

Confidentiality Requested:

Yes  No

KANSAS CORPORATION COMMISSION  
OIL & GAS CONSERVATION DIVISION

Form ACO-1

January 2018

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

Gas  DH  EOR

OG  GSW

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 EOR  Conv. to SWD  
 Plug Back  Liner  Conv. to GSW  Conv. to Producer

Commingled Permit #: \_\_\_\_\_

Dual Completion Permit #: \_\_\_\_\_

SWD Permit #: \_\_\_\_\_

EOR Permit #: \_\_\_\_\_

GSW Permit #: \_\_\_\_\_

Spud Date or Date Reached TD Completion Date or Recompletion Date

API No.: \_\_\_\_\_

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  Drill Stem Tests Received

Geologist Report / Mud Logs Received

UIC Distribution

ALT  I  II  III Approved by: \_\_\_\_\_ Date: \_\_\_\_\_

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 Geologist Report / Mud Logs <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
--	---

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				

1. Did you perform a hydraulic fracturing treatment on this well?  Yes  No *(If No, skip questions 2 and 3)*
2. Does the volume of the total base fluid of the hydraulic fracturing treatment exceed 350,000 gallons?  Yes  No *(If No, skip question 3)*
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)*

Date of first Production/Injection or Resumed Production/Injection:	Producing Method: <input type="checkbox"/> Flowing <input type="checkbox"/> Pumping <input type="checkbox"/> Gas Lift <input type="checkbox"/> Other <i>(Explain)</i> _____				
Estimated Production Per 24 Hours	Oil Bbls.	Gas Mcf	Water Bbls.	Gas-Oil Ratio	Gravity

DISPOSITION OF GAS: <input type="checkbox"/> Vented <input type="checkbox"/> Sold <input type="checkbox"/> Used on Lease <i>(If vented, Submit ACO-18.)</i>	METHOD OF COMPLETION: <input type="checkbox"/> Open Hole <input type="checkbox"/> Perf. <input type="checkbox"/> Dually Comp. <input type="checkbox"/> Commingled <i>(Submit ACO-5)</i> <i>(Submit ACO-4)</i>	PRODUCTION INTERVAL: Top Bottom
---	---	------------------------------------

Shots Per Foot	Perforation Top	Perforation Bottom	Bridge Plug Type	Bridge Plug Set At	Acid, Fracture, Shot, Cementing Squeeze Record <i>(Amount and Kind of Material Used)</i>

TUBING RECORD:	Size:	Set At:	Packer At:	
----------------	-------	---------	------------	--

Form	ACO1 - Well Completion
Operator	TDI, Inc.
Well Name	ROBBEN FAMILY 1
Doc ID	1355647

Perforations

Shots Per Foot	Perforation Record	Material Record	Depth
4	3433'-3440'	550 gal. 15%	



## Summary of Changes

Lease Name and Number: ROBBEN FAMILY 1

API/Permit #: 15-051-26847-00-00

Doc ID: 1355647

Correction Number: 1

Approved By: Karen Ritter

Field Name	Previous Value	New Value
Additional Type And Percent Additive		1/4# flocele
Approved Date	03/09/2017	05/24/2017
Completion Or Recompletion Date	11/30/2016	4/18/2017
Date of First or Resumed Production or SWD or Enhr		4/24/2017
Method Of Completion - Perf	No	Yes
Perf_Material_1		550 gal. 15%
Perf_Record_1		3433'-3440'
Perf_Shots_1		4
Producing Method Pumping	No	Yes
Production Interval #1	TA	Arbuckle

Summary of changes for correction 1 continued

Field Name	Previous Value	New Value
Save Link	../../../../kcc/detail/operatorEditDetail.cfm?docID=1347627	../../../../kcc/detail/operatorEditDetail.cfm?docID=1355647
Temporarily Abandoned	Yes	No
Tubing Set At		3515'
Tubing Size		2.875



Confidentiality Requested:

Yes  No

KANSAS CORPORATION COMMISSION 1347627  
OIL & GAS CONSERVATION DIVISION

Form ACO-1  
August 2013

Form must be Typed  
Form must be Signed  
All blanks must be Filled

**CONFIDENTIAL** 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
-----------------------------------	-----------------	---

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: \_\_\_\_\_

**OPERATOR**

Company: TDI, INC  
 Address: 1310 BISON ROAD  
 HAYS, KANSAS 67601-9696

Contact Geologist: TOM DENNING  
 Contact Phone Nbr: 785-628-2593  
 Well Name: ROBBEN FAMILY # 1  
 Location: NW NE SW NE, SEC.3-T15S-R16W  
 API: 15-051-26,847-00-00  
 Pool: WILDCAT  
 State: KANSAS

Field: UNNAMED  
 Country: USA



Scale 1:240 Imperial

Well Name: ROBBEN FAMILY # 1  
 Surface Location: NW NE SW NE, SEC.3-T15S-R16W  
 Bottom Location:  
 API: 15-051-26,847-00-00  
 License Number: 4787  
 Spud Date: 11/22/2016 Time: 7:00 PM  
 Region: ELLIS COUNTY  
 Drilling Completed: 11/29/2016 Time: 3:05 PM  
 Surface Coordinates: 1360' FNL & 1720' FEL  
 Bottom Hole Coordinates:  
 Ground Elevation: 1893.00ft  
 K.B. Elevation: 1903.00ft  
 Logged Interval: 2800.00ft To: 3575.00ft  
 Total Depth: 3575.00ft  
 Formation: ARBUCKLE  
 Drilling Fluid Type: CHEMICAL/FRESH WATER GEL

**SURFACE CO-ORDINATES**

Well Type: Vertical  
 Longitude: -99.0836441  
 Latitude: 38.7801796  
 N/S Co-ord: 1360' FNL  
 E/W Co-ord: 1720' FEL

**LOGGED BY**

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

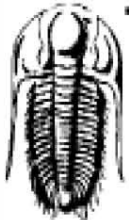
Phone Nbr: (785) 639-1337  
 Logged By: GEOLOGIST Name: HERB DEINES

**CONTRACTOR**

Contractor: SOUTHWIND DRILLING, INC.  
 Rig #: 1  
 Rig Type: MUD ROTARY  
 Spud Date: 11/22/2016 Time: 7:00 PM  
 TD Date: 11/29/2016 Time: 3:05 PM







**TRILOBITE TESTING, INC.**

**DRILL STEM TEST REPORT**

TDI Inc  
 1310 Bison Rd  
 Hays Ks 67601  
 ATTN: Tom Denning, Herb Di

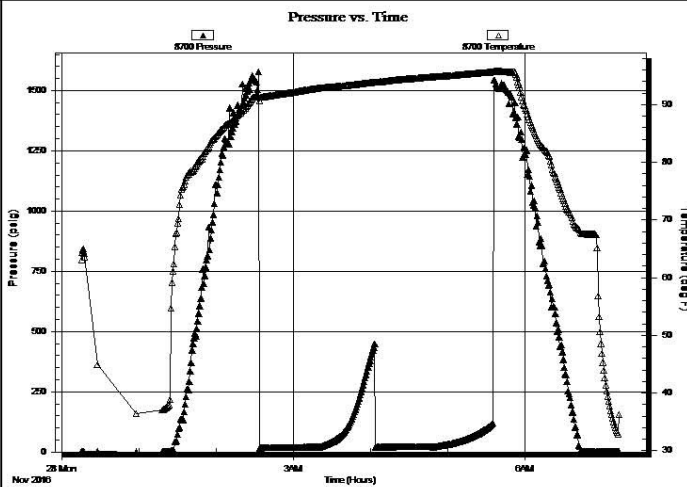
**3-15s-16w Ellis**  
**Robben Family #1**  
 Job Ticket: 63548 **DST#: 1**  
 Test Start: 2016.11.28 @ 00:15:42

