



## DRILL STEM TEST REPORT

Prepared For: **TDI, Inc**

1310 Bison Rd  
Hays KS 67601

ATTN: Herb Dienes

### **Younger Unit #2**

### **7-15s-19w Ellis,KS**

Start Date: 2014.06.17 @ 17:50:39

End Date: 2014.06.18 @ 00:29:33

Job Ticket #: 59310                      DST #: 1

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

Printed: 2014.06.23 @ 09:47:20

TDI, Inc  
7-15s-19w Ellis,KS  
Younger Unit #2  
DST # 1  
LKC C-D  
2014.06.17



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

TDI, Inc  
1310 Bison Rd  
Hays KS 67601  
ATTN: Herb Dienes

**7-15s-19w Ellis, KS**  
**Younger Unit #2**  
Job Ticket: 59310      **DST#: 1**  
Test Start: 2014.06.17 @ 17:50:39

## GENERAL INFORMATION:

Formation: **LKC C-D**  
Deviated: No Whipstock: ft (KB)  
Time Tool Opened: 20:06:04  
Time Test Ended: 00:29:33  
Interval: **3314.00 ft (KB) To 3391.00 ft (KB) (TVD)**  
Total Depth: 3391.00 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: 2039.00 ft (KB)  
2028.00 ft (CF)  
KB to GR/CF: 11.00 ft

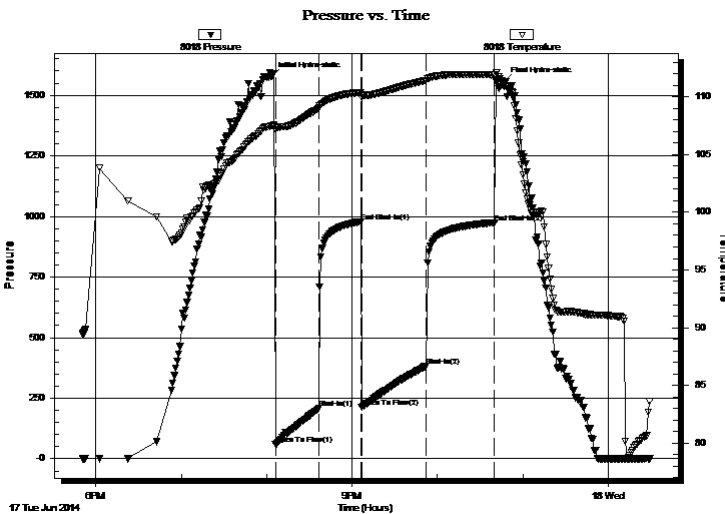
## Serial #: 8018

Inside

Press@RunDepth: 383.40 psig @ 3324.00 ft (KB)      Capacity: 8000.00 psig  
Start Date: 2014.06.17      End Date: 2014.06.18      Last Calib.: 2014.06.18  
Start Time: 17:50:39      End Time: 00:29:33      Time On Btm: 2014.06.17 @ 20:03:34  
Time Off Btm: 2014.06.17 @ 22:46:33

TEST COMMENT: 30-IFP-strg bl in 4 min  
30-ISIP-no bl  
45-FFP-strg bl in 10 min  
45-FSIP-no bl

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1576.46	107.51	Initial Hydro-static
3	61.36	107.17	Open To Flow (1)
33	210.32	109.01	Shut-In(1)
63	978.78	110.39	End Shut-In(1)
63	212.08	109.95	Open To Flow (2)
109	383.40	111.43	Shut-In(2)
157	974.91	111.89	End Shut-In(2)
163	1557.37	110.95	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
65.00	MW 20%M 80%W w/show of oil	0.91
620.00	Water	8.70

## Gas Rates

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





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

TDI, Inc  
1310 Bison Rd  
Hays KS 67601  
ATTN: Herb Dienes

**7-15s-19w Ellis, KS**  
**Younger Unit #2**  
Job Ticket: 59310      **DST#: 1**  
Test Start: 2014.06.17 @ 17:50:39

**Tool Information**

Drill Pipe:	Length: 3308.00 ft	Diameter: 3.80 inches	Volume: 46.40 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: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight to Pull Loose: 95000.00 lb
		Total Volume: 46.40 bbl		Tool Chased 10.00 ft
Drill Pipe Above KB:	15.00 ft			String Weight: Initial 46000.00 lb
Depth to Top Packer:	3314.00 ft			Final 46000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	77.00 ft			
Tool Length:	98.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

<b>Tool Description</b>	<b>Length (ft)</b>	<b>Serial No.</b>	<b>Position</b>	<b>Depth (ft)</b>	<b>Accum. Lengths</b>
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Change Over Sub	1.00			3294.00	
Shut In Tool	5.00			3299.00	
Hydraulic tool	5.00			3304.00	
Packer	5.00			3309.00	21.00      Bottom Of Top Packer
Packer	5.00			3314.00	
Stubb	1.00			3315.00	
Perforations	9.00			3324.00	
Recorder	0.00	8018	Inside	3324.00	
Recorder	0.00	8678	Outside	3324.00	
Blank Spacing	64.00			3388.00	
Bullnose	3.00			3391.00	77.00      Bottom Packers & Anchor

