



Confidentiality Requested:

Yes  No

KANSAS CORPORATION COMMISSION 1140776  
OIL & GAS CONSERVATION DIVISION

Form ACO-1

August 2013

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       SIOW
- Gas       D&A       ENHR       SIGW
- OG       GSW       Temp. Abd.
- 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 ENHR       Conv. to SWD
- Plug Back       Conv. to GSW       Conv. to Producer
- Commingled      Permit #: \_\_\_\_\_
- Dual Completion      Permit #: \_\_\_\_\_
- SWD      Permit #: \_\_\_\_\_
- ENHR      Permit #: \_\_\_\_\_
- GSW      Permit #: \_\_\_\_\_

Spud Date or Recompletion Date	Date Reached TD	Completion Date or Recompletion Date
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API No. 15 - \_\_\_\_\_

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
- Geologist Report Received
- UIC Distribution
- ALT  I  II  III Approved by: \_\_\_\_\_ Date: \_\_\_\_\_



1140776

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. 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  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				

Did you perform a hydraulic fracturing treatment on this well?  Yes  No *(If No, skip questions 2 and 3)*

Does the volume of the total base fluid of the hydraulic fracturing treatment exceed 350,000 gallons?  Yes  No *(If No, skip question 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)*

Shots Per Foot	PERFORATION RECORD - Bridge Plugs Set/Type Specify Footage of Each Interval Perforated	Acid, Fracture, Shot, Cement Squeeze Record <i>(Amount and Kind of Material Used)</i>	Depth

TUBING RECORD:      Size: \_\_\_\_\_ Set At: \_\_\_\_\_ Packer At: \_\_\_\_\_ Liner Run:  Yes  No

Date of First, Resumed Production, SWD or ENHR: \_\_\_\_\_ Producing Method:  
 Flowing  Pumping  Gas Lift  Other *(Explain)* \_\_\_\_\_

Estimated Production Per 24 Hours	Oil Bbls.	Gas Mcf	Water Bbls.	Gas-Oil Ratio	Gravity

<b>DISPOSITION OF GAS:</b> <input type="checkbox"/> Vented <input type="checkbox"/> Sold <input type="checkbox"/> Used on Lease <i>(If vented, Submit ACO-18.)</i>	<b>METHOD OF COMPLETION:</b> <input type="checkbox"/> Open Hole <input type="checkbox"/> Perf. <input type="checkbox"/> Dually Comp. <input type="checkbox"/> Commingled <i>(Submit ACO-5)</i> <input type="checkbox"/> Other <i>(Specify)</i> _____ <i>(Submit ACO-4)</i>	<b>PRODUCTION INTERVAL:</b> _____ _____
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Form	ACO1 - Well Completion
Operator	TDI, Inc.
Well Name	GR 2
Doc ID	1140776

Tops

Name	Top	Datum
Anhydrite	1221'	+798'
Topeka	2998'	-979'
Heebner	3262'	-1243'
Lansing/Kansas City	3306'	-1287'
Base Kansas City	3552'	-1533'
Marmaton	3595'	-1576'
Conglomerate	3637'	-1618'
Arbuckle	3662'	-1643'



## DRILL STEM TEST REPORT

Prepared For: **TDI, Inc.**

1310 Bison Road  
Hays, KS 67601

ATTN: Herb Deines

**GR #2**

**14-15s-19w Ellis,KS**

Start Date: 2013.04.24 @ 04:39:14

End Date: 2013.04.24 @ 11:27:59

Job Ticket #: 52228                      DST #: 1

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

Printed: 2013.05.20 @ 10:44:31

TDI, Inc. 14-15s-19w Ellis,KS GR #2 DST # 1 C 2013.04.24



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

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

**14-15s-19w Ellis, KS**  
**GR #2**  
 Job Ticket: 52228 **DST#: 1**  
 Test Start: 2013.04.24 @ 04:39:14

## GENERAL INFORMATION:

Formation: **C**  
 Deviated: **No** Whipstock: **0.00 ft (KB)**  
 Time Tool Opened: 07:17:59  
 Time Test Ended: 11:27:59  
 Test Type: **Conventional Bottom Hole (Initial)**  
 Tester: **Jason McLemore**  
 Unit No: **54**  
 Interval: **3314.00 ft (KB) To 3350.00 ft (KB) (TVD)**  
 Reference Elevations: **2023.00 ft (KB)**  
**2013.00 ft (CF)**  
 Total Depth: **3350.00 ft (KB) (TVD)**  
 Hole Diameter: **7.88 inches** Hole Condition: **Good**  
 KB to GR/CF: **10.00 ft**

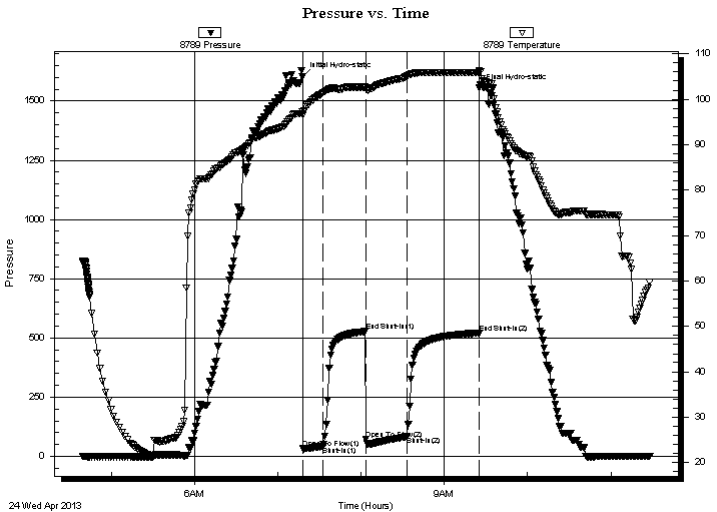
## Serial #: 8789

**Inside**

Press @ Run Depth: **82.81 psig @ 3317.00 ft (KB)** Capacity: **8000.00 psig**  
 Start Date: **2013.04.24** End Date: **2013.04.24** Last Calib.: **2013.04.24**  
 Start Time: **04:39:16** End Time: **11:27:59** Time On Btm: **2013.04.24 @ 07:17:44**  
 Time Off Btm: **2013.04.24 @ 09:25:14**

TEST COMMENT: IFP-Srong, BOB in 2 Min.  
 ISI-Blow back Built to 1"  
 FFP-Strong, BOB in 1 Min.  
 FSI-Blow back Built to 4"

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1604.42	97.17	Initial Hydro-static
1	33.04	96.47	Open To Flow (1)
15	43.21	101.47	Shut-In(1)
46	526.97	102.67	End Shut-In(1)
46	70.43	102.42	Open To Flow (2)
76	82.81	105.09	Shut-In(2)
127	520.05	105.92	End Shut-In(2)
128	1554.73	106.35	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
70.00	Free Oil	0.98
120.00	Muddy Frothy Oil-50%G-40%O-10%M	1.68
0.00	2210' Gas In Pipe	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 Road  
Hays, KS 67601  
ATTN: Herb Deines

**14-15s-19w Ellis,KS**  
**GR #2**  
Job Ticket: 52228      **DST#: 1**  
Test Start: 2013.04.24 @ 04:39:14

**Tool Information**

Drill Pipe:	Length: 3313.00 ft	Diameter: 3.80 inches	Volume: 46.47 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:	25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 2.25 inches	Volume: 0.00 bbl	Weight to Pull Loose:	36000.00 lb
			<u>Total Volume: 46.47 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	20.00 ft			String Weight: Initial	32000.00 lb
Depth to Top Packer:	3314.00 ft			Final	33000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	36.00 ft				
Tool Length:	57.00 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	2.00			3317.00	
Recorder	0.00	8789	Inside	3317.00	
Recorder	0.00	6668	Outside	3317.00	
Perforations	30.00			3347.00	
Bullnose	3.00			3350.00	36.00      Bottom Packers & Anchor

**Total Tool Length: 57.00**



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

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

**14-15s-19w Ellis,KS**  
**GR #2**  
Job Ticket: 52228      **DST#: 1**  
Test Start: 2013.04.24 @ 04:39:14

## Mud and Cushion Information

Mud Type: Gel Chem	Cushion Type:	Oil API: 39 deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity: ppm
Viscosity: 51.00 sec/qt	Cushion Volume: bbl	
Water Loss: 7.38 in <sup>3</sup>	Gas Cushion Type:	
Resistivity: ohm.m	Gas Cushion Pressure: psig	
Salinity: 4400.00 ppm		
Filter Cake: inches		

