



Confidentiality Requested:

Yes  No

KANSAS CORPORATION COMMISSION 1209654  
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: \_\_\_\_\_

1209654

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 <i>(Attach Additional Sheets)</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Log	Formation (Top), Depth and Datum	<input type="checkbox"/> Sample
Samples Sent to Geological Survey	<input type="checkbox"/> Yes <input type="checkbox"/> No	Name	Top	Datum
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:				

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
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<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. <i>(Submit ACO-5)</i> <input type="checkbox"/> Other <i>(Specify)</i> _____ <input type="checkbox"/> Commingled <i>(Submit ACO-4)</i>	<b>PRODUCTION INTERVAL:</b> _____ _____
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## DRILL STEM TEST REPORT

Prepared For: **TDI Inc**

1310 Bison Rd  
Hays KS 67601

ATTN: Herb Deines

### **Madden South #1**

### **16-11s-18w Ellis,KS**

Start Date: 2014.05.29 @ 22:25:00

End Date: 2014.05.30 @ 06:36:30

Job Ticket #: 55282                      DST #: 1

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

Printed: 2014.06.02 @ 13:42:31

TDI Inc  
16-11s-18w Ellis,KS  
Madden South #1  
DST # 1  
Toronto - LKC "D"  
2014.05.29



**TRILOBITE TESTING, INC**

# DRILL STEM TEST REPORT

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

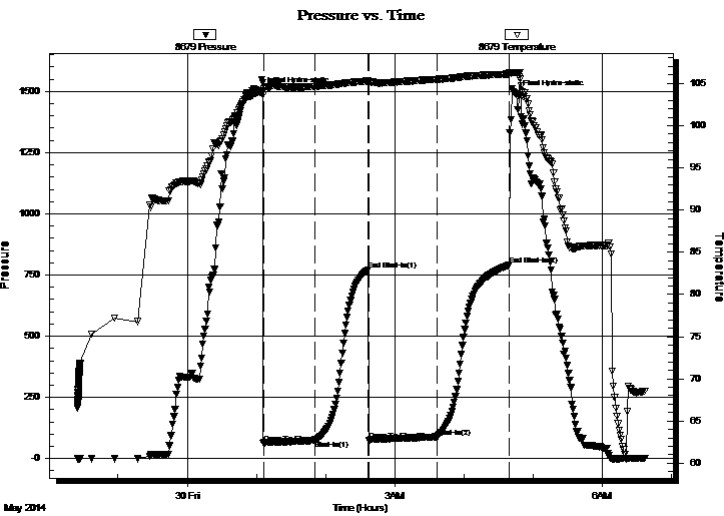
**16-11s-18w Ellis,KS**  
**Madden South #1**  
 Job Ticket: 55282 **DST#: 1**  
 Test Start: 2014.05.29 @ 22:25:00

## GENERAL INFORMATION:

Formation: **Toronto - LKC "D"**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 01:06:00  
 Time Test Ended: 06:36:30  
 Interval: **3090.00 ft (KB) To 3210.00 ft (KB) (TVD)**  
 Total Depth: 3210.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Fair  
 Test Type: Conventional Bottom Hole (Initial)  
 Tester: Bob Hamel  
 Unit No: 67  
 Reference Elevations: 1903.00 ft (KB)  
 1893.00 ft (CF)  
 KB to GR/CF: 10.00 ft

**Serial #: 8679 Inside**  
 Press@RunDepth: 88.26 psig @ 3188.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2014.05.29 End Date: 2014.05.30 Last Calib.: 2014.05.30  
 Start Time: 22:25:01 End Time: 06:36:30 Time On Btm: 2014.05.30 @ 01:03:30  
 Time Off Btm: 2014.05.30 @ 04:45:00

TEST COMMENT: IF. - 45 - Weak blow built to 7 1/4"  
 ISL. - 45 - No blow back  
 FF. - 60 - BOB in 45 min  
 FSL. - 60 - No blow back



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1500.60	103.92	Initial Hydro-static
3	62.92	103.71	Open To Flow (1)
48	73.35	104.64	Shut-In(1)
93	770.76	105.27	End Shut-In(1)
94	73.03	105.13	Open To Flow (2)
153	88.26	105.48	Shut-In(2)
216	790.39	106.10	End Shut-In(2)
222	1488.56	106.28	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
146.00	G,O,C,M, 20%G 30%O 50%M	2.05
0.00	169' G.I.P. (FAINT)	0.00

## Gas Rates

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



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

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

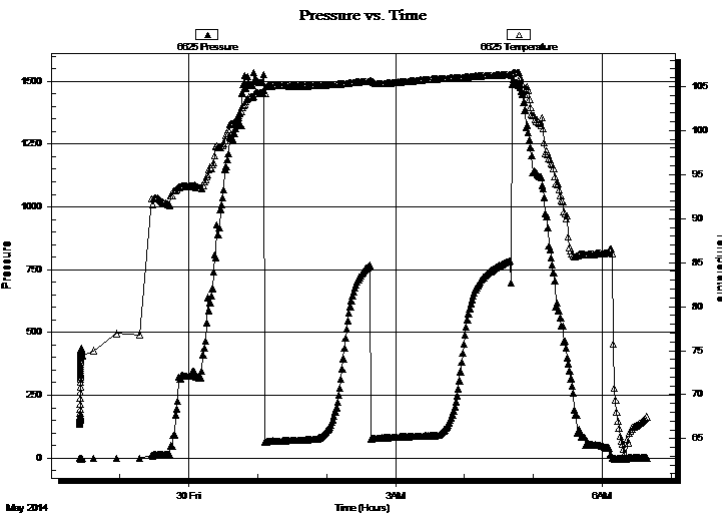
**16-11s-18w Ellis,KS**  
**Madden South #1**  
Job Ticket: 55282      **DST#: 1**  
Test Start: 2014.05.29 @ 22:25:00

## GENERAL INFORMATION:

Formation: **Toronto - LKC "D"**  
Deviated: No Whipstock: ft (KB)  
Time Tool Opened: 01:06:00  
Time Test Ended: 06:36:30  
Interval: **3090.00 ft (KB) To 3210.00 ft (KB) (TVD)**  
Total Depth: 3210.00 ft (KB) (TVD)  
Hole Diameter: 7.88 inches Hole Condition: Fair  
Test Type: Conventional Bottom Hole (Initial)  
Tester: Bob Hamel  
Unit No: 67  
Reference Elevations: 1903.00 ft (KB)  
1893.00 ft (CF)  
KB to GR/CF: 10.00 ft

**Serial #: 6625 Outside**  
Press@RunDepth: psig @ 3188.00 ft (KB)      Capacity: 8000.00 psig  
Start Date: 2014.05.29      End Date: 2014.05.30      Last Calib.: 1899.12.30  
Start Time: 22:25:01      End Time: 06:39:00      Time On Btm:  
Time Off Btm:

**TEST COMMENT:** IF - 45 - Weak blow built to 7 1/4"  
ISL - 45 - No blow back  
FF - 60 - BOB in 45 min  
FSI - 60 - No blow back



## PRESSURE SUMMARY

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

## Recovery

Length (ft)	Description	Volume (bbl)
146.00	G,O,C,M, 20%G 30%O 50%M	2.05
0.00	169' G.I.P. (FAINT)	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  
ATTN: Herb Deines

**16-11s-18w Ellis,KS**  
**Madden South #1**  
Job Ticket: 55282      **DST#: 1**  
Test Start: 2014.05.29 @ 22:25:00

**Tool Information**

Drill Pipe:	Length: 3088.00 ft	Diameter: 3.80 inches	Volume: 43.32 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:	30000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 2.25 inches	Volume: 0.00 bbl	Weight to Pull Loose:	50000.00 lb
			<u>Total Volume: 43.32 bbl</u>	Tool Chased	5.00 ft
Drill Pipe Above KB:	18.00 ft			String Weight: Initial	41000.00 lb
Depth to Top Packer:	3090.00 ft			Final	41000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	120.00 ft				
Tool Length:	140.00 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			3071.00	
Shut In Tool	5.00			3076.00	
Hydraulic tool	5.00			3081.00	
Packer	4.00			3085.00	20.00      Bottom Of Top Packer
Packer	5.00			3090.00	
Stubb	1.00			3091.00	
Perforations	2.00			3093.00	
Change Over Sub	1.00			3094.00	
Drill Pipe	93.00			3187.00	
Change Over Sub	1.00			3188.00	
Recorder	0.00	6625	Outside	3188.00	
Recorder	0.00	8679	Inside	3188.00	
Perforations	18.00			3206.00	
Bullnose	4.00			3210.00	120.00      Bottom Packers & Anchor

**Total Tool Length: 140.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

TDI Inc **16-11s-18w Ellis,KS**  
 1310 Bison Rd **Madden South #1**  
 Hays KS 67601 Job Ticket: 55282 **DST#: 1**  
 ATTN: Herb Deines Test Start: 2014.05.29 @ 22:25:00

### 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: 48.00 sec/qt	Cushion Volume: bbl		
Water Loss: 7.19 in <sup>3</sup>	Gas Cushion Type:		
Resistivity: 0.00 ohm.m	Gas Cushion Pressure: psig		
Salinity: 1900.00 ppm			
Filter Cake: 1.00 inches			

