



## DRILL STEM TEST REPORT

Prepared For: **TDI Inc.**

1310 Bison Rd.  
Hays KS 67601-9696

ATTN: Herb Deines

### **Warren #1**

### **22 15s 18w Ellis,KS**

Start Date: 2013.05.04 @ 13:22:00

End Date: 2013.05.04 @ 19:01:00

Job Ticket #: 53617                      DST #: 1

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

Printed: 2013.05.13 @ 14:12:58

TDI Inc. 22 15s 18w Ellis,KS Warren #1 DST # 1 Arbuckle 2013.05.04



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

TDI Inc.  
1310 Bison Rd.  
Hays KS 67601-9696  
ATTN: Herb Deines

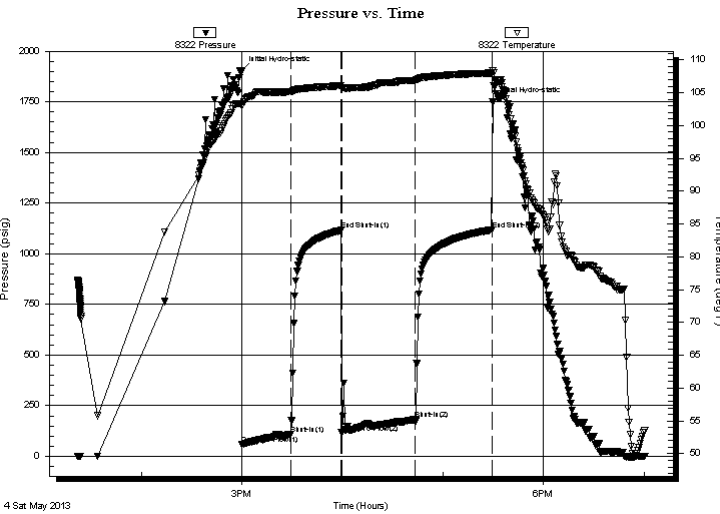
**22 15s 18w Ellis,KS**  
**Warren #1**  
Job Ticket: 53617      **DST#: 1**  
Test Start: 2013.05.04 @ 13:22:00

## GENERAL INFORMATION:

Formation: **Arbuckle**  
Deviated: No Whipstock: ft (KB)  
Time Tool Opened: 15:00:10  
Time Test Ended: 19:01:00  
Interval: **3540.00 ft (KB) To 3620.00 ft (KB) (TVD)**  
Total Depth: 3750.00 ft (KB) (TVD)  
Hole Diameter: 7.88 inches Hole Condition: Poor  
Test Type: Conventional Straddle (Initial)  
Tester: Jim Svaty  
Unit No: 41  
Reference Elevations: 2029.00 ft (KB)  
2021.00 ft (CF)  
KB to GR/CF: 8.00 ft

**Serial #: 8322      Outside**  
Press @ Run Depth: 181.12 psig @ 3609.00 ft (KB)      Capacity: 8000.00 psig  
Start Date: 2013.05.04      End Date: 2013.05.04      Last Calib.: 2013.05.04  
Start Time: 13:22:01      End Time: 19:00:20      Time On Btm: 2013.05.04 @ 14:59:50  
Time Off Btm: 2013.05.04 @ 17:29:40

**TEST COMMENT:** 30-IFP- BOB in 19 min.  
30-ISIP- No Blow  
45-FFP- BOB in 22 1/2 min.  
45-FSIP- Weak Surface Blow in 2 min. Died in 19 min.



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1902.51	103.21	Initial Hydro-static
1	58.65	103.01	Open To Flow (1)
30	107.53	105.13	Shut-In(1)
60	1115.45	106.08	End Shut-In(1)
60	116.07	105.78	Open To Flow (2)
104	181.12	106.90	Shut-In(2)
150	1117.80	107.98	End Shut-In(2)
150	1748.73	108.40	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
5.00	OCM 5% <sub>m</sub> 95% <sub>o</sub>	0.07
93.00	MCO 5% <sub>o</sub> 95% <sub>m</sub>	1.30
189.00	WMCO 10% <sub>w</sub> 20% <sub>m</sub> 70% <sub>o</sub>	2.65
0.00	62 GIP	0.00