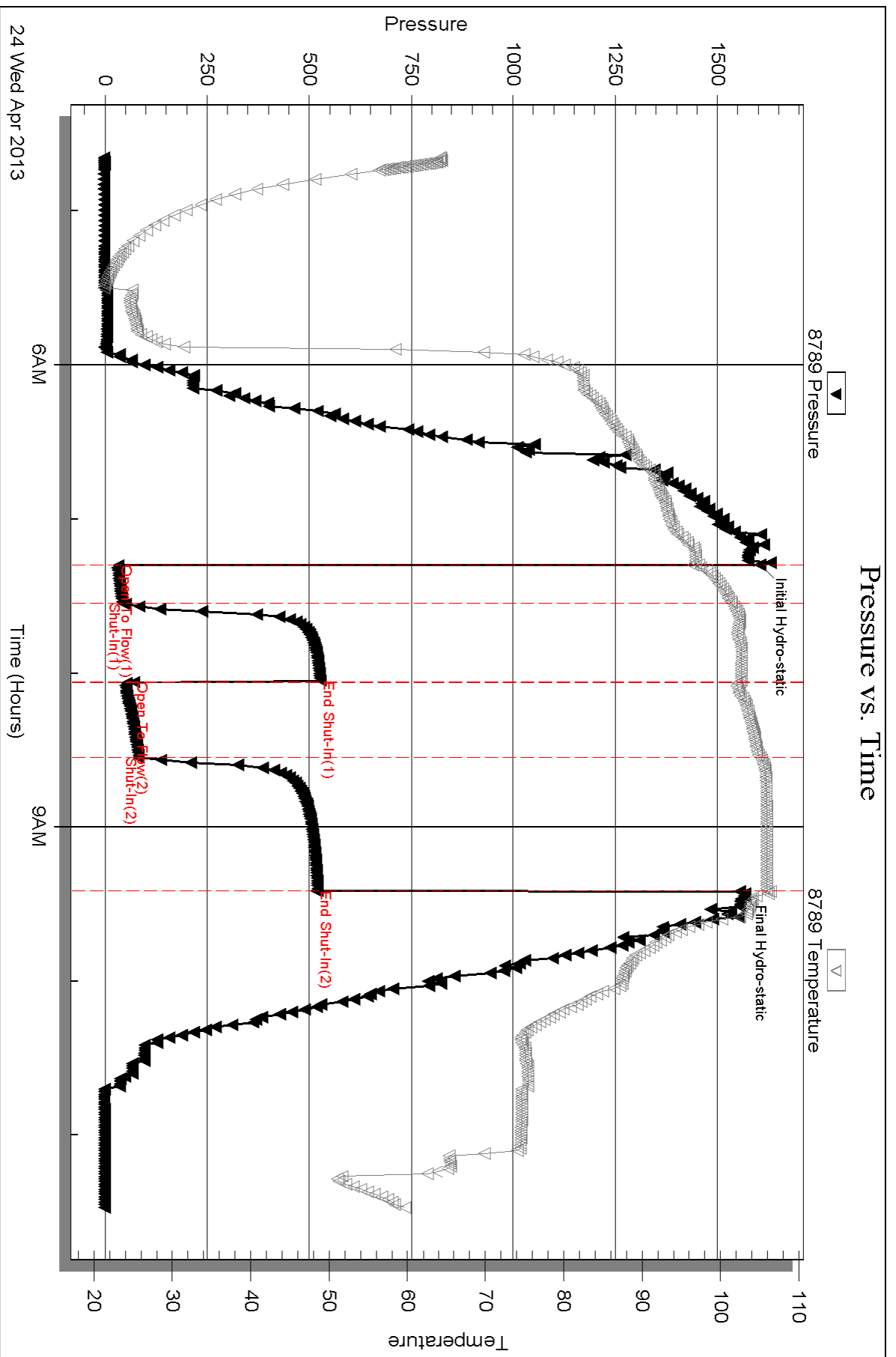
## Recovery Information

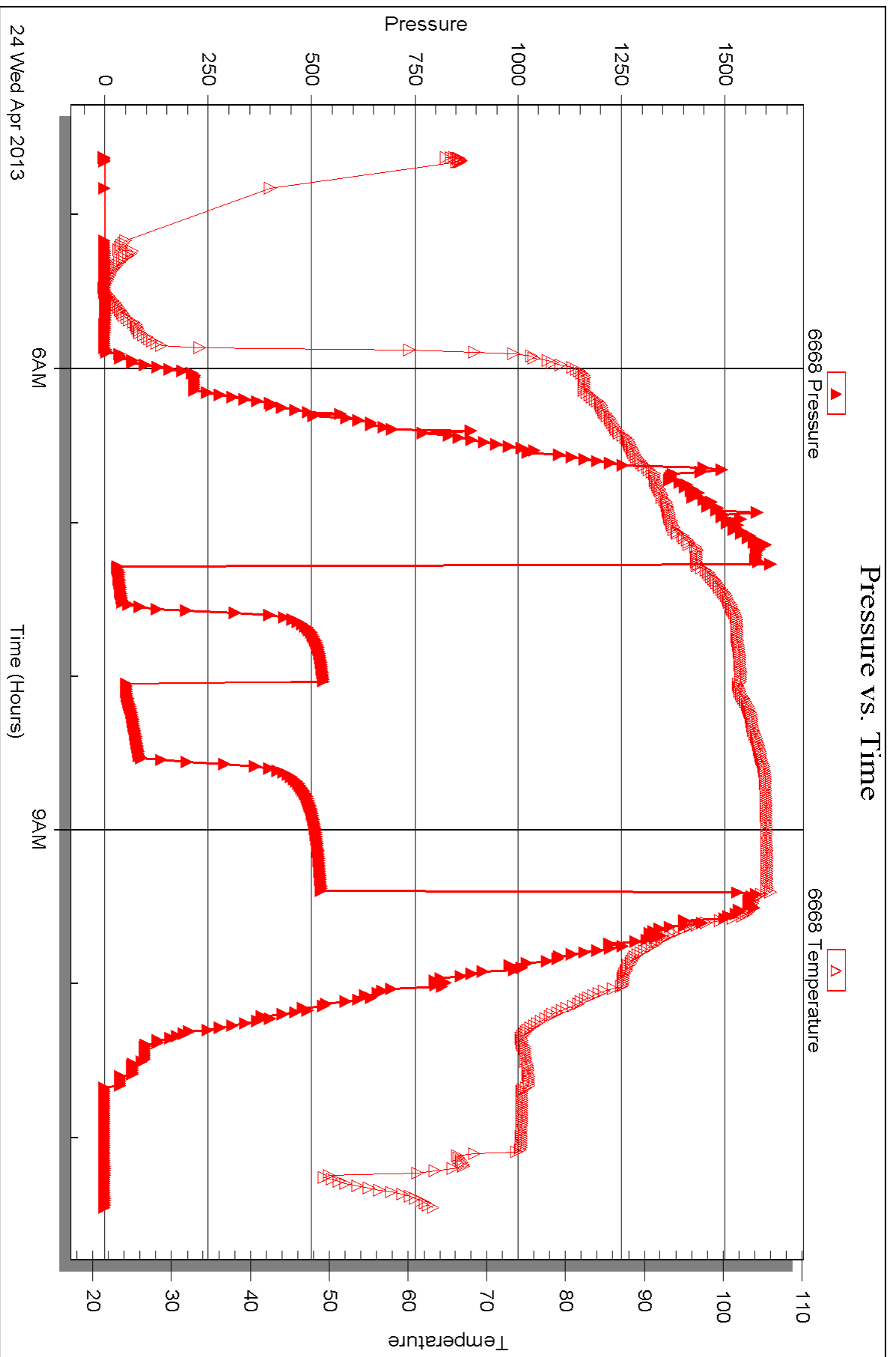
Recovery Table

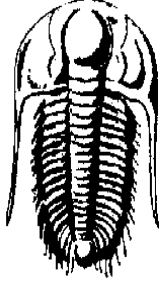
Length ft	Description	Volume bbl
70.00	Free Oil	0.982
120.00	Muddy Frothy Oil-50%G-40%O-10%M	1.683
0.00	2210' Gas In Pipe	0.000

Total Length: 190.00 ft      Total Volume: 2.665 bbl  
 Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:  
 Laboratory Name:      Laboratory Location:  
 Recovery Comments:









**TRILOBITE**  
**TESTING, INC.**

## DRILL STEM TEST REPORT

Prepared For: **TDI, Inc.**

1310 Bison Road  
Hays, KS 67601

ATTN: Herb Deines

**GR #2**

**14-15s-19w Ellis,KS**

Start Date: 2013.04.24 @ 17:59:17

End Date: 2013.04.25 @ 00:13:32

Job Ticket #: 52229                      DST #: 2

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

ph: 785-625-4778 fax: 785-625-5620

Printed: 2013.05.20 @ 10:43:32

TDI, Inc.  
14-15s-19w Ellis,KS  
GR #2  
DST # 2  
D-F  
2013.04.24



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

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

**14-15s-19w Ellis, KS**  
**GR #2**  
 Job Ticket: 52229 **DST#: 2**  
 Test Start: 2013.04.24 @ 17:59:17

## GENERAL INFORMATION:

Formation: **D-F**  
 Deviated: No Whipstock: 0.00 ft (KB)  
 Time Tool Opened: 19:25:02  
 Time Test Ended: 00:13:32  
**Interval: 3348.00 ft (KB) To 3384.00 ft (KB) (TVD)**  
 Total Depth: 3384.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Good  
 Test Type: Conventional Bottom Hole (Reset)  
 Tester: Jason McLemore  
 Unit No: 54  
 Reference Elevations: 2023.00 ft (KB)  
 2013.00 ft (CF)  
 KB to GR/CF: 10.00 ft

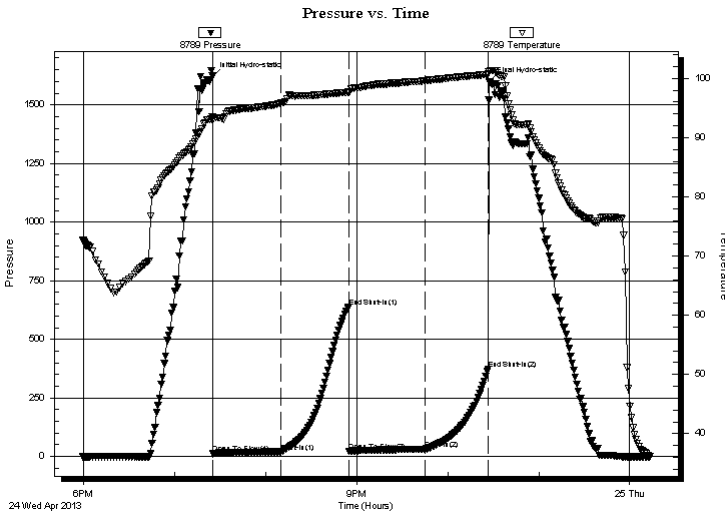
## Serial #: 8789

Inside

Press @ Run Depth: 31.78 psig @ 3351.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2013.04.24 End Date: 2013.04.25 Last Calib.: 2013.04.25  
 Start Time: 17:59:19 End Time: 00:13:32 Time On Btm: 2013.04.24 @ 19:24:47  
 Time Off Btm: 2013.04.24 @ 22:27:32

TEST COMMENT: IFP-Weak Blow , Built to 5"  
 ISI-Dead  
 FFP-Good Blow , Built to 8"  
 FSI-Dead

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1621.97	93.49	Initial Hydro-static
1	12.39	92.95	Open To Flow (1)
46	20.01	95.83	Shut-In(1)
90	637.18	97.68	End Shut-In(1)
91	22.13	97.67	Open To Flow (2)
141	31.78	99.63	Shut-In(2)
182	372.19	100.72	End Shut-In(2)
183	1598.08	101.22	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
55.00	HOCWM-50%O-5%W-45%M	0.77

\* 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 Road  
Hays, KS 67601  
ATTN: Herb Deines

**14-15s-19w Ellis,KS**  
**GR #2**  
Job Ticket: 52229 **DST#: 2**  
Test Start: 2013.04.24 @ 17:59:17

**Tool Information**

Drill Pipe:	Length: 3342.00 ft	Diameter: 3.80 inches	Volume: 46.88 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:	25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 2.25 inches	Volume: 0.00 bbl	Weight to Pull Loose:	35000.00 lb
			<u>Total Volume: 46.88 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	15.00 ft			String Weight: Initial	32000.00 lb
Depth to Top Packer:	3348.00 ft			Final	33000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	36.00 ft				
Tool Length:	57.00 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			3328.00	
Shut In Tool	5.00			3333.00	
Hydraulic tool	5.00			3338.00	
Packer	5.00			3343.00	21.00 Bottom Of Top Packer
Packer	5.00			3348.00	
Stubb	1.00			3349.00	
Perforations	2.00			3351.00	
Recorder	0.00	8789	Inside	3351.00	
Recorder	0.00	6668	Outside	3351.00	
Perforations	30.00			3381.00	
Bullnose	3.00			3384.00	36.00 Bottom Packers & Anchor

**Total Tool Length: 57.00**



**TRILOBITE  
TESTING, INC.**

**DRILL STEM TEST REPORT**

**FLUID SUMMARY**

TDI, Inc.

