

Sec. _____ Twp. _____ S. R. _____ ☐ East ☐ West County: _____

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>	☐ Yes	☐ No	☐ Log	Formation (Top), Depth and Datum	☐ Sample
Samples Sent to Geological Survey	☐ Yes	☐ No	Name	Top	Datum
Cores Taken	☐ Yes	☐ No			
Electric Log Run	☐ Yes	☐ No			
Geologist Report / Mud Logs	☐ Yes	☐ No			
List All E. Logs Run:					

CASING RECORD ☐ New ☐ 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
☐ Perforate				
☐ Protect Casing				
☐ Plug Back TD				
☐ 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: ☐ Flowing ☐ Pumping ☐ Gas Lift ☐ Other (Explain) _____			
Estimated Production Per 24 Hours	Oil Bbls.	Gas Mcf	Water	Bbls.	Gas-Oil Ratio Gravity

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

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

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

Form	ACO1 - Well Completion
Operator	TDI, Inc.
Well Name	RATTLESNAKE 1
Doc ID	1313364

Casing

Purpose Of String	Size Hole Drilled	Size Casing Set	Weight	Setting Depth	Type Of Cement	Number of Sacks Used	Type and Percent Additives
Surface	12.25	8.625	20	221	70/30 Poz	150	3% cc, 2% gel

OPERATOR

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

Contact Geologist: TOM DENNING
Contact Phone Nbr: 785-628-2593
Well Name: RATTLESNAKE # 1
Location: SW NW SE SE SEC.12-T12S-R19W
API: 15-051-26,834-00-00
Pool:
State: KANSAS

Field: HYACINTH NORTHWEST
Country: USA



Scale 1:240 Imperial

Well Name: RATTLESNAKE # 1
Surface Location: SW NW SE SE SEC.12-T12S-R19W
Bottom Location:
API: 15-051-26,834-00-00
License Number: 4787
Spud Date: 6/24/2016 Time: 7:45 AM
Region: ELLIS COUNTY
Drilling Completed: 6/29/2016 Time: 1:39 PM
Surface Coordinates: 915' FSL & 1030' FEL
Bottom Hole Coordinates:
Ground Elevation: 2183.00ft
K.B. Elevation: 2191.00ft
Logged Interval: 0.00ft To: 0.00ft
Total Depth: 3810.00ft
Formation: LANSING-KANSAS
Drilling Fluid Type: CHEMICAL/FRESH WATER GEL

SURFACE CO-ORDINATES

Well Type: Vertical
Longitude: -99.3746252
Latitude: 39.0183912
N/S Co-ord: 915' FSL
E/W Co-ord: 1030' 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 #: 3
Rig Type: MUD ROTARY
Spud Date: 6/24/2016
TD Date: 6/29/2016

Time: 7:45 AM
Time: 1:39 PM

ELEVATIONS

K.B. Elevation: 2191.00ft
K.B. to Ground: 8.00ft

Ground Elevation: 2183.00ft

NOTES

ALL PRIMARY ZONES WITH OIL SHOWS WERE TESTED WITH NEGATIVE RESULTS. RECOMMENDATION TO PLUG AND ABANDON TEST.

NO OPEN HOLE LOGS WERE RAN ON THIS WELL.

DRILL STEM TESTING BY TRILOBITE TESTING INC: TWO (2) CONVENTIONAL TESTS

RATTLESNAKE # 1
SW NW SE SE
SEC.12-12S-19W
2183'GL 2191'KB

STACKHOUSE RANCH 1
SW SE NE NE
SEC.13-12-19W
KB 2208'

KEITH # 1
S2 SW SW NE
SEC.12-12-19W
KB 2197'

FORMATION

SPL TOPS

LOG TOPS

LOG TOPS

Anhydrite	1534 +657	+ 674	+ 667
B-Anhydrite	1574 +617	+ 644	+ 627
Topeka	3214-1023	-1011	-1031
Heebner Sh.	3442-1251	-1241	-1261
Toronto	3459-1268	-1260	-1279
LKC	3484-1293	-1286	-1303
BKC	3721-1530	-1518	-1537
Arbuckle	3798-1607	-1610	NR
RTD	3810-1619	-1677	-1705

SUMMARY OF DAILY ACTIVITY

6-24-16 Spud 7:45 AM, set 8 5/8" surface casing to 221' w/150 sxs 70/30
Pos 2%Gel 3%CC, slope 1/4 degree, plug down 12:30PM

6-25-16 1000', drilling

6-26-16 2406', drilling

6-27-16 3110', drilling, displaced 2965' to 2998'

6-28-16 3550', drilling, CFS 3475', short trip, DST #1 3501' to 3550' "C" to
"D" LKC, TIWB, drilling, CFS 3670', CFS 3693'

6-29-16 3693', DST # 2 3593' to 3693' "H" to "K" LKC, TIWB, RTD 3810' @
12:39PM, P&A, no logs, LDDP, RD



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TDI Inc
1310 Bison Rd
Hays KS 67601-9696

ATTN: Herb Deines

12 12s 19w Ellis

Rattlesnake 1

Job Ticket: 64935

DST#: 1

Test Start: 2016.06.28 @ 07:02:00

GENERAL INFORMATION:

Formation: **LKC "C & D"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 08:29:45

Time Test Ended: 11:46:00

Test Type: Conventional Bottom Hole (Initial)

Tester: Jim Svaty

Unit No: 76

Interval: **3501.00 ft (KB) To 3550.00 ft (KB) (TVD)**

Total Depth: 3550.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2187.00 ft (KB)

2179.00 ft (CF)

KB to GR/CF: 8.00 ft

Serial #: 8289 Inside

Press@RunDepth: 35.46 psig @ 3515.00 ft (KB)

Start Date: 2016.06.28

End Date:

2016.06.28

Start Time: 07:02:02

End Time:

11:46:15

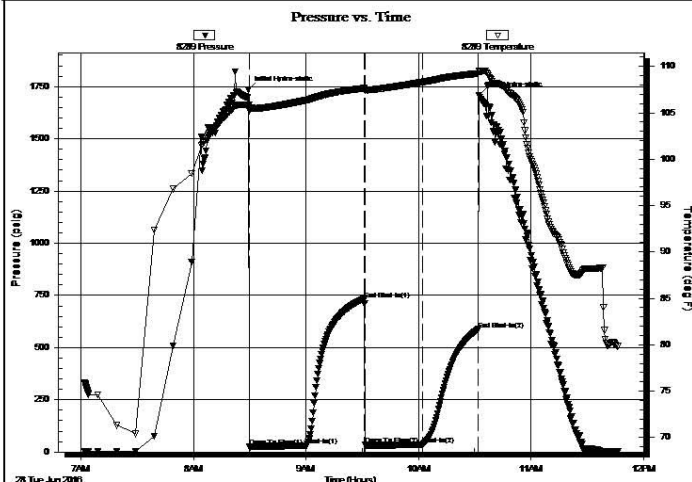
Capacity: 8000.00 psig

Last Calib.: 2016.06.28

Time On Btm: 2016.06.28 @ 08:29:30

Time Off Btm: 2016.06.28 @ 10:32:15

TEST COMMENT: 30-IFP- 1/4in. Blow
30-ISIP- No Blow
30-FFP- Weak Surface Blow in 18min.
30-FSIP- No Blow



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1734.02	105.88	Initial Hydro-static
1	24.34	105.21	Open To Flow (1)
31	29.60	106.35	Shut-In (1)
62	729.98	107.64	End Shut-In (1)
62	33.30	107.39	Open To Flow (2)
93	35.46	108.30	Shut-In (2)
123	587.49	109.23	End Shut-In (2)
123	1709.85	109.53	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
25.00	WCM 45%w 55%w Oil Specks in Tool	0.35

Gas Rates

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

**TRILOBITE
TESTING, INC.****DRILL STEM TEST REPORT**TDL Inc
1310 Bison Rd
Hays KS 67601-9696
ATTN: Herb Deines**12 12s 19w Ellis****Rattlesnake 1**

Job Ticket: 64936

DST#: 2

Test Start: 2016.06.28 @ 22:37:00

GENERAL INFORMATION:Formation: **LKC "H - K"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 00:39:30

Time Test Ended: 05:22:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Jim Svaty

Unit No: 76

Interval: 3593.00 ft (KB) To 3693.00 ft (KB) (TVD)

Total Depth: 3693.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2187.00 ft (KB)

2179.00 ft (CF)

KB to GR/CF: 8.00 ft

Serial #: 8289 Inside

Press@RunDepth: 156.91 psig @ 3607.00 ft (KB)