**Total Tool Length: 98.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

TDI, Inc  
1310 Bison Rd  
Hays KS 67601  
ATTN: Herb Dienes

**7-15s-19w Ellis, KS**  
**Younger Unit #2**  
Job Ticket: 59310      **DST#: 1**  
Test Start: 2014.06.17 @ 17:50:39

### Mud and Cushion Information

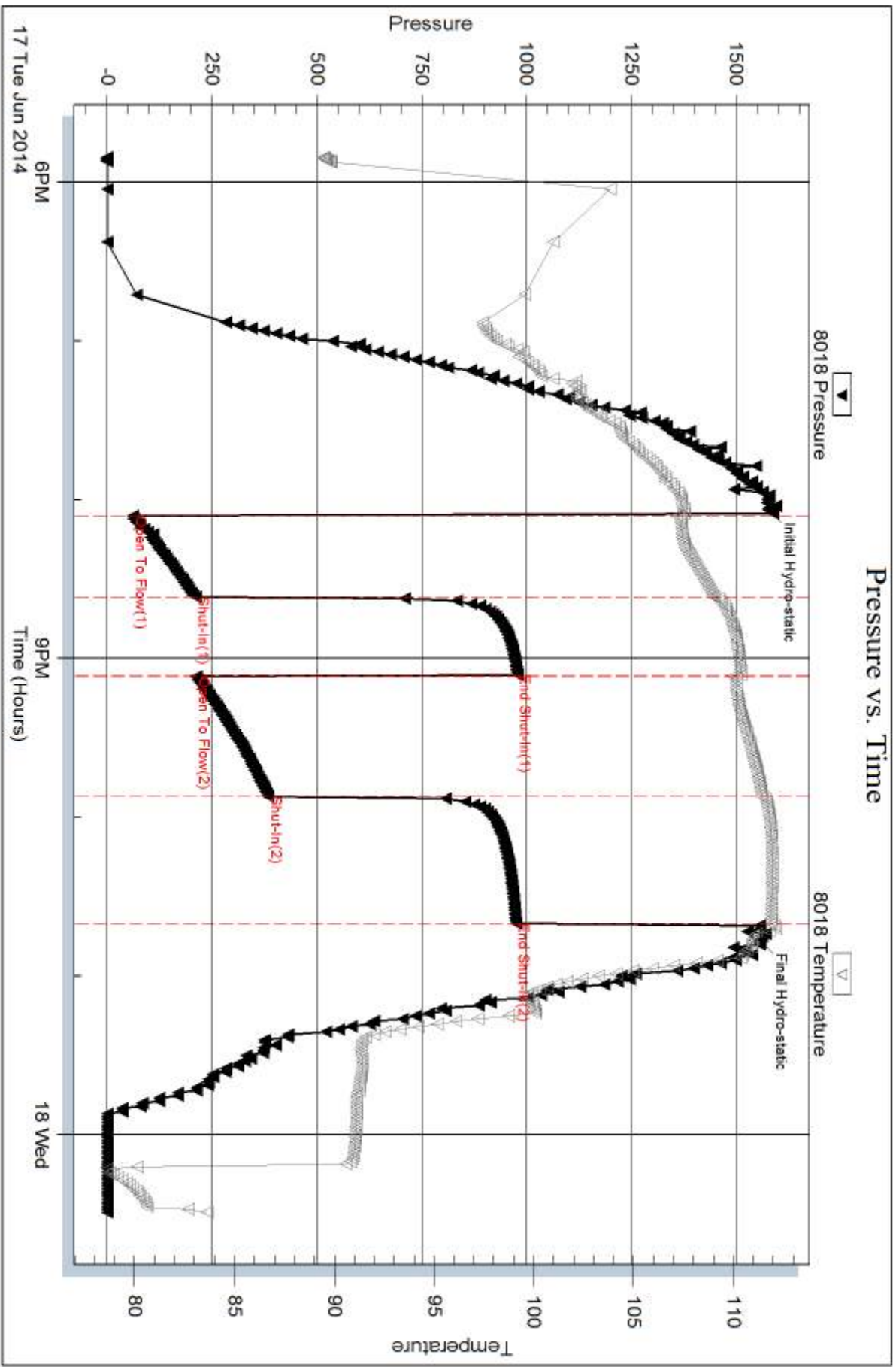
Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	67000 ppm
Viscosity: 53.00 sec/qt	Cushion Volume: bbl		
Water Loss: 13.12 in <sup>3</sup>	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 1200.00 ppm			
Filter Cake: 1.00 inches			

