



## DRILL STEM TEST REPORT

Prepared For: **TDI, Inc.**

1310 Bison Rd.  
Hays, KS 67601

ATTN: Herb Deines

**Gerstner #1**

**13-15s-19w Ellis,KS**

Start Date: 2012.06.22 @ 20:15:15

End Date: 2012.06.23 @ 02:45:15

Job Ticket #: 47957                      DST #: 1

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

Printed: 2012.06.28 @ 10:11:18

TDI, Inc.  
13-15s-19w Ellis,KS  
Gerstner #1  
DST # 1  
LKC "A-D"  
2012.06.22



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

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

**13-15s-19w Ellis, KS**  
**Gerstner #1**  
Job Ticket: 47957 **DST#: 1**  
Test Start: 2012.06.22 @ 20:15:15

## GENERAL INFORMATION:

Formation: **LKC "A-D"**  
Deviated: **No Whipstock:** ft (KB) Test Type: **Conventional Bottom Hole (Initial)**  
Time Tool Opened: **22:02:05** Tester: **Dustin Rash**  
Time Test Ended: **02:45:15** Unit No: **38**  
**Interval: 3300.00 ft (KB) To 3380.00 ft (KB) (TVD)** Reference Elevations: **2035.00 ft (KB)**  
Total Depth: **3380.00 ft (KB) (TVD)** **2028.00 ft (CF)**  
Hole Diameter: **7.88 inches** Hole Condition: **Poor** KB to GR/CF: **7.00 ft**

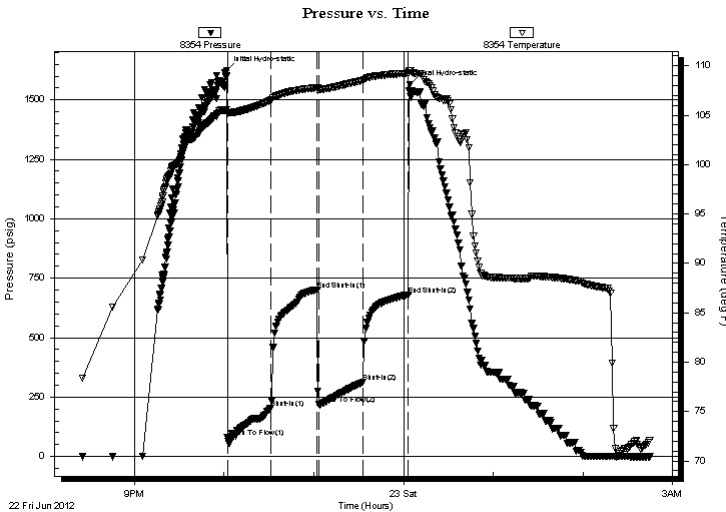
## Serial #: 8354

**Inside**

Press @ Run Depth: **311.82 psig @ 3370.00 ft (KB)** Capacity: **8000.00 psig**  
Start Date: **2012.06.22** End Date: **2012.06.23** Last Calib.: **2012.06.23**  
Start Time: **20:25:15** End Time: **02:45:15** Time On Btm: **2012.06.22 @ 22:01:45**  
Time Off Btm: **2012.06.23 @ 00:04:15**

**TEST COMMENT:** IF-Strong building blow . BOB in 1 minute 45 seconds.  
ISI-Return @ 30 seconds. Built to 5 inches.  
FF-Strong building blow . BOB in 3 minutes.  
FSI-Return @ 1 minute. BOB in 27 minutes.

## PRESSURE SUMMARY



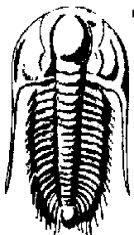
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1624.07	105.60	Initial Hydro-static
1	79.90	105.14	Open To Flow (1)
30	202.80	106.53	Shut-In(1)
61	701.32	107.79	End Shut-In(1)
62	219.20	107.68	Open To Flow (2)
91	311.82	108.51	Shut-In(2)
122	680.35	109.25	End Shut-In(2)
123	1564.78	109.50	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
62.00	95%Water/5%Mud	0.87
31.00	50%Gas/20%Oil/25%Water/5%Mud	0.43
155.00	50%Gas/50%Oil	2.17
372.00	20%Gas/60%Oil/10%Water/10%Mud	5.22
124.00	25%Gas/5%Oil/70%Mud	1.74
17.00	5%Oil/95%Mud	0.24