**GENERAL INFORMATION:**

Formation: **LKC A-C**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 02:33:37  
 Time Test Ended: 07:13:21  
 Test Type: Conventional Bottom Hole (Initial)  
 Tester: Ray Schwager  
 Unit No: 77  
 Interval: **3146.00 ft (KB) To 3200.00 ft (KB) (TVD)**  
 Total Depth: 3200.00 ft (KB) (TVD)  
 Reference Elevations: ft (KB)  
 1893.00 ft (CF)  
 Hole Diameter: 7.85 inches Hole Condition: Fair  
 KB to GR/CF: ft

**Serial #: 8700 Outside**  
 Press@RunDepth: psig @ 3150.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2016.11.28 End Date: 2016.11.28 Last Calib.: 2016.11.28  
 Start Time: 00:15:59 End Time: 07:13:23 Time On Btm:  
 Time Off Btm:

TEST COMMENT: 45-IFP-w k bl thru-out 1/4"to 1/2"bl  
 45-ISIP-no bl  
 45-FFP-surface bl thru-out  
 45-FSIP-no bl



**PRESSURE SUMMARY**

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

**Recovery**

Length (ft)	Description	Volume (bbl)
15.00	Mud	0.21


**Gas Rates**

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


Trilobite Testing, Inc

Ref. No: 63548

Printed: 2016.11.28 @ 07:33:14

	<b>DRILL STEM TEST REPORT</b>	
	TDI Inc 1310 Bison Rd Hays Ks 67601 ATTN: Tom Denning, Herb Di	<b>3-15s-16w Ellis</b>  <b>Robben Family #1</b> Job Ticket: 63549 <b>DST#: 2</b> Test Start: 2016.11.29 @ 01:30:44

**GENERAL INFORMATION:**

Formation: **Arbuckle**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 03:38:24  
 Time Test Ended: 08:44:38

Interval: **3390.00 ft (KB) To 3452.00 ft (KB) (TVD)**  
 Total Depth: 3452.00 ft (KB) (TVD)  
 Hole Diameter: 7.85 inches Hole Condition: Fair

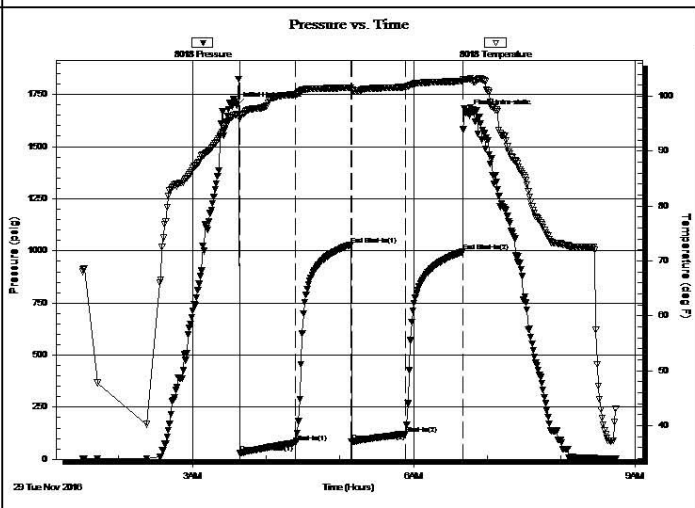
Test Type: Conventional Bottom Hole (Reset)  
 Tester: Ray Schwager  
 Unit No: 77

Reference Elevations: 1902.00 ft (KB)  
 1893.00 ft (CF)  
 KB to GR/CF: 9.00 ft

**Serial #: 8018**      **Inside**

Press@RunDepth: 122.19 psig @ 3395.00 ft (KB)      Capacity: 8000.00 psig  
 Start Date: 2016.11.29      End Date: 2016.11.29      Last Calib.: 2016.11.29  
 Start Time: 01:30:44      End Time: 08:44:38      Time On Btm: 2016.11.29 @ 03:36:24  
 Time Off Btm: 2016.11.29 @ 06:44:08

**TEST COMMENT:** 45-IFP-w k to strg in 19min  
 45-FSIP-no bl  
 45-FFP-w k to strg in 35min  
 45-FSIP-w k bl bk,

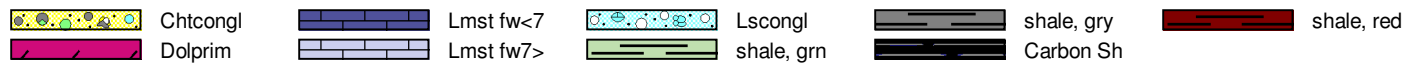


PRESSURE SUMMARY			
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1697.85	96.68	Initial Hydro-static
2	31.34	95.83	Open To Flow (1)
48	81.88	100.26	Shut-In(1)
93	1030.09	101.53	End Shut-In(1)
93	84.71	101.20	Open To Flow (2)
138	122.19	101.67	Shut-In(2)
184	995.80	102.72	End Shut-In(2)
188	1660.62	103.11	Final Hydro-static

Recovery		
Length (ft)	Description	Volume (bbl)
124.00	MGO 20%G35%M45%O	1.74
102.00	MGO 10%G20%M70%O	1.43
75.00	CO	1.05
0.00	330'GIP	0.00