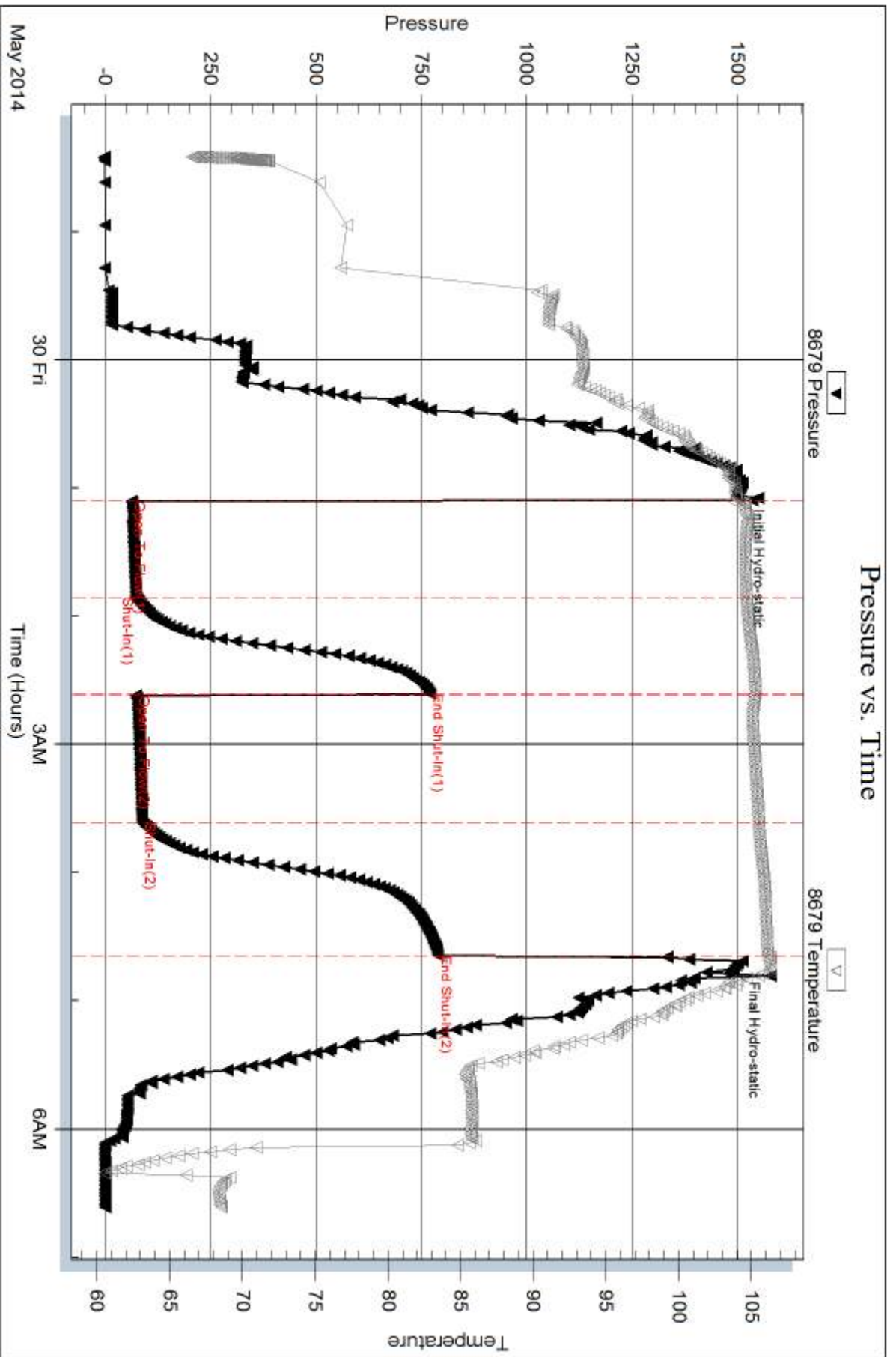
### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
146.00	G,O,C,M, 20%G 30%O 50%M	2.048
0.00	169' G.I.P. (FAINT)	0.000

Total Length: 146.00 ft Total Volume: 2.048 bbl  
 Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:  
 Laboratory Name: Laboratory Location:  
 Recovery Comments:



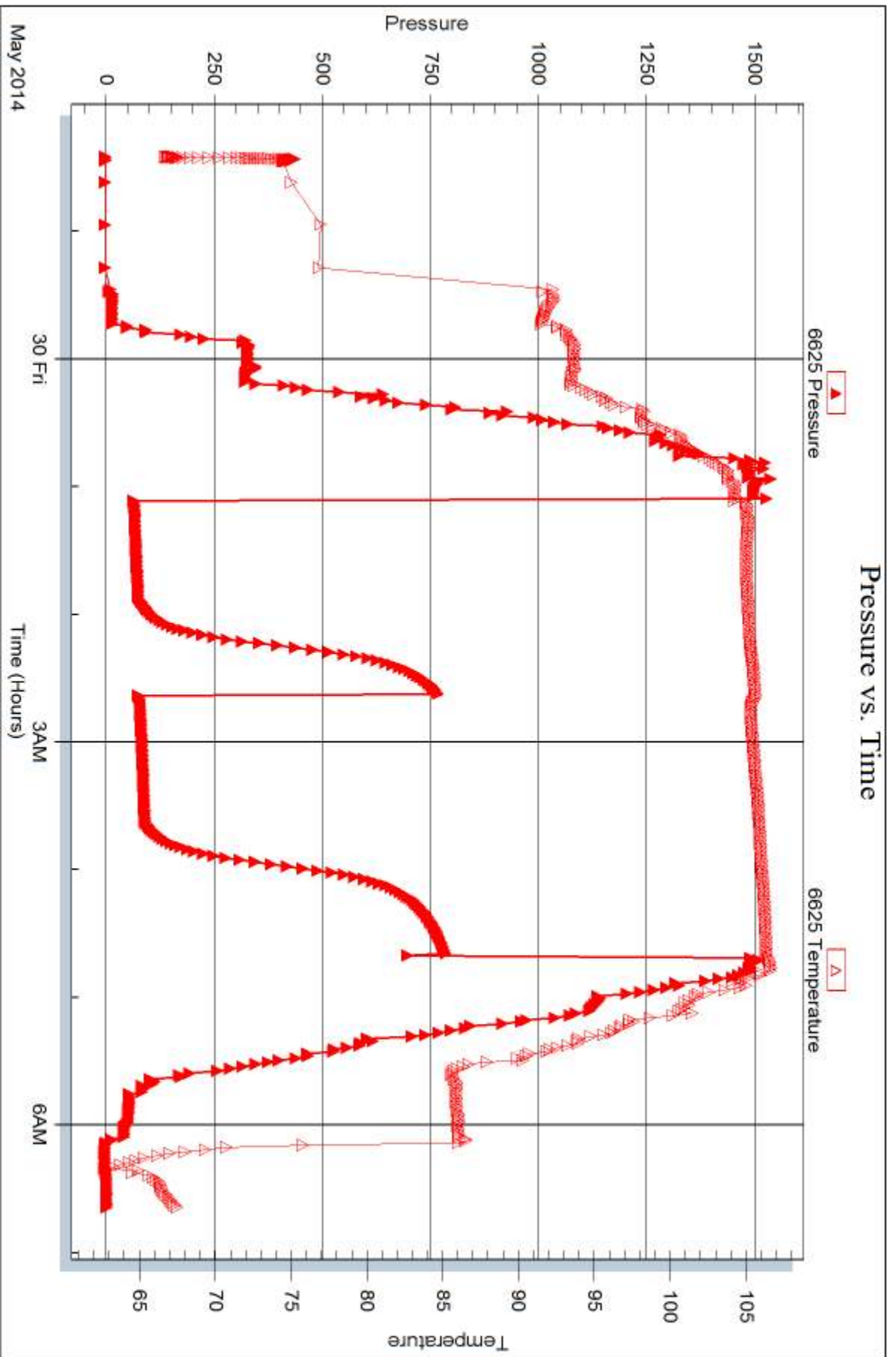


Serial #: 6625

Outside TDI Inc

Madden South #1

DST Test Number: 1



Trilobite Testing, Inc

Ref. No: 55282

Printed: 2014.06.02 @ 13:42:33



## DRILL STEM TEST REPORT

Prepared For: **TDI Inc**

1310 Bison Rd  
Hays KS 67601

ATTN: Herb Deines

### **Madden South #1**

### **16-11s-18w Ellis,KS**

Start Date: 2014.05.30 @ 17:20:00

End Date: 2014.05.30 @ 23:49:30

Job Ticket #: 55283                      DST #: 2

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

Printed: 2014.06.02 @ 13:42:01

TDI Inc  
16-11s-18w Ellis,KS  
Madden South #1  
DST # 2  
LKC "I-J"  
2014.05.30



**TRILOBITE TESTING, INC**

# DRILL STEM TEST REPORT

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

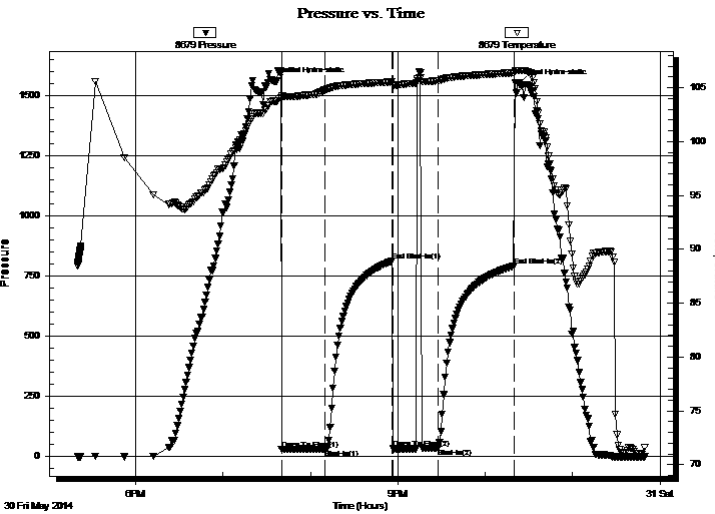
**16-11s-18w Ellis,KS**  
**Madden South #1**  
 Job Ticket: 55283 **DST#: 2**  
 Test Start: 2014.05.30 @ 17:20:00

## GENERAL INFORMATION:

Formation: **LKC "I-J"**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 19:40:00  
 Time Test Ended: 23:49:30  
 Interval: **3284.00 ft (KB) To 3320.00 ft (KB) (TVD)**  
 Total Depth: 3320.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Fair  
 Test Type: Conventional Bottom Hole (Reset)  
 Tester: Bob Hamel  
 Unit No: 67  
 Reference Elevations: 1903.00 ft (KB)  
 1893.00 ft (CF)  
 KB to GR/CF: 10.00 ft

**Serial #: 8679 Inside**  
 Press@RunDepth: 34.86 psig @ 3288.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2014.05.30 End Date: 2014.05.30 Last Calib.: 2014.05.30  
 Start Time: 17:20:01 End Time: 23:49:30 Time On Btm: 2014.05.30 @ 19:36:00  
 Time Off Btm: 2014.05.30 @ 22:23:00

**TEST COMMENT:** I.F. - 30 - Weak blow built to 3" died back to 1 3/4"  
 I.S.I. - 45 - No blow back  
 F.F. - 30 - No blow - flushed tool - no blow  
 F.S.I. - 45 - No blow back



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1559.63	103.76	Initial Hydro-static
4	30.46	104.05	Open To Flow (1)
34	31.88	104.79	Shut-In(1)
80	812.40	105.55	End Shut-In(1)
81	32.78	105.26	Open To Flow (2)
112	34.86	105.67	Shut-In(2)
164	792.11	106.39	End Shut-In(2)
167	1549.80	106.61	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
45.00	MUD 100%	0.63