Start Date: 2016.06.28

End Date:

2016.06.29

Capacity: 8000.00 psig

Last Calib.: 2016.06.29

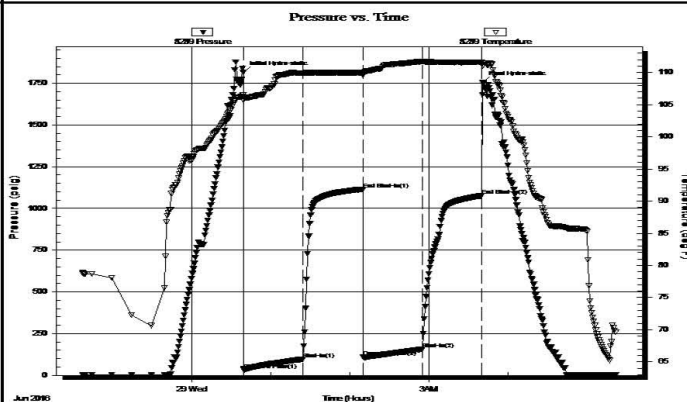
Start Time: 22:37:02

End Time:

05:22:00

Time On Btm: 2016.06.29 @ 00:39:00

Time Off Btm: 2016.06.29 @ 03:41:15

TEST COMMENT: 45-IFP- BOB in 39min.
45-ISIP- No Blow
45-FFP- BOB in 45min.
45-FSIP- No Blow**PRESSURE SUMMARY**

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1814.43	106.55	Initial Hydro-static
1	33.75	106.12	Open To Flow (1)
46	97.12	109.93	Shut-In(1)
91	1113.42	109.96	End Shut-In(1)
91	109.24	109.57	Open To Flow (2)
136	156.91	111.71	Shut-In(2)
181	1075.88	111.58	End Shut-In(2)
183	1753.24	111.04	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
287.00	Oil Speck WCM 1%o 49%w 50%m	4.03