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

**ROCK TYPES**



**ACCESSORIES**

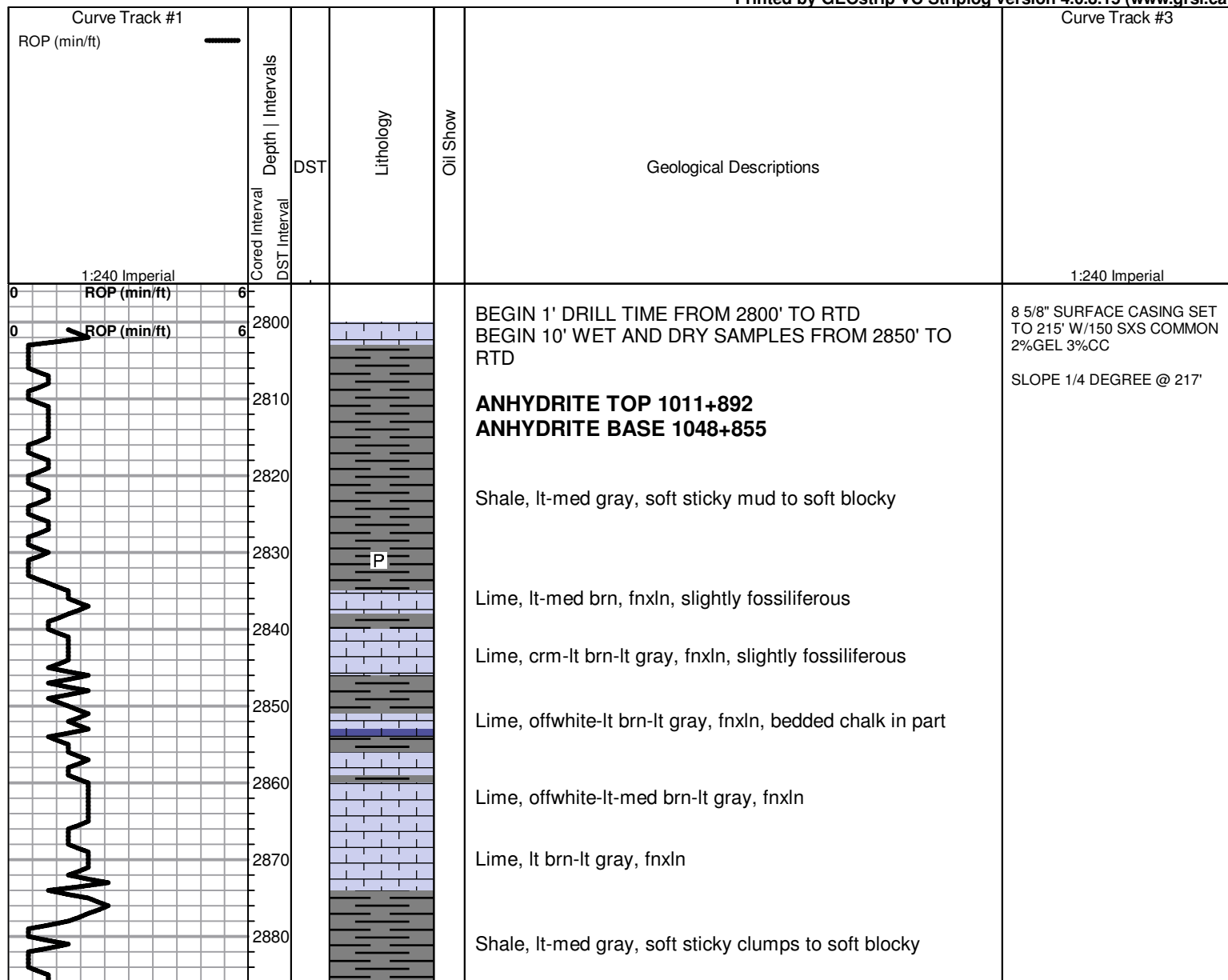
**MINERAL**

- ▲ Chert, dark
- ∩ Glauconite
- P Pyrite
- △ Chert White

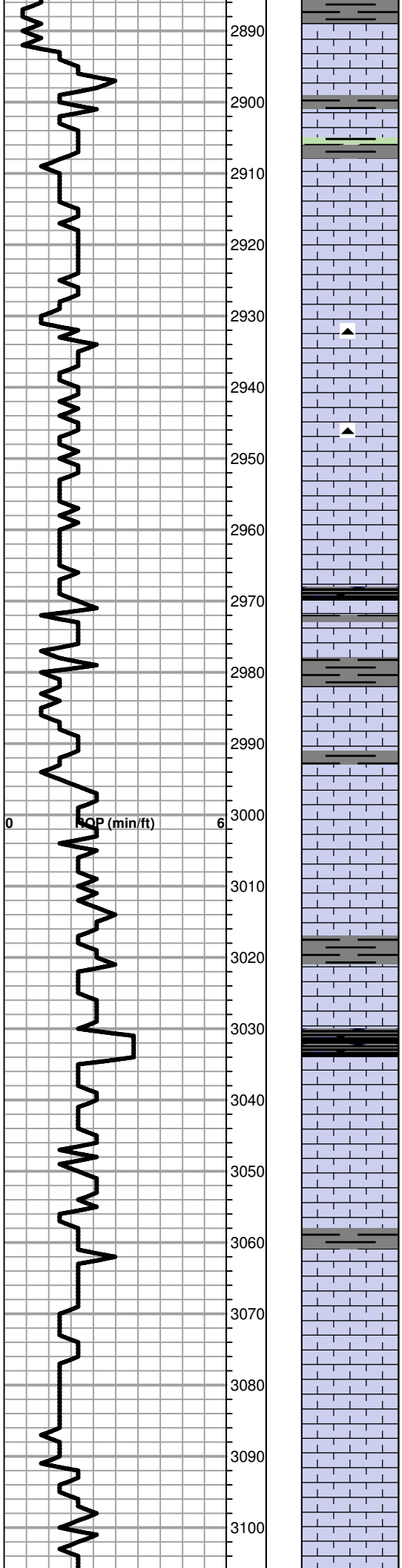
**FOSSIL**

- ⊙ Oolite
- ⊕ Oomoldic

Printed by GEOstrip VC Striplog version 4.0.8.15 (www.grsi.ca)



**TOPEKA 2889-986**



Lime, lt brn, fnxln with some micro xln

Lime, lt-med brn-lt grayish brn, fn-vfxln

Lime, lt brn-lt gray, fn-micro xln, slightly fossiliferous

Lime, lt-med brn-med grayish brn, fn-vfxln with thin cemented fusulinid beds

Lime, lt brn-lt grayish brn, fn-vfxln with some granular chalky matrix , NS

Lime, lt brn-lt-med gray, fnxln with slight granular in part Chert, tan, fresh, sharp

Lime, lt-med grayish brn, fnxln with beds of chalky matrix with bedded chalk in part

Lime, lt brn, fnxln-granular with increasing chalk content with lt white chalk wash

Lime, lt brn, fnxln-granular with chalk  
Shale, black carbonaceous, blocky

Lime, lt brn, fn-vfxln

Lime, white-crm, fn-vfxln, sublithographic

Lime, crm, fn-vfxln

Lime, lt brn-lt gray, fnxln with scattered, thin, well cemented fossil beds

Lime, tan-lt gray, fnxln with gray fossil casts

Shale, dove gray, soft mud

Lime, crm-lt brn-lt gray, fn-vxln, slightly fossiliferous

Shale, black carbonaceous, fissile, blocky

Lime, lt brn, fnxln

Lime, lt brn-lt-med gray, fnxln

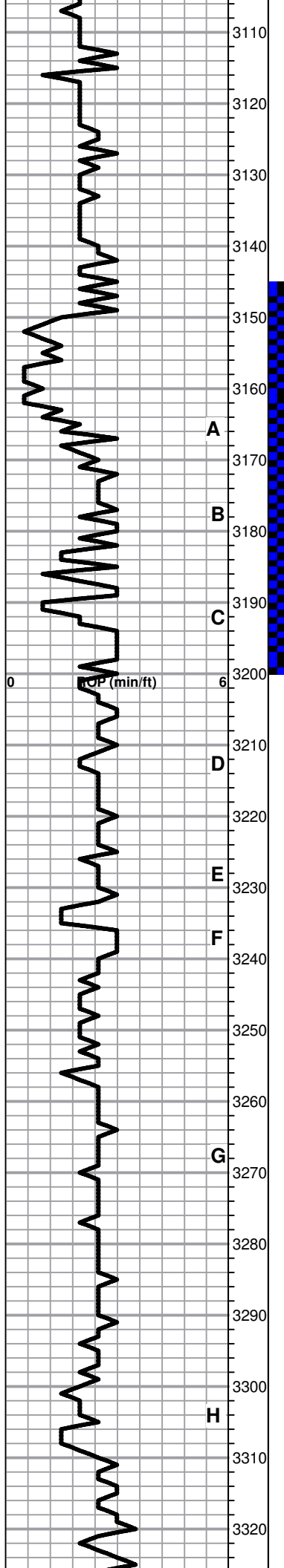
Lime, lt brn-lt grayish brn, fn-vfxln

Lime, crm-lt brn, fnxln with lt white chalk wash

Lime, lt brn, fnxln with bedded chalk

Lime, crm-tan, fnxln with soft crush, bedded chalk and chalky matrix

Lime, tan-lt brn, fnxln



**HEEBNER SHALE 3110-1207**

Shale, black carbonaceous, fissile, blocky  
Lime, lt brn, fn-vfxln

Shale, lime green, soft sticky to soft blocky

**TORONTO 3129-1226**

Lime, crm, fnxln-granular in part, 2 chips with spotty dark stain in fine pinpoint porosity, NFO, No Odor

Lime, crm-lt brn, fn-micro xln

Shale, red-lt gray, soft sticky to soft blocky

**LKC 3161-1258**

\* Lime, crm-lt brn, fn-micro xln, NFO or stain but lt gassy odor

Lime, crm-lt brn, fn-micro xln

Shale, lime green to lt gray, soft sticky to soft blocky

Lime, lt brn, fnxln with thin oomoldic zone with spotty staining with very lt odor, NFO

Lime, lt brn, fn-micro xln

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

Lime, crm, fnxln, bed chalk with lt white wash

Lime, crm-lt brn, fn-vfxln

Shale, black carbonaceous, blocky  
Lime, lt gray, fn-vfxln

Lime, white-crm, fnxln, bed chalk with sticky clumping, NS

Lime, crm-lt brn, fn-vfxln, bedded chalk, NS

Lime, crm-lt brn, fn-micro xln, 1 chip of oolitic lime with lt spotty staining, NFO, no odor