**14-15s-19w Ellis,KS**

1310 Bison Road  
Hays, KS 67601

**GR #2**

Job Ticket: 52229

**DST#: 2**

ATTN: Herb Deines

Test Start: 2013.04.24 @ 17:59:17

**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: 51.00 sec/qt

Cushion Volume:

bbf

Water Loss: 7.38 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 4400.00 ppm

Filter Cake: inches

**Recovery Information**

Recovery Table

Length ft	Description	Volume bbf
55.00	HOCWM-50%O-5%W-45%M	0.772

Total Length: 55.00 ft      Total Volume: 0.772 bbf

Num Fluid Samples: 0

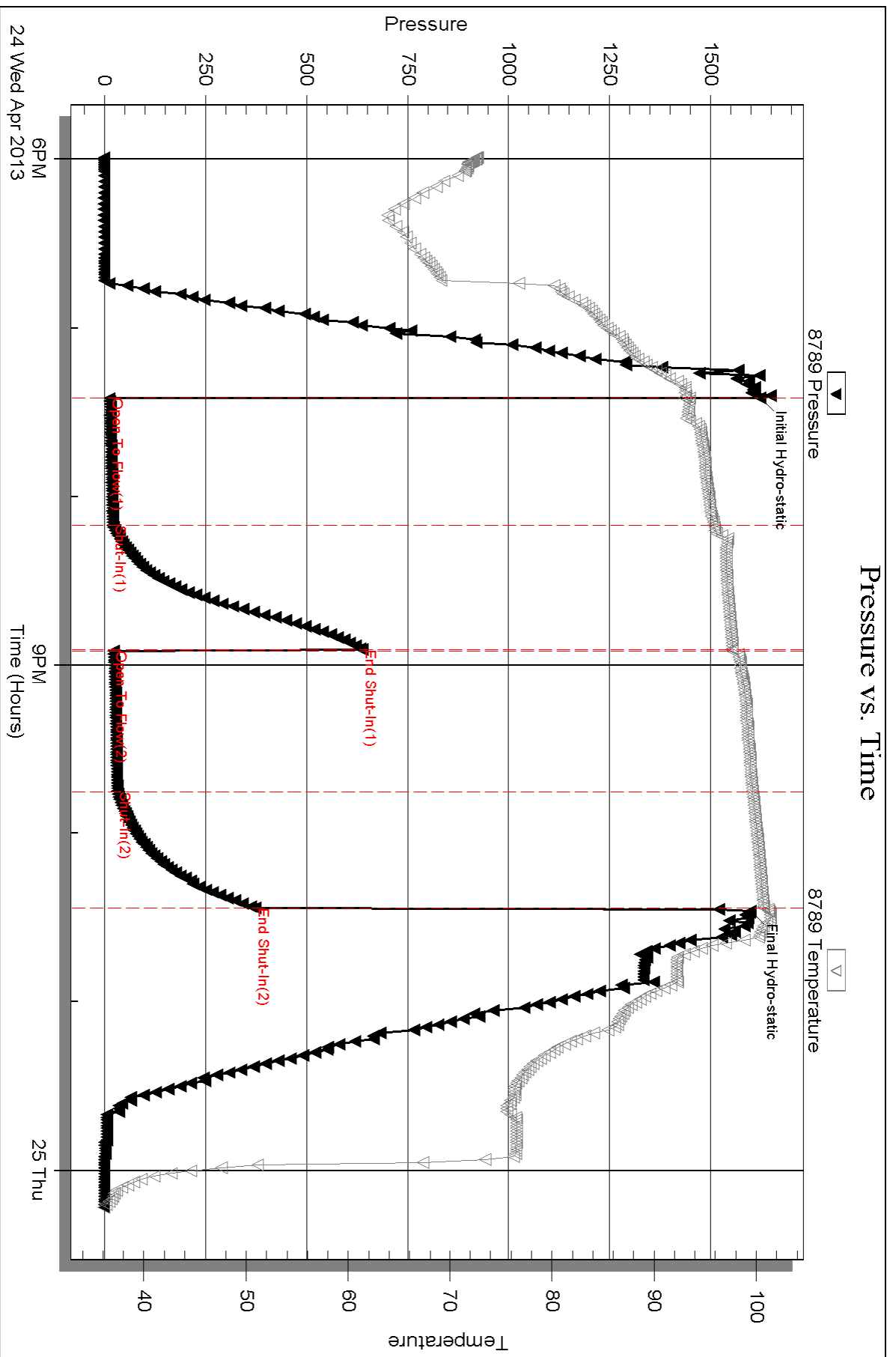
Num Gas Bombs: 0

Serial #:

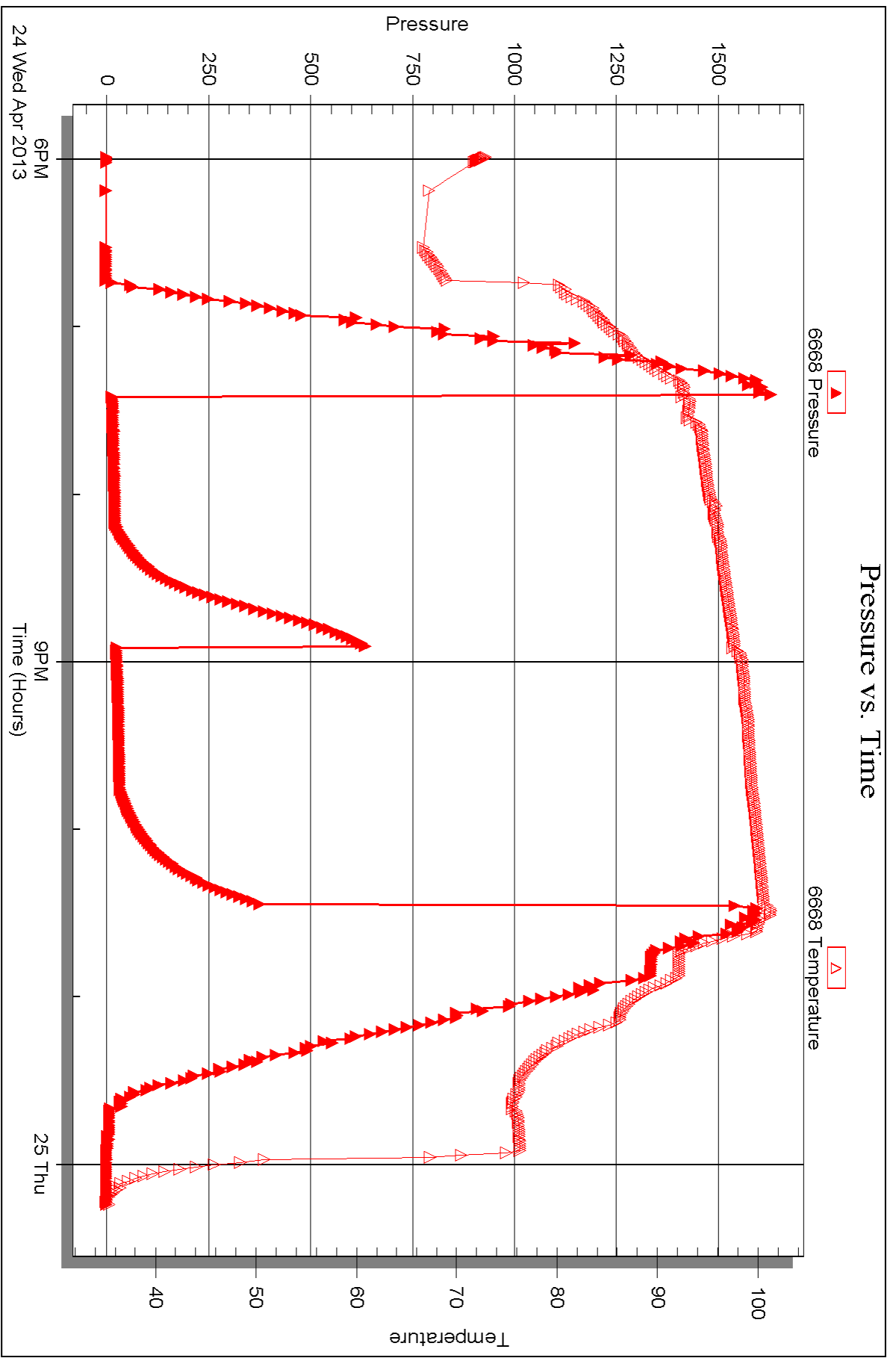
Laboratory Name:

Laboratory Location:

Recovery Comments:









## DRILL STEM TEST REPORT

Prepared For: **TDI, Inc.**

1310 Bison Road  
Hays, KS 67601

ATTN: Herb Deines

**GR #2**

**14-15s-19w Ellis,KS**

Start Date: 2013.04.26 @ 05:53:13

End Date: 2013.04.26 @ 13:34:58

Job Ticket #: 52230                      DST #: 3

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

Printed: 2013.05.20 @ 10:42:53



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

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

**14-15s-19w Ellis,KS**  
**GR #2**  
 Job Ticket: 52230      **DST#: 3**  
 Test Start: 2013.04.26 @ 05:53:13

## GENERAL INFORMATION:

Formation: **I**  
 Deviated: No      Whipstock: 0.00 ft (KB)  
 Time Tool Opened: 08:17:43  
 Time Test Ended: 13:34:58  
**Interval: 3460.00 ft (KB) To 3475.00 ft (KB) (TVD)**  
 Total Depth: 3751.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches      Hole Condition: Good  
 Test Type: Conventional Straddle (Reset)  
 Tester: Jason McLemore  
 Unit No: 54  
 Reference Elevations: 2023.00 ft (KB)  
 2013.00 ft (CF)  
 KB to GR/CF: 10.00 ft

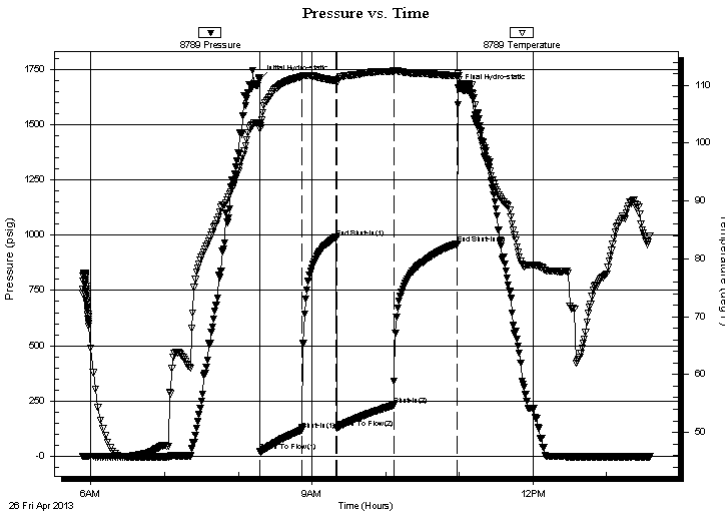
## Serial #: 8789

Inside

Press @ Run Depth: 231.63 psig @ 3471.00 ft (KB)      Capacity: 8000.00 psig  
 Start Date: 2013.04.26      End Date: 2013.04.26      Last Calib.: 2013.04.26  
 Start Time: 05:53:15      End Time: 13:34:58      Time On Btm: 2013.04.26 @ 08:17:13  
 Time Off Btm: 2013.04.26 @ 10:59:13