* Recovery from multiple tests

Gas Rates

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

Clystgy

Dolprim

Lscongl

shale, gry

shale, red

Chtcongl

Lmst fw7>

shale, grn

Carbon Sh

ROCK TYPES

MINERAL

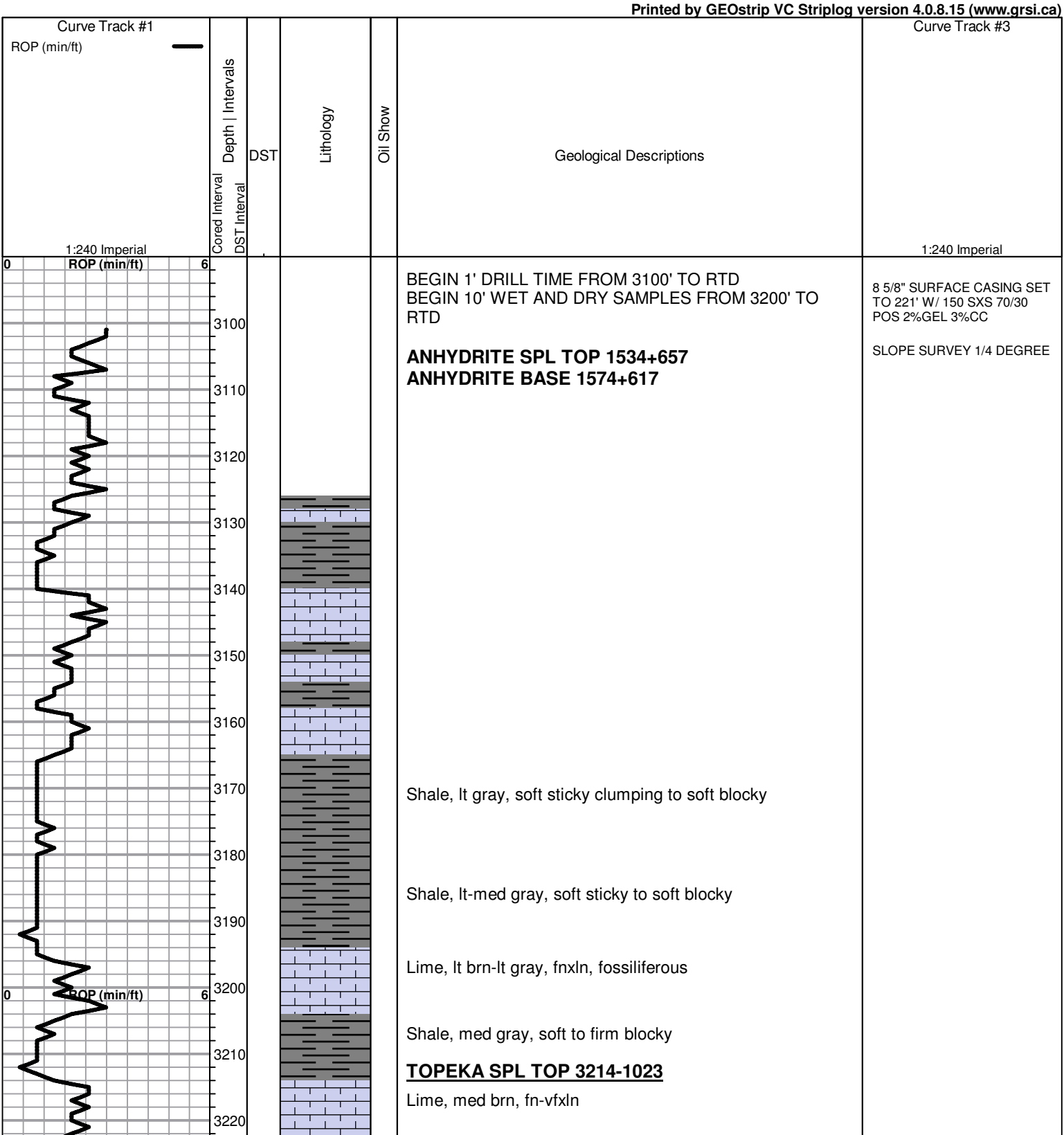
▲ Chert, dark

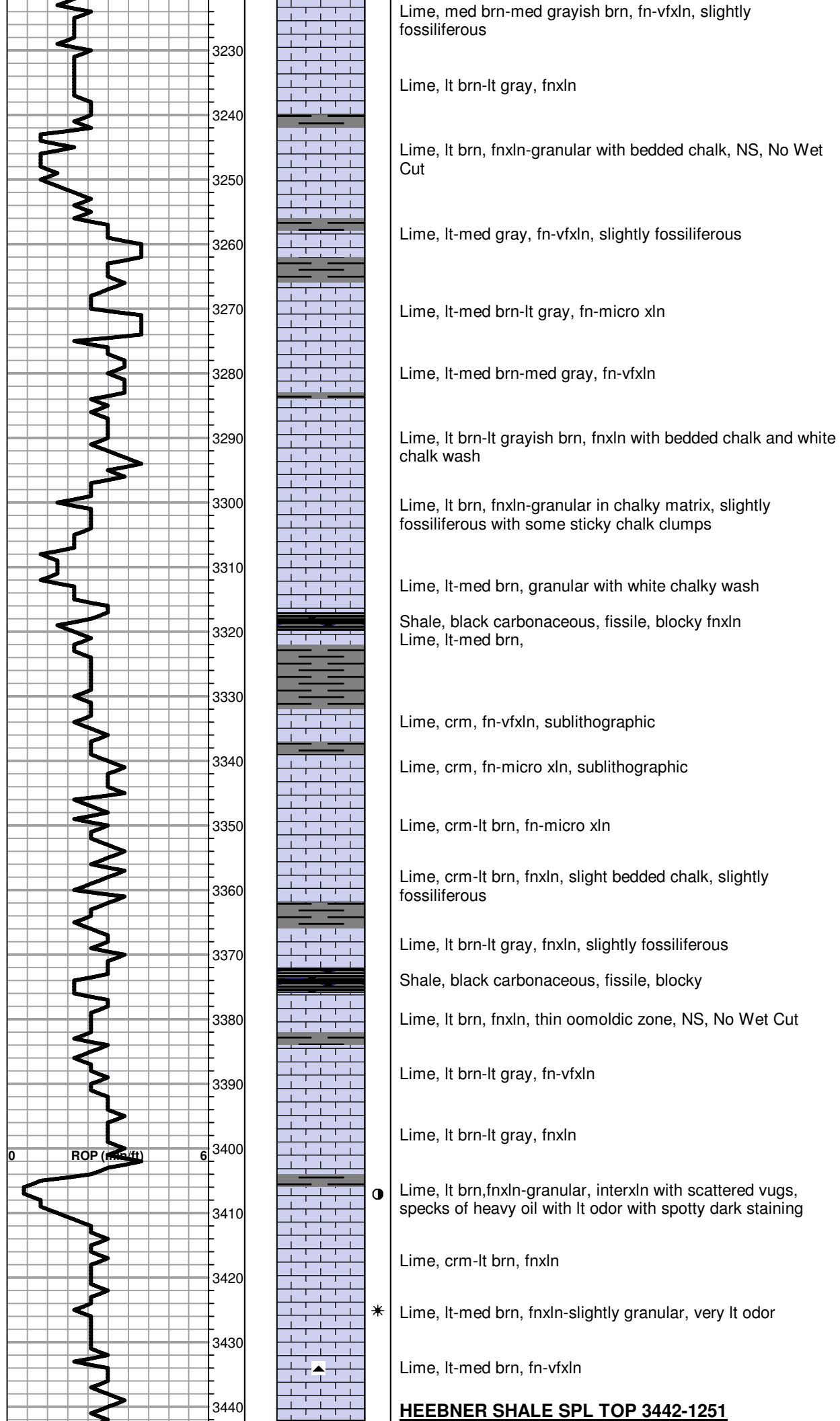
FOSSIL

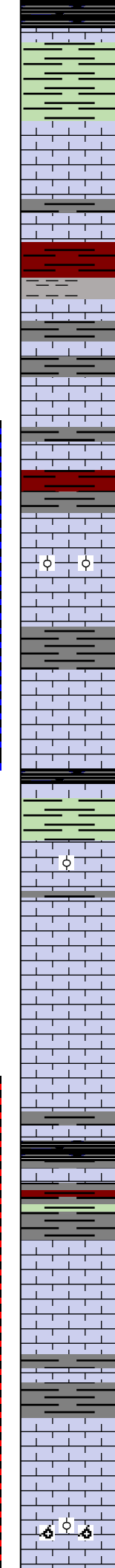
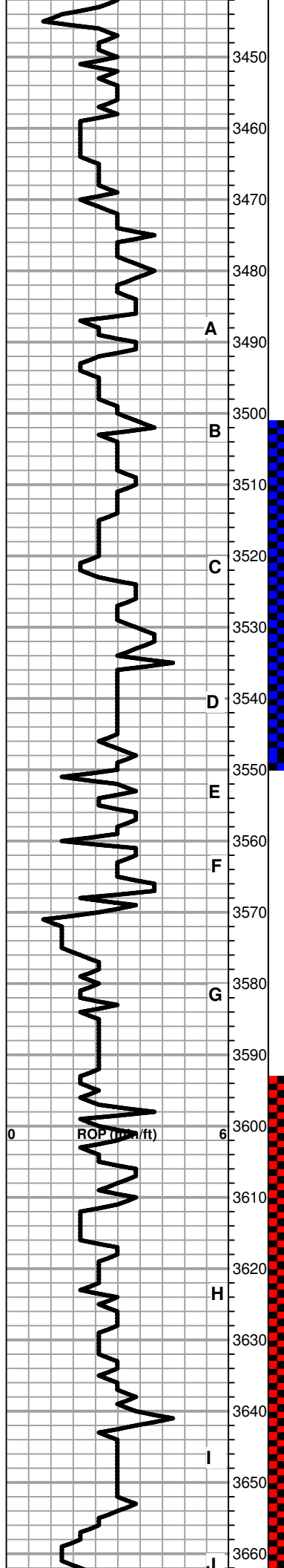
⊕ Oolite

⚙ Oomoldic

ACCESSORIES







Shale, black carbonaceous, fissile, blocky
Lime, med brn, vfxln

Shale, dove gray to lime green, soft mud, sticky clumps

TORONTO SPL TOP 3459-1268

Lime, lt brn, fnxln with bedded chalk, NS

Lime, crm-lt brn, fn-vfxln

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

Shale, soft med with red wash, dove gray, soft sticky

LKC SPL TOP 3484-1293

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

Lime, lt brn-lt gray, fn-vfxln

Lime, lt brn-lt gray, fn-vfxln, spotty gray mottling
Shale, red to med gray, soft blocky with lt red wash

Lime, whit-crm, mostly fnxln with thin oolitic bed with spotty staining in interoolitic porosity, spotty staining, NFO, very lt odor

Shale, lt grayish green, soft blocky

Lime, white-crm, fn-micro xln

Shale, black carbonaceous, blocky
Lime, lt gray, vfxln
Shale, lime green, soft blocky

Lime, crm, fnxln, thin zone of oolitic material with scattered vugs, dark spotty staining, NFO, no odor

Lime, crm-lt brn, fnxln with bedded chalk, NS

Lime, crm, fnxln, sublithographic

Lime, lt-med brn, fnxln

Shale, gray-black carbonaceous, fissile, blocky

Shale, red-lime green-med gray, soft-firm blocky

Lime, crm-lt brn, fnxln, bedded chalk, NS, lt chalk wash

Lime, lt brn-lt gray, fnxln

Lime, med brn, vfxln

Lime, crm-lt brn, fn-micro xln

Lime, crm-lt brn, fn-vfxln, brittle in part, very lt odor

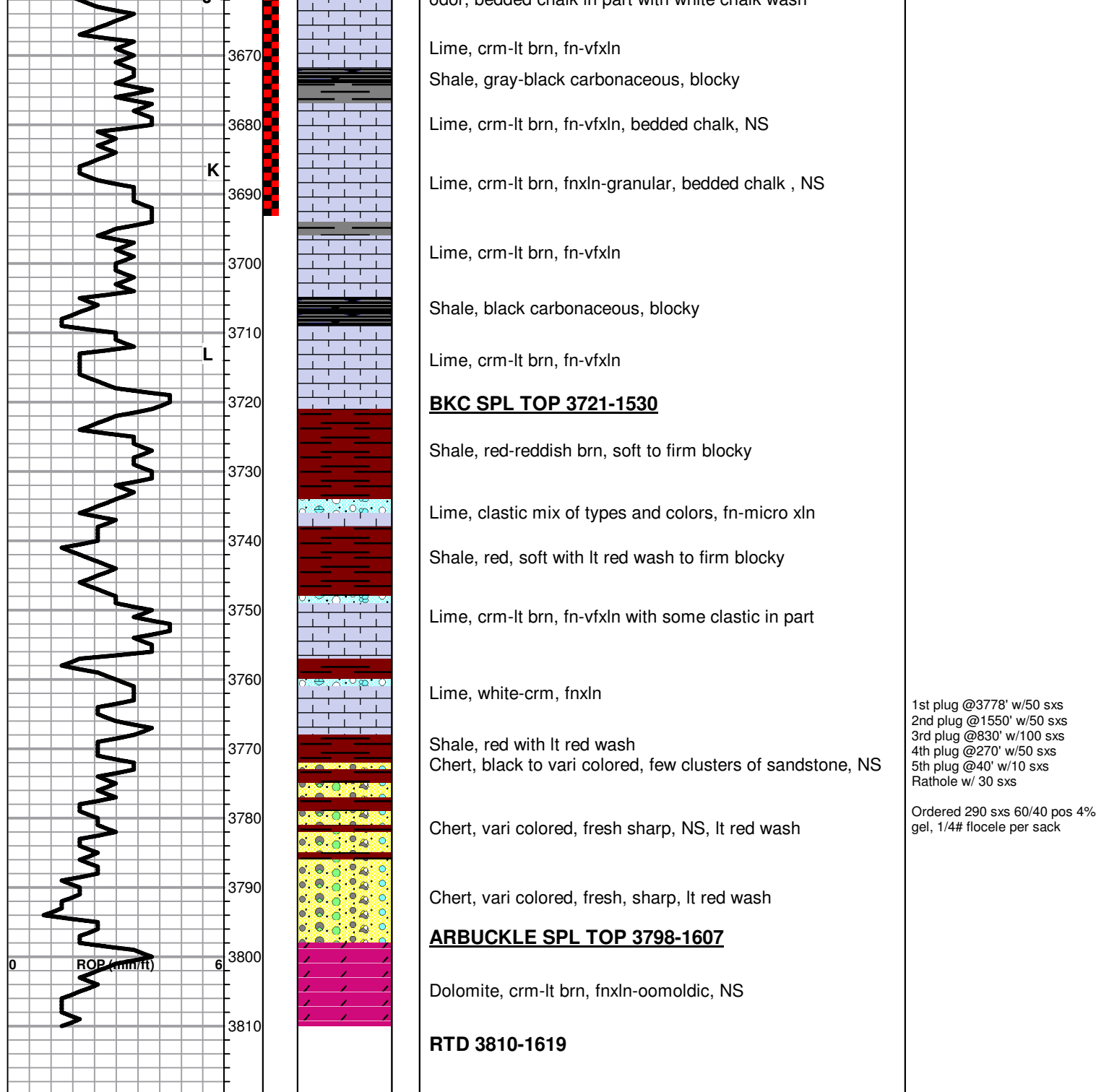
Lime, crm-lt brn, oomoldic in part, scattered lt staining, F-G odor, bedded chalk in part with white chalk wash