\* Recovery from multiple tests

## Gas Rates

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



**TRILOBITE TESTING, INC**

# DRILL STEM TEST REPORT

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

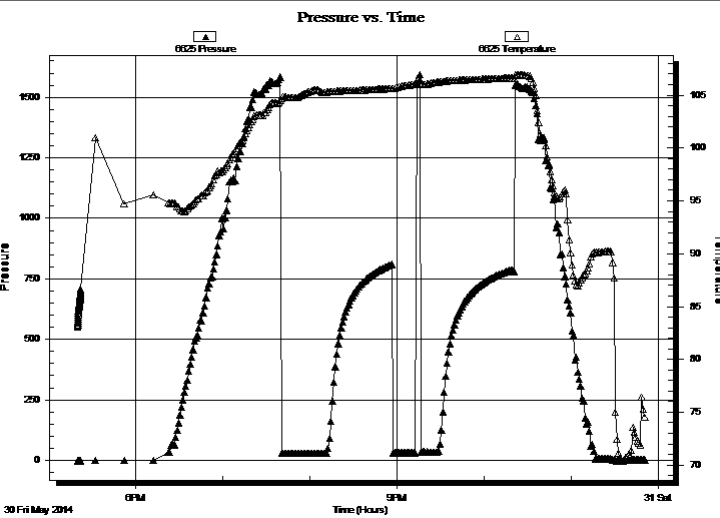
**16-11s-18w Ellis,KS**  
**Madden South #1**  
 Job Ticket: 55283      **DST#: 2**  
 Test Start: 2014.05.30 @ 17:20:00

**GENERAL INFORMATION:**

Formation: **LKC "I-J"**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 19:40:00  
 Time Test Ended: 23:49:30  
**Interval: 3284.00 ft (KB) To 3320.00 ft (KB) (TVD)**  
 Total Depth: 3320.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Fair  
 Test Type: Conventional Bottom Hole (Reset)  
 Tester: Bob Hamel  
 Unit No: 67  
 Reference Elevations: 1903.00 ft (KB)  
 1893.00 ft (CF)  
 KB to GR/CF: 10.00 ft

**Serial #: 6625 Outside**  
 Press@RunDepth: psig @ 3288.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2014.05.30 End Date: 2014.05.30 Last Calib.: 2014.05.31  
 Start Time: 17:20:01 End Time: 23:50:30 Time On Btm:  
 Time Off Btm:

**TEST COMMENT:** I.F. - 30 - Weak blow built to 3" died back to 1 3/4"  
 I.S.I. - 45 - No blow back  
 F.F. - 30 - No blow - flushed tool - no blow  
 F.S.I. - 45 - No blow back



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

Recovery		
Length (ft)	Description	Volume (bbl)
45.00	MUD 100%	0.63

\* 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 Deines

**16-11s-18w Ellis,KS**  
**Madden South #1**  
Job Ticket: 55283      **DST#: 2**  
Test Start: 2014.05.30 @ 17:20:00

**Tool Information**

Drill Pipe:	Length: 3276.00 ft	Diameter: 3.80 inches	Volume: 45.95 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:	30000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 2.25 inches	Volume: 0.00 bbl	Weight to Pull Loose:	60000.00 lb
			<u>Total Volume: 45.95 bbl</u>	Tool Chased	10.00 ft
Drill Pipe Above KB:	12.00 ft			String Weight: Initial	44000.00 lb
Depth to Top Packer:	3284.00 ft			Final	44000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	36.00 ft				
Tool Length:	56.00 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			3265.00	
Shut In Tool	5.00			3270.00	
Hydraulic tool	5.00			3275.00	
Packer	4.00			3279.00	20.00      Bottom Of Top Packer
Packer	5.00			3284.00	
Stubb	1.00			3285.00	
Perforations	3.00			3288.00	
Recorder	0.00	6625	Outside	3288.00	
Recorder	0.00	8679	Inside	3288.00	
Perforations	28.00			3316.00	
Bullnose	4.00			3320.00	36.00      Bottom Packers & Anchor

**Total Tool Length: 56.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

TDI Inc **16-11s-18w Ellis,KS**  
 1310 Bison Rd **Madden South #1**  
 Hays KS 67601 Job Ticket: 55283 **DST#: 2**  
 ATTN: Herb Deines Test Start: 2014.05.30 @ 17:20:00

### Mud and Cushion Information

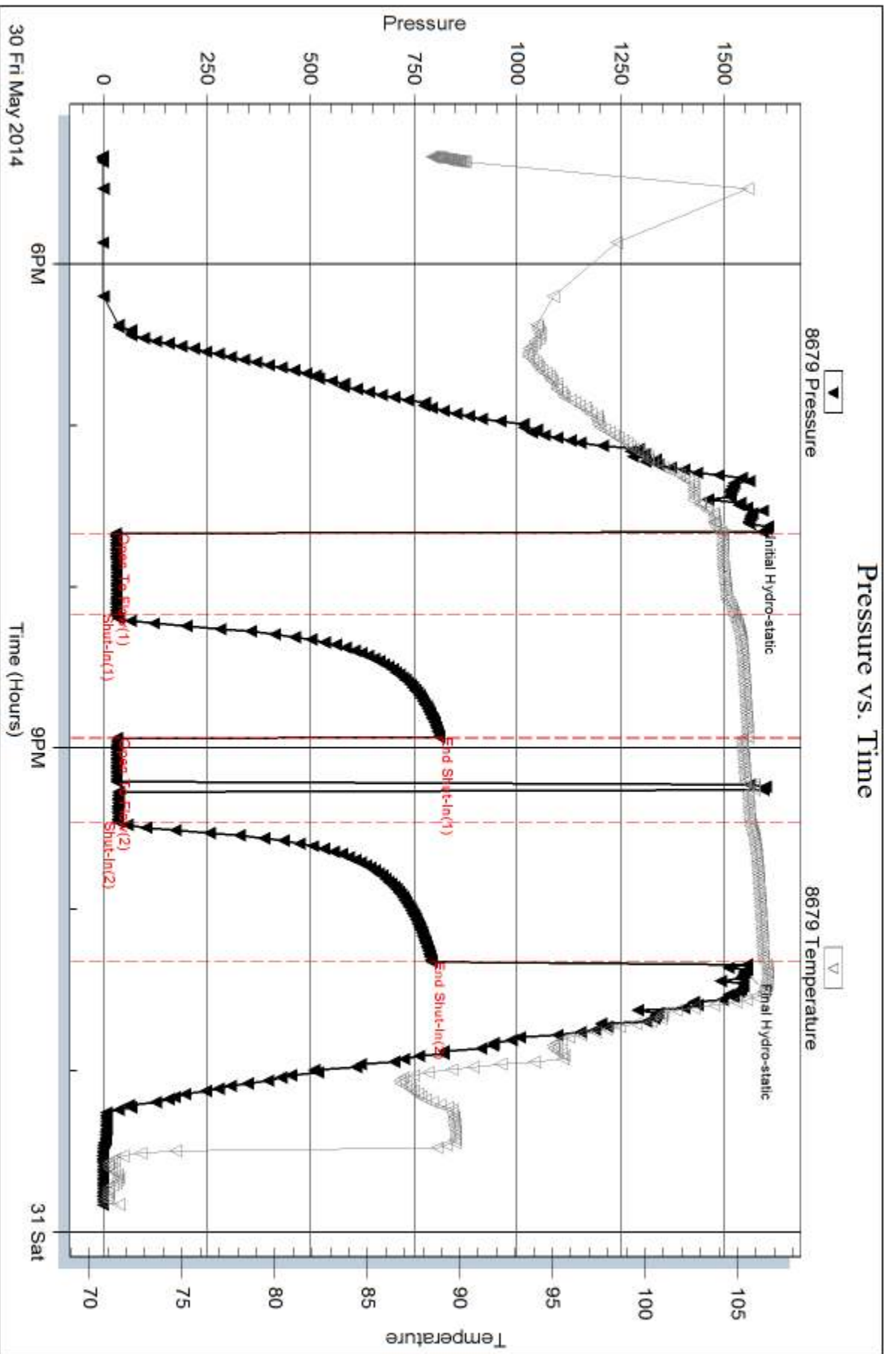
Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	ppm
Viscosity: 50.00 sec/qt	Cushion Volume: bbl		
Water Loss: 6.79 in <sup>3</sup>	Gas Cushion Type:		
Resistivity: 0.00 ohm.m	Gas Cushion Pressure: psig		
Salinity: 2600.00 ppm			
Filter Cake: 1.00 inches			

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
45.00	MUD 100%	0.631

Total Length: 45.00 ft Total Volume: 0.631 bbl  
 Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:  
 Laboratory Name: Laboratory Location:  
 Recovery Comments:



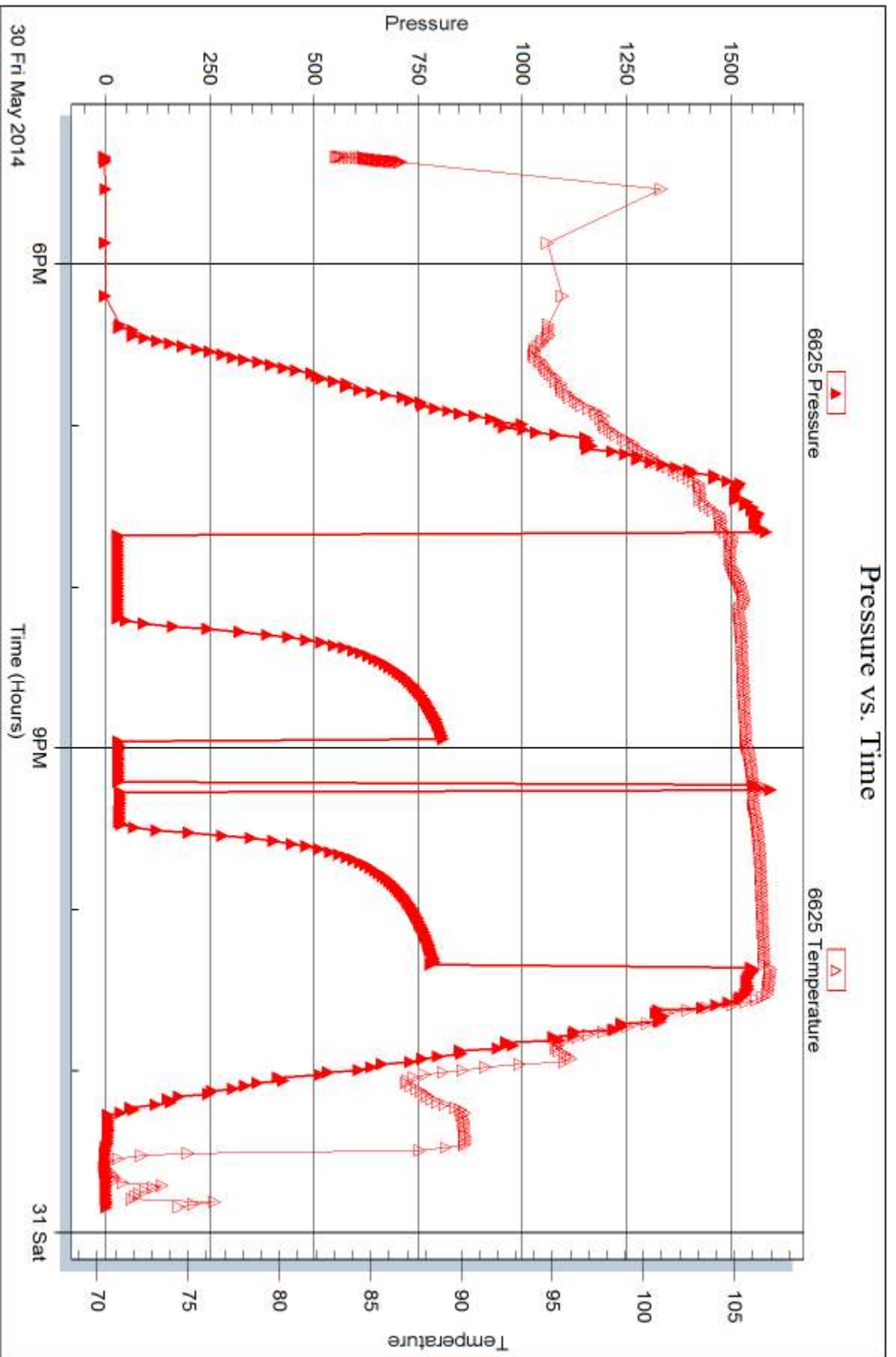


Serial #: 6625

Outside TDI Inc

Madden South #1

DST Test Number: 2



Trilobite Testing, Inc

Ref. No: 55283

Printed: 2014.06.02 @ 13:42:02



## DRILL STEM TEST REPORT

Prepared For: **TDI Inc**

1310 Bison Rd  
Hays KS 67601

ATTN: Herb Deines

### **Madden South #1**

### **16-11s-18w Ellis,KS**

Start Date: 2014.05.31 @ 10:58:00

End Date: 2014.05.31 @ 17:28:00

Job Ticket #: 55284                      DST #: 3

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

Printed: 2014.06.02 @ 13:40:35



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

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

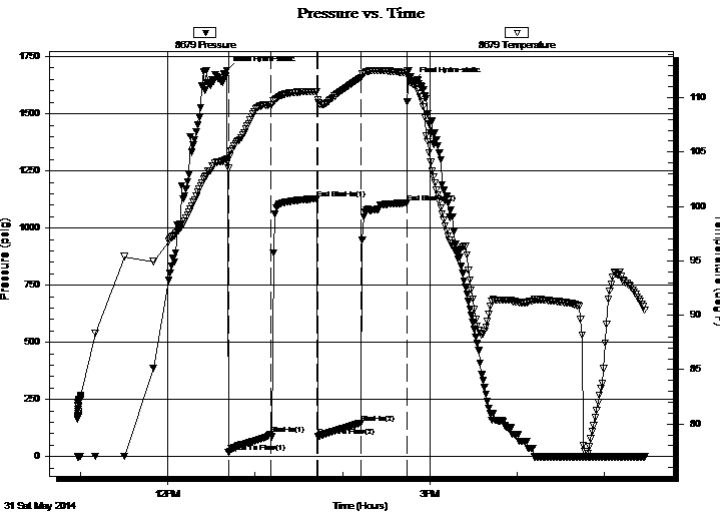
**16-11s-18w Ellis,KS**  
**Madden South #1**  
 Job Ticket: 55284 **DST#: 3**  
 Test Start: 2014.05.31 @ 10:58:00

## GENERAL INFORMATION:

Formation: **Arbuckle**  
 Deviated: No Whipstock: ft (KB)  
 Test Type: Conventional Bottom Hole (Reset)  
 Time Tool Opened: 12:41:30 Tester: Bob Hamel  
 Time Test Ended: 17:28:00 Unit No: 67  
 Interval: **3427.00 ft (KB) To 3450.00 ft (KB) (TVD)** Reference Elevations: 1903.00 ft (KB)  
 Total Depth: 3450.00 ft (KB) (TVD) 1893.00 ft (CF)  
 Hole Diameter: 7.88 inches Hole Condition: Fair KB to GR/CF: 10.00 ft

**Serial #: 8679 Inside**  
 Press@RunDepth: 147.79 psig @ 3428.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2014.05.31 End Date: 2014.05.31 Last Calib.: 2014.05.31  
 Start Time: 10:58:01 End Time: 17:28:00 Time On Btm: 2014.05.31 @ 12:40:30  
 Time Off Btm: 2014.05.31 @ 14:48:30

**TEST COMMENT:** I.F. - 30 - BOB in 12 min  
 I.S.I. - 30 - No blow back  
 F.F. - 30 - BOB in 16 min  
 F.S.I. - 30 - No blow back



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1688.87	104.33	Initial Hydro-static
1	19.15	103.52	Open To Flow (1)
30	98.94	109.38	Shut-In(1)
62	1127.67	110.57	End Shut-In(1)
63	90.36	109.78	Open To Flow (2)
92	147.79	111.81	Shut-In(2)
124	1110.29	112.25	End Shut-In(2)
128	1640.72	111.25	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
63.00	S,M,C,O,W, 5%M 40%O 55%W	0.88
335.00	CLEAN OIL 100%	4.70
0.00	63' G.I.P.	0.00

\* Recovery from multiple tests

## Gas Rates

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



**TRILOBITE**  
TESTING, INC

# DRILL STEM TEST REPORT

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

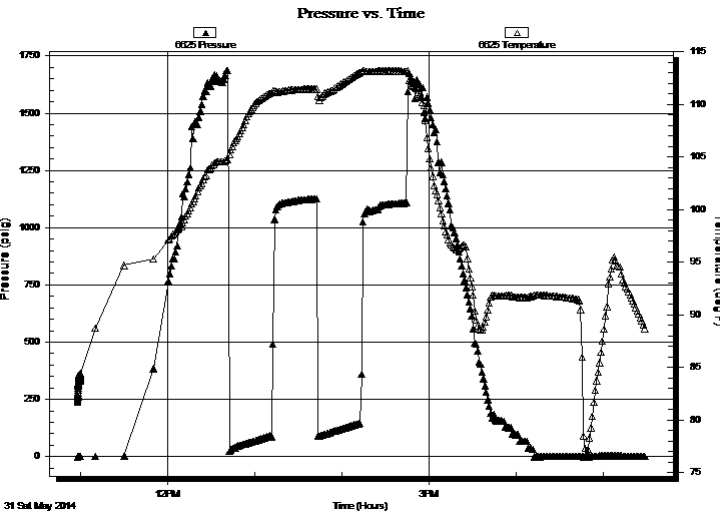
**16-11s-18w Ellis,KS**  
**Madden South #1**  
Job Ticket: 55284      **DST#: 3**  
Test Start: 2014.05.31 @ 10:58:00

## GENERAL INFORMATION:

Formation: **Arbuckle**  
Deviated: No Whipstock:                                      ft (KB)  
Time Tool Opened: 12:41:30  
Time Test Ended: 17:28:00  
Interval: **3427.00 ft (KB) To 3450.00 ft (KB) (TVD)**  
Total Depth: 3450.00 ft (KB) (TVD)  
Hole Diameter: 7.88 inches Hole Condition: Fair  
Test Type: Conventional Bottom Hole (Reset)  
Tester: Bob Hamel  
Unit No: 67  
Reference Elevations: 1903.00 ft (KB)  
1893.00 ft (CF)  
KB to GR/CF: 10.00 ft

**Serial #: 6625      Outside**  
Press@RunDepth:                      psig @ 3428.00 ft (KB)      Capacity: 8000.00 psig  
Start Date: 2014.05.31      End Date: 2014.05.31      Last Calib.: 1899.12.30  
Start Time: 10:58:01      End Time: 17:29:00      Time On Btm:  
Time Off Btm:

**TEST COMMENT:** I.F. - 30 - BOB in 12 min  
I.S.I. - 30 - No blow back  
F.F. - 30 - BOB in 16 min  
F.S.I. - 30 - No blow back



## PRESSURE SUMMARY

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

## Recovery

Length (ft)	Description	Volume (bbl)
63.00	S,M,C,O,W, 5%M 40%O 55%W	0.88
335.00	CLEAN OIL 100%	4.70
0.00	63' G.I.P.	0.00

\* 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 Deines

**16-11s-18w Ellis,KS**  
**Madden South #1**  
Job Ticket: 55284      **DST#: 3**  
Test Start: 2014.05.31 @ 10:58:00

**Tool Information**

Drill Pipe:	Length: 3436.00 ft	Diameter: 3.80 inches	Volume: 48.20 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:	30000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 2.25 inches	Volume: 0.00 bbl	Weight to Pull Loose:	50000.00 lb
			<u>Total Volume: 48.20 bbl</u>	Tool Chased	3.00 ft
Drill Pipe Above KB:	29.00 ft			String Weight: Initial	44000.00 lb
Depth to Top Packer:	3427.00 ft			Final	44000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	23.00 ft				
Tool Length:	43.00 ft				
Number of Packers:	2	Diameter: 6.75 inches			

Tool Comments:

**Tool Description**

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3408.00	
Shut In Tool	5.00			3413.00	
Hydraulic tool	5.00			3418.00	
Packer	4.00			3422.00	20.00      Bottom Of Top Packer
Packer	5.00			3427.00	
Stubb	1.00			3428.00	
Recorder	0.00	6625	Outside	3428.00	
Recorder	0.00	8679	Inside	3428.00	
Perforations	18.00			3446.00	
Bullnose	4.00			3450.00	23.00      Bottom Packers & Anchor
<b>Total Tool Length:</b>	<b>43.00</b>				



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

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

**16-11s-18w Ellis,KS**  
**Madden South #1**  
Job Ticket: 55284      **DST#: 3**  
Test Start: 2014.05.31 @ 10:58:00

## Mud and Cushion Information

Mud Type: Gel Chem	Cushion Type:	Oil API: 22.8 deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity: 40000 ppm
Viscosity: 62.00 sec/qt	Cushion Volume: bbl	
Water Loss: 7.20 in <sup>3</sup>	Gas Cushion Type:	
Resistivity: 0.00 ohm.m	Gas Cushion Pressure: psig	
Salinity: 2600.00 ppm		
Filter Cake: 1.00 inches		

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
63.00	S,M,C,O,W, 5%M 40%O 55%W	0.884
335.00	CLEAN OIL 100%	4.699
0.00	63' G.I.P.	0.000