**TEST COMMENT:** IFP-Good Blow , BOB in 25 Min.  
 ISI-Surface Blow back for 10 Min.  
 FFP-Fair Blow , Built to 8-1/4"  
 FSI-Dead

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1704.95	103.46	Initial Hydro-static
1	23.10	102.48	Open To Flow (1)
35	119.89	111.49	Shut-In(1)
63	989.50	110.80	End Shut-In(1)
63	128.67	110.32	Open To Flow (2)
110	231.63	112.45	Shut-In(2)
162	962.23	111.61	End Shut-In(2)
162	1664.38	111.65	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
450.00	Muddy Water-95%W-5%M	6.31

\* 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 Road  
Hays, KS 67601  
ATTN: Herb Deines

**14-15s-19w Ellis,KS**  
**GR #2**  
Job Ticket: 52230      **DST#: 3**  
Test Start: 2013.04.26 @ 05:53:13

**Tool Information**

Drill Pipe:	Length: 3463.00 ft	Diameter: 3.80 inches	Volume: 48.58 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: 25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 2.25 inches	Volume: 0.00 bbl	Weight to Pull Loose: 50000.00 lb
		Total Volume: 48.58 bbl		Tool Chased 0.00 ft
Drill Pipe Above KB:	24.00 ft			String Weight: Initial 34000.00 lb
Depth to Top Packer:	3460.00 ft			Final 36000.00 lb
Depth to Bottom Packer:	3475.00 ft			
Interval between Packers:	15.00 ft			
Tool Length:	298.00 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>
-------------------------	--------------------	-------------------	-----------------	-------------------	-----------------------

Recorder	0.00	6755	Fluid	3439.00	
Change Over Sub	1.00			3440.00	
Shut In Tool	5.00			3445.00	
Hydraulic tool	5.00			3450.00	
Packer	5.00			3455.00	21.00      Bottom Of Top Packer
Packer	5.00			3460.00	
Stubb	1.00			3461.00	
Perforations	10.00			3471.00	
Recorder	0.00	8789	Inside	3471.00	
Recorder	0.00	8289	Outside	3471.00	
Blank Off Sub	1.00			3472.00	
Blank Spacing	3.00			3475.00	15.00      Tool Interval
Packer	1.00			3476.00	
Perforations	5.00			3481.00	
Change Over Sub	1.00			3482.00	
Recorder	0.00	6668	Below	3482.00	
Blank Spacing	251.00			3733.00	
Change Over Sub	1.00			3734.00	
Bullnose	3.00			3737.00	262.00      Bottom Packers & Anchor

**Total Tool Length: 298.00**



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

TDI, Inc.

**14-15s-19w Ellis,KS**

1310 Bison Road  
Hays, KS 67601

**GR #2**

Job Ticket: 52230

**DST#: 3**

ATTN: Herb Deines

Test Start: 2013.04.26 @ 05:53:13

## 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:

50000 ppm

Viscosity: 52.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.19 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 4500.00 ppm

Filter Cake: inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
450.00	Muddy Water-95%W-5%M	6.312

Total Length: 450.00 ft

Total Volume: 6.312 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

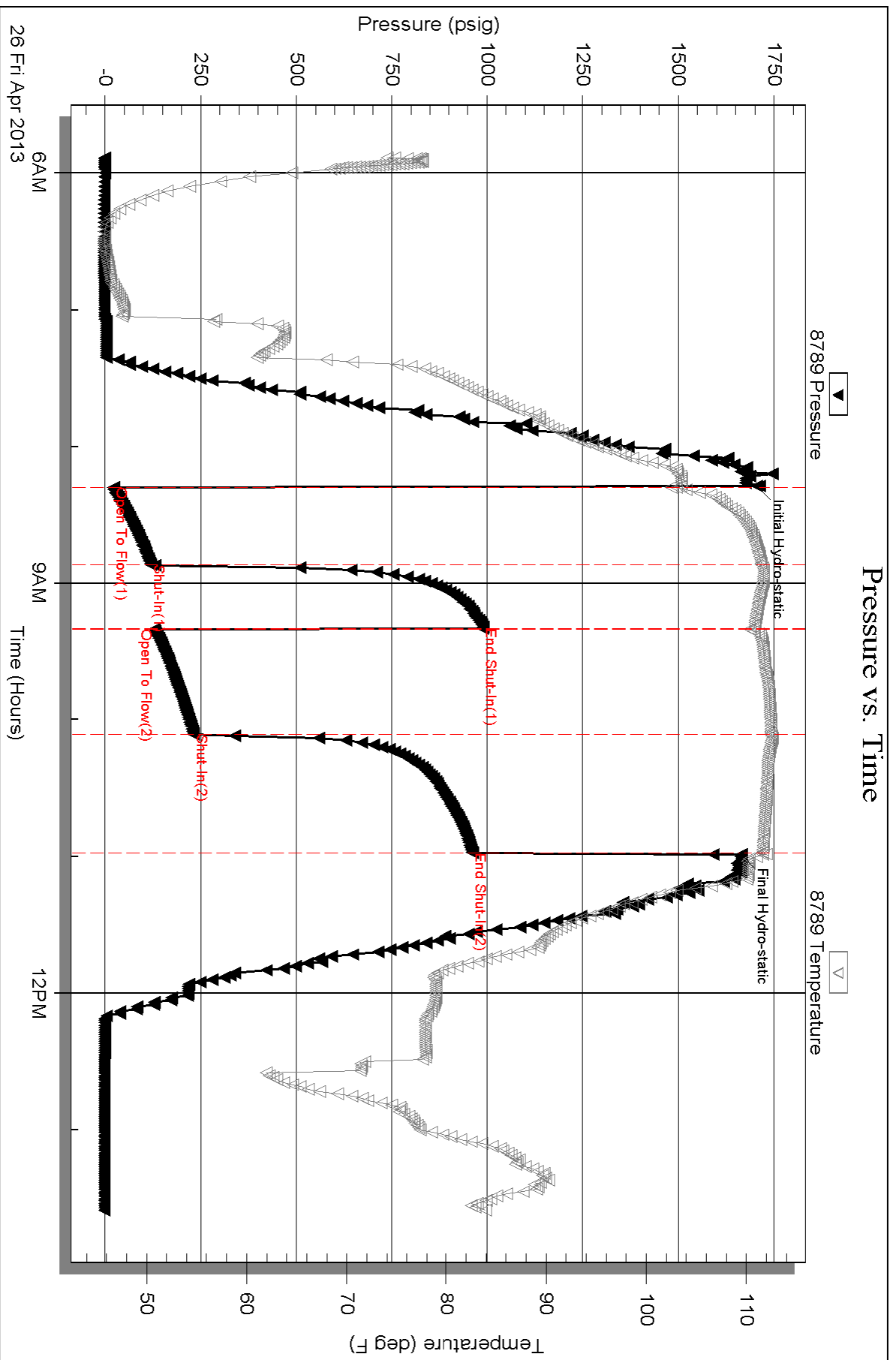
Serial #:

Laboratory Name:

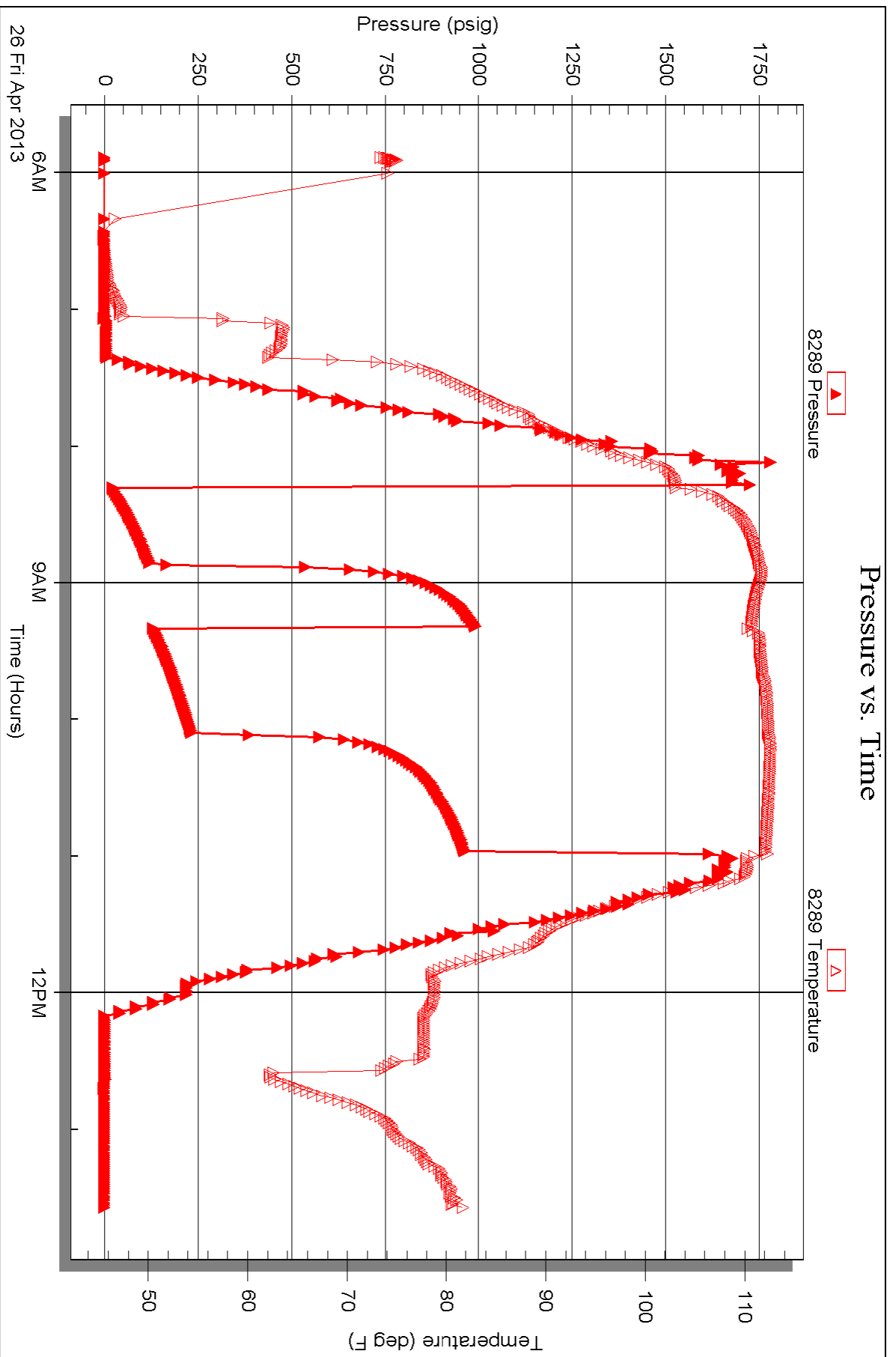
Laboratory Location:

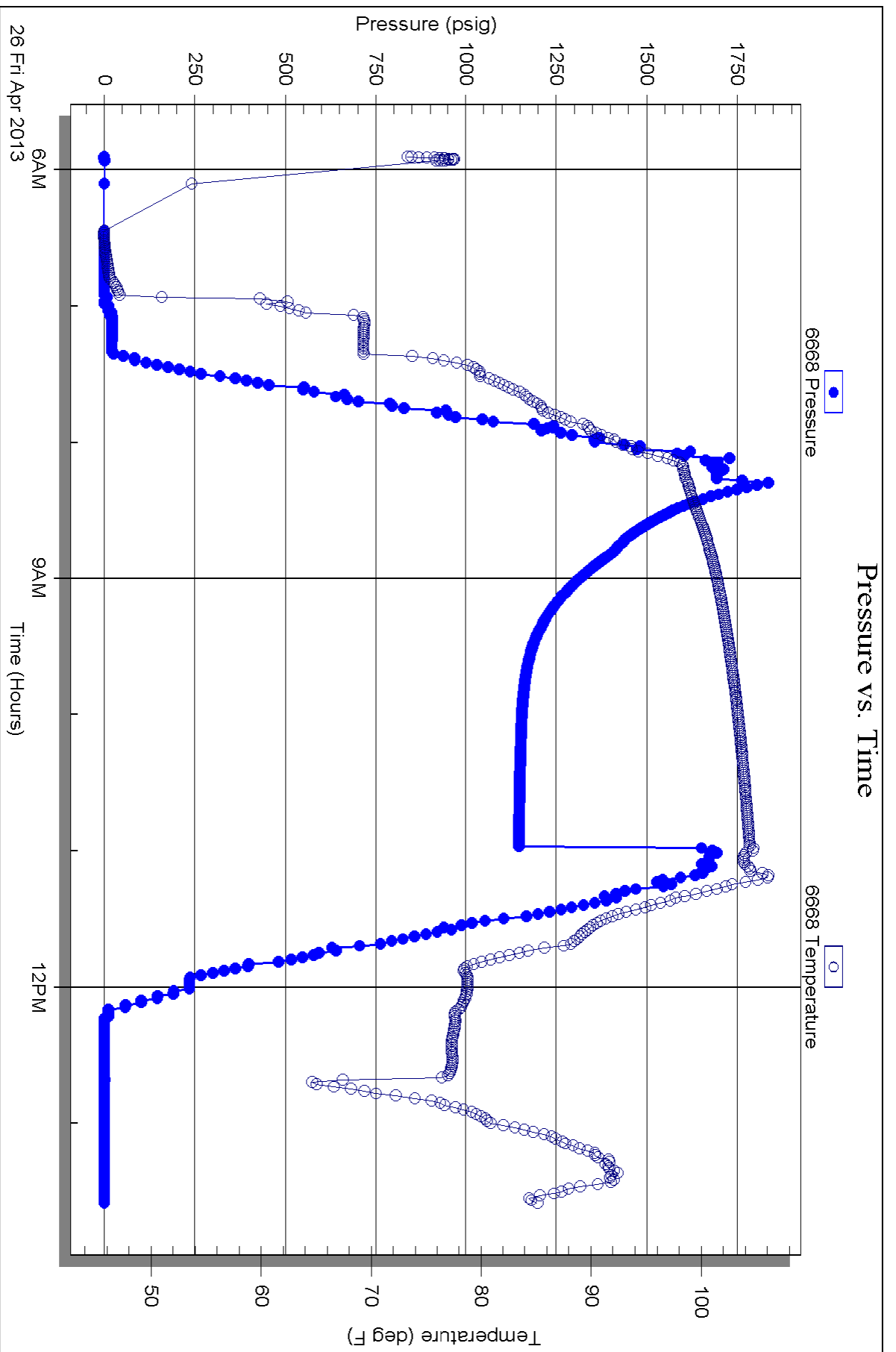
Recovery Comments:

### Pressure vs. Time











# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 52228

Well Name & No. GR #2 Test No. 1 Date 4-24-13  
 Company TDI, Inc. Elevation 2023 KB 2013 GL  
 Address 1310 Bison Road, Hays, KS. 67601  
 Co. Rep / Geo. Harb Deines Rig Southwind #1  
 Location: Sec. 14 Twp. 15s Rge. 19w Co. Ellis State KS

Interval Tested 3314-3350 Zone Tested 'C'  
 Anchor Length 36 Drill Pipe Run 3313 Mud Wt. 9.1  
 Top Packer Depth 3309 Drill Collars Run 0 Vis 51  
 Bottom Packer Depth 3314 Wt. Pipe Run 0 WL 7.4  
 Total Depth 3350 Chlorides 4400 ppm System LCM 2 #  
 Blow Description IFP - Strong, BOB in 2 min  
ISI - Blowback Built to 1"  
FFP - Strong, BOB in 1 min  
FSI - Blowback Built to 4"

Rec	Feet of	%gas	%oil	%water	%mud
<u>70</u>	<u>Free Oil</u>				
<u>120</u>	<u>Muddy Frothy Oil</u>	<u>50</u>	<u>40</u>		<u>10</u>
	<u>2210' Gas In Pipe</u>				

Rec Total 190 BHT \_\_\_\_\_ Gravity 39 API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm

(A) Initial Hydrostatic 1604  Test 1150 T-On Location 4:22  
 (B) First Initial Flow 33  Jars \_\_\_\_\_ T-Started 4:37  
 (C) First Final Flow 43  Safety Joint \_\_\_\_\_ T-Open 7:18  
 (D) Initial Shut-In 527  Circ Sub \_\_\_\_\_ T-Pulled 9:18  
 (E) Second Initial Flow 70  Hourly Standby \_\_\_\_\_ T-Out 11:28  
 (F) Second Final Flow 83  Mileage 30 rt 46.50 Comments \_\_\_\_\_  
 (G) Final Shut-In 520  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 1555  Straddle \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  
 Extra Recorder \_\_\_\_\_  
 Day Standby \_\_\_\_\_  
 Accessibility \_\_\_\_\_

Initial Open 15  
 Initial Shut-In 30  
 Final Flow 30  
 Final Shut-In 45

Sub Total 1196.50 MP/DST Disc't \_\_\_\_\_

Approved By \_\_\_\_\_ Our Representative Jason Mc Lemmon *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. 52229

Well Name & No. GR #2 Test No. 2 Date 4-24-13  
 Company T.D.I., Inc. Elevation 2023 KB 2013 GL  
 Address 1310 Bison Road, Hays, KS. 67601  
 Co. Rep / Geo. Herb Deines Rig Southwind #1  
 Location: Sec. 14 Twp. 15s Rge. 19w Co. Ellis State KS

Interval Tested 3348 - 3384 Zone Tested D-F  
 Anchor Length 36' Drill Pipe Run 3342 Mud Wt. 9.1  
 Top Packer Depth 3343 Drill Collars Run 0 Vis 51  
 Bottom Packer Depth 3348 Wt. Pipe Run 0 WL 7.4  
 Total Depth 3384 Chlorides 4400 ppm System LCM 2"  
 Blow Description IFP - Weak Blow, Built to 5"  
ISI - Dead  
FFP - Good Blow, Built to 8"  
FSI - Dead

Rec	Feet of	%gas	%oil	%water	%mud
<u>55</u>	<u>HOCWM</u>	<u>50</u>	<u>5</u>	<u>45</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 55 BHT \_\_\_\_\_ Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm

(A) Initial Hydrostatic 1622  Test 1150 T-On Location 17:58  
 (B) First Initial Flow 12  Jars \_\_\_\_\_ T-Started 17:59  
 (C) First Final Flow 20  Safety Joint \_\_\_\_\_ T-Open 19:26  
 (D) Initial Shut-In 637  Circ Sub \_\_\_\_\_ T-Pulled 22:26  
 (E) Second Initial Flow 22  Hourly Standby \_\_\_\_\_ T-Out 00:16  
 (F) Second Final Flow 32  Mileage 30 + 4 46.50 Comments \_\_\_\_\_  
 (G) Final Shut-In 372  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 1598  Straddle \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  
 Extra Recorder \_\_\_\_\_  
 Day Standby \_\_\_\_\_  
 Accessibility \_\_\_\_\_

Initial Open 45  
 Initial Shut-In 45  
 Final Flow 45  
 Final Shut-In 45

Sub Total 1196.50

MP/DST Disc't \_\_\_\_\_

Approved By \_\_\_\_\_ Our Representative Jason McLemon *Thank You*

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 52230

Well Name & No. GR #2 Test No. 3 Date 4-26-13  
 Company TDI, Inc. Elevation 2023 KB 2013 GL  
 Address 1310 Bison Road, Hays, KS 67601  
 Co. Rep / Geo. Herb Deines Rig Southwind #1  
 Location: Sec. 14 Twp. 15s Rge. 19w Co. Ellis State KS

Interval Tested 3460 - 3475 Zone Tested I  
 Anchor Length 15' Drill Pipe Run 3463 Mud Wt. 9.1  
 Top Packer Depth 3455 Drill Collars Run 0 Vis 52  
 Bottom Packer Depth 3475 Wt. Pipe Run 0 WL 7.2  
 Total Depth 3751 Chlorides 4,500 ppm System LCM 2<sup>th</sup>  
 Blow Description IFP - Good Blow, BOB in 25 min.  
ISI - Surface Blowback for 10 min  
FFA - Fair Blow, Built to 8 1/4"  
FSI - Dead

Rec	Feet of	%gas	%oil	%water	%mud
<u>450</u>	<u>Muddy Water</u>		<u>95</u>		<u>5</u>
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 450 BHT \_\_\_\_\_ Gravity \_\_\_\_\_ API RW .142 @ 70 °F Chlorides 50,000 ppm