CFS 3475', SHORT TRIP

DST # 1 3501' TO 3550' SEE
HEADER FOR TEST
SUMMARY

SLOPE SURVEY 3/4 DEGREE

DST # 3593' TO 3693' SEE
HEADER FOR TEST
SUMMARY





DRILL STEM TEST REPORT

Prepared For: **TDI Inc**

1310 Bison Rd
Hays KS 67601-9696

ATTN: Herb Deines

Rattlesnake #1

12-12s-19w Ellis,KS

Start Date: 2016.06.28 @ 07:02:00

End Date: 2016.06.28 @ 11:46:00

Job Ticket #: 64935 DST #: 1

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

Printed: 2016.06.30 @ 08:37:32



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TDI Inc

1310 Bison Rd
Hays KS 67601-9696

ATTN: Herb Deines

12-12s-19w Ellis, KS

Rattlesnake #1

Job Ticket: 64935

DST#: 1

Test Start: 2016.06.28 @ 07:02:00

GENERAL INFORMATION:

Formation: **LKC "C- D"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 08:29:45

Time Test Ended: 11:46:00

Test Type: Conventional Bottom Hole (Initial)

Tester: Jim Svaty

Unit No: 76

Interval: 3501.00 ft (KB) To 3550.00 ft (KB) (TVD)

Total Depth: 3550.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2187.00 ft (KB)

2179.00 ft (CF)

KB to GR/CF: 8.00 ft

Serial #: 8289 Inside

Press@RunDepth: 35.46 psig @ 3515.00 ft (KB)

Start Date: 2016.06.28

End Date:

2016.06.28

Start Time: 07:02:02

End Time:

11:46:15

Capacity: 8000.00 psig

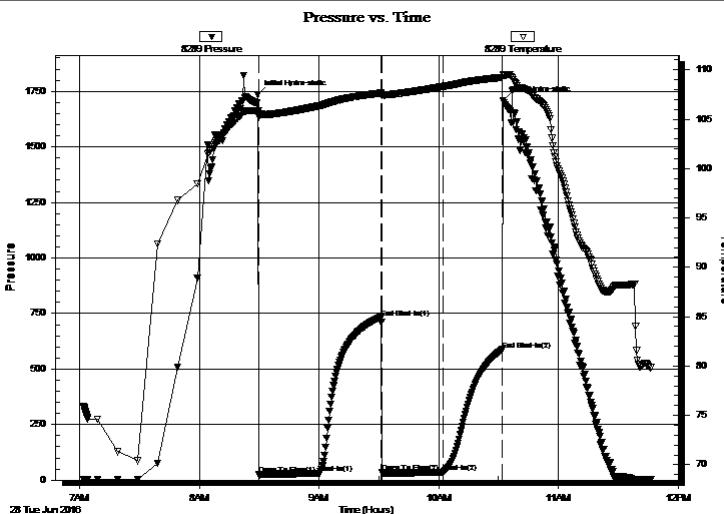
Last Calib.: 2016.06.28

Time On Btm: 2016.06.28 @ 08:29:30

Time Off Btm: 2016.06.28 @ 10:32:15

TEST COMMENT: 30-IFP- 1/4" Blow
30-ISIP- No Blow
30-FFP- Weak Surface Blow in 18 min.
30-FSIP- No Blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1734.02	105.88	Initial Hydro-static
1	24.34	105.21	Open To Flow (1)
31	29.60	106.35	Shut-In(1)
62	729.98	107.64	End Shut-In(1)
62	33.30	107.39	Open To Flow (2)
93	35.46	108.30	Shut-In(2)
123	587.49	109.23	End Shut-In(2)
123	1709.85	109.53	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
25.00	WCM 45%w 55%m Oil Specks in Too	0.35

Gas Rates

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



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

TDI Inc

1310 Bison Rd
Hays KS 67601-9696

ATTN: Herb Deines

12-12s-19w Ellis, KS

Rattlesnake #1

Job Ticket: 64935

DST#: 1

Test Start: 2016.06.28 @ 07:02:00

GENERAL INFORMATION:

Formation: **LKC "C- D"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 08:29:45

Time Test Ended: 11:46:00

Test Type: Conventional Bottom Hole (Initial)

Tester: Jim Svaty

Unit No: 76

Interval: 3501.00 ft (KB) To 3550.00 ft (KB) (TVD)

Total Depth: 3550.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2187.00 ft (KB)

2179.00 ft (CF)

KB to GR/CF: 8.00 ft

Serial #: 6668 Outside

Press@RunDepth: psig @ 3515.00 ft (KB)

Start Date: 2016.06.28

End Date:

2016.06.28

Start Time: 07:02:02

End Time:

11:46:00

Capacity: 8000.00 psig

Last Calib.:

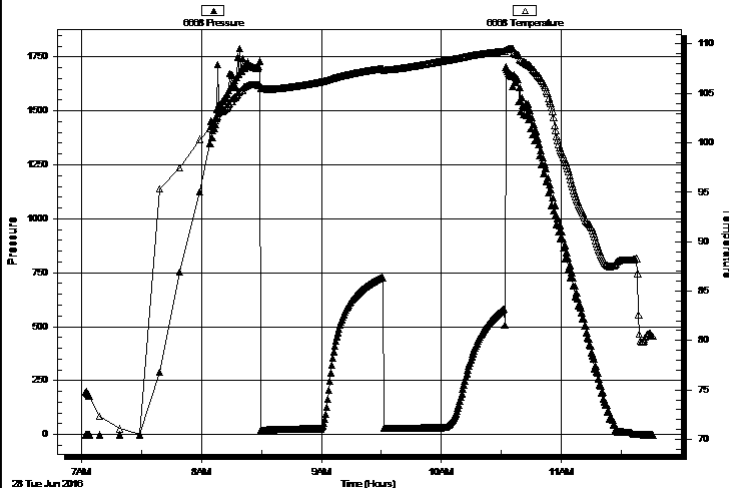
2016.06.28

Time On Btm:

Time Off Btm:

TEST COMMENT: 30-IFP- 1/4" Blow
30-ISIP- No Blow
30-FFP- Weak Surface Blow in 18 min.
30-FSIP- No Blow

Pressure vs. Time



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
25.00	WCM 45%w 55%m Oil Specks in Too	0.35

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

TDI Inc

1310 Bison Rd
Hays KS 67601-9696

ATTN: Herb Deines

12-12s-19w Ellis,KS

Rattlesnake #1

Job Ticket: 64935

DST#: 1

Test Start: 2016.06.28 @ 07:02:00

Tool Information

Drill Pipe:	Length:	3512.00 ft	Diameter:	3.80 inches	Volume:	49.26 bbl	Tool Weight:	2500.00 lb
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	2.75 inches	Volume:	0.00 bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length:	0.00 ft	Diameter:	2.25 inches	Volume:	0.00 bbl	Weight to Pull Loose:	40000.00 lb
					Total Volume:	49.26 bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:		32.00 ft					String Weight: Initial	38000.00 lb
Depth to Top Packer:		3501.00 ft					Final	38000.00 lb
Depth to Bottom Packer:		ft						
Interval between Packers:		49.00 ft						
Tool Length:		70.00 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		3481.00	
Shut In Tool	5.00		3486.00	
Hydraulic tool	5.00		3491.00	
Packer	5.00		3496.00	21.00 Bottom Of Top Packer
Packer	5.00		3501.00	
Stubb	1.00		3502.00	
Perforations	12.00		3514.00	
Change Over Sub	1.00		3515.00	
Recorder	0.00	8289 Inside	3515.00	
Recorder	0.00	6668 Outside	3515.00	
Blank Spacing	31.00		3546.00	
Change Over Sub	1.00		3547.00	
Bullnose	3.00		3550.00	49.00 Bottom Packers & Anchor