## 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 67601-9696  
ATTN: Herb Deines

**22 15s 18w Ellis,KS**  
**Warren #1**  
Job Ticket: 53617      **DST#: 1**  
Test Start: 2013.05.04 @ 13:22:00

**Tool Information**

Drill Pipe:	Length: 3532.00 ft	Diameter: 3.80 inches	Volume: 49.54 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 2.25 inches	Volume: 0.00 bbl	Weight to Pull Loose: 34000.00 lb
			<u>Total Volume: 49.54 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	12.00 ft			String Weight: Initial 32000.00 lb
Depth to Top Packer:	3540.00 ft			Final 33000.00 lb
Depth to Bottom Packer:	3620.00 ft			
Interval between Packers:	80.00 ft			
Tool Length:	230.00 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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Shut In Tool	5.00			3525.00	
Hydraulic tool	5.00			3530.00	
Packer	5.00			3535.00	20.00      Bottom Of Top Packer
Packer	5.00			3540.00	
Stubb	1.00			3541.00	
Perforations	5.00			3546.00	
Change Over Sub	1.00			3547.00	
Blank Spacing	61.00			3608.00	
Change Over Sub	1.00			3609.00	
Recorder	0.00	6752	Inside	3609.00	
Recorder	0.00	8322	Outside	3609.00	
Perforations	7.00			3616.00	
Blank Off Sub	4.00			3620.00	80.00      Tool Interval
Packer	1.00			3621.00	
Stubb	1.00			3622.00	
Perforations	1.00			3623.00	
Recorder	0.00	8734	Below	3623.00	
Change Over Sub	1.00			3624.00	
Blank Spacing	126.00			3750.00	130.00      Bottom Packers & Anchor

**Total Tool Length: 230.00**



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# DRILL STEM TEST REPORT

**FLUID SUMMARY**

TDI Inc.  
1310 Bison Rd.  
Hays KS 67601-9696  
ATTN: Herb Deines

**22 15s 18w Ellis,KS**  
**Warren #1**  
Job Ticket: 53617      **DST#: 1**  
Test Start: 2013.05.04 @ 13:22:00

## Mud and Cushion Information

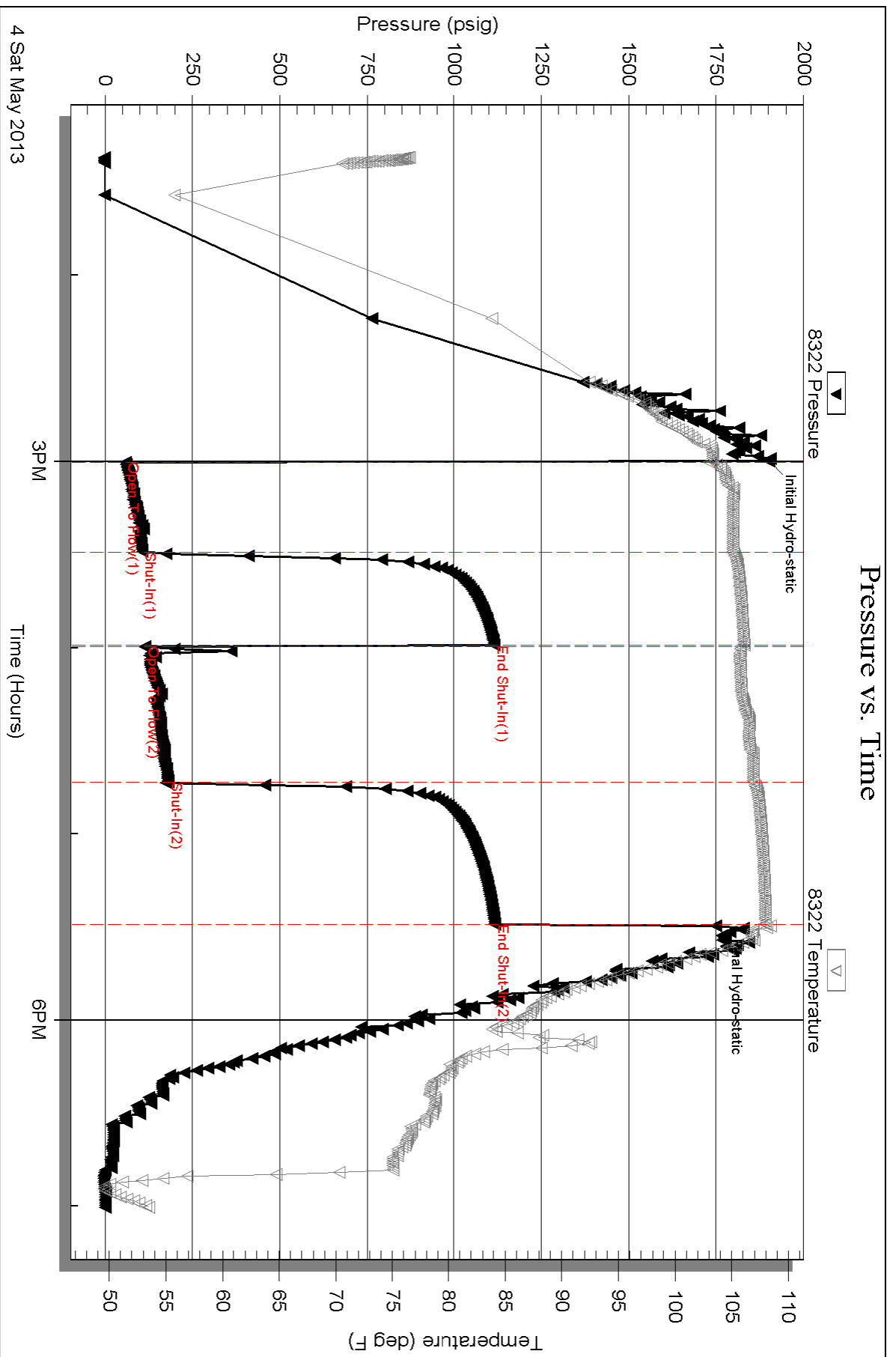
Mud Type: Gel Chem	Cushion Type:	Oil API: 31 deg API
Mud Weight: 10.00 lb/gal	Cushion Length: ft	Water Salinity: ppm
Viscosity: 59.00 sec/qt	Cushion Volume: bbl	
Water Loss: 7.79 in <sup>3</sup>	Gas Cushion Type:	
Resistivity: ohm.m	Gas Cushion Pressure: psig	
Salinity: 5000.00 ppm		
Filter Cake: 2.00 inches		