(A) Initial Hydrostatic <u>1705</u>	<input checked="" type="checkbox"/> Test <u>1150</u>	T-On Location <u>5:25</u>
(B) First Initial Flow <u>23</u>	<input type="checkbox"/> Jars _____	T-Started <u>5:49</u>
(C) First Final Flow <u>120</u>	<input type="checkbox"/> Safety Joint _____	T-Open <u>8:15</u>
(D) Initial Shut-In <u>990</u>	<input type="checkbox"/> Circ Sub _____	T-Pulled <u>10:45</u>
(E) Second Initial Flow <u>129</u>	<input checked="" type="checkbox"/> Hourly Standby _____	T-Out <u>13:32</u>
(F) Second Final Flow <u>232</u>	<input checked="" type="checkbox"/> Mileage <u>30rt</u> 46.50	Comments _____
(G) Final Shut-In <u>962</u>	<input type="checkbox"/> Sampler _____	
(H) Final Hydrostatic <u>1664</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>30</u>	<input type="checkbox"/> Extra Recorder _____	Sub Total <u>175</u>
Final Flow <u>45</u>	<input type="checkbox"/> Day Standby <u>1d 5.25h</u>	Total <u>1971.50</u>
Final Shut-In <u>45</u>	<input type="checkbox"/> Accessibility _____	MP/DST Disc't _____
	Sub Total <u>1796.50</u>	

Approved By \_\_\_\_\_ Our Representative Jason McJannet

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Thank You

**OPERATOR**

Company: TDI, INC  
 Address: 1310 BISON ROAD  
 HAYS, KANSAS 67601

Contact Geologist: TOM DENNING  
 Contact Phone Nbr: 785-628-2593  
 Well Name: GR # 2  
 Location: N2 NW SW NW Sec 14-15s-19w  
 Pool: INFIELD  
 State: KANSAS  
 API: 15-051-26,504-00-00  
 Field: MARTINA NORTH  
 Country: USA



**TDI, Inc.**  
 1310 BISON ROAD  
 HAYS, KANSAS 67601  
 (785) 628-2593

Scale 1:240 Imperial

Well Name: GR # 2  
 Surface Location: N2 NW SW NW Sec 14-15s-19w  
 Bottom Location:  
 API: 15-051-26,504-00-00  
 License Number: 4787  
 Spud Date: 4/19/2013  
 Region: ELLIS COUNTY  
 Drilling Completed: 4/25/2013  
 Surface Coordinates: 1565' FNL & 330' FWL  
 Bottom Hole Coordinates:  
 Ground Elevation: 2009.00ft  
 K.B. Elevation: 2019.00ft  
 Logged Interval: 2900.00ft  
 Total Depth: 3750.00ft  
 Formation: LANSING-KANSAS CITY  
 Drilling Fluid Type: CHEMICAL/FRESH WATER GEL

Time: 2:15 PM  
 Time: 8:28 PM  
 To: 3750.00ft

**SURFACE CO-ORDINATES**

Well Type: Vertical  
 Longitude: Latitude:  
 N/S Co-ord: 1565' FNL  
 E/W Co-ord: 330' FWL

**LOGGED BY**

Company: SOLUTIONS CONSULTING, INC.  
 Address: 108 W 35TH  
 HAYS, KS 67601

Phone Nbr: (785) 639-1337  
 Logged By: Geologist  
 Name: HERB DEINES

**CONTRACTOR**

Contractor: SOUTHWIND DRILLING, INC.  
 Rig #: 1  
 Rig Type: MUD ROTARY

Rig Type: MUD ROTARY  
 Spud Date: 4/19/2013  
 TD Date: 4/25/2013  
 Rig Release: 4/26/2013

Time: 2:15 PM  
 Time: 8:28 PM  
 Time: 9:00 PM

**ELEVATIONS**

K.B. Elevation: 2019.00ft                      Ground Elevation: 2009.00ft  
 K.B. to Ground: 10.00ft

**NOTES**

RECOMMENDATION TO RUN PRODUCTION CASING BASED ON POSITIVE RESULTS OF DST # 1 AND FAVORABLE STRUCTURE.

OPEN HOLE LOGGING BY PIONEER ENERGY SERVICES: DUAL INDUCTION LOG, DUAL COMPENSATED POROSITY LOG, MICRORESISTIVITY LOG.

OPEN HOLE DRILL STEM TESTING BY TRILOBITE TESTING INC: TWO (2) CONVENTIONAL TESTS AND ONE (1) STRADDLE TEST

**FORMATION TOPS SUMMARY AND CHRONOLOGY OF DAILY ACTIVITY**

<b>GR # 2</b>	<b>GR # 1</b>
<b>1565' FNL &amp; 330' FWL, NW/4</b>	<b>NE SW SW NW</b>
<b>Sec. 14-15s-19w</b>	<b>Sec 14-15s-19w</b>
<b>2009' GL 2019' KB</b>	<b>Reference Well</b>


<u>FORMATION</u>	<u>SAMPLE TOPS</u>	<u>LOG TOPS</u>	<u>LOG TOPS</u>
Anhydrite	1220+ 799	1221+ 798	+ 806
B-Anhydrite	1255+ 764	1253+ 766	+ 768
Topeka	3000- 981	2998- 979	- 970
Heebner Shale	3264-1245	3262-1243	-1241
Toronto	3282-1263	3282-1278	-1265
LKC	3307-1288	3306-1287	-1288
BKC	3547-1528	3552-1533	-1530
Marmaton	3590-1571	3595-1576	-1573
Conglomerate SS	3605-1586	3637-1618	-1621
Arbuckle	3659-1640	3662-1643	-1639
RTD	3750-1731		
LTD		3751-1732	

**SUMMARY OF DAILY ACTIVITY**

4-19-13      RU, spud 2:15 PM,  
 4-20-13      1229', set 8 5/8" surface pipe to 1227.3' w/ 375 sxs SMD, plug down  
                  3:00 PM, WOC 12hrs, slope 2 degrees  
 4-21-13      1346,'drilling,

- 4-22-13 2400', drilling, displaced 2766' to 2797'
- 4-23-13 3060', drilling
- 4-24-13 3350', TIWB after DST # 1 3314' to 3350' "C" LKC, DST # 2 3348' TO 3384' "D" & "F", slope 1 degree @ 3350'
- 4-25-13 3464', CFS @3480', RTD @ 8:28PM, mini short trip, CCH 1 ½ hrs
- 4-26-13 3750' logs, straddle test # 3 3460' to 3475' "I" LKC, LDDP, run production casing.

**DST # 1 3314' TO 3350' "C" LKC CONVENTIONAQL TEST**

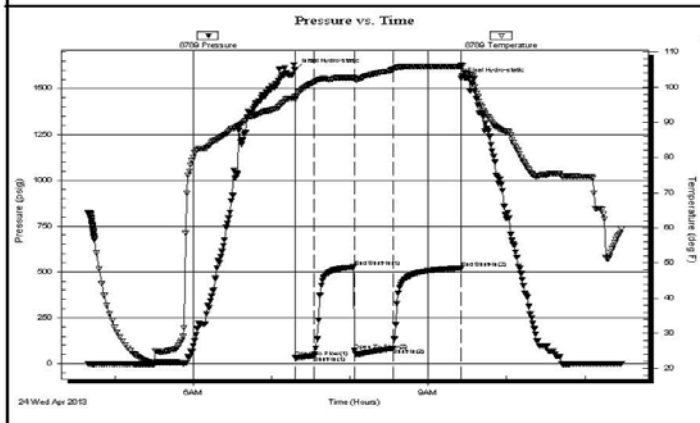
 <p><b>TRILOBITE TESTING, INC.</b></p>	<b>DRILL STEM TEST REPORT</b>		
	TDI, Inc. 1310 Bison Road Hays, KS. 67601 ATTN: Herb Deines	<b>14-15s-19w-Ellis</b>  <b>GR #2</b> Job Ticket: 52228 <b>DST#: 1</b> Test Start: 2013.04.24 @ 04:39:14	

**GENERAL INFORMATION:**

Formation: <b>C</b>	Test Type: Conventional Bottom Hole (Initial)
Deviated: No    Whipstock: 0.00 ft (KB)	Tester: Jason McLemore
Time Tool Opened: 07:17:59	Unit No: 54
Time Test Ended: 11:27:59	Reference Elevations: 2023.00 ft (KB)
<b>Interval: 3314.00 ft (KB) To 3350.00 ft (KB) (TVD)</b>	2013.00 ft (CF)
Total Depth: 3350.00 ft (KB) (TVD)	KB to GR/CF: 10.00 ft
Hole Diameter: 7.80 inches	Hole Condition: Good

<b>Serial #: 8789</b>	<b>Inside</b>	Capacity: 8000.00 psig
Press@RunDepth: 82.81 psig @ 3317.00 ft (KB)	Start Date: 2013.04.24	Last Calib.: 2013.04.24
Start Time: 04:39:16	End Date: 2013.04.24	Time On Btm: 2013.04.24 @ 07:17:44
	End Time: 11:27:59	Time Off Btm: 2013.04.24 @ 09:25:14

**TEST COMMENT:** IFP-Strong, BOB in 2 Min.  
 ISI-Blow back Built to 1"  
 FFP-Strong, BOB in 1 Min.  
 FSI-Blow back Built to 4"




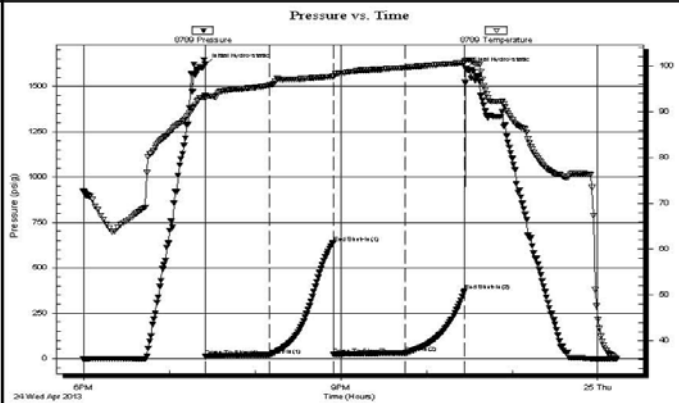
PRESSURE SUMMARY			
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1604.42	97.17	Initial Hydro-static
1	33.04	96.47	Open To Flow (1)
15	43.21	101.47	Shut-In(1)
46	526.97	102.67	End Shut-In(1)
46	70.43	102.42	Open To Flow (2)
76	82.81	105.09	Shut-In(2)
127	520.05	105.92	End Shut-In(2)
128	1554.73	106.35	Final Hydro-static

Recovery		
Length (ft)	Description	Volume (bbl)
70.00	Free Oil	0.98
120.00	Muddy Frothy Oil-50%G-40%O-10%M	1.68
0.00	2210' Gas In Pipe	0.00