Lime, crm-lt brn, fn-micro xln

Lime, crm-lt brn, fn-micro xln

Lime, crm-lt brn-lt gray tinting in part, fn-micro xln

Lime, crm-lt brn with scattered dark brn lime chips, fn-micro xln,  
Shale, gray-black carbonaceous, blocky

Lime, crm, fn-vfxln with scattered sticky clumps of lt gray shale

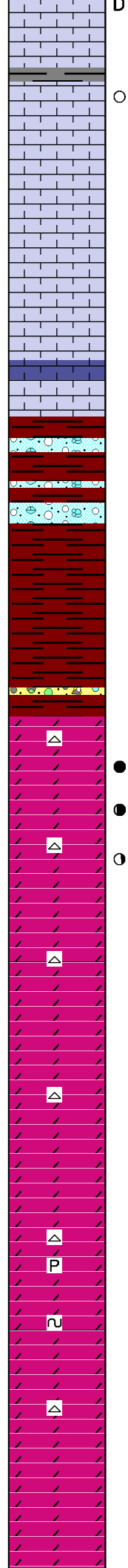
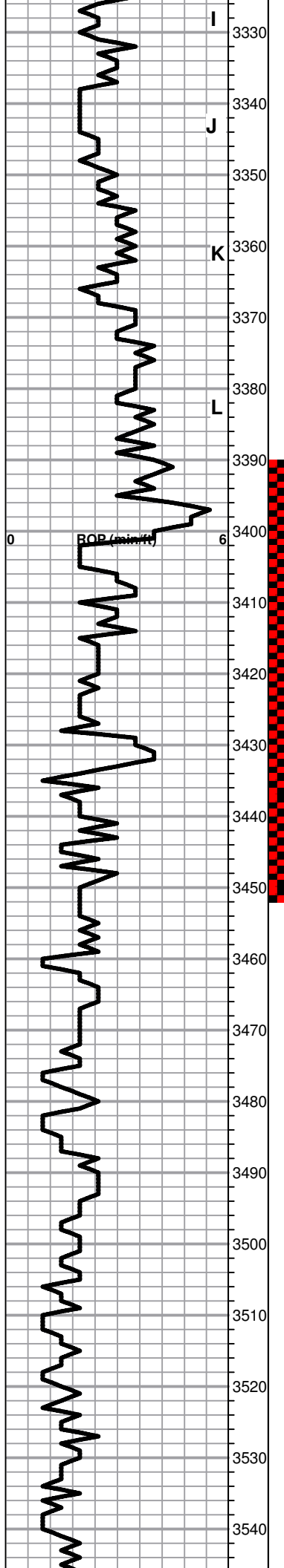
Lime, crm, fnxln with lt white chalk wash, NS

Lime, crm-lt brn-lt gray, fn-micro xln, NS

Lime, crm-lt brn, fn-micro xln, fine specks of dead oil

DST # 1 3146' TO 3200' SEE  
HEADER FOR TEST  
SUMMARY

SLOPE 3/4 DEGREE @3200'



Lime, crm-lt brn, fn-micro xln, fine spots of dead oil staining in very fine inter xln porosity, NFO, no odor

○ Lime, crm-lt brn, fn-vfxln, with few oolmoldic chips with spotty lt staining, NFO, very lt odor, white chalk wash

Lime, crm-lt brn, fn-micro xln, white chalk wash

Lime, crm-lt brn, fn-micro xln, lt chalk wash

Lime, crm-lt brn, fn-micro xln

Lime, lt-med brn, fn-micro xln

**BKC 3384-1481**

Shale, lt red wash, soft

Lime, crm-med grayish brn, fn-micro xln, NS

Lime, crm-lt brn, micro xln

Shale, red wash, soft mud

Shale, red wash, soft mud

**ARBUCKLE 3426-1523**

● Dolomite, lt brn, fnxln grading into granular fine grained dolomite, lt odor and spotty staining

● Dolomite, tan-lt brn, fnxln-granular, lt-fair odor, lt saturated staining and free floating specks of lt gassy oil

○ Dolomite, white-lt brn, fnxln-granular, med to cxln, sucrosic, fair odor with floating droplets of lt gassy oil

Dolomite, crm-tan, fnxln-granular, lt odor with spotty staining

Dolomite, crm, fnxln-granular, chalky in part

Dolomite, crm-lt brn, fnxln-granular

Dolomite, crm-lt brn, fn-micro xln, granular in part

Dolomite, ivory-crm, fnxln-granular with increasing interxln porosity with less sucrosic material, scattered pyrite clusters

△ Dolomite, crm-ivory, granular-fnxln, scattered glauconite staining in part

△ Dolomite, crm-ivory, fnxln-granular

Dolomite, ivory, cxln granular

DST # 2 3390' TO 3452' SEE  
HEADER FOR TEST  
SUMMARY







JOB LOG

SWIFT Services, Inc.

DATE 30 Nov 16 PAGE NO.

CUSTOMER **TDI** WELL NO. **1** LEASE **Robben Family** JOB TYPE **Cement long string** TICKET NO. **29835**

CHART NO.	TIME	RATE (BPM)	VOLUME (BBL) (GAL)	PUMPS		PRESSURE (PSI)		DESCRIPTION OF OPERATION AND MATERIALS
				T	C	TUBING	CASING	
								150 sk SA-2 cement w/ 1/4" floccle 200 sk SMD w/ 1/4" floccle TD= 3575' 5 1/2" x 14" casing 85 jts 3572' Centralizer #1, 3, 5, 7, 9, 11, 13, 15, 59, 74 Basket 1, 11, 59 DV tool #60 1020'
	0300							on loc TRK 110
	0655							start 5 1/2" x 14" casing in well
	0900							Drop ball - circulate - ROTATE
	1007	4 1/2	12				100	Pump 500 gal mud flush
		4 1/2	20				100	Pump 20 bbl KCL plugs
	1015	4	35				100	mix SA-2 cement 150 sk @ 15.3 ppg
								Drop 1st stage plug wash pump & line
	1034	6					200	Displace plug
		6	84				850	
	1049	6	87				1500	Land plug - Release pressure to truck
	1053		7				1500	Drop bomb - open DV - circulating Plug RH - MH 30sk - 20sk
	1112	4 1/2	92				200	mix SMD cement 150sk @ 11.2 ppg
								Drop 2nd stage plug
	1140	6					200	Displace plug (10sk mixed 30 to pipe)
		6					1000	→ cement to surface ←
	1145	6	25				1500	Land plug - close DV tool Release pressure to truck - dried up
	1155							wash truck
								Rock up
	1225							job complete Plugs Blow, hit, & piston



## DRILL STEM TEST REPORT

Prepared For: **TDI Inc**

1310 Bison Rd  
Hays KS 67601

ATTN: Tom Denning, Herb Di

### **Robben Family #1**

### **3-15s-16w Ellis,KS**

Start Date: 2016.11.28 @ 00:15:42

End Date: 2016.11.28 @ 07:13:21

Job Ticket #: 63548                      DST #: 1

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

Printed: 2016.11.29 @ 11:38:40

TDI Inc  
3-15s-16w Ellis,KS  
Robben Family #1  
DST # 1  
LKC A-C  
2016.11.28



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

TDI Inc  
1310 Bison Rd  
Hays KS 67601  
ATTN: Tom Denning, Herb Di

**3-15s-16w Ellis,KS**  
**Robben Family #1**  
Job Ticket: 63548 **DST#: 1**  
Test Start: 2016.11.28 @ 00:15:42

## GENERAL INFORMATION:

Formation: **LKC A-C**  
Deviated: No Whipstock: ft (KB)  
Time Tool Opened: 02:33:37  
Time Test Ended: 07:13:21  
Interval: **3146.00 ft (KB) To 3200.00 ft (KB) (TVD)**  
Total Depth: 3200.00 ft (KB) (TVD)  
Hole Diameter: 7.88 inches Hole Condition: Fair  
Test Type: Conventional Bottom Hole (Initial)  
Tester: Ray Schwager  
Unit No: 77  
Reference Elevations: 1902.00 ft (KB)  
1893.00 ft (CF)  
KB to GR/CF: 9.00 ft