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
5.00	OCM 5% <sub>m</sub> 95% <sub>o</sub>	0.070
93.00	MCO 5% <sub>o</sub> 95% <sub>m</sub>	1.305
189.00	WMCO 10% <sub>w</sub> 20% <sub>m</sub> 70% <sub>o</sub>	2.651
0.00	62 GIP	0.000

Total Length: 287.00 ft      Total Volume: 4.026 bbl  
 Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:  
 Laboratory Name:      Laboratory Location:  
 Recovery Comments:

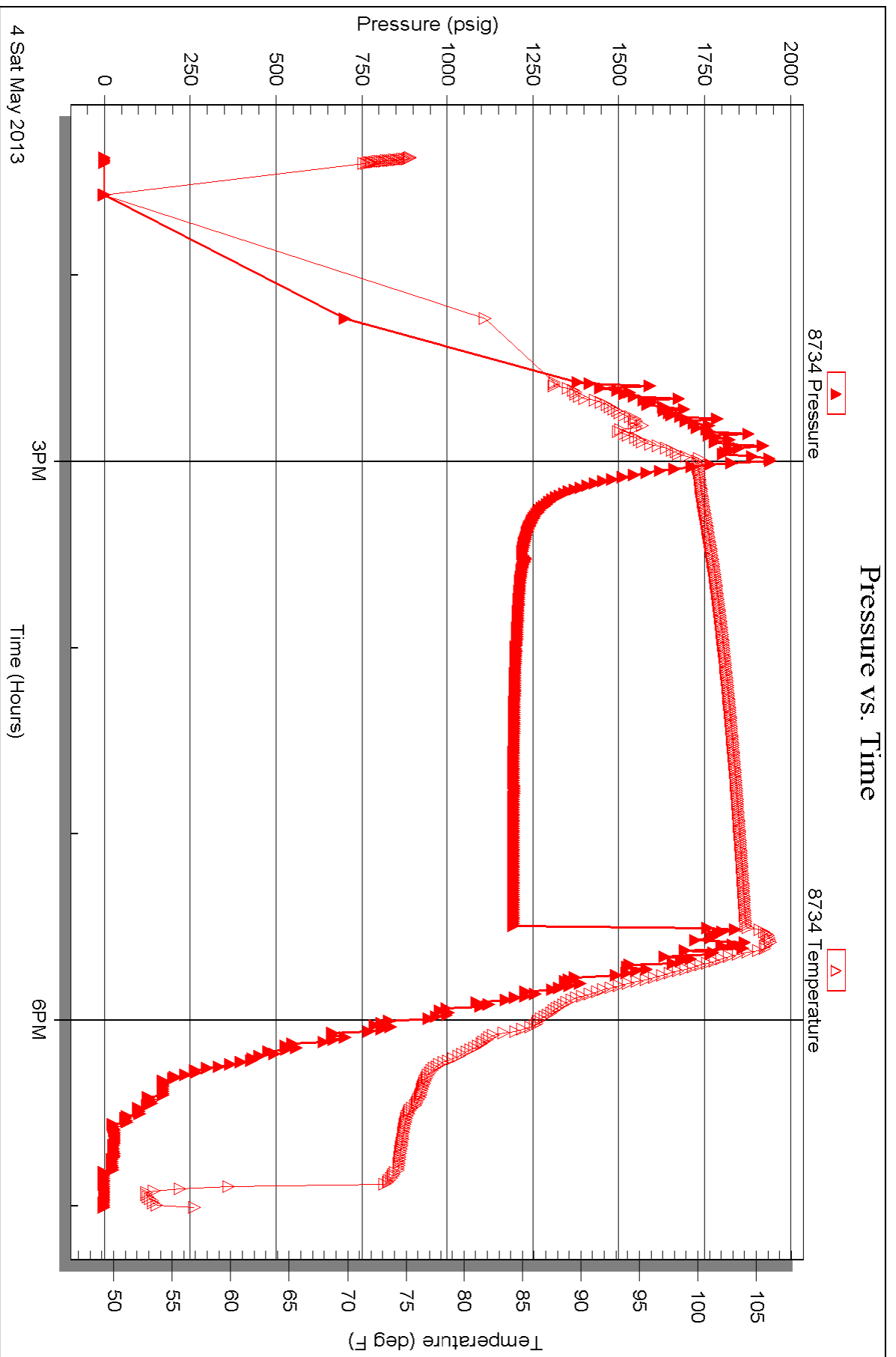


Serial #: 8734

Below (Straddling)