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



**DST # 2 3348' TO 3384' "D" "F" LKC CONVENTIONAL TEST**

 <p><b>TRILOBITE TESTING, INC.</b></p>	<b>DRILL STEM TEST REPORT</b>																																						
	TDI, Inc. 1310 Bison Road Hays, KS. 67601 ATTN: Herb Deines	<b>14-15s-19w-Ellis</b> <b>GR #2</b> Job Ticket: 52229 <b>DST#: 2</b> Test Start: 2013.04.24 @ 17:59:17																																					
<b>GENERAL INFORMATION:</b>																																							
Formation: <b>D-F</b> Deviated: No    Whipstock: 0.00 ft (KB) Time Tool Opened: 19:25:02 Time Test Ended: 00:13:32		Test Type: Conventional Bottom Hole (Reset) Tester: Jason McLemore Unit No: 54																																					
Interval: <b>3348.00 ft (KB) To 3384.00 ft (KB) (TVD)</b> Total Depth: 3384.00 ft (KB) (TVD) Hole Diameter: 7.80 inches    Hole Condition: Good		Reference Elevations: 2023.00 ft (KB) 2013.00 ft (CF) KB to GR/CF: 10.00 ft																																					
<b>Serial #: 8789    Inside</b> Press@RunDepth: 31.78 psig @ 3351.00 ft (KB)      Capacity: 8000.00 psig Start Date: 2013.04.24      End Date: 2013.04.25      Last Calib.: 2013.04.25 Start Time: 17:59:19      End Time: 00:13:32      Time On Btm: 2013.04.24 @ 19:24:47 Time Off Btm: 2013.04.24 @ 22:27:32																																							
<b>TEST COMMENT:</b> IFF-Weak Blow , Built to 5" ISI-Dead FFP-Good Blow , Built to 8" FSI-Dead																																							
<b>Pressure vs. Time</b> 		<b>PRESSURE SUMMARY</b>																																					
		<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>Time (Min.)</th> <th>Pressure (psig)</th> <th>Temp (deg F)</th> <th>Annotation</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>1621.97</td> <td>93.49</td> <td>Initial Hydro-static</td> </tr> <tr> <td>1</td> <td>12.39</td> <td>92.95</td> <td>Open To Flow (1)</td> </tr> <tr> <td>46</td> <td>20.01</td> <td>95.83</td> <td>Shut-In(1)</td> </tr> <tr> <td>90</td> <td>637.18</td> <td>97.68</td> <td>End Shut-In(1)</td> </tr> <tr> <td>91</td> <td>22.13</td> <td>97.67</td> <td>Open To Flow (2)</td> </tr> <tr> <td>141</td> <td>31.78</td> <td>99.63</td> <td>Shut-In(2)</td> </tr> <tr> <td>182</td> <td>372.19</td> <td>100.72</td> <td>End Shut-In(2)</td> </tr> <tr> <td>183</td> <td>1598.08</td> <td>101.22</td> <td>Final Hydro-static</td> </tr> </tbody> </table>		Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation	0	1621.97	93.49	Initial Hydro-static	1	12.39	92.95	Open To Flow (1)	46	20.01	95.83	Shut-In(1)	90	637.18	97.68	End Shut-In(1)	91	22.13	97.67	Open To Flow (2)	141	31.78	99.63	Shut-In(2)	182	372.19	100.72	End Shut-In(2)	183	1598.08	101.22	Final Hydro-static
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation																																				
0	1621.97	93.49	Initial Hydro-static																																				
1	12.39	92.95	Open To Flow (1)																																				
46	20.01	95.83	Shut-In(1)																																				
90	637.18	97.68	End Shut-In(1)																																				
91	22.13	97.67	Open To Flow (2)																																				
141	31.78	99.63	Shut-In(2)																																				
182	372.19	100.72	End Shut-In(2)																																				
183	1598.08	101.22	Final Hydro-static																																				
<b>Recovery</b>		<b>Gas Rates</b>																																					
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**DST # 3 STRADDLE TEST 3460' TO 3475' "I" LKC BOTTOM PACKER HELD**

 <p><b>TRILOBITE TESTING, INC.</b></p>	<b>DRILL STEM TEST REPORT</b>		



**TRILLOBITE TESTING, INC.**

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

14-15s-19w-Ellis

GR #2

Job Ticket: 52230

DST#: 3

Test Start: 2013.04.26 @ 05:53:13

**GENERAL INFORMATION:**

Formation: I  
Deviated: No Whipstock: 0.00 ft (KB)  
Time Tool Opened: 08:17:43  
Time Test Ended: 13:34:58

Test Type: Conventional Straddle (Reset)  
Tester: Jason McLemore  
Unit No: 54

Interval: 3460.00 ft (KB) To 3475.00 ft (KB) (TVD)  
Total Depth: 3751.00 ft (KB) (TVD)  
Hole Diameter: 7.80 inches Hole Condition: Good

Reference Elevations: 2023.00 ft (KB)  
2013.00 ft (CF)  
KB to GR/CF: 10.00 ft

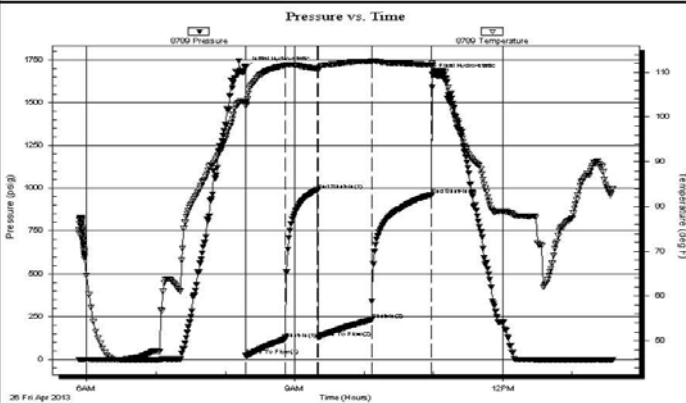
**Serial #: 8789**

**Inside**

Press@RunDepth: 231.63 psig @ 3471.00 ft (KB)  
Start Date: 2013.04.26 End Date: 2013.04.26  
Start Time: 05:53:15 End Time: 13:34:58

Capacity: 8000.00 psig  
Last Calib.: 2013.04.26  
Time On Btm: 2013.04.26 @ 08:17:13  
Time Off Btm: 2013.04.26 @ 10:59:13

TEST COMMENT: IFF-Good Blow, BOB in 25 Min.  
ISI-Surface Blow back for 10 Min.  
FFP-Fair Blow, Built to 8-1/4"  
FSI-Dead



**PRESSURE SUMMARY**

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1704.95	103.46	Initial Hydro-static
1	23.10	102.48	Open To Flow (1)
35	119.89	111.49	Shut-In(1)
63	989.50	110.80	End Shut-In(1)
63	128.67	110.32	Open To Flow (2)
110	231.63	112.45	Shut-In(2)
162	962.23	111.61	End Shut-In(2)
162	1664.38	111.65	Final Hydro-static

**Recovery**

Length (ft)	Description	Volume (bbl)
450.00	Muddy Water-95%W-5%M	6.31

**Gas Rates**

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

\* Recovery from multiple tests

Trilobite Testing, Inc

Ref. No: 52230

Printed: 2013.04.26 @ 14:03:24

**ROCK TYPES**

- Cht vari
- Lmst fw<7
- shale, gry
- Ss
- CglSandy
- Clystgy
- Lmst fw>7
- Carbon Sh
- Dol Lime
- Dolprim
- shale, grn
- shale, red
- Lscong1

**ACCESSORIES**

**MINERAL**

- Glauconite
- Pyrite
- Sandy
- Varicolored chert

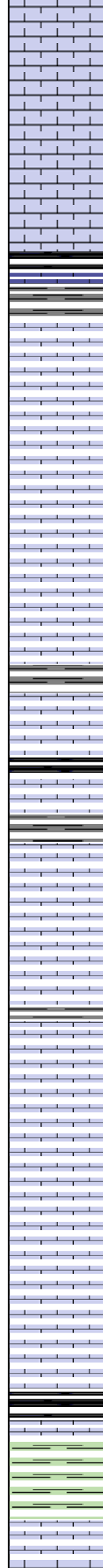
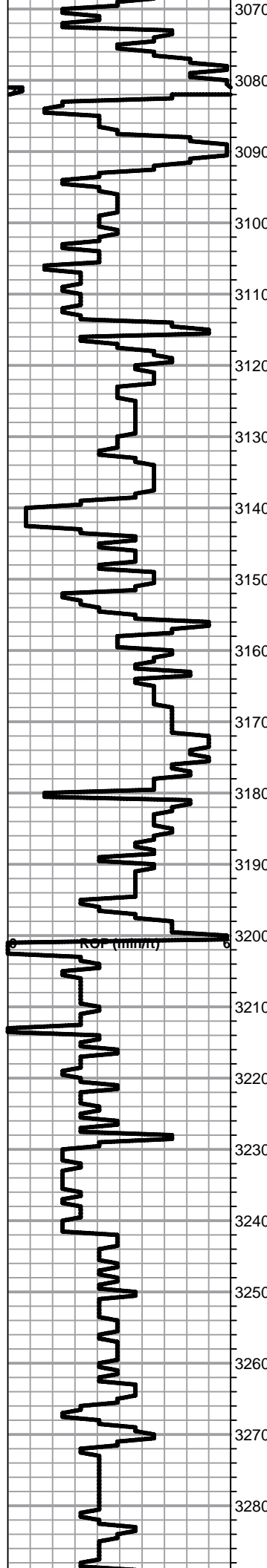
**FOSSIL**

- Oolite
- Oomoldic

**OTHER SYMBOLS**

DST  
DST Int

Curve Track #1 ROP (min/ft)	Depth   Intervals Cored Interval DST Interval	DST Lithology	Oil Show Geological Descriptions	TG, C1 - C5 1:240 Imperial
	<p>2900</p> <p>2910</p> <p>2920</p> <p>2930</p> <p>2940</p> <p>2950</p> <p>2960</p> <p>2970</p> <p>2980</p> <p>2990</p> <p>3000</p> <p>3010</p> <p>3020</p> <p>3030</p> <p>3040</p> <p>3050</p> <p>3060</p>	<p>P 2</p>	<p>BEGIN 1' DRILL TIME FROM 2900' TO RTD BEGIN 10' WET AND DRY SAMPLES FROM 2950' TO RTD</p> <p><b>ANHYDRITE TOP 1221+798</b> <b>ANHYDRITE BASE 1253+766</b></p> <p>Shale, lt-med gray, soft blocky</p> <p>Lime, lt-med brn, fnxln, slightly fossiliferous</p> <p>Shale, med gray, soft blocky, calcareous, fossiliferous</p> <p>Lime, lt-med brn, fnxln, slight chalk, slightly fossiliferous, specks of glauconite</p> <p>Lime, dark brn, fnxln, fossiliferous</p> <p>Shale, dove gray soft sticky clumps grading into soft blocky shale</p> <p>Lime, med-dark brn, fnxln, fossiliferous</p> <p>Lime, crm-lt brn, fnxln, slight bedded chalk</p> <p><b><u>TOPEKA 2998-979</u></b></p> <p>Lime, lt-med brn-med grayish brn, fnxln, slightly fossiliferous</p> <p>Lime, lt-med brn, fnxln, slight bedded chalk in part</p> <p>Lime, med brn-med grayish brn, fnxln, slight bedded chalk</p> <p>Lime, med brn-med grayish brn, fnxln, slightly fossiliferous, shaley in part</p> <p>Lime, lt brn, granular, lot of chalk with sticky clumps in part</p> <p>Lime, lt-med brn, fnxln, slight chalk in part, slightly fossiliferous</p> <p>Lime, lt-med brn, fnxln-granular, bedded chalk with sticky clumps in part</p>	<p>8 5/8" SURFACE CASING SET TO 1227.3' W/ 375 SMD, WOC 12 HOURS</p> <p>SLOPE 2 DEGREES @1228'</p>