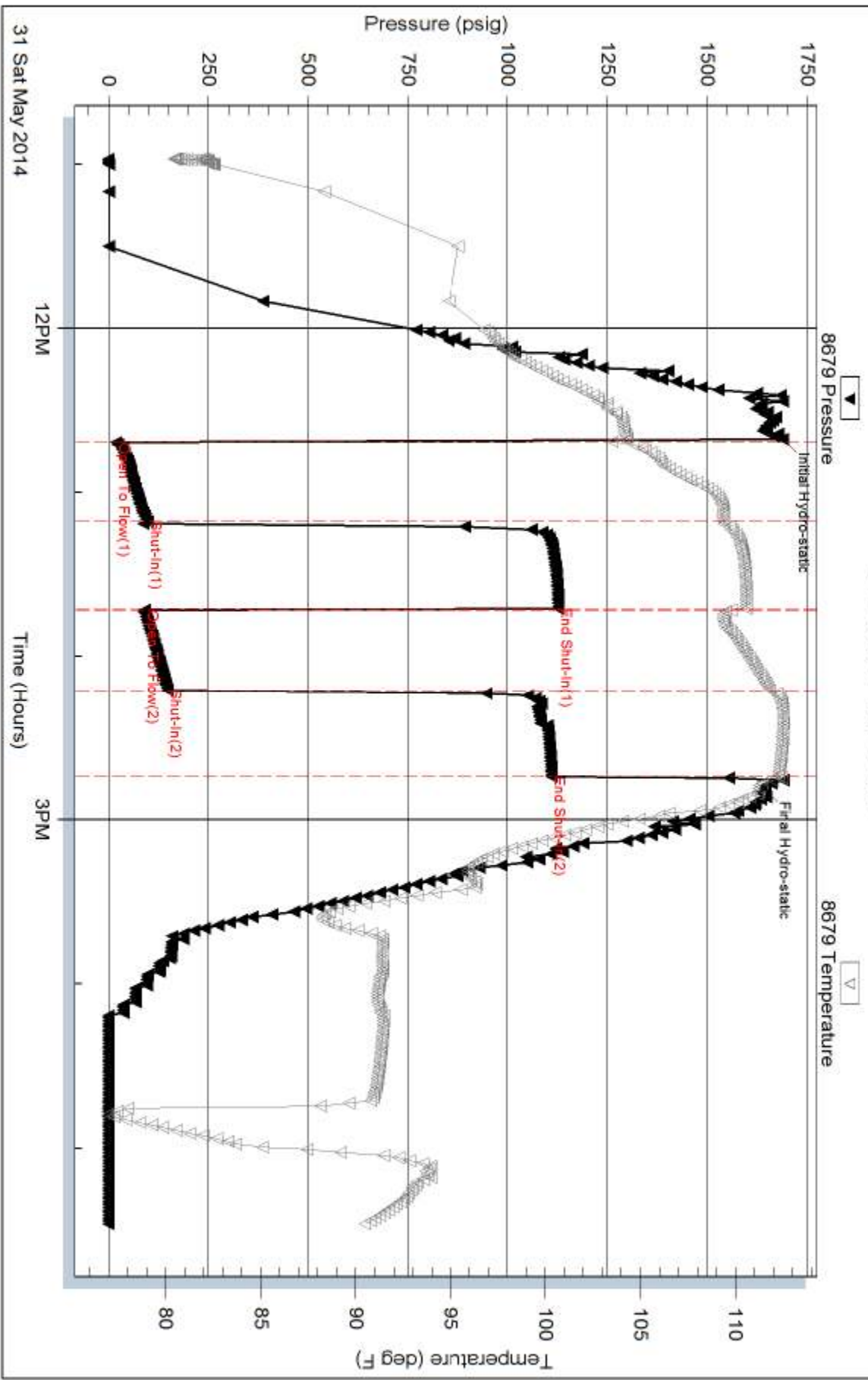
Total Length: 398.00 ft      Total Volume: 5.583 bbl

Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:

Laboratory Name:      Laboratory Location:

Recovery Comments: "R.W. = .13 OHMS @ 94.2 DEG."

### Pressure vs. Time

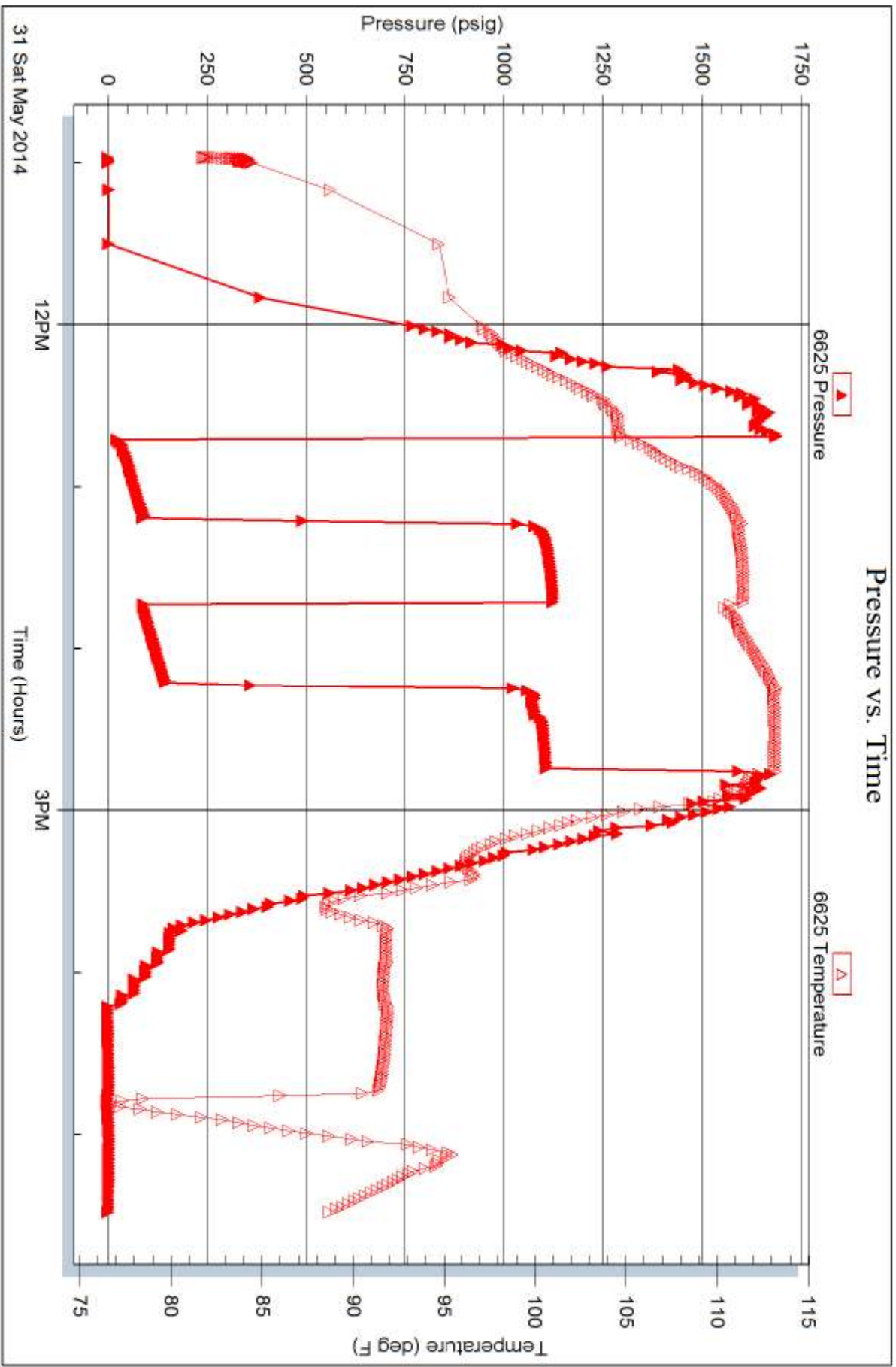


Serial #: 6625

Outside TDI Inc

Madden South #1

DST Test Number: 3



Trilobite Testing, Inc

Ref. No: 55284

Printed: 2014.06.02 @ 13:40:37





# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 55282

Well Name & No. Madden South #1 Test No. 1 Date 5/29/14  
 Company TDI INC. Elevation 1903 KB 1893 GL  
 Address 1310 Bison R.D. Hays, KS. 67601  
 Co. Rep / Geo. Herb Deines Rig Southwind #1  
 Location: Sec. 16 Twp. 11 - S. Rge. 18 - W. Co. Ellis State KS.

Interval Tested 3090 - 3210 Zone Tested Toronto - "D"  
 Anchor Length 120' Drill Pipe Run 3088 Mud Wt. 8.8  
 Top Packer Depth 3085 Drill Collars Run --- Vis 48  
 Bottom Packer Depth 3090 Wt. Pipe Run --- WL 2.2  
 Total Depth 3210 Chlorides 1900 ppm System LCM 3

Blow Description I.F. - 1/2" INT. Blow Built to 1 3/4" in 45 min.  
E.S.T. - 45 - No B.B.  
E.F. - 60 - 3/4" INT. Blow Built to (B.O.B. in 45 min.)  
E.S.T. - 60 - No B.B.

Rec	Feet of	%gas	%oil	%water	%mud
Rec <u>0</u>	Feet of <u>169' G.I.P. (Faint)</u>	<u>100%</u>			
Rec <u>146'</u>	Feet of <u>[REDACTED]</u>	<u>20%</u>	<u>30%</u>		<u>50%</u>
Rec	Feet of <u>G.O.C.M.</u>				

Rec Total 146 BHT \_\_\_\_\_ Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm

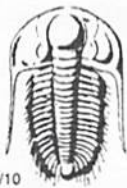
(A) Initial Hydrostatic 1501  Test 1150 T-On Location 21:50:00  
 (B) First Initial Flow 63  Jars \_\_\_\_\_ T-Started 22:25:00  
 (C) First Final Flow 73  Safety Joint \_\_\_\_\_ T-Open 01:20:00  
 (D) Initial Shut-In 771  Circ Sub \_\_\_\_\_ T-Pulled 04:50:00  
 (E) Second Initial Flow 73  Hourly Standby \_\_\_\_\_ T-Out 06:45:00  
 (F) Second Final Flow 88  Mileage 32 R.T. 49.60 Comments \_\_\_\_\_  
 (G) Final Shut-In 790  Sampler \_\_\_\_\_ "Thank you"  
 (H) Final Hydrostatic 1,489  Straddle \_\_\_\_\_  Ruined Shale Packer \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  Ruined Packer \_\_\_\_\_

Initial Open 45  Extra Packer \_\_\_\_\_  Extra Copies \_\_\_\_\_  
 Initial Shut-In 45  Extra Recorder \_\_\_\_\_ Sub Total 0  
 Final Flow 60  Day Standby \_\_\_\_\_ Total 1199.60  
 Final Shut-In 60  Accessibility \_\_\_\_\_ MP/DST Disc't \_\_\_\_\_  
 Sub Total 1199.60

Approved By \_\_\_\_\_ Our Representative Bob Stone

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. **55283**

Well Name & No. Madden South #1 Test No. 2 Date 5/30/14  
 Company T.D.T. INC. Elevation 1903 KB 1893 GL  
 Address 1310 Bison R.D. Hays, KS. 67601  
 Co. Rep / Geo. Herb Deines Rig Southwind #1  
 Location: Sec. 16 Twp. 11-S Rge. 18-W Co. Ellis State KS.