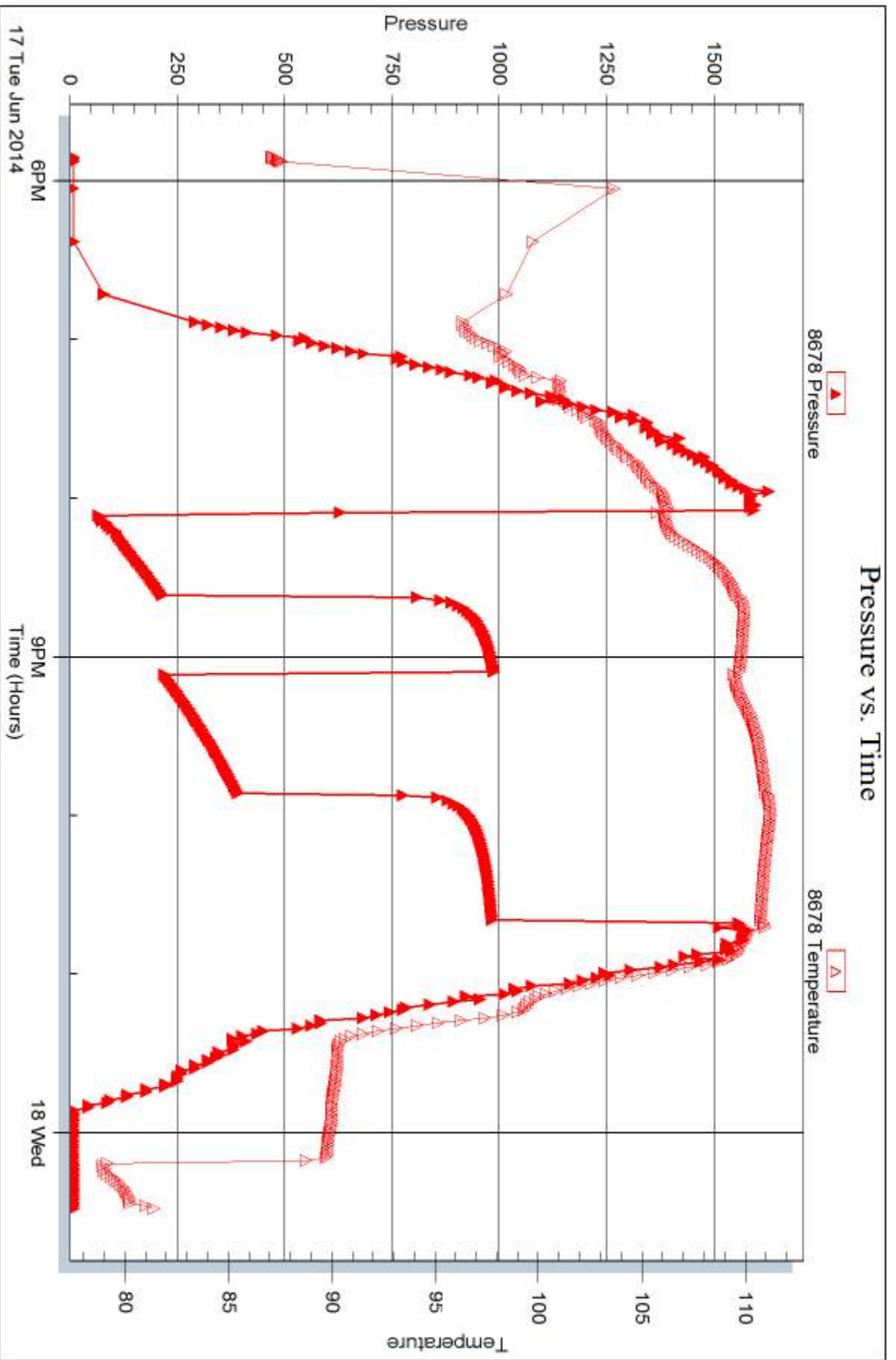
### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
65.00	MW 20%M 80%W w/show of oil	0.912
620.00	Water	8.697

Total Length: 685.00 ft      Total Volume: 9.609 bbl  
 Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:  
 Laboratory Name:      Laboratory Location:  
 Recovery Comments: RW .12 @ 65F







## DRILL STEM TEST REPORT

Prepared For: **TDI, Inc**

1310 Bison Rd  
Hays KS 67601

ATTN: Herb Dienes

### **Younger Unit #2**

### **7-15s-19w Ellis,KS**

Start Date: 2014.06.19 @ 02:40:58

End Date: 2014.06.19 @ 09:01:36

Job Ticket #: 59311                      DST #: 2

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

Printed: 2014.06.23 @ 09:46:48





**TRILOBITE TESTING, INC**

# DRILL STEM TEST REPORT

TDI, Inc  
 1310 Bison Rd  
 Hays KS 67601  
 ATTN: Herb Dienes

**7-15s-19w Ellis, KS**  
**Younger Unit #2**  
 Job Ticket: 59311 **DST#: 2**  
 Test Start: 2014.06.19 @ 02:40:58

## GENERAL INFORMATION:

Formation: **Conglomerate Sand**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 04:26:06  
 Time Test Ended: 09:01:36  
 Interval: **3633.00 ft (KB) To 3680.00 ft (KB) (TVD)**  
 Total Depth: 3718.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Fair  
 Test Type: Conventional Straddle (Reset)  
 Tester: Ray Schwager  
 Unit No: 70  
 Reference Elevations: 2039.00 ft (KB)  
 2028.00 ft (CF)  
 KB to GR/CF: 11.00 ft

