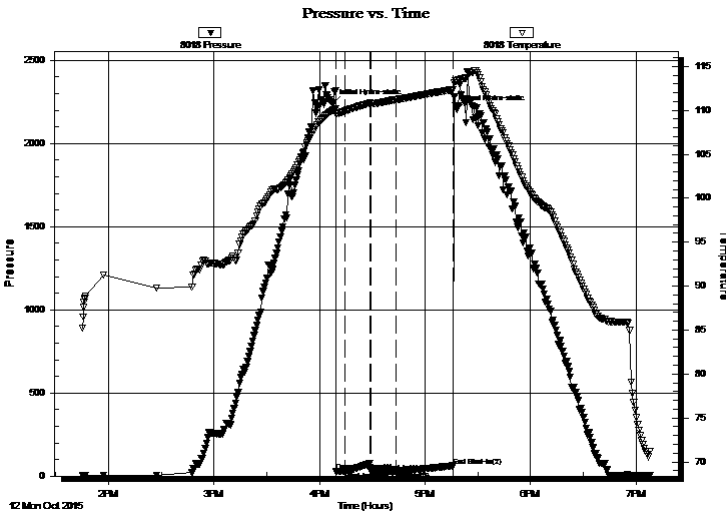
## Serial #: 8018

Inside

Press@RunDepth: 30.00 psig @ 4638.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2015.10.12 End Date: 2015.10.12 Last Calib.: 2015.10.12  
 Start Time: 13:45:17 End Time: 19:08:11 Time On Btm: 2015.10.12 @ 16:07:42  
 Time Off Btm: 2015.10.12 @ 17:18:12

TEST COMMENT: 5-IFP-w k bl thru-out 1/4"bl  
 15-ISIP-no bl  
 15-FFP-no bl  
 30-FSIP-no bl

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2237.88	110.02	Initial Hydro-static
2	27.87	109.54	Open To Flow (1)
7	28.48	109.89	Shut-In(1)
21	77.60	110.80	End Shut-In(1)
22	31.35	110.78	Open To Flow (2)
36	30.00	111.19	Shut-In(2)
69	61.69	112.34	End Shut-In(2)
71	2206.11	113.38	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
5.00	Mud	0.02

## Gas Rates

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





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Larson Engineering , Inc

**Kersting-Williams #1-1**

562 W. State Rd. 4  
Olmitz , KS 67564-8561

**1-26s-21w Ford,KS**

Job Ticket: 62672

**DST#: 1**

ATTN: Vern Schrag

Test Start: 2015.10.12 @ 13:45:17

## Tool Information

Drill Pipe:	Length: 4515.00 ft	Diameter: 3.80 inches	Volume: 63.33 bbl	Tool Weight:	2200.00 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: 120.00 ft	Diameter: 2.25 inches	Volume: 0.59 bbl	Weight to Pull Loose:	120000.0 lb
			<u>Total Volume: 63.92 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	30.00 ft			String Weight: Initial	64000.00 lb
Depth to Top Packer:	4634.00 ft			Final	64000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	96.00 ft				
Tool Length:	125.00 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			4606.00	
Shut In Tool	5.00			4611.00	
Hydraulic tool	5.00			4616.00	
Jars	5.00			4621.00	
Safety Joint	3.00			4624.00	
Packer	5.00			4629.00	29.00 Bottom Of Top Packer
Packer	5.00			4634.00	
Stubb	1.00			4635.00	
Perforations	3.00			4638.00	
Recorder	0.00	8018	Inside	4638.00	
Recorder	0.00	8700	Outside	4638.00	
Blank Spacing	64.00			4702.00	
Perforations	25.00			4727.00	
Bullnose	3.00			4730.00	96.00 Bottom Packers & Anchor

**Total Tool Length: 125.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Larson Engineering , Inc

**Kersting-Williams #1-1**

562 W. State Rd. 4  
Olmitz , KS 67564-8561

**1-26s-21w Ford,KS**

Job Ticket: 62672

**DST#: 1**

ATTN: Vern Schrag

Test Start: 2015.10.12 @ 13:45:17

## 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: 46.00 sec/qt

Cushion Volume:

bbf

Water Loss: 8.74 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 4500.00 ppm