Warren #1

DST Test Number: 1





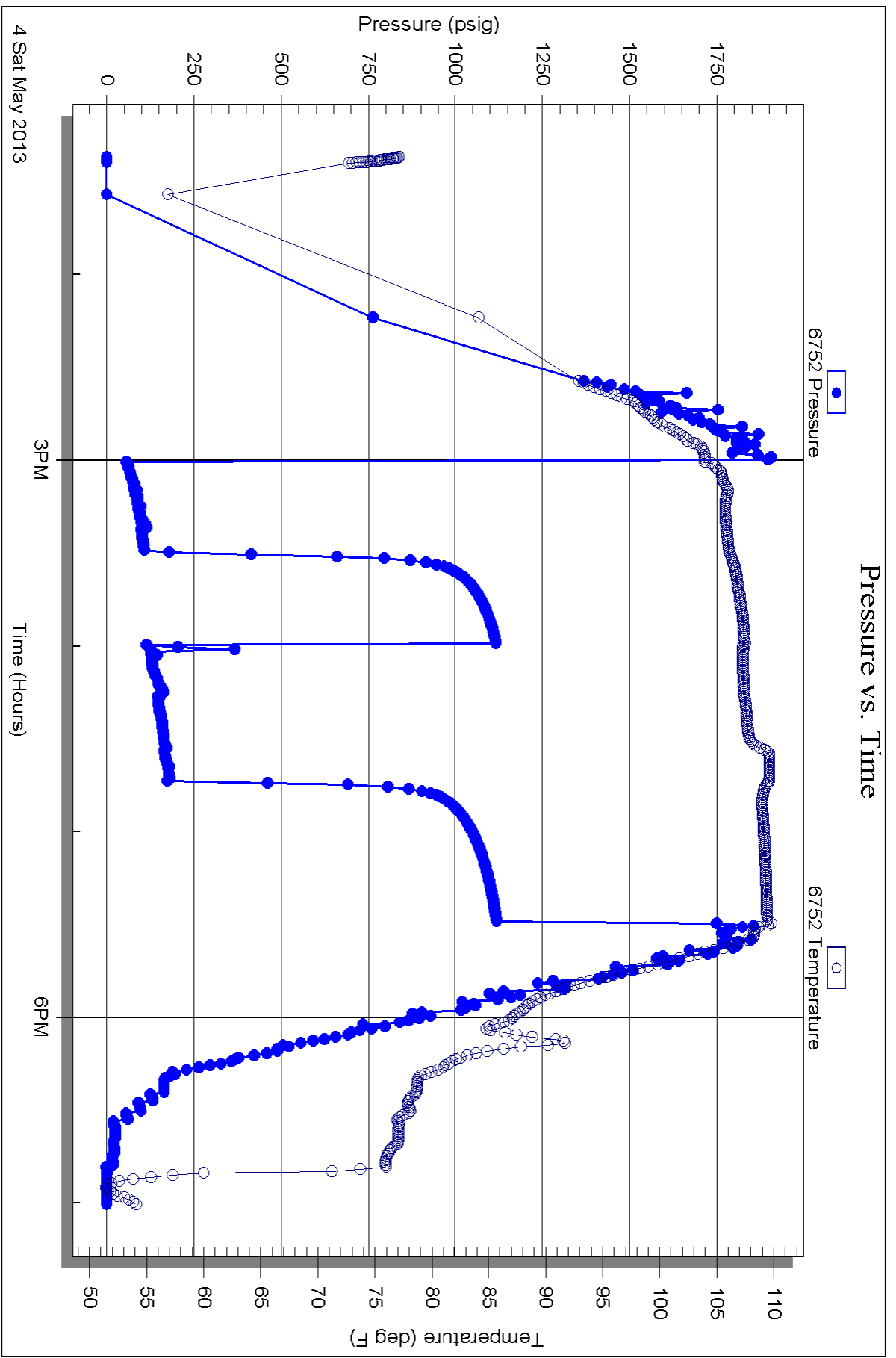
Serial #: 6752

Inside

TDI Inc.

Warren #1

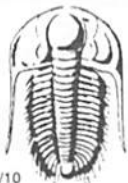
DST Test Number: 1



Triobite Testing, Inc

Ref. No: 53617

Printed: 2013.05.13 @ 14:13:03



# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 53617

Well Name & No. Warren #1 Test No. 1 Date 5-4-13  
 Company TDI Inc. Elevation 2029 KB 2021 GL  
 Address 1310 Bison Rd. Hays Ks. 67601-9696  
 Co. Rep / Geo. Herb Deines Rig Southwind #1  
 Location: Sec. 22 Twp. 15<sup>s</sup> Rge. 18<sup>w</sup> Co. Ellis State Ks

Interval Tested 3540-3620 Zone Tested Arbuckle  
 Anchor Length 80 - 130 T.P. Drill Pipe Run 3532 Mud Wt. 9.5  
 Top Packer Depth 3540 Drill Collars Run 0 Vis 59  
 Bottom Packer Depth 3620 Wt. Pipe Run 0 WL 7.8  
 Total Depth 3750 Chlorides 5000 ppm System LCM 2

Blow Description IFP - BOB in 19 min.  
ISIP - No Blow  
FFP - BOB in 22 1/2 min.  
FSIP - Weak Surface Blow in 2 min Died in 19 min.