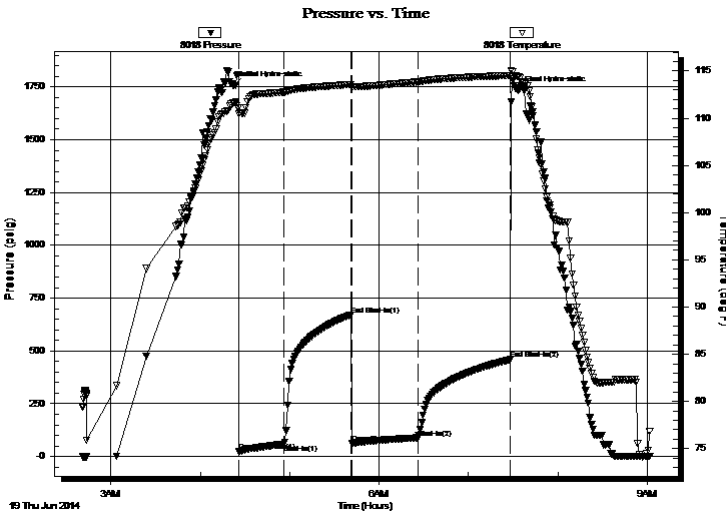
## Serial #: 8018

Inside

Press@RunDepth: 88.65 psig @ 3638.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2014.06.19 End Date: 2014.06.19 Last Calib.: 2014.06.19  
 Start Time: 02:40:58 End Time: 09:01:36 Time On Btm: 2014.06.19 @ 04:22:36  
 Time Off Btm: 2014.06.19 @ 07:33:06

TEST COMMENT: 30-IFP-w k to strg in 15 min  
 45-ISIP-surface bl bk  
 45-FFP-w k to a fr bl 1/4" to 3 1/2" bl  
 60-FSIP-no bl

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1756.25	111.67	Initial Hydro-static
4	22.95	110.51	Open To Flow (1)
34	58.26	112.77	Shut-In(1)
79	670.94	113.60	End Shut-In(1)
79	63.03	113.39	Open To Flow (2)
124	88.65	113.86	Shut-In(2)
186	458.80	114.53	End Shut-In(2)
191	1734.09	114.44	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
0.00	60'GIP	0.00
135.00	CO	1.89
62.00	MGO 10%G40%M50%O	0.87

\* Recovery from multiple tests

## Gas Rates

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





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# DRILL STEM TEST REPORT

TDI, Inc  
1310 Bison Rd  
Hays KS 67601  
ATTN: Herb Dienes

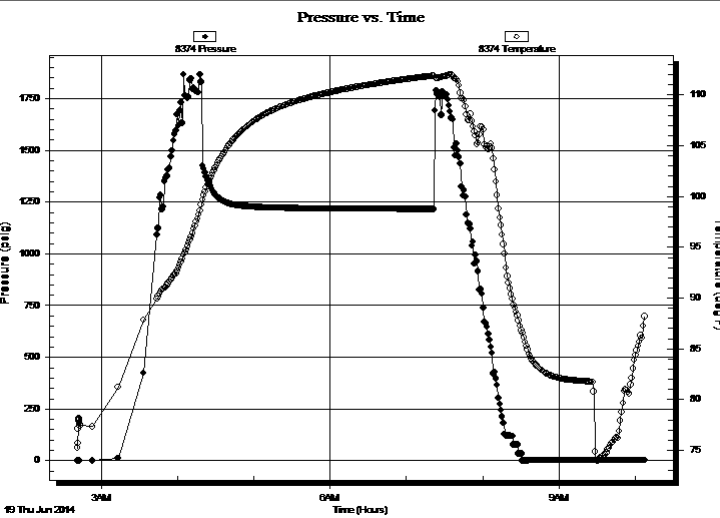
**7-15s-19w Ellis, KS**  
**Younger Unit #2**  
Job Ticket: 59311      **DST#: 2**  
Test Start: 2014.06.19 @ 02:40:58

## GENERAL INFORMATION:

Formation: <b>Conglomerate Sand</b>	Test Type: Conventional Straddle (Reset)
Deviated: No Whipstock:                      ft (KB)	Tester: Ray Schwager
Time Tool Opened: 04:26:06	Unit No: 70
Time Test Ended: 09:01:36	Reference Elevations: 2039.00 ft (KB)
<b>Interval: 3633.00 ft (KB) To 3680.00 ft (KB) (TVD)</b>	2028.00 ft (CF)
Total Depth: 3718.00 ft (KB) (TVD)	KB to GR/CF: 11.00 ft
Hole Diameter: 7.88 inches Hole Condition: Fair	

<b>Serial #: 8374</b>	<b>Below (Straddle)</b>	Capacity: 8000.00 psig
Press@RunDepth:                      psig @ 3694.00 ft (KB)		Last Calib.: 2014.06.19
Start Date: 2014.06.19	End Date: 2014.06.19	Time On Btm:
Start Time: 02:41:02	End Time: 10:07:56	Time Off Btm:

**TEST COMMENT:** 30-IFP-w k to strg in 15 min  
45-ISIP-surface bl bk  
45-FFP-w k to a fr bl 1/4" to 3 1/2" bl  
60-FSIP-no bl