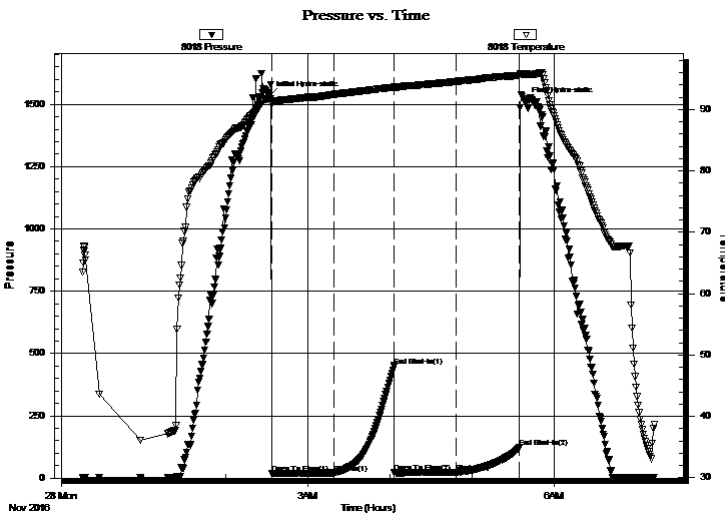
## Serial #: 8018

Inside

Press@RunDepth: 22.15 psig @ 3150.00 ft (KB) Capacity: 8000.00 psig  
Start Date: 2016.11.28 End Date: 2016.11.28 Last Calib.: 2016.11.28  
Start Time: 00:15:42 End Time: 07:13:21 Time On Btm: 2016.11.28 @ 02:31:52  
Time Off Btm: 2016.11.28 @ 05:38:51

TEST COMMENT: 45-IFP-w k bl thru-out 1/4" to 1/2" bl  
45-ISIP-no bl  
45-FFP-surface bl thru-out  
45-FSIP-no bl

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1535.34	91.72	Initial Hydro-static
2	18.37	90.76	Open To Flow (1)
47	20.82	92.45	Shut-In(1)
92	451.57	93.65	End Shut-In(1)
92	21.94	93.46	Open To Flow (2)
137	22.15	94.56	Shut-In(2)
183	123.68	95.55	End Shut-In(2)
187	1509.66	95.76	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
15.00	Mud	0.21

## 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: Tom Denning, Herb Di

**3-15s-16w Ellis,KS**  
**Robben Family #1**  
Job Ticket: 63548      **DST#: 1**  
Test Start: 2016.11.28 @ 00:15:42

**Tool Information**

Drill Pipe:	Length: 3143.00 ft	Diameter: 3.80 inches	Volume: 44.09 bbl	Tool Weight: 2200.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight to Pull Loose: 45000.00 lb
			<u>Total Volume: 44.09 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	18.00 ft			String Weight: Initial 32000.00 lb
Depth to Top Packer:	3146.00 ft			Final 32000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	54.00 ft			
Tool Length:	75.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

**Tool Description**

**Length (ft)    Serial No.    Position    Depth (ft)    Accum. Lengths**

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3126.00	
Shut In Tool	5.00			3131.00	
Hydraulic tool	5.00			3136.00	
Packer	5.00			3141.00	21.00      Bottom Of Top Packer
Packer	5.00			3146.00	
Stubb	1.00			3147.00	
Perforations	3.00			3150.00	
Recorder	0.00	8018	Inside	3150.00	
Recorder	0.00	8700	Outside	3150.00	
Blank Spacing	33.00			3183.00	
Perforations	14.00			3197.00	
Bullnose	3.00			3200.00	54.00      Bottom Packers & Anchor

**Total Tool Length:    75.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

TDI Inc **3-15s-16w Ellis,KS**  
 1310 Bison Rd **Robben Family #1**  
 Hays KS 67601 Job Ticket: 63548 **DST#: 1**  
 ATTN: Tom Denning, Herb Di Test Start: 2016.11.28 @ 00:15:42

## Mud and Cushion Information

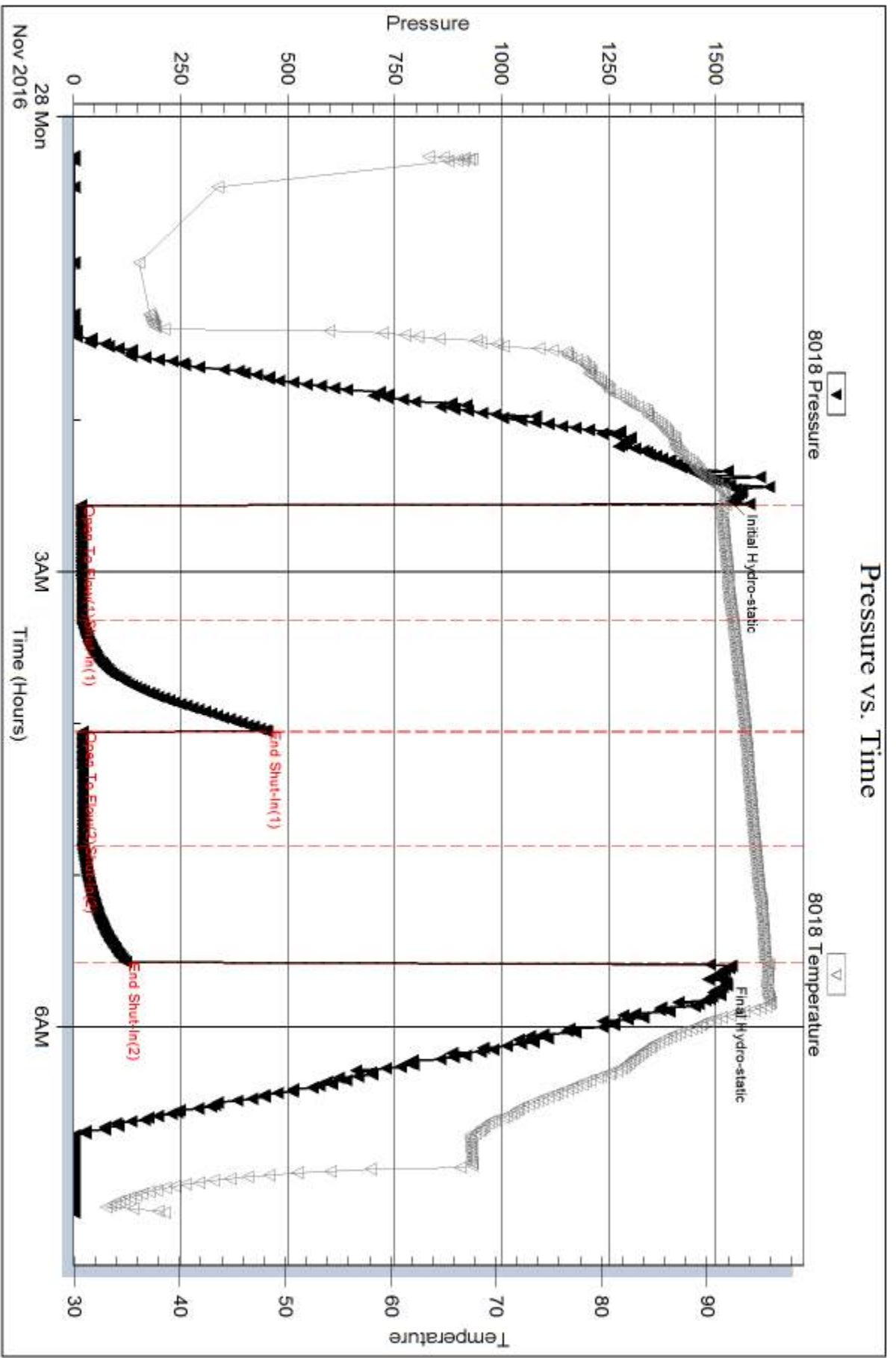
Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	ppm
Viscosity: 62.00 sec/qt	Cushion Volume: bbl		
Water Loss: 7.18 in <sup>3</sup>	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 4800.00 ppm			
Filter Cake: 1.00 inches			