Filter Cake: 1.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbf
5.00	Mud	0.025

Total Length: 5.00 ft      Total Volume: 0.025 bbf

Num Fluid Samples: 0

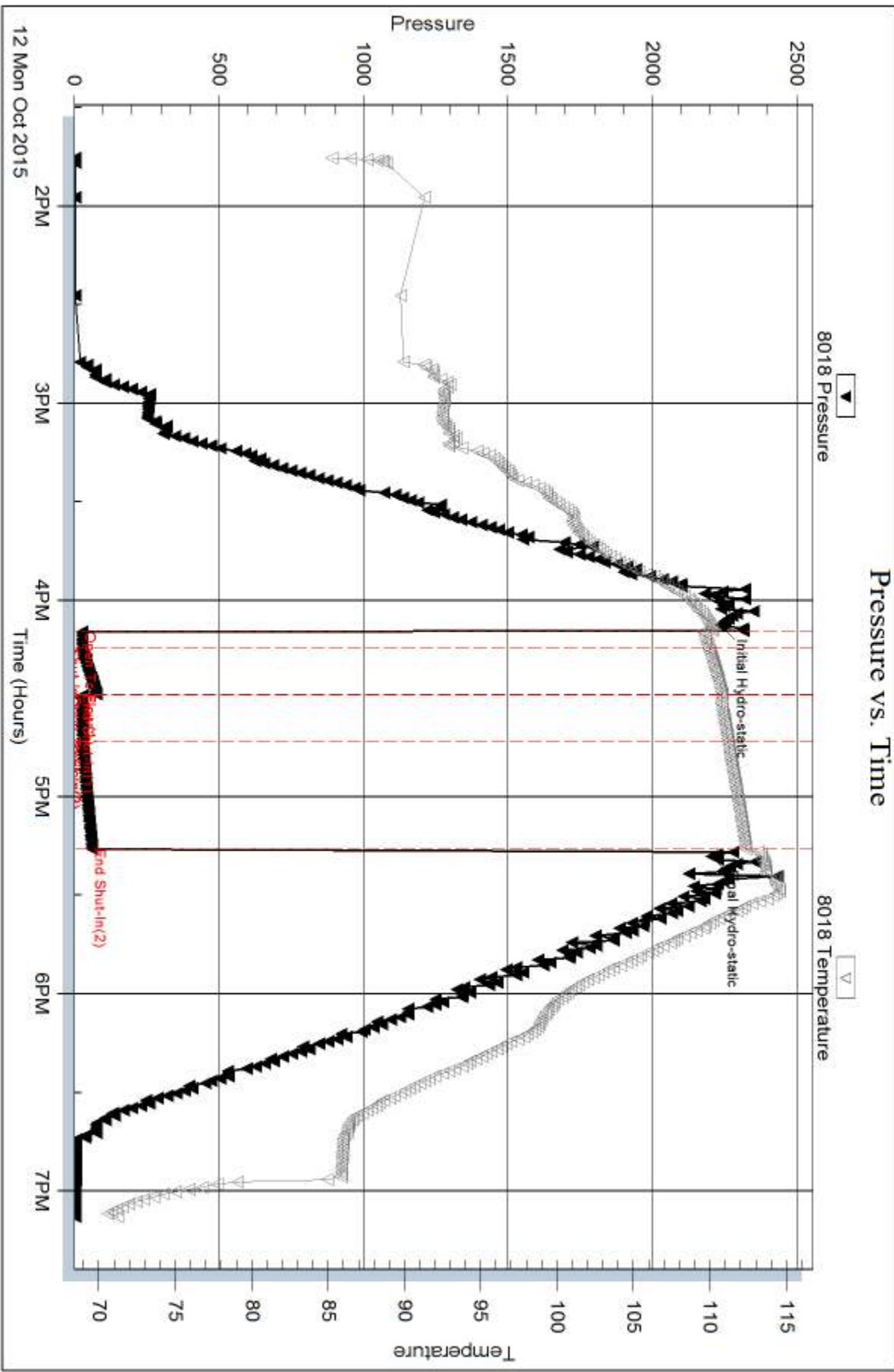
Num Gas Bombs: 0

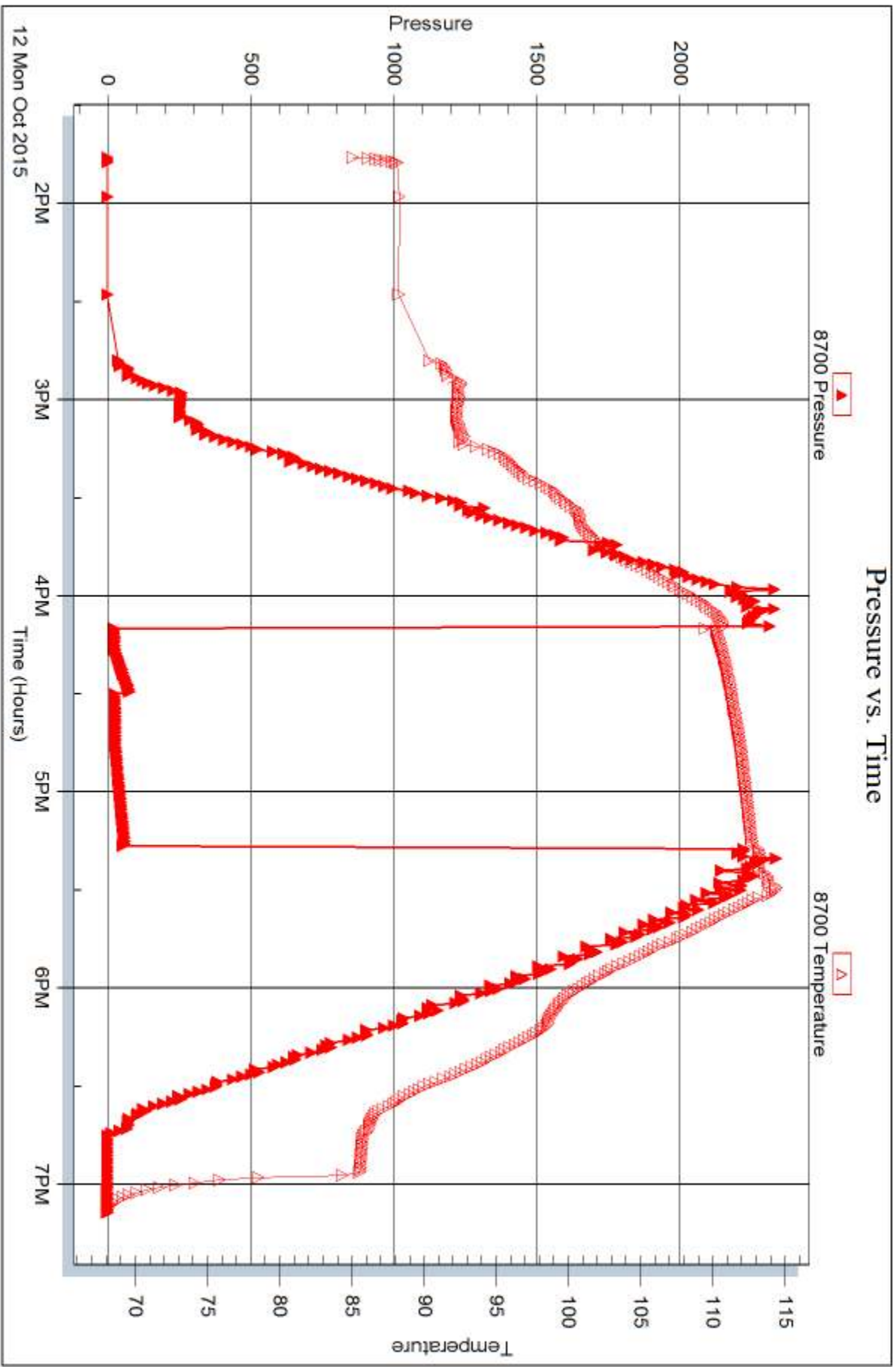
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:







## DRILL STEM TEST REPORT

Prepared For: **Larson Engineering , Inc**

562 W. State Rd. 4  
Olmitz , KS 67564-8561

ATTN: Vern Schrag

**1-26s-21w Ford,KS**

**Kersting-Williams #1-1**

Start Date: 2015.10.13 @ 05:35:20

End Date: 2015.10.13 @ 12:42:14

Job Ticket #: 62673                      DST #: 2

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

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**TRILOBITE TESTING, INC**

# DRILL STEM TEST REPORT

Larson Engineering, Inc  
 562 W. State Rd. 4  
 Olmitz, KS 67564-8561  
 ATTN: Vern Schrag

**Kersting-Williams #1-1**

**1-26s-21w Ford,KS**

Job Ticket: 62673

**DST#: 2**

Test Start: 2015.10.13 @ 05:35:20

## GENERAL INFORMATION:

Formation: **Miss**  
 Deviated: No Whipstock: ft (KB)  
 Test Type: Conventional Bottom Hole (Reset)  
 Time Tool Opened: 07:56:45  
 Tester: Ray Schwager  
 Time Test Ended: 12:42:14  
 Unit No: 70  
 Interval: **4725.00 ft (KB) To 4774.00 ft (KB) (TVD)**  
 Reference Elevations: 2272.00 ft (KB)  
 Total Depth: 4774.00 ft (KB) (TVD)  
 2264.00 ft (CF)  
 Hole Diameter: 7.88 inches  
 Hole Condition: Fair  
 KB to GR/CF: 8.00 ft

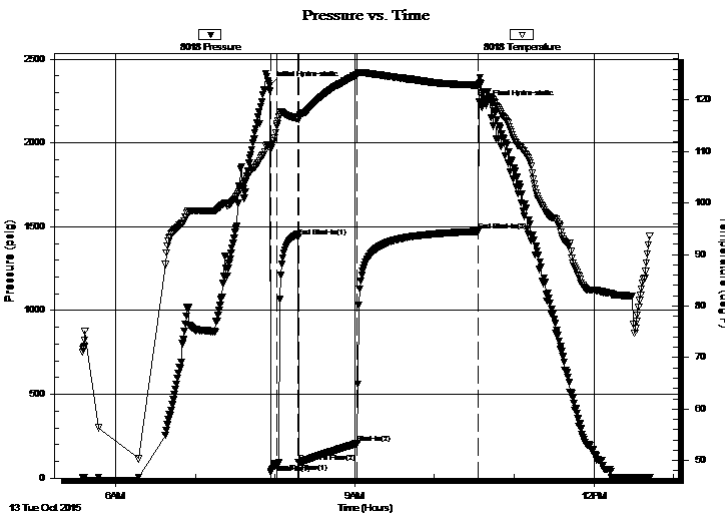
## Serial #: 8018

**Inside**

Press@RunDepth: 206.95 psig @ 4735.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2015.10.13 End Date: 2015.10.13 Last Calib.: 2015.10.13  
 Start Time: 05:35:20 End Time: 12:42:14 Time On Btm: 2015.10.13 @ 07:56:00  
 Time Off Btm: 2015.10.13 @ 10:38:44

TEST COMMENT: 5-IFP-w k to a fr bl 1/2" to 3 1/2" bl  
 15-ISIP-no bl  
 45-FFP-w k to a strg bl in 41 min  
 90-FSIP-no bl

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2342.62	111.36	Initial Hydro-static
1	36.33	110.31	Open To Flow (1)
6	84.75	115.38	Shut-In(1)
22	1438.12	116.43	End Shut-In(1)
22	94.25	116.14	Open To Flow (2)
66	206.95	124.99	Shut-In(2)
157	1472.52	122.89	End Shut-In(2)
163	2225.69	119.97	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
0.00	60' GIP	0.00
180.00	Water	1.43
210.00	MW 40%M60%W	2.95