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

Recovery		
Length (ft)	Description	Volume (bbl)
0.00	60'GIP	0.00
135.00	CO	1.89
62.00	MGO 10%G40%M50%O	0.87

\* Recovery from multiple tests

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



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

TDI, Inc  
1310 Bison Rd  
Hays KS 67601  
ATTN: Herb Dienes

**7-15s-19w Ellis, KS**  
**Younger Unit #2**  
Job Ticket: 59311      **DST#: 2**  
Test Start: 2014.06.19 @ 02:40:58

**Tool Information**

Drill Pipe:	Length: 3617.00 ft	Diameter: 3.80 inches	Volume: 50.74 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: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight to Pull Loose: 60000.00 lb
			<u>Total Volume: 50.74 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	5.00 ft			String Weight: Initial 43000.00 lb
Depth to Top Packer:	3633.00 ft			Final 45000.00 lb
Depth to Bottom Packer:	3680.00 ft			
Interval between Packers:	47.00 ft			
Tool Length:	118.00 ft			
Number of Packers:	3	Diameter: 6.75 inches		

Tool Comments:

<b>Tool Description</b>	<b>Length (ft)</b>	<b>Serial No.</b>	<b>Position</b>	<b>Depth (ft)</b>	<b>Accum. Lengths</b>
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Change Over Sub	1.00			3613.00	
Shut In Tool	5.00			3618.00	
Hydraulic tool	5.00			3623.00	
Packer	5.00			3628.00	21.00      Bottom Of Top Packer
Packer	5.00			3633.00	
Stubb	1.00			3634.00	
Perforations	4.00			3638.00	
Recorder	0.00	8018	Inside	3638.00	
Recorder	0.00	8678	Outside	3638.00	
Blank Spacing	33.00			3671.00	
Perforations	8.00			3679.00	
Blank Off Sub	1.00			3680.00	
Packer	5.00			3685.00	
Blank Spacing	3.00			3688.00	47.00      Tool Interval
Packer	5.00			3693.00	
Stubb	1.00			3694.00	
Recorder	0.00	8374	Below	3694.00	
Blank Spacing	33.00			3727.00	
Bullnose	3.00			3730.00	50.00      Bottom Packers & Anchor

**Total Tool Length: 118.00**



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# DRILL STEM TEST REPORT

**FLUID SUMMARY**

TDI, Inc  
1310 Bison Rd  
Hays KS 67601  
ATTN: Herb Dienes

**7-15s-19w Ellis, KS**  
**Younger Unit #2**  
Job Ticket: 59311      **DST#: 2**  
Test Start: 2014.06.19 @ 02:40:58

## Mud and Cushion Information

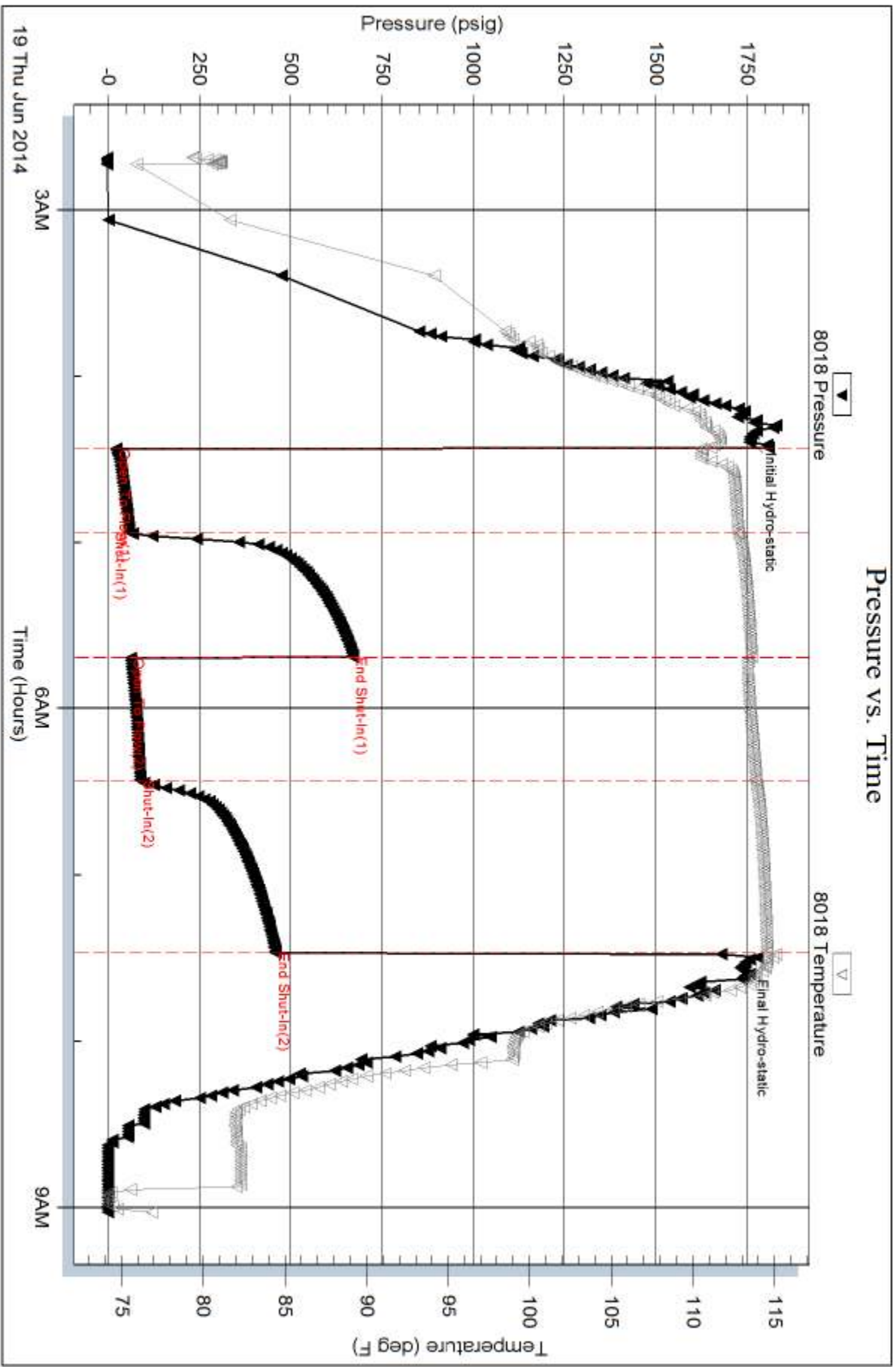
Mud Type: Gel Chem	Cushion Type:	Oil API: 29 deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity: ppm
Viscosity: 63.00 sec/qt	Cushion Volume: bbl	
Water Loss: 8.74 in <sup>3</sup>	Gas Cushion Type:	
Resistivity: ohm.m	Gas Cushion Pressure: psig	
Salinity: 4500.00 ppm		
Filter Cake: 1.00 inches		