## Recovery Information

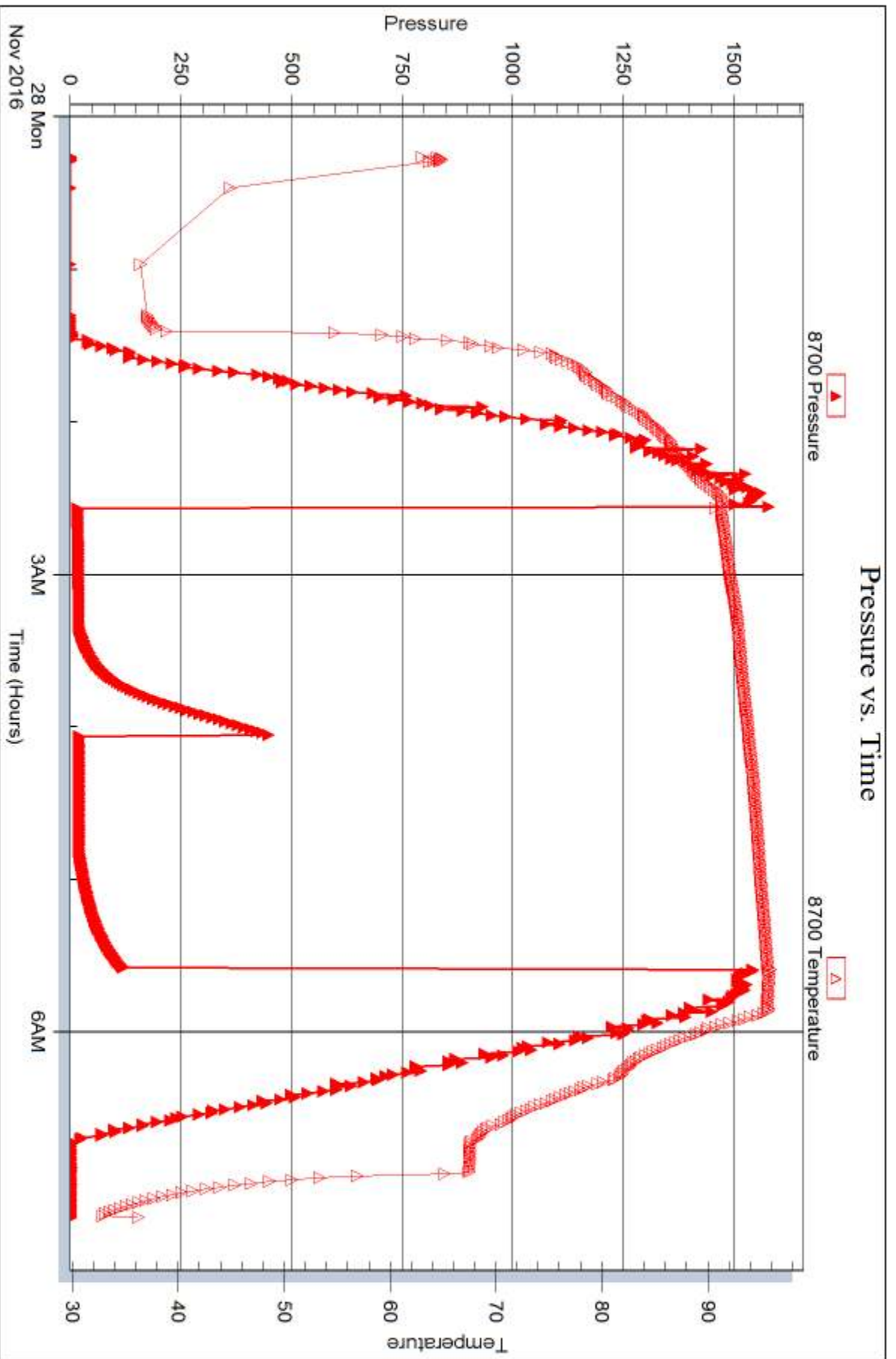
Recovery Table

Length ft	Description	Volume bbl
15.00	Mud	0.210

Total Length: 15.00 ft Total Volume: 0.210 bbl  
 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 Rd  
Hays KS 67601

ATTN: Tom Denning, Herb Di

### **Robben Family #1**

### **3-15s-16w Ellis,KS**

Start Date: 2016.11.29 @ 01:30:44

End Date: 2016.11.29 @ 08:44:38

Job Ticket #: 63549                      DST #: 2

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

Printed: 2016.11.29 @ 11:39:34

TDI Inc  
3-15s-16w Ellis,KS  
Robben Family #1  
DST # 2  
Arbuckle  
2016.11.29



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

TDI Inc  
1310 Bison Rd  
Hays KS 67601  
ATTN: Tom Denning, Herb Di

**3-15s-16w Ellis,KS**  
**Robben Family #1**  
Job Ticket: 63549 **DST#: 2**  
Test Start: 2016.11.29 @ 01:30:44

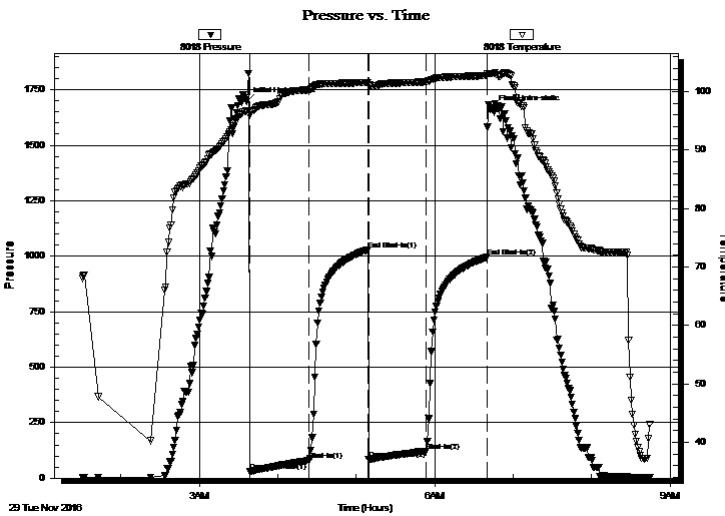
## GENERAL INFORMATION:

Formation: **Arbuckle**  
Deviated: No Whipstock: ft (KB)  
Time Tool Opened: 03:38:24  
Time Test Ended: 08:44:38  
Interval: **3390.00 ft (KB) To 3452.00 ft (KB) (TVD)**  
Total Depth: 3452.00 ft (KB) (TVD)  
Hole Diameter: 7.88 inches Hole Condition: Fair  
Reference Elevations: 1902.00 ft (KB)  
1893.00 ft (CF)  
KB to GR/CF: 9.00 ft

**Serial #: 8018 Inside**  
Press@RunDepth: 122.19 psig @ 3395.00 ft (KB) Capacity: 8000.00 psig  
Start Date: 2016.11.29 End Date: 2016.11.29 Last Calib.: 2016.11.29  
Start Time: 01:30:44 End Time: 08:44:38 Time On Btm: 2016.11.29 @ 03:36:24  
Time Off Btm: 2016.11.29 @ 06:44:08

TEST COMMENT: 45-IFP-w k to strg in 19 min  
45-FSIP-no bl  
45-FFP-w k to strg in 35 min  
45-FSIP-w k bl bk,