\* Recovery from multiple tests

## Gas Rates

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





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Larson Engineering , Inc

**Kersting-Williams #1-1**

562 W. State Rd. 4  
Olmitz , KS 67564-8561

**1-26s-21w Ford,KS**

Job Ticket: 62673

**DST#: 2**

ATTN: Vern Schrag

Test Start: 2015.10.13 @ 05:35:20

## Tool Information

Drill Pipe:	Length: 4581.00 ft	Diameter: 3.80 inches	Volume: 64.26 bbl	Tool Weight:	2200.00 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: 120.00 ft	Diameter: 2.25 inches	Volume: 0.59 bbl	Weight to Pull Loose:	120000.0 lb
			<u>Total Volume: 64.85 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	5.00 ft			String Weight: Initial	62000.00 lb
Depth to Top Packer:	4725.00 ft			Final	66000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	49.00 ft				
Tool Length:	78.00 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			4697.00	
Shut In Tool	5.00			4702.00	
Hydraulic tool	5.00			4707.00	
Jars	5.00			4712.00	
Safety Joint	3.00			4715.00	
Packer	5.00			4720.00	29.00 Bottom Of Top Packer
Packer	5.00			4725.00	
Stubb	1.00			4726.00	
Perforations	9.00			4735.00	
Recorder	0.00	8018	Inside	4735.00	
Recorder	0.00	8700	Outside	4735.00	
Blank Spacing	33.00			4768.00	
Perforations	3.00			4771.00	
Bullnose	3.00			4774.00	49.00 Bottom Packers & Anchor

**Total Tool Length: 78.00**



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# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Larson Engineering , Inc

**Kersting-Williams #1-1**

562 W. State Rd. 4  
Olmitz , KS 67564-8561

**1-26s-21w Ford,KS**

Job Ticket: 62673

**DST#: 2**

ATTN: Vern Schrag

Test Start: 2015.10.13 @ 05:35:20

## Mud and Cushion Information

Mud Type: Gel Chem  
Mud Weight: 9.00 lb/gal  
Viscosity: 54.00 sec/qt  
Water Loss: 8.71 in<sup>3</sup>  
Resistivity: ohm.m  
Salinity: 4500.00 ppm  
Filter Cake: 1.00 inches

Cushion Type:  
Cushion Length: ft  
Cushion Volume: bbl  
Gas Cushion Type:  
Gas Cushion Pressure: psig

Oil API: deg API  
Water Salinity: 36000 ppm

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
0.00	60' GIP	0.000
180.00	Water	1.432
210.00	MW 40%M60%W	2.946