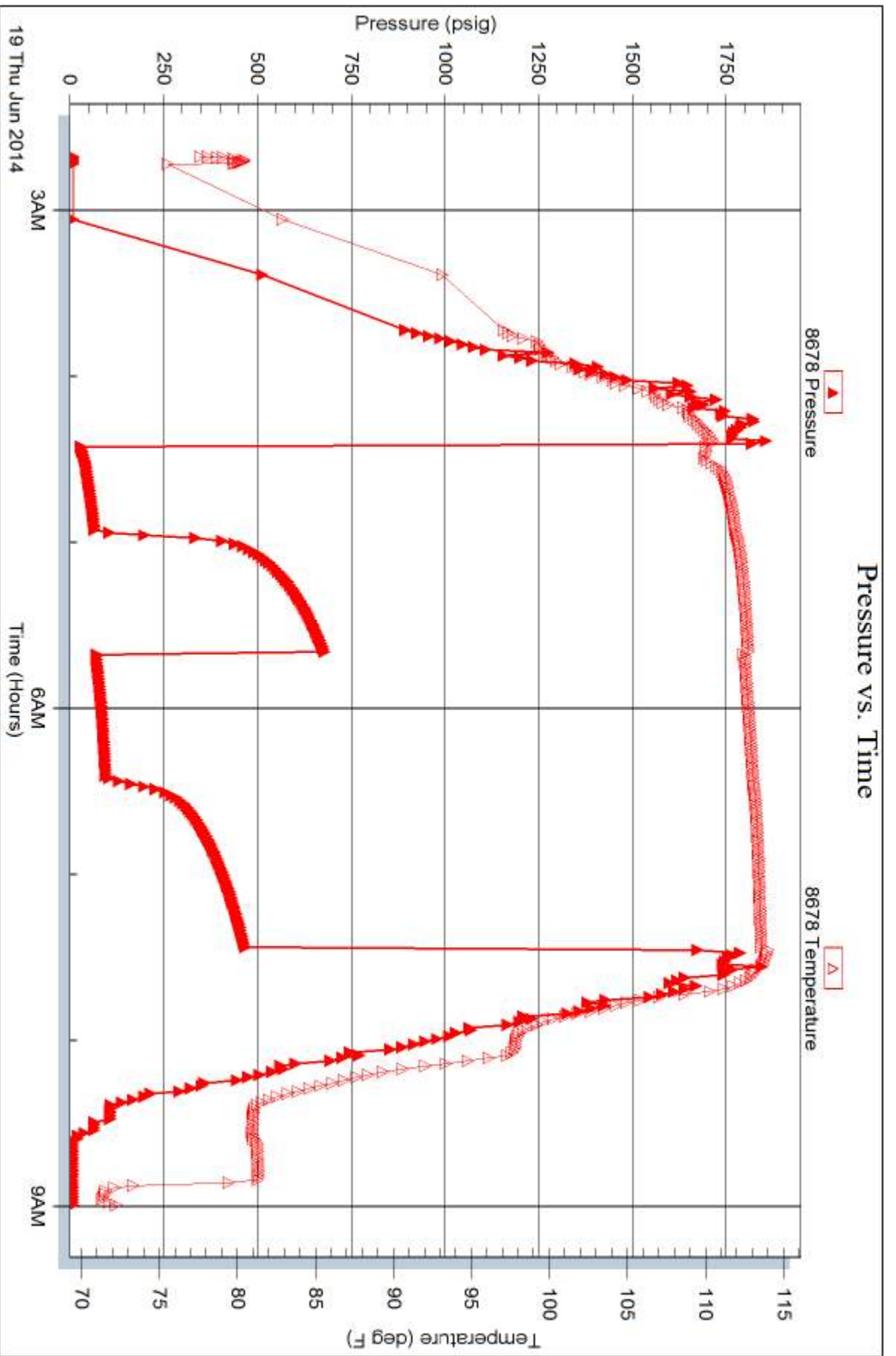
## Recovery Information

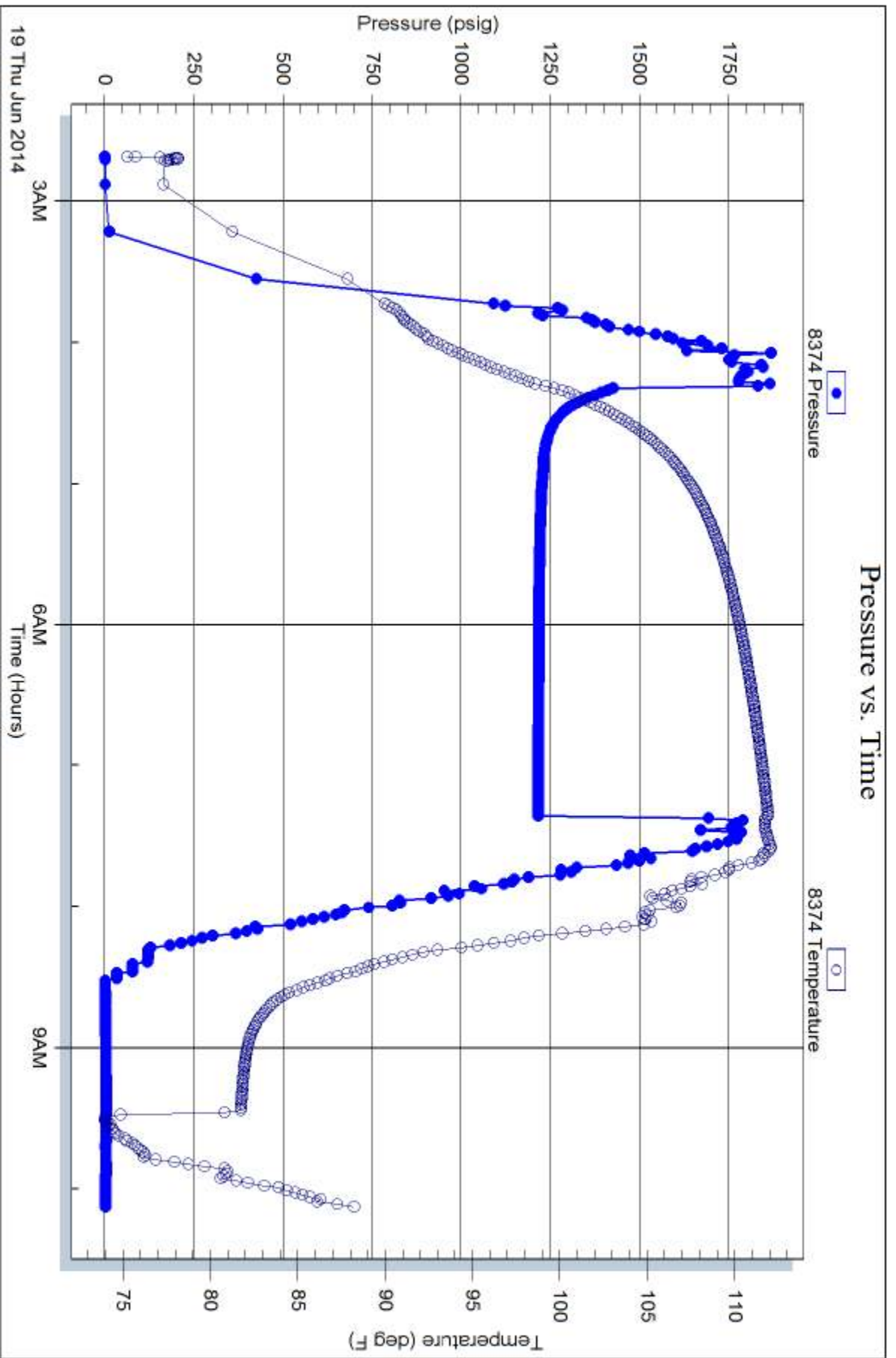
Recovery Table

Length ft	Description	Volume bbl
0.00	60'GIP	0.000
135.00	CO	1.894
62.00	MGO 10%G40%M50%O	0.870

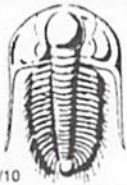
Total Length: 197.00 ft      Total Volume: 2.764 bbl  
 Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:  
 Laboratory Name:      Laboratory Location:  
 Recovery Comments:











# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 59310

Well Name & No. Younger Unit #2 Test No. 1 Date 6-17-14  
 Company TOT Inc Elevation 2039 KB 2028 GL  
 Address 1310 Bison Rd. Hays, Ko 67601  
 Co. Rep / Geo. Herb Dienes, Tom Denning Rig Southwind rig 1  
 Location: Sec. 7 Twp. 15<sup>th</sup> Rge. 19<sup>th</sup> Co. ELLIS State K