Interval Tested 3284-3320 Zone Tested "I-J"  
 Anchor Length 36 Drill Pipe Run 3276 Mud Wt. 9.0  
 Top Packer Depth 3279 Drill Collars Run --- Vis 50  
 Bottom Packer Depth 3284 Wt. Pipe Run --- WL 6.8  
 Total Depth 3320 Chlorides 2,600 ppm System LCM 2

Blow Description IF-30-3/4" INT. Blow Built to 3" then Died to (3/4" in 30 min.)  
LSI-45-No B.B.  
FF-30-No Blow Flushed tool @ 16 min. No Blow  
F.S.I.-45-No B.B.

Rec	Feet of	%gas	%oil	%water	%mud
Rec <u>45'</u>	Feet of <u>Mud</u>				<u>100</u> %mud
Rec _____	Feet of <u>"Show of Free oil in"</u>				
Rec _____	Feet of <u>test tool</u>				
Rec _____	Feet of _____				

Rec Total 45 BHT \_\_\_\_\_ Gravity --- API RW --- @ \_\_\_\_\_ °F Chlorides --- ppm

(A) Initial Hydrostatic <u>1560.</u>	<input checked="" type="checkbox"/> Test <u>1150</u>	T-On Location <u>17'00.00</u>
(B) First Initial Flow <u>30</u>	<input type="checkbox"/> Jars _____	T-Started <u>17'20.00</u>
(C) First Final Flow <u>32</u>	<input type="checkbox"/> Safety Joint _____	T-Open <u>19'46.00</u>
(D) Initial Shut-In <u>812</u>	<input type="checkbox"/> Circ Sub _____	T-Pulled <u>21'16.00</u>
(E) Second Initial Flow <u>33</u>	<input type="checkbox"/> Hourly Standby _____	T-Out <u>23'50.00</u>
(F) Second Final Flow <u>35</u>	<input checked="" type="checkbox"/> Mileage <u>32/R.T</u> 49.60	Comments <u>Flu Sheel Tool</u>
(G) Final Shut-In <u>792</u>	<input type="checkbox"/> Sampler _____	<u>"Thank you"</u>
(H) Final Hydrostatic <u>1550</u>	<input type="checkbox"/> Straddle _____	<input type="checkbox"/> Ruined Shale Packer _____

Initial Open 30  
 Initial Shut-In 45  
 Final Flow 30 45  
 Final Shut-In \_\_\_\_\_

Shale Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  
 Extra Recorder \_\_\_\_\_  
 Day Standby \_\_\_\_\_  
 Accessibility \_\_\_\_\_

Sub Total 1199.60

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

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

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. 55284

Well Name & No. Madden South #1 Test No. 3 Date 5/31/84  
 Company T.O.I. INC. Elevation 1903 KB 1893 GL  
 Address 1310 Bison Rd. Hays, KS. 67601  
 Co. Rep / Geo. Herb Deines Rig Southwind Rig #1  
 Location: Sec. 16 Twp. 11-S Rge. 18-W Co. Ellis State KS.

Interval Tested 3427-3450 Zone Tested Arbuckle  
 Anchor Length 23 Drill Pipe Run 3436 Mud Wt. 9.1  
 Top Packer Depth 3422 Drill Collars Run — Vis 62  
 Bottom Packer Depth 3427 Wt. Pipe Run — WL 72  
 Total Depth 3450 Chlorides 2,600 ppm System LCM 1

Blow Description I.F. - 30 - 1/2" INT. Blow Built to (B.O.B. in 12 min.)  
I.S.I. - 30 - No B.B.  
E.C. - 30 - W.S.B. Started @ 1 min Built to (B.O.B. in 16 min.)  
E.S.I. - 30 - No B.B.

Rec	Feet of	%gas	%oil	%water	%mud
<u>0</u>	<u>63 GIP</u>	<u>100</u>			
<u>335</u>	<u>C/O</u>		<u>100</u>		
<u>63</u>	<u>S, M, C, O, W</u>	<u>40</u>	<u>55</u>	<u>5</u>	

Rec Total 398 BHT 111 Gravity 22.8 API RW 13 @ 94.2° F Chlorides 40,000 ppm  
 Test 1150 T-On Location 10:40:00  
 Jars T-Started 10:58:00  
 Safety Joint T-Open 12:43:00  
 Circ Sub T-Pulled 14:43:00  
 Hourly Standby T-Out 17:50:00  
 Mileage 32/R.T. 49.60 Comments  
"Thank-you"

Initial Open 30  
 Initial Shut-In 30  
 Final Flow 30  
 Final Shut-In 30  
 Sub Total 0  
 Total 1199.60  
 MP/DST Disc't \_\_\_\_\_  
 Sub Total 1199.60

Approved By \_\_\_\_\_ Our Representative Bol Hamed

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.



**OPERATOR**

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

Contact Geologist: TOM DENNING  
 Contact Phone Nbr: 785-628-2593  
 Well Name: MADDEN SOUTH # 1  
 Location: SW NE SW SE Sec.16-11s-18w  
 API: 15-051-26,688-00-00  
 Pool:  
 State: KANSAS

Field: BEMIS-SHUTTS  
 Country: USA



Scale 1:240 Imperial

Well Name: MADDEN SOUTH # 1  
 Surface Location: SW NE SW SE Sec.16-11s-18w  
 Bottom Location:  
 API: 15-051-26,688-00-00  
 License Number: 4787  
 Spud Date: 5/23/2014 Time: 8:28 PM  
 Region: ELLIS COUNTY Time: 11:05 PM  
 Drilling Completed: 5/31/2014  
 Surface Coordinates: 825' FSL & 1680' FEL  
 Bottom Hole Coordinates:  
 Ground Elevation: 1893.00ft  
 K.B. Elevation: 1903.00ft  
 Logged Interval: 2700.00ft To: 3550.00ft  
 Total Depth: 3550.00ft  
 Formation: LANSING-KANSAS CITY  
 Drilling Fluid Type: CHEMICAL/FRESH WATER GEL

**SURFACE CO-ORDINATES**

Well Type: Vertical  
 Longitude:  
 Latitude:  
 N/S Co-ord: 825' FSL  
 E/W Co-ord: 1680' FEL

**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  
 Spud Date: 5/23/2014 Time: 8:28 PM  
 TD Date: 5/31/2014 Time: 11:05 PM

**ELEVATIONS**

K.B. Elevation: 1903.00ft  
 K.B. to Ground: 10.00ft

Ground Elevation: 1893.00ft

**NOTES**

RECOMMENDATION TO RUN PRODUCTION CASING BASED ON FAVORABLE STRUCTURE AND POSITIVE RESULTS OF DSTS.

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

DRILL STEM TESTING BY TRILOBITE TESTING INC: THREE (3) CONVENTIONAL TESTS

**Image Header 01**

**MADDEN SOUTH # 1**  
**SW NE SW SE**  
**SEC.16-11S-18W**  
**1893'GL 1903'KB**

**MADDEN # 1**  
**SE SW SE**  
**SEC.16-11-18W**  
**KB 1908'**

**WASINGER B-6**  
**NW NW NE**  
**SEC.21-11-18W**  
**KB 1917'**


<u>FORMATION</u>	<u>LOG TOPS</u>	<u>LOG TOPS</u>	<u>LOG TOPS</u>
Anhydrite	1184 +719	+ 714	+717
B-Anhydrite	1217 +686	+ 685	+681
Topeka	2870- 967	- 969	- 974
Heebner Sh.	3094-1191	-1193	-1199
Toronto	3112-1209		-1220
LKC	3134-1231	-1234	-1242
BKC	3368-1465	-1462	-1468
Simpson Sh.	3421-1518		-1526
Simpson Dol.	3428-1525	-1522	-1532
Arbuckle	3445-1542	-1543	-1550
RTD	3550-1647	-1551	-1583

**SUMMARY OF DAILY ACTIVITY**

5-23-14 RU, Spud 2:30 PM  
 5-24-14 1192', set 8 5/8" surface casing to 1192' w/ 375 sxs SMD, slope 1 degree, plug down 1:00 PM  
 5-25-14 1192', down for holiday  
 5-26-14 1192', down for holiday  
 5-27-14 1192', drill plug  
 5-28-14 2310', drilling, displaced 2789'-2816'  
 5-29-14 3010', CFS 3120', short trip, CFS 3210' DST # 1 3090'-3210'  
 5-30-14 3210' finish DST # 1, TIWB, CFS 3320' DST # 2 3284'-3320'

5-30-14 3210', finish DST # 1, TIWB, CFS 3520 DST # 2 3284'-3520'  
 5-31-14 3410', drilling, CFS 3450', DST # 3 3427'-3450', TIWB, RTD  
 3550'@11:05 PM, slope 1 3/4 degree  
 6-01-14 3650', TOWB, logs, TIWB, LDDP, run 5 1/2" casing & cement

Image Header 02

	<b>DRILL STEM TEST REPORT</b>	
	T.D.I. INC. 1310 BISON RD. HAYS KS. 67601 ATTN: HERB DEINES	<b>SEC. 16 - 11 s. - 18 w./ELLIS</b>  <b>Madden South # 1</b> Job Ticket: 55282 <b>DST#: 1</b> Test Start: 2014.05.29 @ 22:25:00

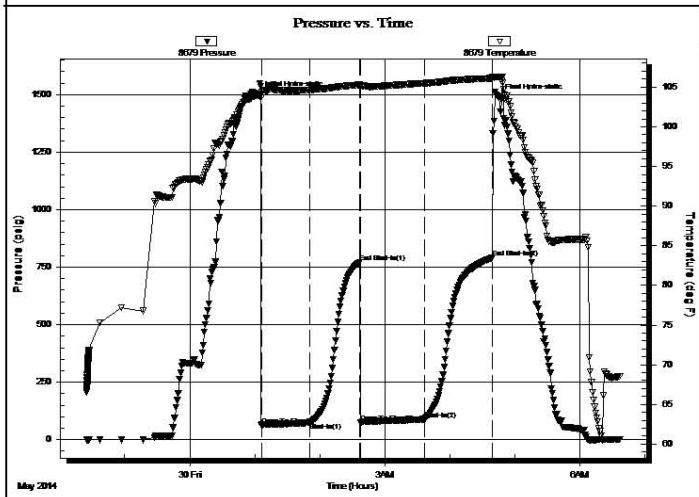
**GENERAL INFORMATION:**

Formation: <b>TORONTO - "D"</b>	Test Type: Conventional Bottom Hole (Initial)
Deviated: No Whipstock: ft (KB)	Tester: Bob Hamel
Time Tool Opened: 01:06:00	Unit No: 67
Time Test Ended: 06:36:30	Reference Elevations: 1903.00 ft (KB)
Interval: 3090.00 ft (KB) To 3210.00 ft (KB) (TVD)	1893.00 ft (CF)
Total Depth: 3210.00 ft (KB) (TVD)	KB to GR/CF: 10.00 ft
Hole Diameter: 7.88 inches Hole Condition: Fair	

**Serial #: 8679      Inside**

Press@RunDepth: 88.26 psig @ 3188.00 ft (KB)	Capacity: 8000.00 psig
Start Date: 2014.05.29      End Date: 2014.05.30	Last Calib.: 2014.05.30
Start Time: 22:25:01      End Time: 06:36:30	Time On Btm: 2014.05.30 @ 01:03:30
	Time Off Btm: 2014.05.30 @ 04:45:00

**TEST COMMENT:** I.F. - 45 - 1/2" INT. BLOW BUILT TO (7 1/4" IN 45 MIN.)  
 I.S.I. - 45 - NO B.B.  
 F.F. - 60 - 3/4" INT. BLOW BUILT TO (B.O.B IN 45 MIN.)  
 F.S.I. - 60 - NO B.B.