## Gas Rates

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



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ATTN: Herb Deines

**13-15s-19w Ellis,KS**  
**Gerstner #1**  
Job Ticket: 47957 **DST#: 1**  
Test Start: 2012.06.22 @ 20:15:15

## GENERAL INFORMATION:

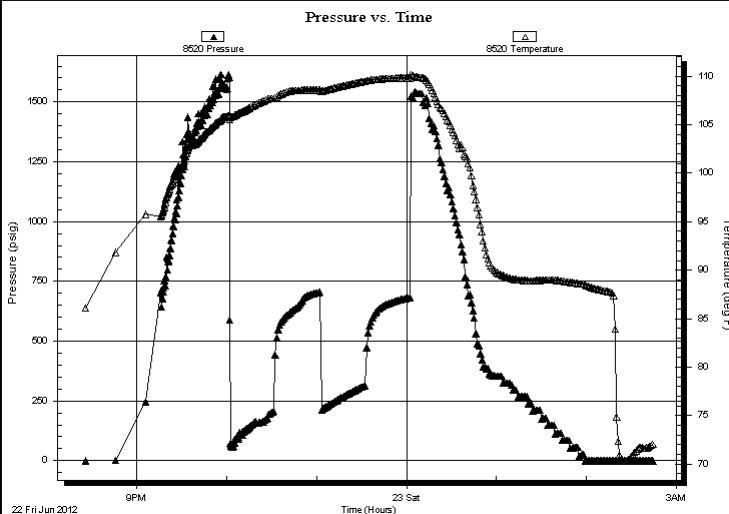
Formation: **LKC "A-D"**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 22:02:05  
 Time Test Ended: 02:45:15  
 Interval: **3300.00 ft (KB) To 3380.00 ft (KB) (TVD)**  
 Total Depth: 3380.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches  
 Hole Condition: Poor  
 Test Type: Conventional Bottom Hole (Initial)  
 Tester: Dustin Rash  
 Unit No: 38  
 Reference Elevations: 2035.00 ft (KB)  
 2028.00 ft (CF)  
 KB to GR/CF: 7.00 ft

## Serial #: 8520

Outside

Press @RunDepth: psig @ 3370.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2012.06.22 End Date: 2012.06.23 Last Calib.: 2012.06.23  
 Start Time: 20:25:45 End Time: 02:44:45 Time On Btm:  
 Time Off Btm:

**TEST COMMENT:** IF-Strong building blow . BOB in 1 minute 45 seconds.  
 ISI-Return @ 30 seconds. Built to 5 inches.  
 FF-Strong building blow . BOB in 3 minutes.  
 FSI-Return @ 1 minute. BOB in 27 minutes.



## PRESSURE SUMMARY

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

## Recovery

Length (ft)	Description	Volume (bbl)
62.00	95%Water/5%Mud	0.87
31.00	50%Gas/20%Oil/25%Water/5%Mud	0.43
155.00	50%Gas/50%Oil	2.17
372.00	20%Gas/60%Oil/10%Water/10%Mud	5.22
124.00	25%Gas/5%Oil/70%Mud	1.74
17.00	5%Oil/95%Mud	0.24

## 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 Deines

**13-15s-19w Ellis,KS**  
**Gerstner #1**  
Job Ticket: 47957 **DST#: 1**  
Test Start: 2012.06.22 @ 20:15:15

**Tool Information**

Drill Pipe:	Length: 3296.00 ft	Diameter: 3.80 inches	Volume: 46.23 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.70 inches	Volume: 0.00 bbl	Weight set on Packer: 24000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 2.25 inches	Volume: 0.00 bbl	Weight to Pull Loose: 10000.00 lb
			<u>Total Volume: 46.23 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	16.00 ft			String Weight: Initial 32000.00 lb
Depth to Top Packer:	3300.00 ft			Final 34000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	80.00 ft			
Tool Length:	100.00 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			3281.00	
Shut In Tool	5.00			3286.00	
Hydraulic tool	5.00			3291.00	
Packer	5.00			3296.00	20.00 Bottom Of Top Packer
Packer	4.00			3300.00	
Stubb	1.00			3301.00	
Perforations	5.00			3306.00	
Change Over Sub	1.00			3307.00	
Drill Pipe	62.00			3369.00	
Change Over Sub	1.00			3370.00	
Recorder	0.00	8354	Inside	3370.00	
Recorder	0.00	8520	Outside	3370.00	
Perforations	7.00			3377.00	
Bullnose	3.00			3380.00	80.00 Bottom Packers & Anchor

**Total Tool Length: 100.00**



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TESTING, INC.**

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## FLUID SUMMARY

TDI, Inc.