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1697.85	96.68	Initial Hydro-static
2	31.34	95.83	Open To Flow (1)
48	81.88	100.26	Shut-In(1)
93	1030.09	101.53	End Shut-In(1)
93	84.71	101.20	Open To Flow (2)
138	122.19	101.67	Shut-In(2)
184	995.80	102.72	End Shut-In(2)
188	1660.62	103.11	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
124.00	MGO 20%G35%M45%O	1.74
102.00	MGO 10%G20%M70%O	1.43
75.00	CO	1.05
0.00	330'GIP	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: Tom Denning, Herb Di

**3-15s-16w Ellis,KS**  
**Robben Family #1**  
Job Ticket: 63549 **DST#: 2**  
Test Start: 2016.11.29 @ 01:30:44

**Tool Information**

Drill Pipe:	Length: 3395.00 ft	Diameter: 3.80 inches	Volume: 47.62 bbl	Tool Weight: 2200.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight to Pull Loose: 45000.00 lb
			<u>Total Volume: 47.62 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	26.00 ft			String Weight: Initial 33000.00 lb
Depth to Top Packer:	3390.00 ft			Final 36000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	62.00 ft			
Tool Length:	83.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

**Tool Description**

**Length (ft) Serial No. Position Depth (ft) Accum. Lengths**

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3370.00	
Shut In Tool	5.00			3375.00	
Hydraulic tool	5.00			3380.00	
Packer	5.00			3385.00	21.00 Bottom Of Top Packer
Packer	5.00			3390.00	
Stubb	1.00			3391.00	
Perforations	4.00			3395.00	
Recorder	0.00	8018	Inside	3395.00	
Recorder	0.00	8700	Outside	3395.00	
Blank Spacing	33.00			3428.00	
Perforations	21.00			3449.00	
Bullnose	3.00			3452.00	62.00 Bottom Packers & Anchor

**Total Tool Length: 83.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

TDI Inc **3-15s-16w Ellis,KS**  
 1310 Bison Rd **Robben Family #1**  
 Hays KS 67601 Job Ticket: 63549 **DST#: 2**  
 ATTN: Tom Denning, Herb Di Test Start: 2016.11.29 @ 01:30:44

### Mud and Cushion Information

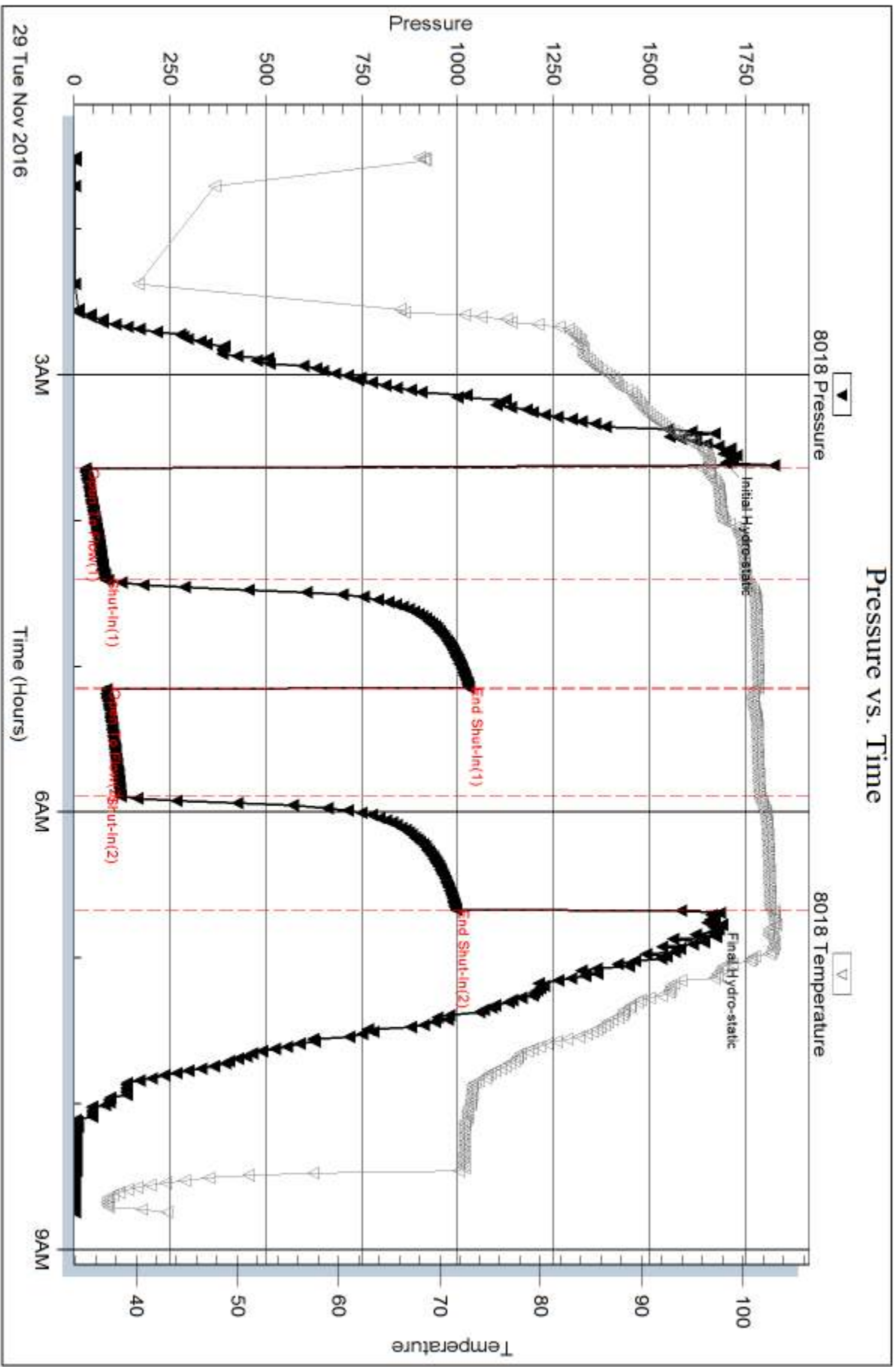
Mud Type: Gel Chem	Cushion Type:	Oil API: 36 deg API
Mud Weight: 10.00 lb/gal	Cushion Length: ft	Water Salinity: ppm
Viscosity: 64.00 sec/qt	Cushion Volume: bbl	
Water Loss: 7.78 in <sup>3</sup>	Gas Cushion Type:	
Resistivity: ohm.m	Gas Cushion Pressure: psig	
Salinity: 5500.00 ppm		
Filter Cake: 1.00 inches		