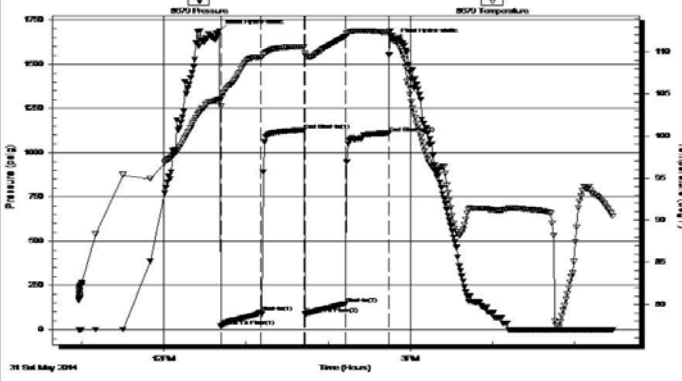
PRESSURE SUMMARY			
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1500.60	103.92	Initial Hydro-static
3	62.92	103.71	Open To Flow (1)
48	73.35	104.64	Shut-In(1)
93	770.76	105.27	End Shut-In(1)
94	73.03	105.13	Open To Flow (2)
153	88.26	105.48	Shut-In(2)
216	790.39	106.10	End Shut-In(2)
222	1488.56	106.28	Final Hydro-static

Recovery		
Length (ft)	Description	Volume (bbl)

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



### Image Header 04

	<h2 style="margin: 0;">DRILL STEM TEST REPORT</h2>																																						
<p>T.D.I. INC. 1310 BISON RD. HAYS KS. 67601 ATTN: HERB DENES</p>	<p><b>SEC. 16 - 11 s. - 18 w./ELLIS</b></p> <p><b>Madden South # 1</b></p> <p>Job Ticket: 55284      <b>DST#: 3</b></p> <p>Test Start: 2014.05.31 @ 10:58:00</p>																																						
<p><b>GENERAL INFORMATION:</b></p>																																							
<p>Formation: <b>ARBUCKLE</b></p> <p>Deviated: No Whipstock      ft (KB)</p> <p>Time Tool Opened: 12:41:30</p> <p>Time Test Ended: 17:28:00</p>		<p>Test Type: Conventional Bottom Hole (Reset)</p> <p>Tester: Bob Hamel</p> <p>Unit No: 67</p>																																					
<p><b>Interval: 3427.00 ft (KB) To 3450.00 ft (KB) (TVD)</b></p> <p>Total Depth: 3450.00 ft (KB) (TVD)</p> <p>Hole Diameter: 7.88 inches Hole Condition: Fair</p>		<p>Reference Elevations: 1903.00 ft (KB)</p> <p>1893.00 ft (CF)</p> <p>KB to GR/CF: 10.00 ft</p>																																					
<p><b>Serial #: 8679      Inside</b></p>																																							
<p>Press@RunDepth: 147.79 psig @ 3428.00 ft (KB)</p> <p>Start Date: 2014.05.31      End Date: 2014.05.31</p> <p>Start Time: 10:58:01      End Time: 17:28:00</p>		<p>Capacity: 8000.00 psig</p> <p>Last Calib.: 2014.05.31</p> <p>Time On Btm: 2014.05.31 @ 12:40:30</p> <p>Time Off Btm: 2014.05.31 @ 14:48:30</p>																																					
<p><b>TEST COMMENT:</b> I.F. - 30 - 1/2" INT. BLOW BUILT TO (B.O.B. IN 12 MIN.)                  I.S.I - 30 - NO B.B.                  F.F. - 30 - W.S.B. STARTED @ 1 MIN. BUILT TO (B.O.B. IN 16 MIN.)                  F.S.I. - 30 - NO B.B.</p>																																							
<p><b>Pressure vs. Time</b></p>		<p><b>PRESSURE SUMMARY</b></p>																																					
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<p><small>* Recovery from multiple tests</small></p>																																							







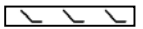






Trilobite Testing, Inc

Ref. No: 55284

Printed: 2014.05.31 @ 20:19:19

### Image Header 05

#### ROCK TYPES

 Clystgy	 Dolsec	 Lmst fw>	 shale, gry	 Ss
 Clystool	 Dol Lime	 Lscongl	 Carbon Sh	
 Dolprim	 Lmst fw<	 shale, grn	 shale, red	

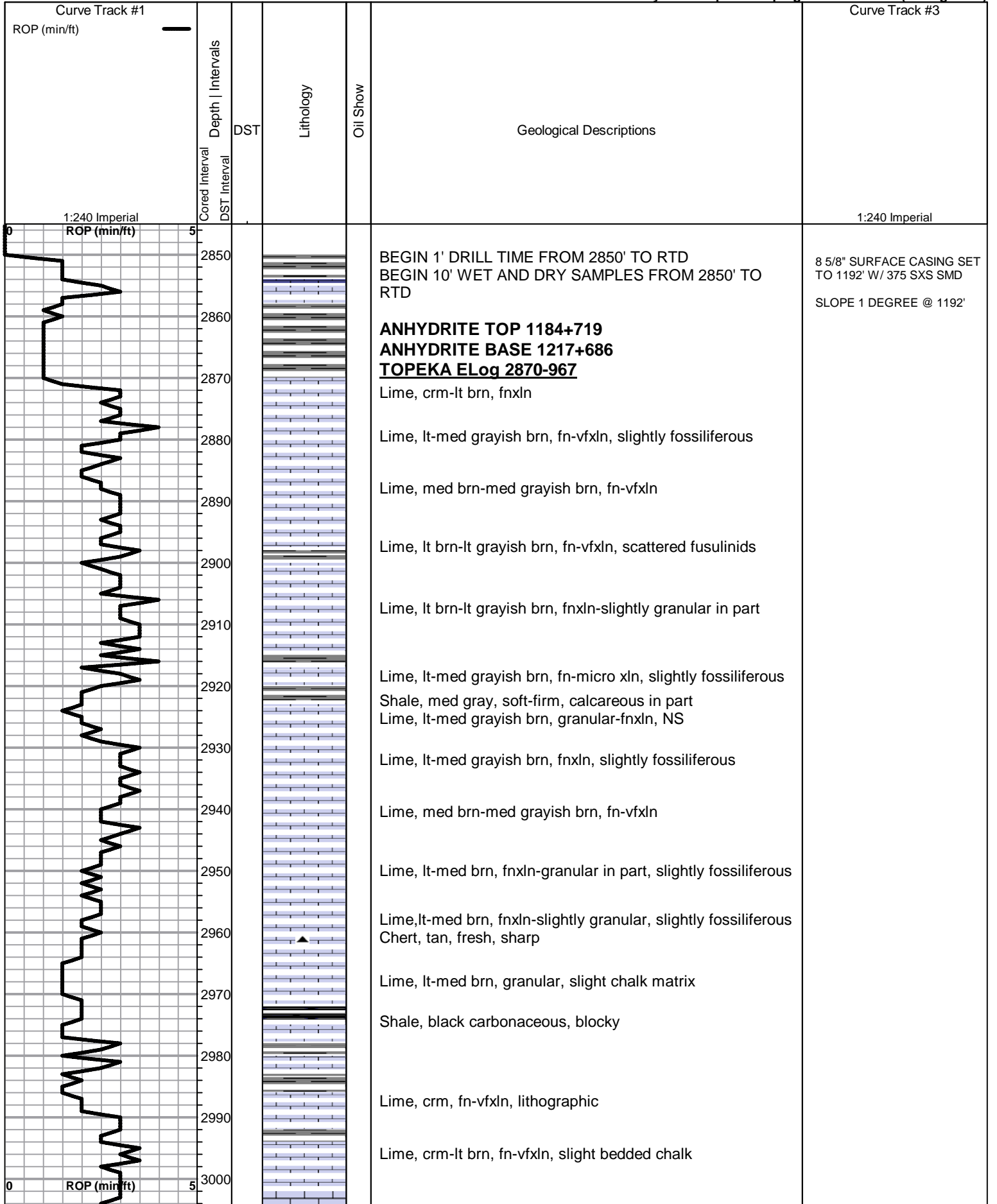
#### ACCESSORIES

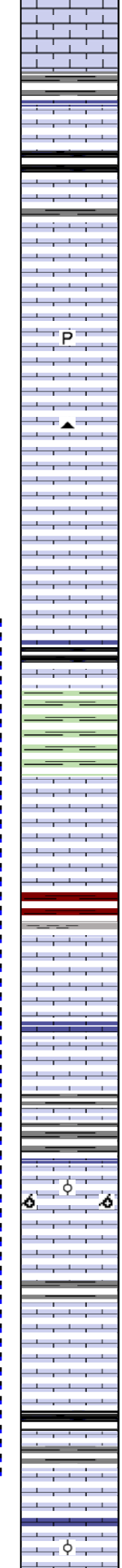
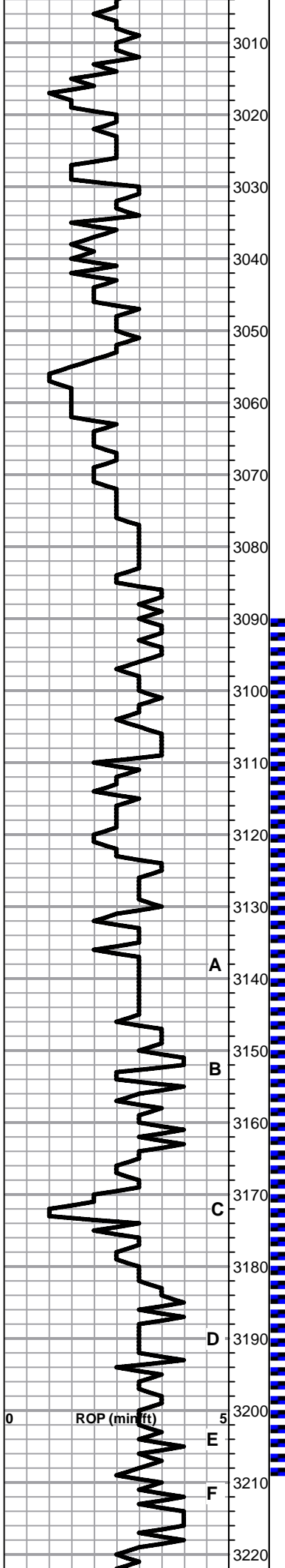
MINERAL      FOSSIL