Rec	Feet of	%gas	%oil	%water	%mud
5	OCM	95		5	
93	MCO	5		95	
189	WMCO	70	10	20	
-	62 DIP				

Rec Total 287 BHT 108 Gravity 31 API RW @      ° F Chlorides      ppm

(A) Initial Hydrostatic 1902  Test 1150 T-On Location 10:56  
 (B) First Initial Flow 58  Jars      T-Started 13:22  
 (C) First Final Flow 107  Safety Joint      T-Open 15:00  
 (D) Initial Shut-In 1115  Circ Sub      T-Pulled 17:30  
 (E) Second Initial Flow 116  Hourly Standby      T-Out 19:01  
 (F) Second Final Flow 181  Mileage 26 RT 40.30  
 (G) Final Shut-In 1117  Sampler       
 (H) Final Hydrostatic 1748  Straddle 600  Ruined Shale Packer     

Initial Open 30  Shale Packer       Ruined Packer       
 Initial Shut-In 30  Extra Packer       Extra Copies       
 Final Flow 45  Extra Recorder      Sub Total 0  
 Final Shut-In 45  Day Standby      Total 1790.30  
 Accessibility      MP/DST Disc't       
 Sub Total 1790.30

Approved By \_\_\_\_\_ Our Representative [Signature]

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