Interval Tested 3314-3391 Zone Tested LKC C-D  
 Anchor Length 77 Drill Pipe Run 3308 Mud Wt. 8.9  
 Top Packer Depth 3309 Drill Collars Run — Vis 53  
 Bottom Packer Depth 3314 Wt. Pipe Run — WL 13.2  
 Total Depth 3391 Chlorides 1200 ppm System LCM 2#  
 Blow Description IFP - STRONG Blow IN 4min  
ISIP - NO Blow  
FFP - STRONG Blow IN 10min  
FSIP - NO Blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>65</u>	<u>MW w/show of oil</u>			<u>80</u>	<u>20</u>
<u>620</u>	<u>WATER</u>				
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

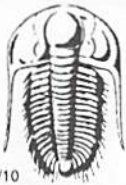
Rec Total 685 BHT 111 Gravity — API RW 12 @ 65 °F Chlorides 67000 ppm  
 (A) Initial Hydrostatic 1576  Test 1150 T-On Location 1715  
 (B) First Initial Flow 61  Jars — T-Started 1750  
 (C) First Final Flow 210  Safety Joint — T-Open 2005  
 (D) Initial Shut-In 978  Circ Sub — T-Pulled 2235  
 (E) Second Initial Flow 212  Hourly Standby — T-Out 0029  
 (F) Second Final Flow 383  Mileage 40 RT 62 Comments 5Lid Tool Approx 10' To Bottom  
 (G) Final Shut-In 974  Sampler —  Ruined Shale Packer —  
 (H) Final Hydrostatic 1557  Straddle —  Ruined Packer —  
 Initial Open 30  Shale Packer —  Extra Copies —  
 Initial Shut-In 30  Extra Packer — Sub Total 0  
 Final Flow 45  Extra Recorder — Total 1212  
 Final Shut-In 45  Day Standby — MP/DST Disc't —  
 Sub Total 1212  Accessibility —

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

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.





# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 59311

Well Name & No. Younger Unit #2 Test No. 2 Date 6-19-14  
 Company TDI, Inc Elevation 2039 KB 2028 GL  
 Address 1310 Bison Rd Hays, Ko 67601  
 Co. Rep / Geo. Herb Dienes, Tom Denning Rig Southwind rig 1  
 Location: Sec. 7 Twp. 15<sup>s</sup> Rge. 19<sup>w</sup> Co. ELLIS State Ko

Interval Tested 3633-3680 Zone Tested Congl sd.  
 Anchor Length 47 Drill Pipe Run 3617 Mud Wt. 9.3  
 Top Packer Depth 3633-3628 Drill Collars Run - Vis 63  
 Bottom Packer Depth 3680 Wt. Pipe Run - WL 8.8  
 Total Depth 3718 Chlorides 4500 ppm System LCM 2#  
 Blow Description IFP - WEAK TO STRONG IN 15 MIN  
TSIP - SURFACE BLOW BACK  
FFP - WEAK TO A FAIR BLOW 1/4" TO 3 1/2" BLOW  
FSIP - NO BLOW

Rec	Feet of	%gas	%oil	%water	%mud
<u>60</u>	<u>GTP</u>				
<u>135</u>	<u>CO</u>				
<u>62</u>	<u>MGO</u>	<u>10</u>	<u>50</u>		<u>40</u>

Rec Total 197 BHT 114 Gravity 29 API RW - @ - °F Chlorides - ppm

(A) Initial Hydrostatic <u>1756</u>	<input checked="" type="checkbox"/> Test <u>1150</u>	T-On Location <u>0225</u>
(B) First Initial Flow <u>22</u>	<input type="checkbox"/> Jars	T-Started <u>0240</u>
(C) First Final Flow <u>58</u>	<input type="checkbox"/> Safety Joint	T-Open <u>0425</u>
(D) Initial Shut-In <u>670</u>	<input type="checkbox"/> Circ Sub	T-Pulled <u>0725</u>
(E) Second Initial Flow <u>63</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>0901</u>
(F) Second Final Flow <u>88</u>	<input checked="" type="checkbox"/> Mileage <u>40 RT</u> <u>62</u>	Comments
(G) Final Shut-In <u>458</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>1734</u>	<input checked="" type="checkbox"/> Straddle <u>600</u>	<input type="checkbox"/> Ruined Shale Packer
	<input type="checkbox"/> Shale Packer	<input type="checkbox"/> Ruined Packer
Initial Open <u>30</u>	<input type="checkbox"/> Extra Packer	<input type="checkbox"/> Extra Copies
Initial Shut-In <u>45</u>	<input type="checkbox"/> Extra Recorder	Sub Total <u>66.67</u>
Final Flow <u>45</u>	<input type="checkbox"/> Day Standby <u>1d 2h</u>	Total <u>1878.67</u>
Final Shut-In <u>60</u>	<input type="checkbox"/> Accessibility	MP/DST Disc't
	Sub Total <u>1812</u>	

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