Total Tool Length: 70.00



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

FLUID SUMMARY

TDI Inc

12-12s-19w Ellis,KS

1310 Bison Rd
Hays KS 67601-9696

Rattlesnake #1

Job Ticket: 64935

DST#: 1

ATTN: Herb Deines

Test Start: 2016.06.28 @ 07:02:00

Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 51.00 sec/qt

Water Loss: 7.18 in³

Resistivity: ohm.m

Salinity: 3400.00 ppm

Filter Cake: 2.00 inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

Oil API:

deg API

Water Salinity: 20000 ppm

ft

bbl

psig

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
25.00	WCM 45%w 55%m Oil Specks in Tool	0.351

Total Length: 25.00 ft

Total Volume: 0.351 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: .295 @ 79

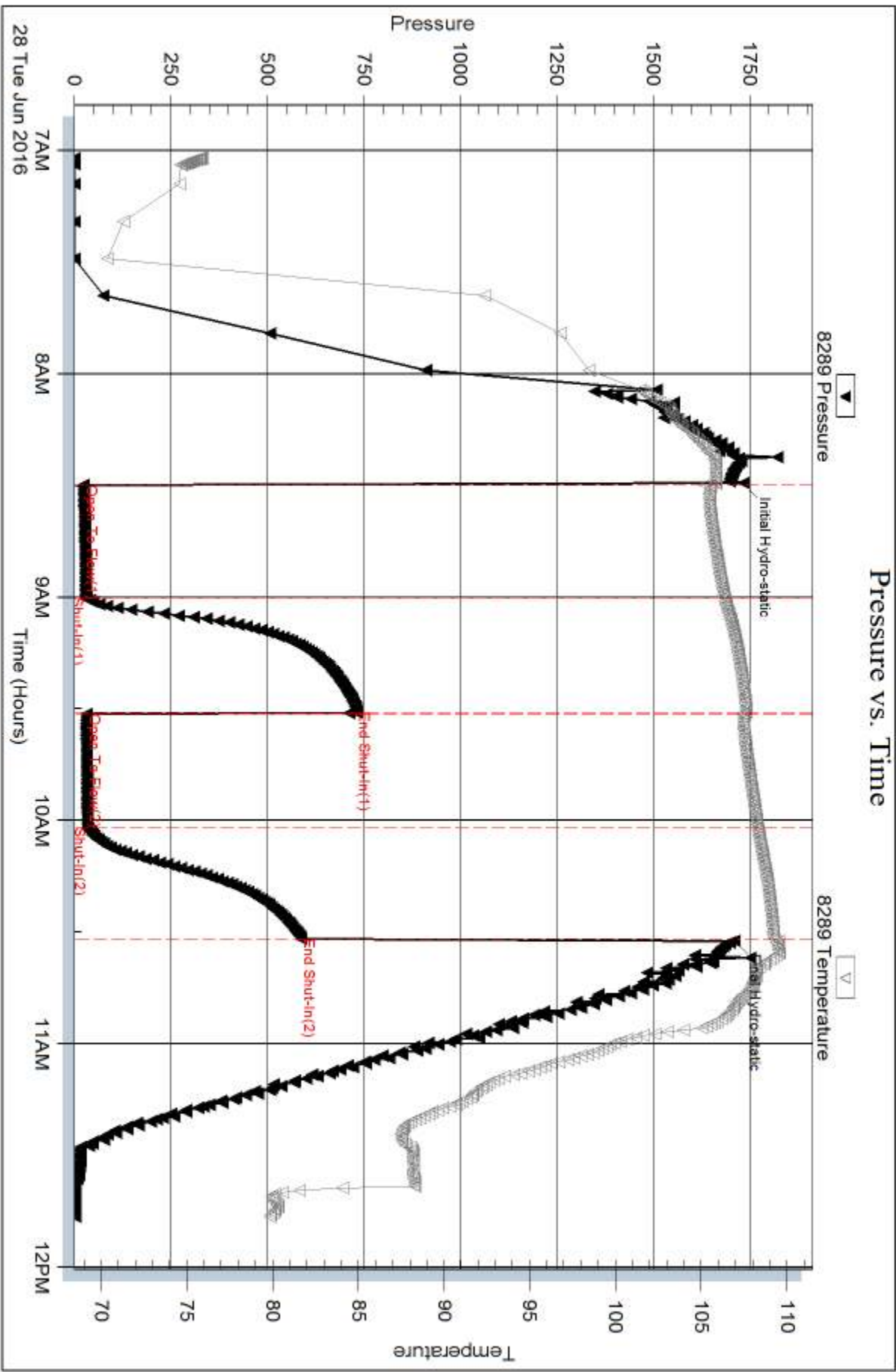
Serial #: 8289

Inside

TDI Inc

Rattlesnake #1

DST Test Number: 1

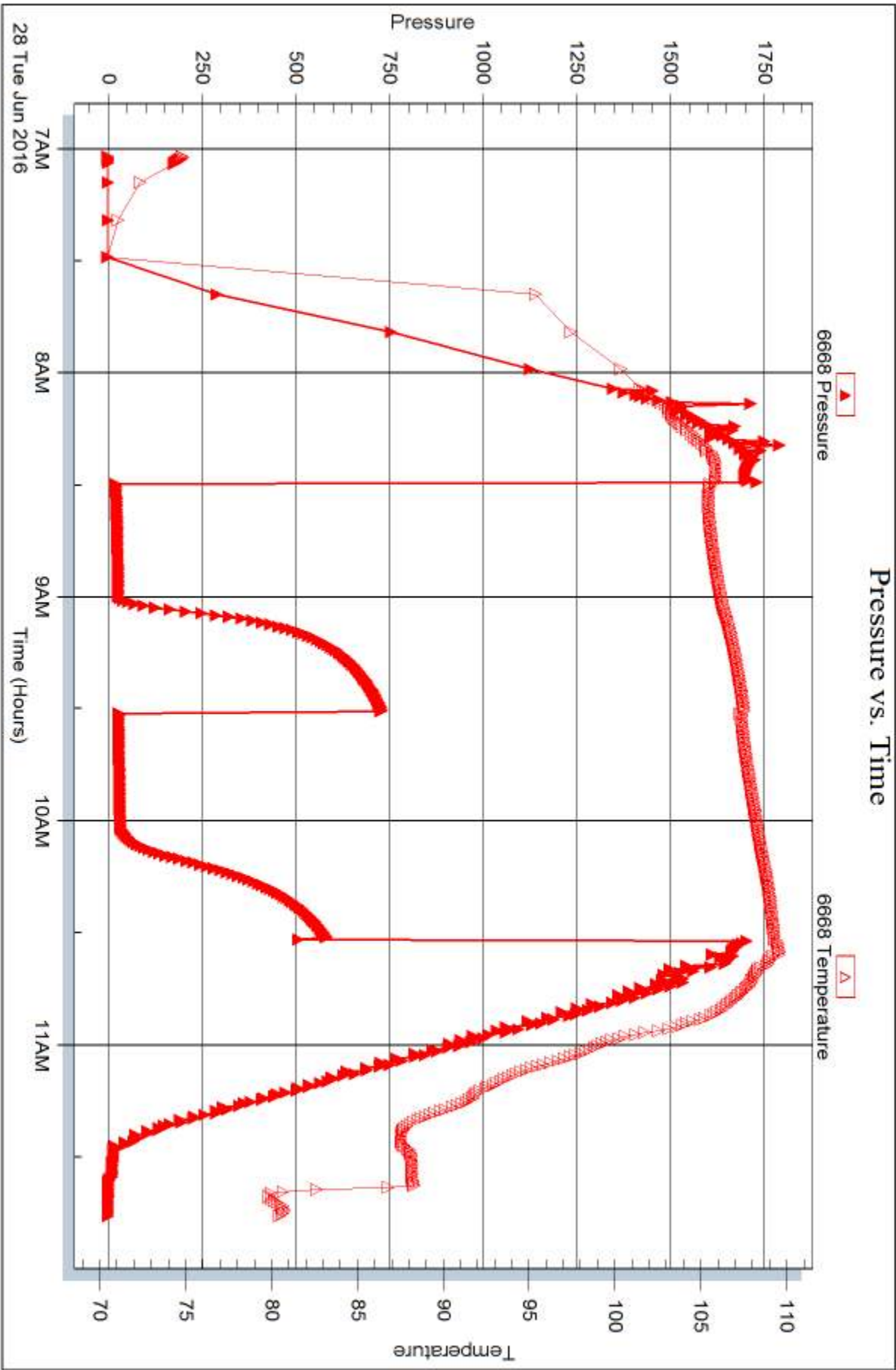


Serial #: 6668

Outside TDI Inc

Rattlesnake #1

DST Test Number: 1





DRILL STEM TEST REPORT

Prepared For: **TDI Inc**

1310 Bison Rd
Hays KS 67601-9696

ATTN: Herb Deines

Rattlesnake #1

12-12s-19w Ellis,KS

Start Date: 2016.06.28 @ 22:37:00

End Date: 2016.06.29 @ 05:22:00

Job Ticket #: 64936 DST #: 2

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

Printed: 2016.06.30 @ 08:35:21



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

TDI Inc

1310 Bison Rd
Hays KS 67601-9696

ATTN: Herb Deines

12-12s-19w Ellis, KS

Rattlesnake #1

Job Ticket: 64936

DST#: 2

Test Start: 2016.06.28 @ 22:37:00

GENERAL INFORMATION:

Formation: **LKC " H - K "**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 00:39:30

Time Test Ended: 05:22:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Jim Svaty

Unit No: 76

Interval: 3593.00 ft (KB) To 3693.00 ft (KB) (TVD)

Total Depth: 3693.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2187.00 ft (KB)

2179.00 ft (CF)

KB to GR/CF: 8.00 ft

Serial #: 8289 Inside

Press@RunDepth: 156.91 psig @ 3607.00 ft (KB)

Start Date: 2016.06.28

End Date:

2016.06.29

Start Time: 22:37:02

End Time:

05:22:00

Capacity: 8000.00 psig

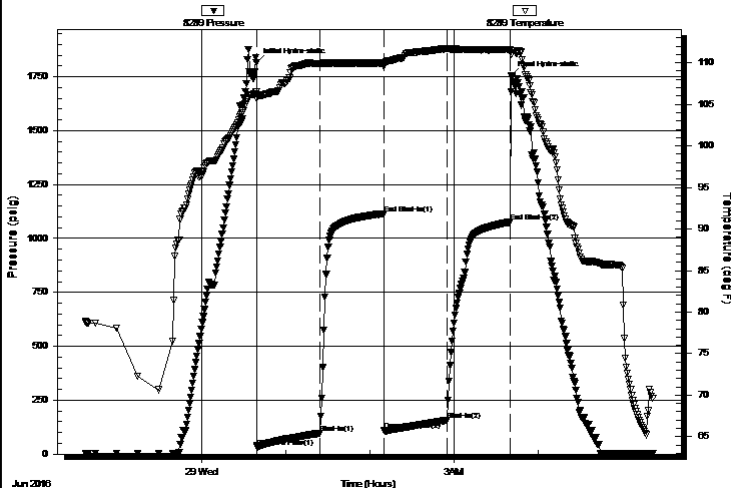
Last Calib.: 2016.06.29

Time On Btm: 2016.06.29 @ 00:39:00

Time Off Btm: 2016.06.29 @ 03:41:15

TEST COMMENT: 45-IFP- BOB in 39 min.
45-ISIP- No Blow
45-FFP- BOB in 45 min.
45-FSIP- No Blow

Pressure vs. Time



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1814.43	106.55	Initial Hydro-static
1	33.75	106.12	Open To Flow (1)
46	97.12	109.93	Shut-In(1)
91	1113.42	109.96	End Shut-In(1)
91	109.24	109.57	Open To Flow (2)
136	156.91	111.71	Shut-In(2)
181	1075.88	111.58	End Shut-In(2)
183	1753.24	111.04	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
287.00	Oil Speck WCM 1%o 49%w 50%m	4.03

Gas Rates

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

* Recovery from multiple tests



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

TDI Inc

1310 Bison Rd
Hays KS 67601-9696

ATTN: Herb Deines

12-12s-19w Ellis, KS

Rattlesnake #1

Job Ticket: 64936

DST#: 2

Test Start: 2016.06.28 @ 22:37:00

GENERAL INFORMATION:

Formation: **LKC " H - K "**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 00:39:30

Time Test Ended: 05:22:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Jim Svaty

Unit No: 76

Interval: 3593.00 ft (KB) To 3693.00 ft (KB) (TVD)

Total Depth: 3693.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2187.00 ft (KB)

2179.00 ft (CF)

KB to GR/CF: 8.00 ft

Serial #: 6668 Outside

Press@RunDepth: psig @ 3607.00 ft (KB)

Start Date: 2016.06.28

End Date:

2016.06.29

Start Time: 22:37:02

End Time:

05:22:00

Capacity: 8000.00 psig

Last Calib.:

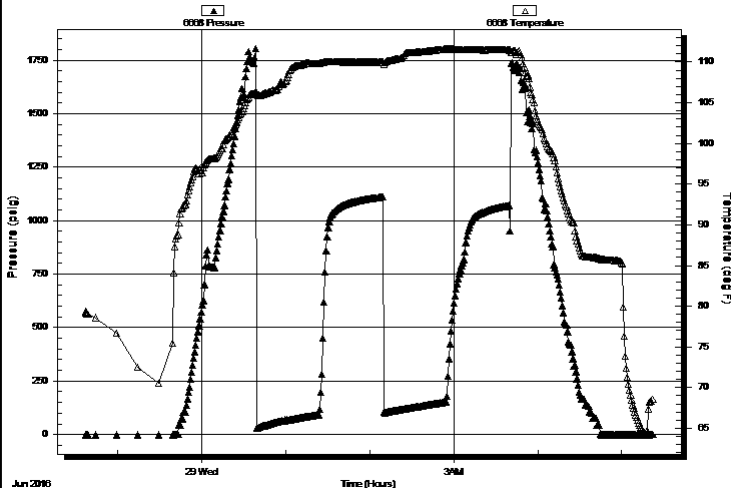
2016.06.29

Time On Btm:

Time Off Btm:

TEST COMMENT: 45-IFP- BOB in 39 min.
45-ISIP- No Blow
45-FFP- BOB in 45 min.
45-FSIP- No Blow

Pressure vs. Time



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
287.00	Oil Speck WCM 1%o 49%w 50%m	4.03

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

TDI Inc

1310 Bison Rd
Hays KS 67601-9696

ATTN: Herb Deines

12-12s-19w Ellis,KS

Rattlesnake #1

Job Ticket: 64936

DST#: 2

Test Start: 2016.06.28 @ 22:37:00

Tool Information

Drill Pipe:	Length:	3576.00 ft	Diameter:	3.80 inches	Volume:	50.16 bbl	Tool Weight:	2500.00 lb
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	2.75 inches	Volume:	0.00 bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length:	0.00 ft	Diameter:	2.25 inches	Volume:	0.00 bbl	Weight to Pull Loose:	40000.00 lb
					Total Volume:	50.16 bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:		4.00 ft					String Weight: Initial	38000.00 lb
Depth to Top Packer:		3593.00 ft					Final	39000.00 lb
Depth to Bottom Packer:		ft						
Interval between Packers:		100.00 ft						
Tool Length:		121.00 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		3573.00	
Shut In Tool	5.00		3578.00	
Hydraulic tool	5.00		3583.00	
Packer	5.00		3588.00	21.00 Bottom Of Top Packer
Packer	5.00		3593.00	
Stubb	1.00		3594.00	
Perforations	12.00		3606.00	
Change Over Sub	1.00		3607.00	
Recorder	0.00	8289 Inside	3607.00	
Recorder	0.00	6668 Outside	3607.00	
Blank Spacing	63.00		3670.00	
Change Over Sub	1.00		3671.00	
Perforations	19.00		3690.00	
Bullnose	3.00		3693.00	100.00 Bottom Packers & Anchor

Total Tool Length: 121.00



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

FLUID SUMMARY

TDI Inc

12-12s-19w Ellis,KS

1310 Bison Rd
Hays KS 67601-9696

Rattlesnake #1

Job Ticket: 64936

DST#: 2

ATTN: Herb Deines

Test Start: 2016.06.28 @ 22:37:00

Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 51.00 sec/qt

Water Loss: 7.18 in³

Resistivity: ohm.m

Salinity: 3400.00 ppm

Filter Cake: 2.00 inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

Oil API:

deg API

Water Salinity: 48000 ppm

ft

bbl

psig

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
287.00	Oil Speck WCM 1%o 49%w 50%m	4.026

Total Length: 287.00 ft Total Volume: 4.026 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: .170 @ 66