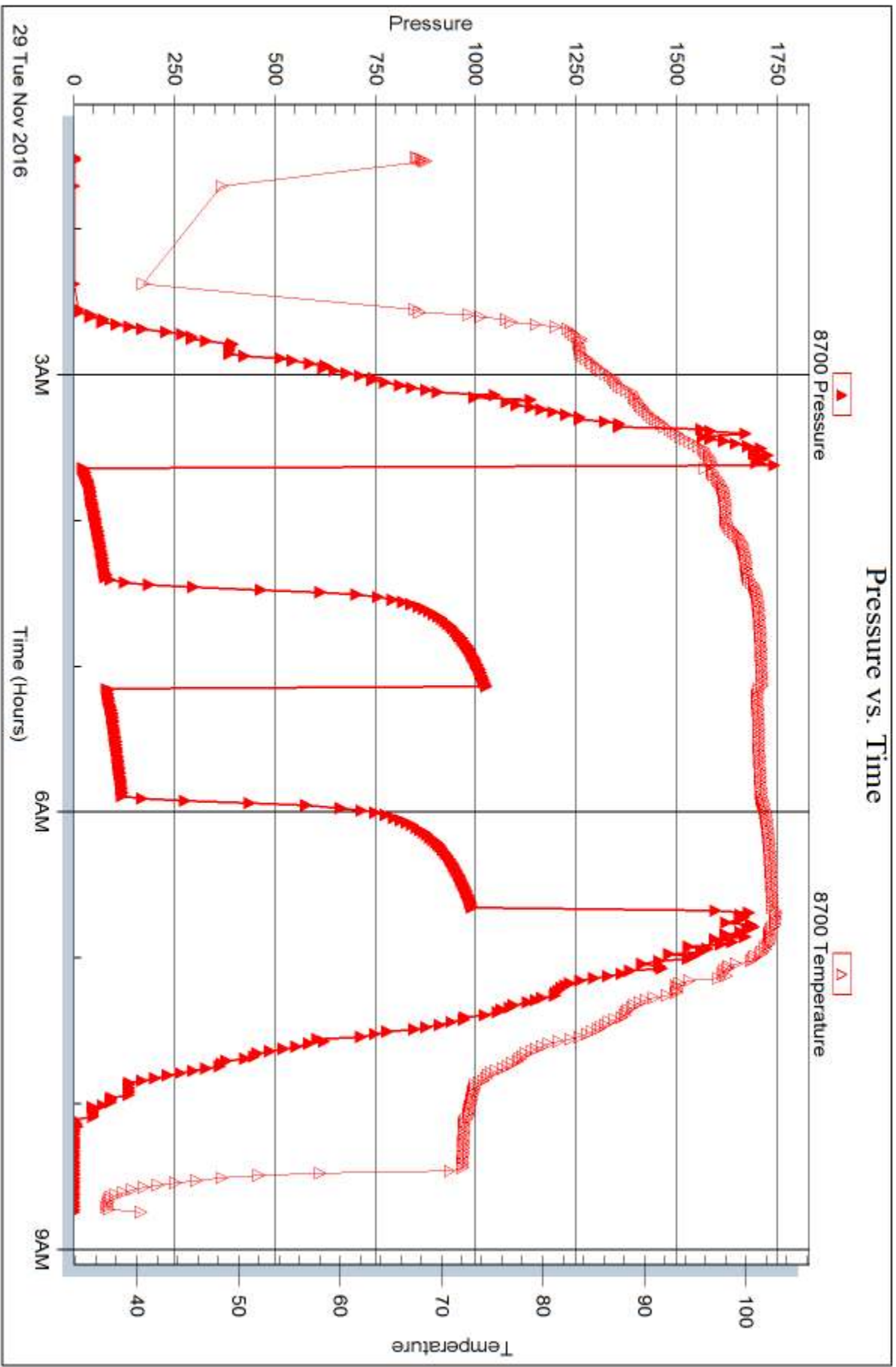
### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
124.00	MGO 20%G35%M45%O	1.739
102.00	MGO 10%G20%M70%O	1.431
75.00	CO	1.052
0.00	330'GIP	0.000

Total Length: 301.00 ft Total Volume: 4.222 bbl  
 Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:  
 Laboratory Name: Laboratory Location:  
 Recovery Comments:









# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. **63548**

Well Name & No. Robben Family #1 Test No. 1 Date 11-27-16  
 Company TOI, Inc Elevation 1902 KB 1893 GL  
 Address 1310 Bison Rd. Hays, Ko 67601  
 Co. Rep / Geo. Herb Oienes Rig Southwindrig 1  
 Location: Sec. 3 Twp. 15<sup>s</sup> Rge. 16<sup>w</sup> Co. ELLIS State Ko

Interval Tested 3146-3200 Zone Tested LKC A-C  
 Anchor Length 54 Drill Pipe Run 3143 Mud Wt. 9.1  
 Top Packer Depth 3141 Drill Collars Run - Vis 6.2  
 Bottom Packer Depth 3146 Wt. Pipe Run - WL 7.2  
 Total Depth 3200 Chlorides 4800 ppm System LCM 1#  
 Blow Description IFP - Weak Blow thru-out 1/4" to 1/2" Blow  
ISTP - NO Blow  
FFP - surface Blow thru-out  
FSTP - NO Blow

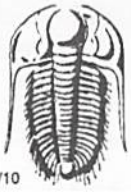
Rec	Feet of	%gas	%oil	%water	%mud
<u>15</u>	<u>Mud</u>				
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 15 BHT 95 Gravity - API RW - @ - ° F Chlorides - ppm

(A) Initial Hydrostatic <u>1535</u>	<input checked="" type="checkbox"/> Test <u>1050</u>	T-On Location <u>2145</u>
(B) First Initial Flow <u>18</u>	<input type="checkbox"/> Jars	T-Started <u>0015</u>
(C) First Final Flow <u>20</u>	<input type="checkbox"/> Safety Joint	T-Open <u>0235</u>
(D) Initial Shut-In <u>451</u>	<input type="checkbox"/> Circ Sub	T-Pulled <u>0535</u>
(E) Second Initial Flow <u>21</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>0713</u>
(F) Second Final Flow <u>22</u>	<input checked="" type="checkbox"/> Mileage <u>36RT</u> 27	Comments
(G) Final Shut-In <u>123</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>1509</u>	<input type="checkbox"/> Straddle	<input type="checkbox"/> Ruined Shale Packer
Initial Open <u>45</u>	<input type="checkbox"/> Shale Packer	<input type="checkbox"/> Ruined Packer
Initial Shut-In <u>45</u>	<input type="checkbox"/> Extra Packer	<input type="checkbox"/> Extra Copies
Final Flow <u>45</u>	<input type="checkbox"/> Extra Recorder	Sub Total <u>0</u>
Final Shut-In <u>45</u>	<input type="checkbox"/> Day Standby	Total <u>1077</u>
	<input type="checkbox"/> Accessibility	MP/DST Disc't
	Sub Total <u>1077</u>	

Approved By \_\_\_\_\_ Our Representative RAY SCHWAGA *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. **63549**

Well Name & No. Robben Family #1 Test No. 2 Date 11-28-16  
 Company T O I, Inc Elevation 1902 KB 1893 GL  
 Address 1310 Bison Rd Hays, Ks 67601  
 Co. Rep / Geo. Herb Dienes Rig Southwind rig 1  
 Location: Sec. 3 Twp. 15<sup>s</sup> Rge. 16<sup>w</sup> Co. ELLIS State Ks

Interval Tested 3390-3452 Zone Tested Arbuckle  
 Anchor Length 62 Drill Pipe Run 3395 Mud Wt. 9.5  
 Top Packer Depth 3385 Drill Collars Run - Vis 64  
 Bottom Packer Depth 3390 Wt. Pipe Run - WL 7.8  
 Total Depth 3452 Chlorides 5500 ppm System LCM 2#  
 Blow Description IFP - WEAK TO STRONG IN 19 MIN  
ISIP - NO BLOW  
FFP - WEAK TO STRONG IN 35 MIN  
FSIP - WEAK SURFACE BLOW BACK

Rec	Feet of	%gas	%oil	%water	%mud
<u>330</u>	<u>GIP</u>				
<u>75</u>	<u>CO</u>				
<u>102</u>	<u>MGO</u>	<u>10</u>	<u>70<del>45</del></u>		<u>20</u>
<u>124</u>	<u>MGO</u>	<u>20</u>	<u>45</u>		<u>35</u>
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 301 BHT 102 Gravity 36 API RW - @ - °F Chlorides - ppm

(A) Initial Hydrostatic 1697  Test 1050 T-On Location 2315  
 (B) First Initial Flow 31  Jars \_\_\_\_\_ T-Started 0130  
 (C) First Final Flow 81  Safety Joint \_\_\_\_\_ T-Open 0335  
 (D) Initial Shut-In 1030  Circ Sub \_\_\_\_\_ T-Pulled 0635  
 (E) Second Initial Flow 84  Hourly Standby \_\_\_\_\_ T-Out 0844  
 (F) Second Final Flow 122  Mileage 36 RT 27  
 (G) Final Shut-In 995  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 1660  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 1077

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

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

Our Representative Ray Schwager Thank you