**13-15s-19w Ellis,KS**

1310 Bison Rd.  
Hays, KS 67601

**Gerstner #1**

Job Ticket: 47957

**DST#: 1**

ATTN: Herb Deines

Test Start: 2012.06.22 @ 20:15:15

### Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

40 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

38000 ppm

Viscosity: 58.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.80 in<sup>3</sup>

Gas Cushion Type:

Resistivity: 0.19 ohm.m

Gas Cushion Pressure:

psig

Salinity: 3300.00 ppm

Filter Cake: inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
62.00	95%Water/5%Mud	0.870
31.00	50%Gas/20%Oil/25%Water/5%Mud	0.435
155.00	50%Gas/50%Oil	2.174
372.00	20%Gas/60%Oil/10%Water/10%Mud	5.218
124.00	25%Gas/5%Oil/70%Mud	1.739
17.00	5%Oil/95%Mud	0.238
0.00	1223' G.I.P.	0.000

Total Length: 761.00 ft

Total Volume: 10.674 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

Serial #: 8354

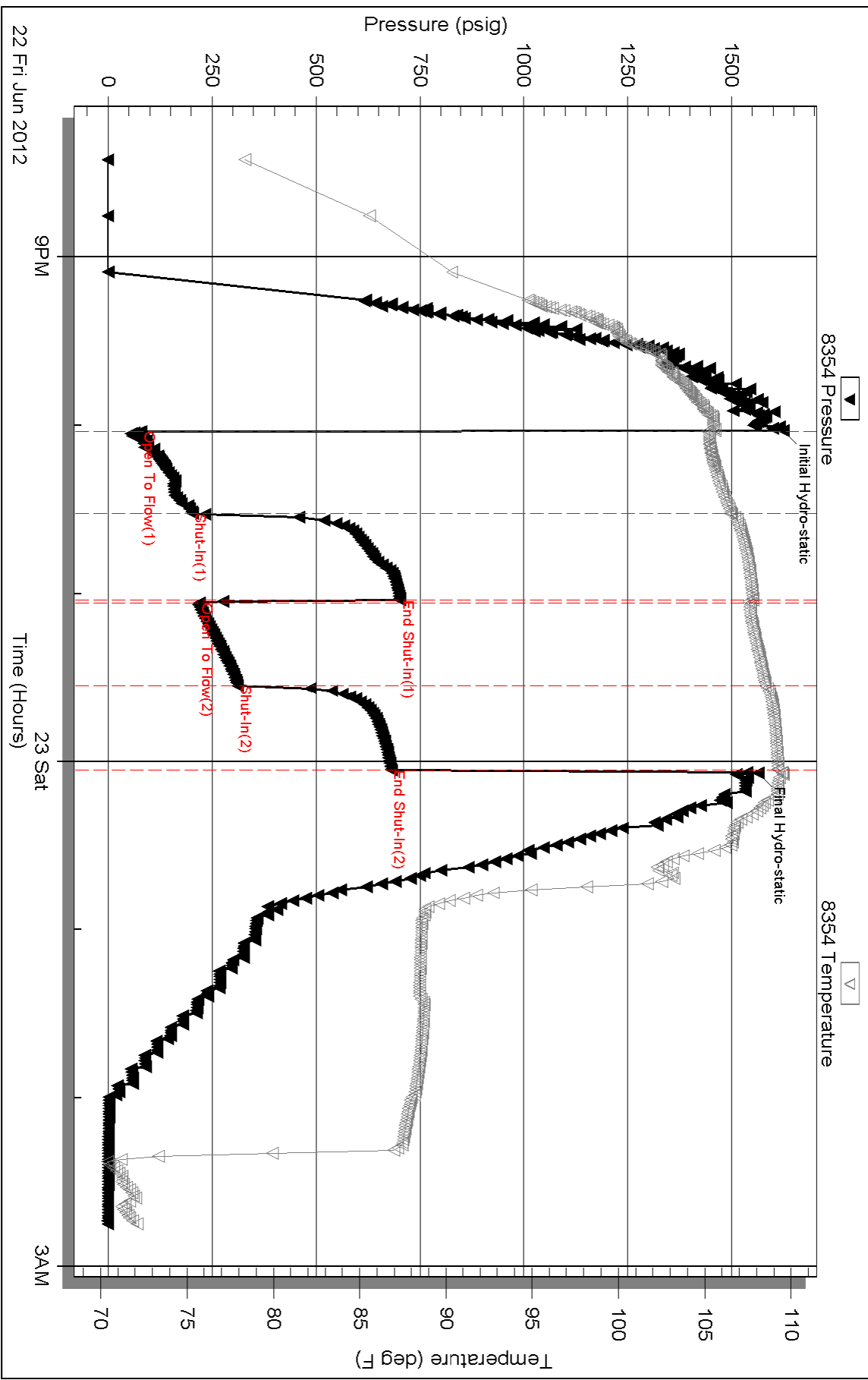
Inside

TDI, Inc.

Gerstner #1

DST Test Number: 1

# Pressure vs. Time



Triobite Testing, Inc

Ref. No: 47957

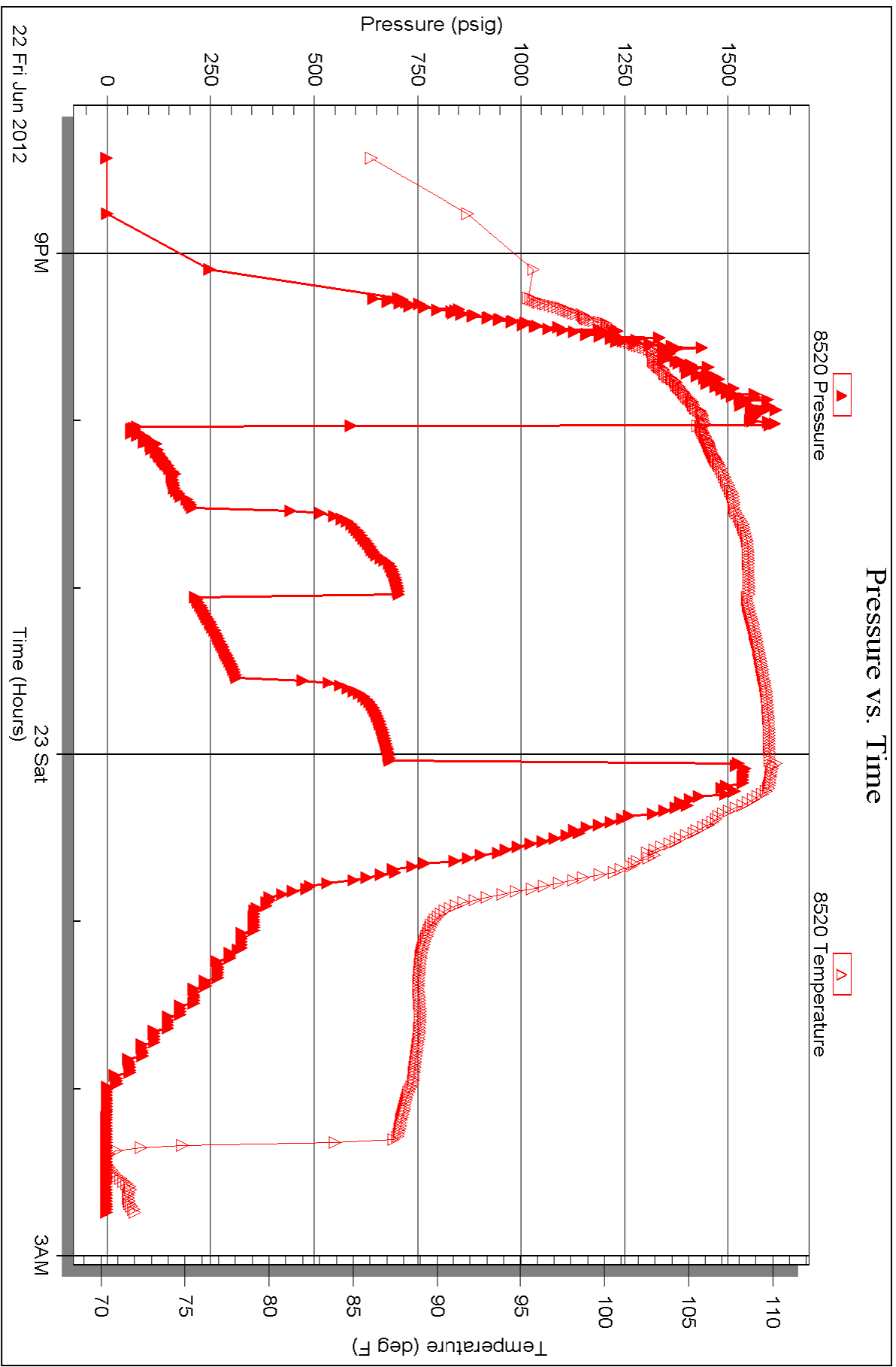
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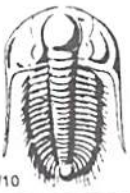
Serial #: 8520