- MINERAL**  
 ▲ Chert, dark  
 P Pyrite  
 • Sandy  
 △ Chert White

- FOSSIL**  
 ○ Oolite  
 ⊕ Oomoldic





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

Shale, lt gray, soft blocky, calcareous and fossiliferous in part

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

Shale, black carbonaceous, blocky

Lime, med brn, fn-micro xln, slightly fossiliferous

Lime, crm-tan, fnxln-granular, bedded chalk, NS

Lime, crm-tan, fnxln-granular, fnxln pyrite inclusions, slight bedded chalk

Lime, lt-med brn, fnxln-granular, increasing bedded chalk  
Chert, lt gray, fresh, sharp

Lime, lt-med brn, fnxln

Lime, lt-med brn, fnxln, slightly fossiliferous

Lime, lt-med brn, fnxln-granular, slight chalk in chalk matrix

**HEEBNER SHALE ELog 3094-1191**

Shale, black carbonaceous, fissile, blocky

Lime, med brn, fn-vfxln

Shale, lime green, soft forming soft mud

**TORONTO ELog 3112-1209**

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

Lime, crm-lt brn, fn-vfxln, few chips with lt spotty stain, NFO, No Odor, appears poorly developed

Shale, reddish brn, soft blocky

**LKC ELog 3134-1231**

Lime, crm, fnxln, fn inter xln with slight vugs, gilsonitic, NFO, No Odor, appears poorly developed

Lime, lt-med brn, fn-vfxln

Lime, lt-med brn-med grayish brn, fn-micro xln

Shale, lt-med gray, soft blocky

Lime, crm-tan, fnxln-oolitic/oomoldic with fossil fragments, scattered lt stain, lt odor, NFO

Lime, tan-lt brn, fnxln

Lime, crm, fn-vfxln, slight bedded chalk, few chips oolitic with interoolitic porosity, lt spotty stain, NFO, No Odor

Lime, crm, fn-vfxln

Shale, black carbonaceous, blocky

Lime, crm-tan, fn-vfxln

Lime, crm-tan, fossiliferous, spotty staining, NFO, No Odor

Lime, tan, fnxln, thin oolitic zone w fossil fragments, scattered lt staining, NFO, No Odor

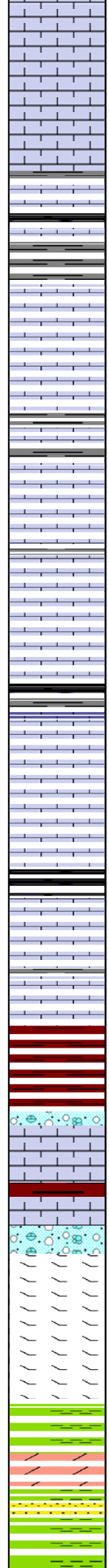
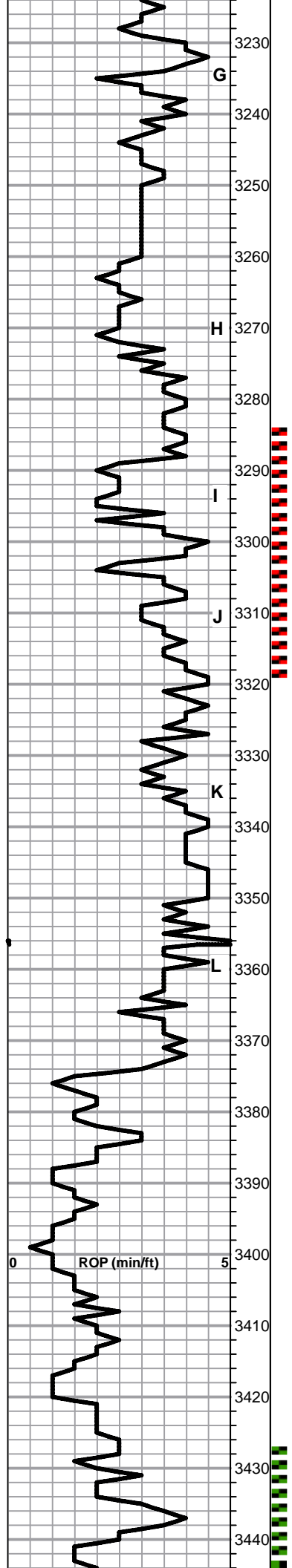
CFS 3120', SHORT TRIP

DST # 1 3090' TO 3210'  
SEE HEADER FOR TEST SUMMARY

CFS 3210'

ROP (min/ft)

A  
B  
C  
D  
E  
F



Lime, crm-tan, fnxln, bedded chalk

Lime, crm-tan, fn-vfxln, bedded chalk

Lime, tan-lt brn-med grayish brn, fnxln, slightly fossiliferous

Shale, black carbonaceous, blocky

Shale, lt gray forming soft mud

Lime, crm-tan, fn-vfxln, slight bedded chalk, no visible porosity

Lime, tan-lt gray, fn-vfxln

Lime, crm-tan, fnxln, fine inter xln porosity with scattered vugs, spotty staining, very lt odor, NFO

Lime, tan-lt gray, fnxln with oolitic zone with fine granular fill with scattered to saturated staining, lt odor, NFO

Lime, tan-lt brn, fnxln, lt chalky wash

Shale, lt-med gray-black carbonaceous, soft blocky

Lime, tan-lt brn, fnxln, thin oolitic zone with inter oolitic porosity, lt scattered staining, very faint odor, NFO

Lime, tan-lt brn, fn-vfxln

Shale, gray-black carbonaceous, soft blocky

Lime, tan-lt brn, fn-vfxln

Lime, tan-lt brn, fn-vfxln

**BKC ELog 3368-1465**

Shale, reddish brn, soft blocky with chert nodules in part

Lime, brn-lt gray, fnxln, clastic lime mix in part, specks of glauconite

Shale, reddish brn, soft-firm with vari color cherts

Clastic mix of lime, chert and dolomite

Lime, crm-tan, fn-vfxln  
Chert, orange, fresh, sharp

**SIMPSON SHALE ELog 3421-1518**  
Shale, blue green, soft sticky -firm

**SIMPSON DOLOMITE ELog 3428-1525**  
Dolomite, lt brn, fnxln, NS  
Few sand clusters, quartz, well sorted, SFO on crush

Shale, blue green, firm, fnxln pyrite inclusions

**ARBUCKLE ELog 3445-1542**

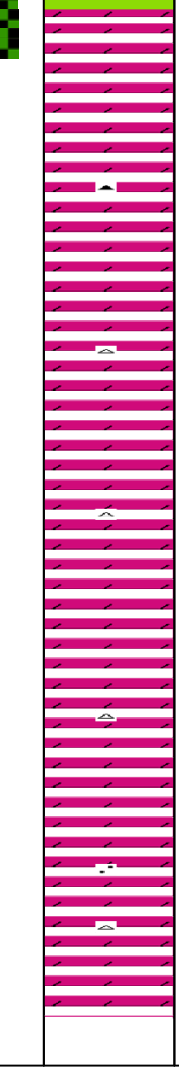
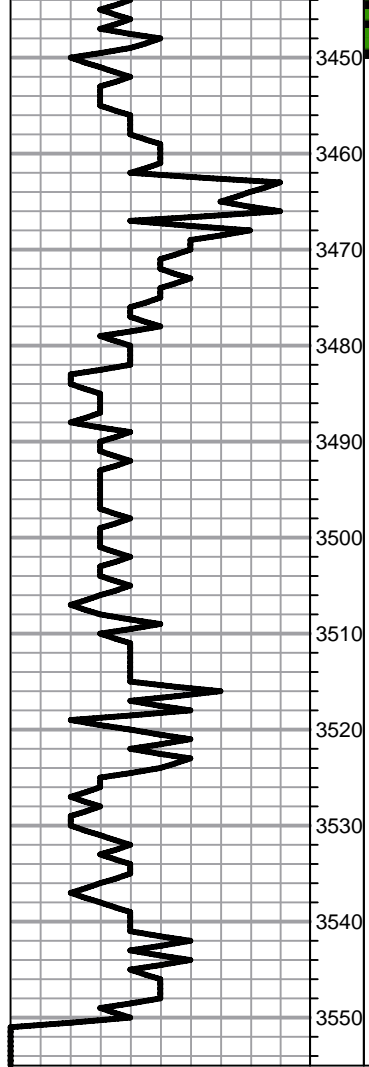
DST # 2 3284' TO 3320'  
SEE HEADER FOR TEST SUMMARY

CFS 3320'

DST # 3 3427' TO 3450'  
SEE HEADER FOR TEST SUMMARY

**ARBUCKLE ELog 3445-1542**

CFS 3450'



- Dolomite, tan-lt brn, fnxln-granular, SFO, strong odor, scattered to saturated staining
- Dolomite, tan-lt brn, fnxln-granular, interxln porosity with scattered vuggy development, f-g odor, saturated staining, SFO
- Dolomite, lt-med brn, fnxln, lt odor, scattered stain, oolitic chert, fresh, sharp
- Dolomite, tan-lt brn, fnxln-granular  
Chert, white, fresh sharp
- Dolomite, tan-lt brn, fnxln with sucrosic in part
- Dolomite, tan-lt brn-scattered salmon, fn-cxln, inter xln porosity
- Dolomite, tan-lt brn, fnxln-granular
- Dolomite, crm-tan-salmon, fnxln
- Dolomite, tan-crm, fnxln-granular, scattered quartz grain inclusions

**RTD 3550-1647    LTD 3548-1645**

SET 5 1/2" 14# CASING TO 3548' W 175 SXS EA2, 20 SXS IN MOUSEHOLE, 30 SXS IN RATHOLE