Total Length: 390.00 ft Total Volume: 4.378 bbl

Num Fluid Samples: 0

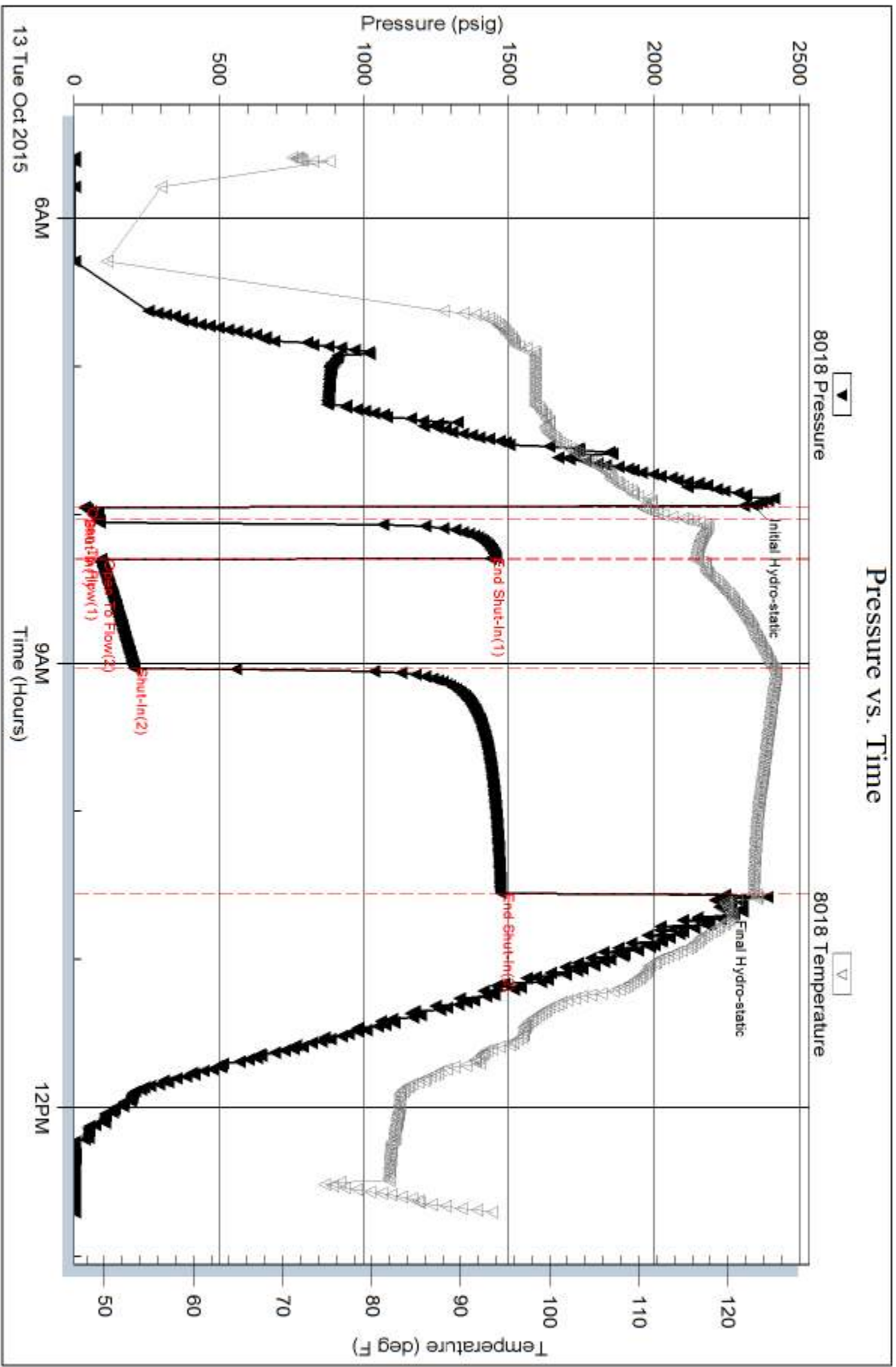
Num Gas Bombs: 0

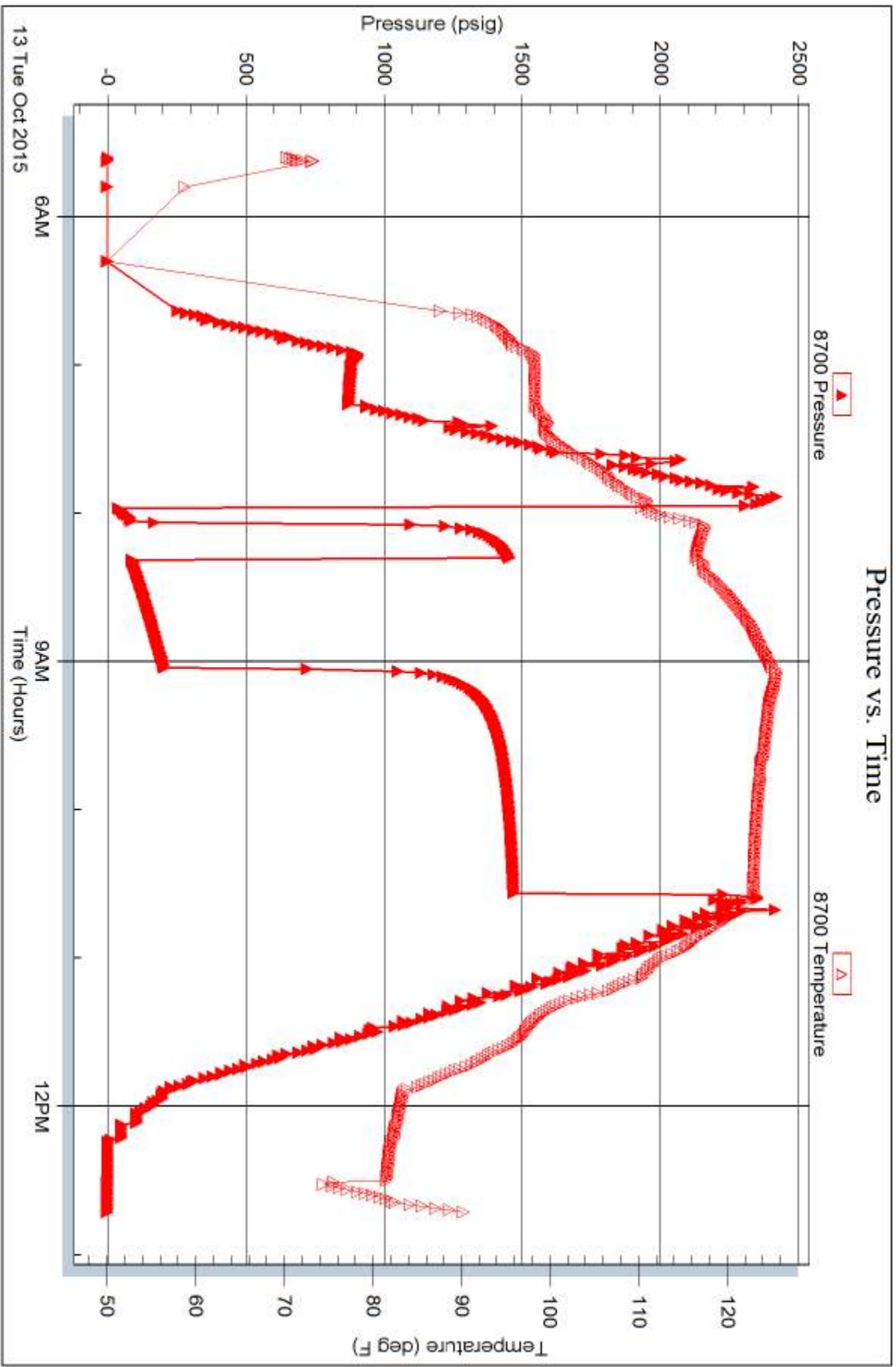
Serial #:

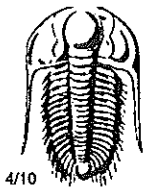
Laboratory Name:

Laboratory Location:

Recovery Comments: RW .16 @ 80F







# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 62672

Well Name & No. Keating Williams 1-1 Test No. 1 Date 10-12-15  
 Company LARSON ENGINEERING, INC Elevation 2272 KB 2264 GL  
 Address 562 W. STATE RD 4 OLMITZ, K067564-8561  
 Co. Rep / Geo. VERN SCHRAG Rig. H-O delg rig 3  
 Location: Sec. 1 Twp. 26<sup>s</sup> Rge. 21<sup>w</sup> Co. Ford State Ko

Interval Tested 4634-4730 Zone Tested Cher sd.  
 Anchor Length 96 Drill Pipe Run 4515 Mud Wt. 9.4  
 Top Packer Depth 4629 Drill Collars Run 120 Vis 46  
 Bottom Packer Depth 4634 Wt. Pipe Run - WL 8.8  
 Total Depth 4730 Chlorides 4500 ppm System LCM 1 1/2#

Blow Description I FP - WEAK BLOW THRU-OUT 1/4" BLOW  
I STP - NO BLOW  
F FP - NO BLOW  
F STP - NO BLOW

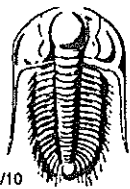
Rec	Feet of	%gas	%oil	%water	%mud
<u>5</u>	<u>Mud</u>				