Lime, lt brn-lt grayish brn, fnxln, fn-vfxln in part, bedded chalk

Lime, lt-med brn, fnxln-granular in part, bedded chalk with sticky clumps in part, fusulinids

Lime, lt-med brn, fnxln-granular, bedded chalk with sticky clumps in part

Lime, lt-med brn, granular, slightly fossiliferous, bed chalk

Shale, black carbonaceous

Shale, lt gray soft forming soft mud

Lime, crm-lt brn, fnxln-granular, slight chalk

Lime, crm, fnxln, bedded chalk, NS

Lime, lt brn, granular, bedded chalk w/ sticky clumps in part

Lime, crm-lt brn, fnxln-granular, bedded chalk w/ sticly clumps in part

Lime, lt-med brn, fnxln-granular, chalky  
Shale, med gray, soft blocky

Lime, lt brn, fnxln

Shale, black carbonaceous, fissile, blocky

Lime, lt brn, fnxln, soft on crush, bedded chalk

Lime, lt brn, fnxln-granular, slight bedded chalk

Lime, lt brn, fnxln-granular

Lime, lt brn, fnxln-granular, slight chalk beds, slightly fossiliferous

Lime, lt brn, fnxln, slight bedded chalk

Lime, lt brn, fnxln, slightly chalky

Lime, lt brn, fnxln

**HEEBNER SPL 3265-1245 ELog 3262-1243**

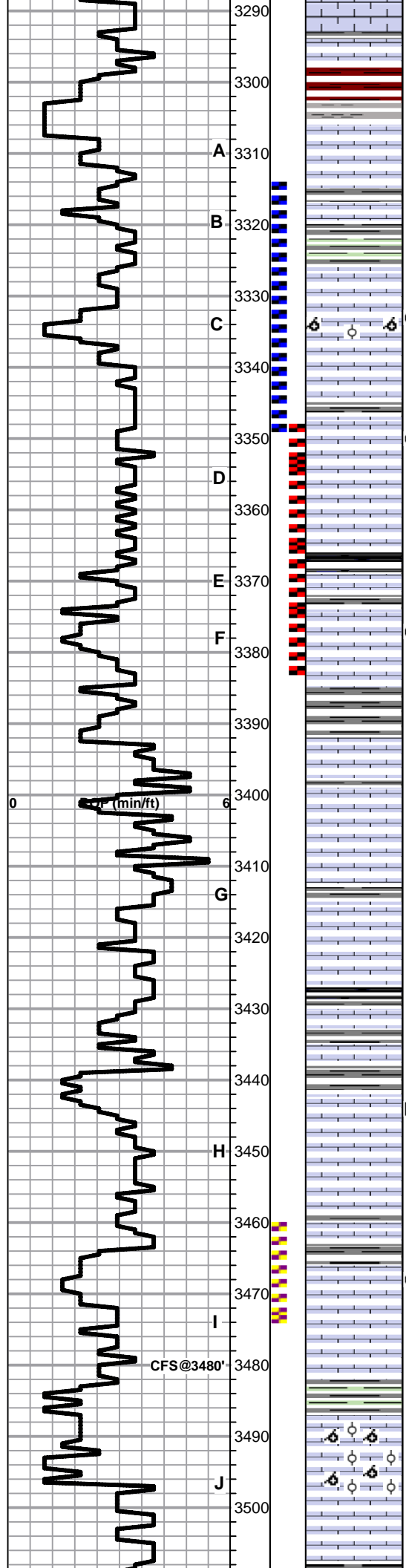
Shale, black carbonaceous, fissile, blocky  
Lime med brn, fn-vfxln, hard on crush

Shale, lime green, soft blocky with soft mud in part

**TORONTO 3282-1263**

Lime, white-crm, fnxln, thin bedded chalk in part, NS

BIT TRIP @ 3200'



Lime, white-cream, fnxln, bedded chalk, NS

Lime, cream-med brown-pale green, fnxln  
Shale, reddish brown wash, soft blocky

**LKC 3306-1287**

Lime, light-med brown, fn-vfxln, slight chalk, NS

Shale, dove gray, soft mud  
Lime, light-med brown, fnxln, NS

DST # 1 33124' TO 3350' SEE  
HEADER FOR TEST  
SUMMARY

Shale, lime green, soft sticky clumps  
Lime, light-med brown, fnxln grading into oolitic/oolmoldic lime, light stain, very light odor

Lime, cream-tan, fnxln, bedded chalk in part

Lime, cream-tan, fnxln, slight chalk  
Shale, light gray, soft sticky clumps

Lime, cream, fnxln, bedded chalk, few chips with light spotty staining, No Odor

DST # 2 3348' TO 3384' SEE  
HEADER FOR TEST SUMMARY

Lime, cream-light brown, fnxln, bedded chalk

Shale, black carbonaceous, fissile, blocky  
Lime, light gray, fnln  
Shale, dove gray, forming soft mud clumps

Lime, cream-light brown, fnxln-granular, interxln porosity, scattered fossil fragments, scattered staining, very light odor, VMSFO

Shale, med gray, soft blocky

Lime, cream-tan, fnxln

Lime, cream, fnxln, bedded chalk, hard on crush

Lime, cream, fnxln, slight bedded chalk, very clean appearance

Lime, cream, fn-vfxln, slight chalk, light gray near shale boundary  
Shale, gray-black carbonaceous in part

Lime, light-med brown, fn-vfxln  
Shale, dove gray, soft mud clumps

Lime, light brown, fnxln-granular, trace dead oil stain, No Odor, bedded chalk, very light Odor

Lime, cream, fnxln, slight chalk

Shale, dove gray, soft mud to soft blocky

DST # 3 STRADDLE TEST  
3450' TO 3475' SEE HEADER  
FOR TEST SUMMARY.  
BOTTOM PACKER HELD

Lime, cream-light brown, fnxln, soft on crush, few chips with trace of spotty staining, No detectable odor

Lime, cream, fnxln, bedded chalk

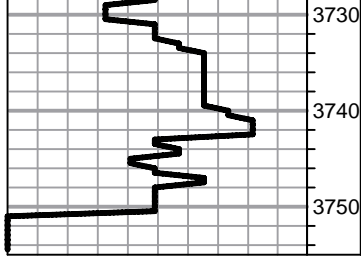
CFS@3480'

Shale, grayish green, soft blocky

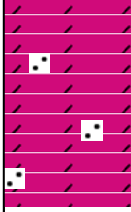
Lime, cream-tan, bedded chalk, oolmoldic, NS, No Odor, No staining noted

Lime, cream-light brown, fnxln, bedded chalk





3730  
3740  
3750



Dolomite, crm, fnxln, sandy, quartz, granular-fused solid  
Dolomite, crm, fnxln, fused quartz in part  
**RTD 3750-1731 LTD 3751-1732**

**JOB LOG**

**SWIFT Services, Inc.**

DATE 4-20-13 PAGE NO. 1

CUSTOMER T. D. I. WELL NO. #2 LEASE GR JOB TYPE Surface TICKET NO. 274005

CHART NO.	TIME	RATE (BPM)	VOLUME (BBL) (GAL)	PUMPS		PRESSURE (PSI)		DESCRIPTION OF OPERATION AND MATERIALS
				T	C	TUBING	CASING	
	0630							on Loc. Rig Cir.
	0645							TOH with Bit
								TD 1229' 8 5/8" Csg. 1229'
								Shoe Joint 42'
	0845							short Trip
	11:05							Start in hole with 8 5/8" casing
								Baffle Plate
								Cent. #1, #3, #15
	13:30							csg. on Bottom Circulate
	14:05		20					2000 KCL Flush
	14:10	5.5						mix 100 SK SMD 11.8 #/gal
								100 SK 12.5 #/gal
								100 SK 13.5 #/gal
								75 SK 14.5 #/gal
			140					Finish mixing Release 5-w top plug
	14:40							Displ.
	1500		76				400	Plug down shot in well head
								Cir 50 SK case to Pit
								Rack up truck
	1520							Job Complete

*T. D. I.*

*Roger, Nick, Flint*



**JOB LOG**

**SWIFT Services, Inc.**

DATE 4-26-13 PAGE NO.

CUSTOMER TOJ WELL NO. 2 LEASE 6R JOB TYPE 5 1/2 long string TICKET NO. 24401

CHART NO.	TIME	RATE (BPM)	VOLUME (BBL) (GAL)	PUMPS		PRESSURE (PSI)		DESCRIPTION OF OPERATION AND MATERIALS
				T	C	TUBING	CASING	
	1830							On location
								TD 3750 Inset 3709 TP 3746 SJ 37
								Centralizers 1,3,5,7,8,10,12 Baskets 4,14
	1915							Start casing
	2045							Drop Ball Break circulation
	2145		1/4					Plug AH 30 sks MH 15 sks
	2155	5	12		✓		300	Start Mudflush
		5	20		✓		300	Start KLL flush
	2200	5	32		✓		200	Start Cement
	2214							Drop Plug wash out Pump + Lines
	2215							Start Displacement
	2230	6	90.5		✓		650 / 1500	land Plug
	2232							Release Pry
	2245							wash up Back up
	2315							Job Complete Thank You Josh, Brian, Oleg, John

Conservation Division  
Finney State Office Building  
130 S. Market, Rm. 2078  
Wichita, KS 67202-3802



Phone: 316-337-6200  
Fax: 316-337-6211  
<http://kcc.ks.gov/>

Mark Sievers, Chairman  
Thomas E. Wright, Commissioner  
Shari Feist Albrecht, Commissioner

Sam Brownback, Governor

May 21, 2013

Tom Denning  
TDI, Inc.  
1310 BISON RD  
HAYS, KS 67601-9696

Re: ACO1  
API 15-051-26504-00-00  
GR 2  
NW/4 Sec.14-15S-19W  
Ellis County, Kansas

Dear Production Department:

We are herewith requesting that the Well Completion Form ACO-1 and attached information for the subject well be held confidential for a period of two years.

Should you have any questions or need additional information regarding subject well, please contact our office.

Respectfully,  
Tom Denning