Serial #: 8289

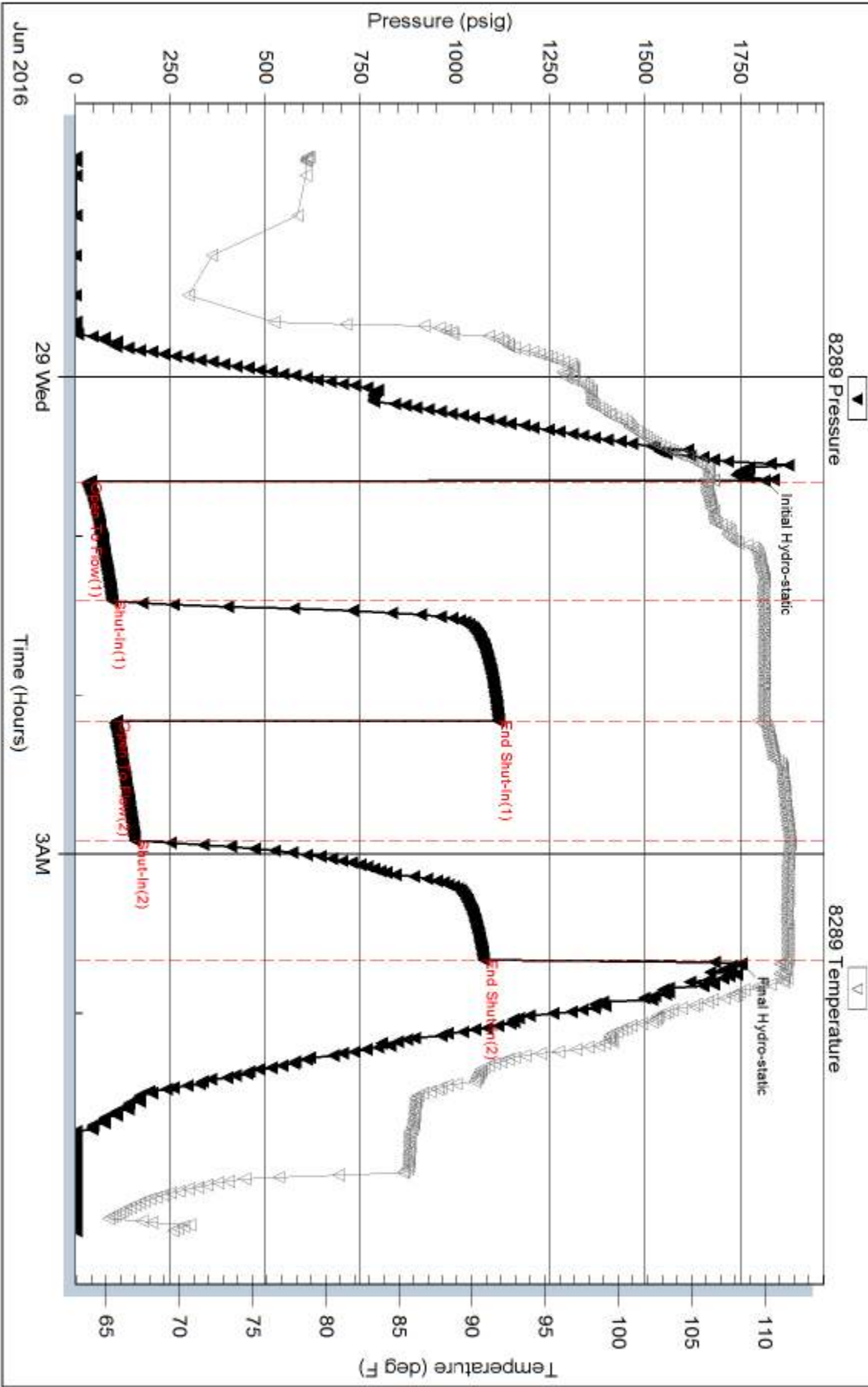
Inside

TDI Inc

Rattlesnake #1

DST Test Number: 2

Pressure vs. Time

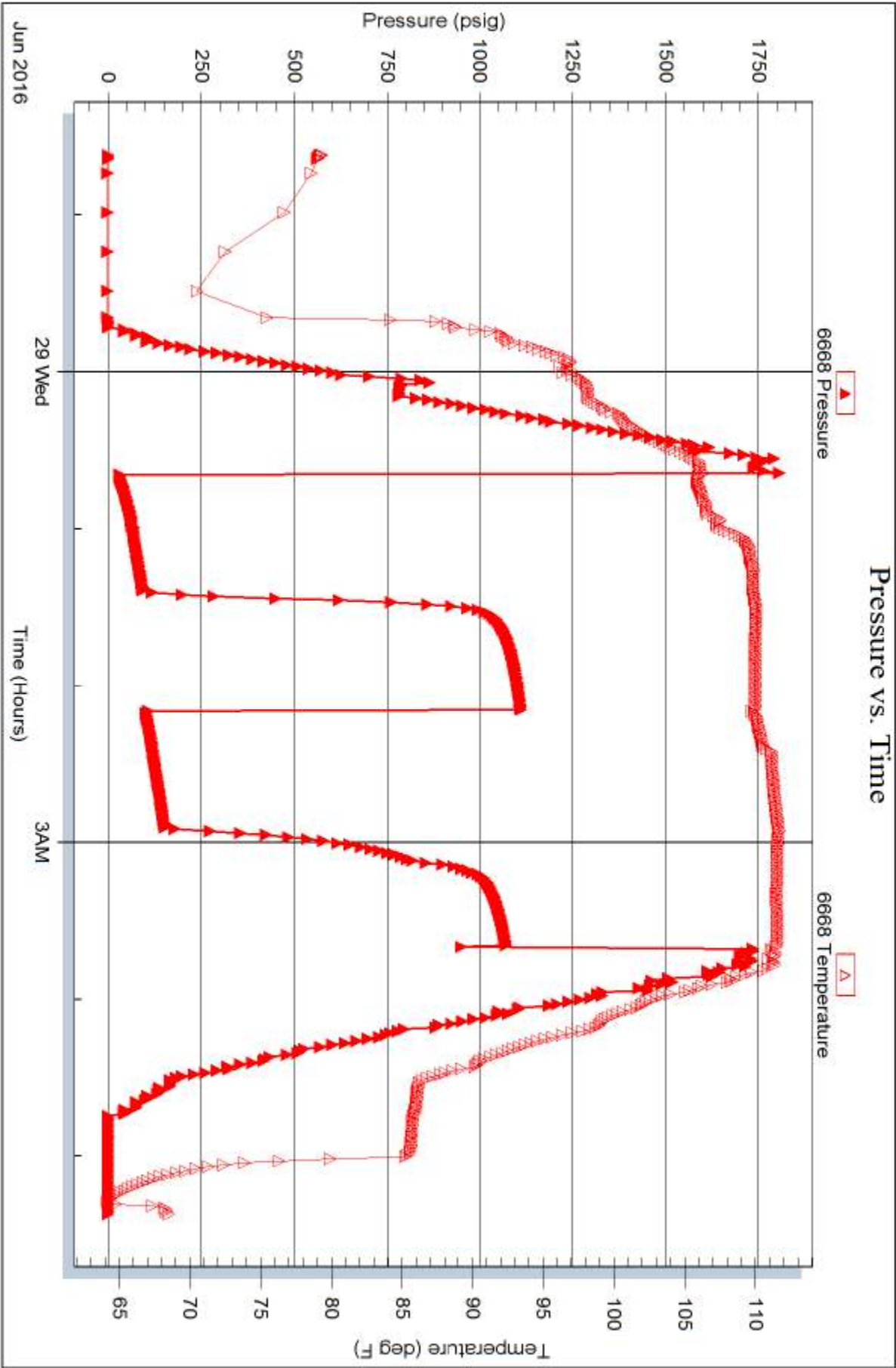


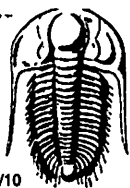
Serial #: 6668

Outside TDI Inc

Rattlesnake #1

DST Test Number: 2





TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 64935

Well Name & No. Rattlesnake #1 Test No. 1 Date 6-28-16
 Company T D I Inc. Elevation 2187 KB 2179 GL
 Address 1310 Bison Rd Hays KS 67601-9696
 Co. Rep / Geo. Herb Deines Rig Southwind #3
 Location: Sec. 12 Twp. 12^s Rge. 19^w Co. Ellis State KS