Rec Total 5 BHT 112 Gravity - API RW - @ - ° F Chlorides - ppm

(A) Initial Hydrostatic 2237  Test 1150 T-On Location 1115  
 (B) First Initial Flow 27  Jars 250 T-Started 1345  
 (C) First Final Flow 28  Safety Joint 75 T-Open 1550  
 (D) Initial Shut-In 77  Circ Sub \_\_\_\_\_ T-Pulled 1555  
 (E) Second Initial Flow 31  Hourly Standby \_\_\_\_\_ T-Out 1808  
 (F) Second Final Flow 30  Mileage 126 RT Comments Motel stay  
 (G) Final Shut-In 61  Sampler \_\_\_\_\_  Ruined Shale Packer \_\_\_\_\_  
 (H) Final Hydrostatic 2206  Straddle \_\_\_\_\_  Ruined Packer \_\_\_\_\_

Initial Open 5  Extra Packer \_\_\_\_\_  Extra Copies \_\_\_\_\_  
 Initial Shut-In 15  Extra Recorder \_\_\_\_\_ Sub Total 0  
 Final Flow 15  Day Standby \_\_\_\_\_ Total 1601  
 Final Shut-In 30  Accessibility \_\_\_\_\_ MP/DST Disc't \_\_\_\_\_

Approved By Jessie E. Schrag Our Representative Ray Schrag 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.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 62673

Well Name & No. Kearney-Williams 1-1 Test No. 2 Date 10-13-15  
 Company LARSON Engineering, Inc Elevation 2272 KB 2264 GL  
 Address 562 W. STATE Rd 4 OLMITE, Ks 67564-8561  
 Co. Rep / Geo. Vern Schrag Rig H/O drlg rig 3  
 Location: Sec. 1 Twp. 26<sup>s</sup> Rge. 21<sup>w</sup> Co. Ford State Ks

Interval Tested 4725-4774 Zone Tested MISS  
 Anchor Length 49 Drill Pipe Run 4581 Mud Wt. 9.2  
 Top Packer Depth 4720 Drill Collars Run 120 Vis 54  
 Bottom Packer Depth 4725 Wt. Pipe Run — WL 8.8  
 Total Depth 4774 Chlorides 4500 ppm System LCM 1#

Blow Description IFP - WEAK TO A FAIR BLOW 1/2" TO 3 1/2" BLOW  
ISIP - NO BLOW  
FFP - WEAK TO A STRONG BLOW IN 41 MIN  
FSTIP - NO BLOW

Rec	Feet of	%gas	%oil	%water	%mud
<u>60</u>	<u>GIP</u>				
<u>210</u>	<u>MW</u>			<u>60</u>	<u>40</u>
<u>180</u>	<u>WATER</u>				
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 390 BHT 122 Gravity — API RW .16 @ 80 ° F Chlorides 36000 ppm

(A) Initial Hydrostatic <u>2342</u>	<input checked="" type="checkbox"/> Test <u>1150</u>	T-On Location <u>0450</u>
(B) First Initial Flow <u>36</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>0535</u>
(C) First Final Flow <u>84</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>0755</u>
(D) Initial Shut-In <u>1438</u>	<input type="checkbox"/> Circ Sub	T-Pulled <u>1030</u>
(E) Second Initial Flow <u>94</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>1242</u>
(F) Second Final Flow <u>206</u>	<input checked="" type="checkbox"/> Mileage <u>126</u>	Comments
(G) Final Shut-In <u>1472</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>2225</u>	<input type="checkbox"/> Straddle	

Initial Open 5  
 Initial Shut-In 15  
 Final Flow 45  
 Final Shut-In 90

Ruined Shale Packer  
 Ruined Packer  
 Extra Copies  
 Sub Total 0  
 Total 1601  
 MP/DST Disc't

Approved By Vern C Schrag Our Representative Ray Schwager 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.