Outside TDI, Inc.

Gerstner #1

DST Test Number: 1





# TRILOBITE TESTING INC.

P.O. Box 1733 • Hays, Kansas 67601

## Test Ticket

NO. 47957

4/10

Well Name & No. Geothermal #1 Test No. 1 Date 6-22-12  
 Company TNT, Inc. Elevation 2035 KB 2028 GL  
 Address 1310 Bison Rd, Hays, KS 67601  
 Co. Rep / Geo. Herb Dennes Rig Southward #1  
 Location: Sec. 13 Twp. 15S Rge. 19W Co. Ellis State KS

Interval Tested 3300-3380 Zone Tested LKC "A-D"  
 Anchor Length 80' Drill Pipe Run 3296 Mud Wt. 8.9  
 Top Packer Depth 3295 Drill Collars Run 0 Vis 58  
 Bottom Packer Depth 3300 Wt. Pipe Run 0 WL 6.8  
 Total Depth 3380 Chlorides 3300 ppm System LCM 1"

Blow Description FF- Strong building blow, BOB in 1 minute 45 seconds,  
FST- Return @ 30 seconds, Built to 5 inches,  
FF- Strong building blow, BOB in 3 minutes,  
FST- Return @ 1 minute, BOB in 27 minutes,

Rec	Feet of	%gas	%oil	%water	%mud
17	USOCM		5		95
124	Gassy OCM	25	5		70
372	Gassy wmo.	20	60	10	10
155	Gassy oil	50	50		
31	Gassy mow	50	20	25	5

*(Handwritten note in a circle):*  
 62' MW  
 65% OCM  
 95% W

Rec Total 761 BHT \_\_\_\_\_ Gravity 40 API RW 192 @ 71 °F Chlorides 33000 ppm

(A) Initial Hydrostatic 1624  Test 1150 T-On Location 1815  
 (B) First Initial Flow 80  Jars 1223' T-Started 2045  
 (C) First Final Flow 203  Safety Joint 6TIP T-Open 2202  
 (D) Initial Shut-In 701  Circ Sub \_\_\_\_\_ T-Pulled 0005  
 (E) Second Initial Flow 219  Hourly Standby \_\_\_\_\_ T-Out 0245  
 (F) Second Final Flow 312  Mileage 15X2 46.50 Comments BAST-2015  
 (G) Final Shut-In 680  Sampler \_\_\_\_\_ Slid 8-10' after  
 (H) Final Hydrostatic 1565  Straddle \_\_\_\_\_ opening of tool,  
 Ruined Shale Packer \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  Ruined Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  Extra Copies \_\_\_\_\_  
 Initial Open 30  Extra Recorder \_\_\_\_\_ Sub Total 0  
 Initial Shut-In 30  Day Standby \_\_\_\_\_ Total 1196.50  
 Final Flow 30  Accessibility \_\_\_\_\_ MP/DST Disc't  
 Final Shut-In 30 Sub Total 1196.50

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