Interval Tested 3501-3550 Zone Tested LKC * C & D
 Anchor Length 49 Drill Pipe Run 3512 Mud Wt. 9.1
 Top Packer Depth 3496 Drill Collars Run 0 Vis 51
 Bottom Packer Depth 3501 Wt. Pipe Run 0 WL 7.2
 Total Depth 3550 Chlorides 3400 ppm System LCM 2

Blow Description IFP - 1/4 in. Blow
ISIP - No Blow
IFP - Weak Surface Blow in 18 min.
FSIP - No Blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>25</u>	<u>WCM</u>		<u>45</u>	<u>55</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of <u>Oil Speck in Tool</u>	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 25 BHT 109 Gravity _____ API RW 295 @ 79 °F Chlorides 20000 ppm
 (A) Initial Hydrostatic 1734 ☒ Test 1050 T-On Location 06:22
 (B) First Initial Flow 24 ☐ Jars _____ T-Started 07:02
 (C) First Final Flow 29 ☐ Safety Joint _____ T-Open 08:30
 (D) Initial Shut-In 729 ☐ Circ Sub _____ T-Pulled 10:30
 (E) Second Initial Flow 33 ☐ Hourly Standby _____ T-Out 11:46
 (F) Second Final Flow 35 ☒ Mileage 30 RT 22.50 Comments _____
 (G) Final Shut-In 587 ☐ Sampler _____
 (H) Final Hydrostatic 1709 ☐ Straddle _____
☐ Ruined Shale Packer _____
☐ Ruined Packer _____
☐ Extra Copies _____

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

☐ Shale Packer _____
☐ Extra Packer _____
☐ Extra Recorder _____
☐ Day Standby _____
☐ Accessibility _____
 Sub Total 1072.50
 Total 1072.50
 MP/DST Disc't _____

Approved By _____

Our Representative _____

Triobite 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.



Test Ticket

NO. 64936

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.

QUALITY OILWELL CEMENTING, INC.

Federal Tax I.D.# 20-2886107

Phone 785-483-2025

Home Office P.O. Box 32 Russell, KS 67665

No. 1974

Cell 785-324-1041

Date	6-24-16	Sec.	12	Twp.	12	Range	19	County	Ellis	State	KS	On Location		Finish	12:30pm
Lease								Location				Hays & Buckeye Rd 2 1/2 W Ninto			
Rattlesnake								Well No. 1				Owner			
Contractor								Southwire #3				To Quality Oilwell Cementing, Inc.			
Type Job								Surface				You are hereby requested to rent cementing equipment and furnish cementer and helper to assist owner or contractor to do work as listed.			
Hole Size								12 1/4				Charge To			
Csg.								8 5/8				T.D.I.			
Tbg. Size												Street			
Tool												City			
Cement Left in Csg.								15'				State			
Meas Line								Displace				13 BCL			
EQUIPMENT															
Pumptrk								18 No. Cementer				Common			
Bulktrk								No. Driver				Poz. Mix			
Bulktrk								21 No. Driver				Gel.			
Bulktrk								21 No. Driver				Calcium			
JOB SERVICES & REMARKS												Hulls			
Remarks:												Salt			
Rat Hole												Flowseal			
Mouse Hole												Kol-Seal			
Centralizers												Mud CLR 48			
Baskets												CFL-117 or CD110 CAF 38			
D/V or Port Collar												Sand			
8 5/8 on bottom. Est. Circulation.												Handling			
Mix 150SK & Displace												Mileage			
Cement Circulated!												FLOAT EQUIPMENT			
												Guide Shoe			
												Centralizer			
												Baskets			
												AFU Inserts			
												Float Shoe			
												Latch Down			
												Pumptrk Charge			
												Mileage			
												Tax			
												Discount			
												Total Charge			
Signature															

QUALITY OILWELL CEMENTING, INC.

Federal Tax I.D.# 20-2886107

Phone 785-483-2025

Home Office P.O. Box 32 Russell, KS 67665

No. 1751

Cell 785-324-1041

Date	29 6-30-16	Sec.	12	Twp.	12	Rahge	19	County	Ellis	State	KS	On Location		Finish	9:30pm
------	---------------	------	----	------	----	-------	----	--------	-------	-------	----	-------------	--	--------	--------

Location								Hays N Buckleford 3W Ninto							
----------	--	--	--	--	--	--	--	----------------------------	--	--	--	--	--	--	--

Lease	Rattle Snake	Well No.	1	Owner											
-------	--------------	----------	---	-------	--	--	--	--	--	--	--	--	--	--	--

Contractor	Southwest #3	To Quality Oilwell Cementing, Inc.													
------------	--------------	------------------------------------	--	--	--	--	--	--	--	--	--	--	--	--	--

Type Job	Rotary Plug	You are hereby requested to rent cementing equipment and furnish cementer and helper to assist owner or contractor to do work as listed.													
----------	-------------	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Hole Size	7 7/8	T.D.	3810	Charge To	T.D.I										
-----------	-------	------	------	-----------	-------	--	--	--	--	--	--	--	--	--	--

Csg.	4 1/2 X-H	Depth		Street											
------	-----------	-------	--	--------	--	--	--	--	--	--	--	--	--	--	--

Tbg. Size		Depth		City		State									
-----------	--	-------	--	------	--	-------	--	--	--	--	--	--	--	--	--

Tool		Depth		The above was done to satisfaction and supervision of owner agent or contractor.											
------	--	-------	--	--	--	--	--	--	--	--	--	--	--	--	--

Cement Left in Csg.		Shoe Joint		Cement Amount Ordered	3290 60/40 41/65L 1/4#R10										
---------------------	--	------------	--	-----------------------	---------------------------	--	--	--	--	--	--	--	--	--	--

Meas Line		Displace													
-----------	--	----------	--	--	--	--	--	--	--	--	--	--	--	--	--

EQUIPMENT				Common	124										
-----------	--	--	--	--------	-----	--	--	--	--	--	--	--	--	--	--

Pumptrk	218	No.		Cement		Poz. Mix	116								
---------	-----	-----	--	--------	--	----------	-----	--	--	--	--	--	--	--	--

Bulktrk		No.		Helper		Gel.	10								
---------	--	-----	--	--------	--	------	----	--	--	--	--	--	--	--	--

Bulktrk	21	No.		Driver		Calcium									
---------	----	-----	--	--------	--	---------	--	--	--	--	--	--	--	--	--

Bulktrk		No.		Driver		Hulls									
---------	--	-----	--	--------	--	-------	--	--	--	--	--	--	--	--	--

JOB SERVICES & REMARKS															
------------------------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Remarks:															
----------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Rat Hole	305K	Flowseal	74K												
----------	------	----------	-----	--	--	--	--	--	--	--	--	--	--	--	--

Mouse Hole		Kol-Seal													
------------	--	----------	--	--	--	--	--	--	--	--	--	--	--	--	--

Centralizers		Mud CLR 48													
--------------	--	------------	--	--	--	--	--	--	--	--	--	--	--	--	--

Baskets		CFL-117 or CD110 CAF 38													
---------	--	-------------------------	--	--	--	--	--	--	--	--	--	--	--	--	--

D/V or Port Collar		Sand													
--------------------	--	------	--	--	--	--	--	--	--	--	--	--	--	--	--

1st	1000'	3778	505K	Handling	300										
-----	-------	------	------	----------	-----	--	--	--	--	--	--	--	--	--	--

2nd	1550'		505K	Mileage											
-----	-------	--	------	---------	--	--	--	--	--	--	--	--	--	--	--

3rd	830'		1005K	FLOAT EQUIPMENT											
-----	------	--	-------	-----------------	--	--	--	--	--	--	--	--	--	--	--

4th	270'		505K	Guide Shoe											
-----	------	--	------	------------	--	--	--	--	--	--	--	--	--	--	--

5th	40'		105K	Centralizer	8 5/8 Dry Hole Plug										
-----	-----	--	------	-------------	---------------------	--	--	--	--	--	--	--	--	--	--

				Baskets											
--	--	--	--	---------	--	--	--	--	--	--	--	--	--	--	--

				AFU Inserts											
--	--	--	--	-------------	--	--	--	--	--	--	--	--	--	--	--

				Float Shoe											
--	--	--	--	------------	--	--	--	--	--	--	--	--	--	--	--

				Latch Down											
--	--	--	--	------------	--	--	--	--	--	--	--	--	--	--	--

				Pumptrk Charge	plug										
--	--	--	--	----------------	------	--	--	--	--	--	--	--	--	--	--

				Mileage	11										
--	--	--	--	---------	----	--	--	--	--	--	--	--	--	--	--

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--