

OPERATOR

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

Contact Geologist: TOM DENNING
 Contact Phone Nbr: 785-628-2593
 Well Name: MATLOCK # 1
 Location: 1700'FSL and 1200' FEL
 API: 15-051-26,954-00-00
 Pool: WILDCAT
 State: KANSAS

Field: UNNAMED
 Country: USA



Scale 1:240 Imperial

Well Name: MATLOCK # 1
 Surface Location: 1700'FSL and 1200' FEL
 Bottom Location:
 API: 15-051-26,954-00-00
 License Number: 4787
 Spud Date: 6/5/2019 Time: 10:00 PM
 Region: ELLIS COUNTY
 Drilling Completed: 6/12/2019 Time: 12:10 PM
 Surface Coordinates: 1700' FSL & 1200' FEL
 Bottom Hole Coordinates:
 Ground Elevation: 2163.00ft
 K.B. Elevation: 2172.00ft
 Logged Interval: 3100.00ft To: 3900.00ft
 Total Depth: 3900.00ft
 Formation: LANSING-KANSAS CITY
 Drilling Fluid Type: CHEMICAL/FRESH WATER GEL

SURFACE CO-ORDINATES

Well Type: Vertical
 Longitude:
 Latitude:
 N/S Co-ord: 1700' FSL
 E/W Co-ord: 1200' 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: 6/5/2019 Time: 10:00 PM
 TD Date: 6/12/2019 Time: 12:10 PM

ELEVATIONS

K.B. Elevation: 2172.00ft
 K.B. to Ground: 9.00ft

Ground Elevation: 2163.00ft

NOTES

RECOMMENDATION TO RUN PRODUCTION CASING BASED ON LOG ANALYSIS AND POSITIVE RESULTS OF DST #1 AND # 4.

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

DRILL STEM TESTING BY TRILOBITE TESTING INC: THREE (3) CONVENTIONAL TESTS AND ONE (1) STRADDLE TEST

MATLOCK # 1	YOUNGER # 1	BRULL FARMS # 1
NW SW NE SE	SW NE SW NW	SE NW NW NE
SEC.26-13S-19W	SEC.35-13-19W	SEC.25-13-19W
KB 2172'	KB 2174'	KB 2024'

LOG TOPS

Anhydrite top	1468 +704	+ 704	+ 715
Anhydrite base	1505 +667	+ 664	+ 678
Topeka	3182-1010	-1015	- 996
Heebner Sh.	3432-1260	-1267	-1253
Toronto	3452-1280	-1285	-1271
LKC	3477-1305	-1311	-1299
BKC	3714-1542	-1552	-1528
Arbuckle	3814-1642	-1668	-1638
RTD	3900-1728	-1751	-1648

SUMMARY OF DAILY ACTIVITY

06-05-19 Spud 10:00pm, set

06-06-19 187', drilling, 8 5/8" surface casing to 212' w/ 180 sxs 60/40 2%gel 3%CC, plug down 9:30AM. slope 3/4 degree, drill plug at 5:30PM.

06-07-19 1042' drilling


06-08-19 2371', drilling

06-09-19 3196' drilling, CFS 3475', short trip 20 stands,

06-10-19 3535', CFS 3535', DST#1 33463'-3535', TOWB, slope 1 1/2 degree, TIWB, CFS 3580', DST # 2 3534'-3580'.

06-11-19 3660', DST # 3 3638'-3660', TIWB, drilling

06-12-19 3805', CFS 3805', CFS 3815', RTD 3900 @12:10PM, TOWB, logs, DST # 4 straddle test 3657'-3707'

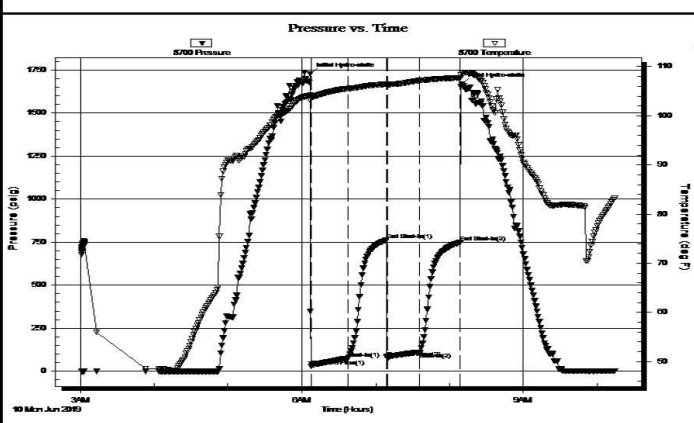
	<h3>DRILL STEM TEST REPORT</h3> <p>TDI, Inc. 26-13S-19W Ellis, KS</p> <p>1310 Bison Rd. Matlock #1 Hays, KS 67601</p> <p>ATTN: Herb Deines Job Ticket: 65692 DST#: 1</p> <p style="text-align: right;">Test Start: 2019.06.10 @ 03:01:13</p>
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GENERAL INFORMATION:

Formation: LKC "A-D"	Test Type: Conventional Bottom Hole (Initial)
Deviated: No Whipstock: ft (KB)	Tester: Brannan Lonsdale
Time Tool Opened: 06:07:34	Unit No: 73
Time Test Ended: 10:14:19	Reference Elevations: 2172.00 ft (KB)
Interval: 3464.00 ft (KB) To 3535.00 ft (KB) (TVD)	2163.00 ft (CF)
Total Depth: 3535.00 ft (KB) (TVD)	KB to GR/CF: 9.00 ft
Hole Diameter: 7.88 inches	Hole Condition: Poor

Serial #: 8700 Outside	Capacity: 8000.00 psig
Press@RunDepth: 110.41 psig @ 3465.00 ft (KB)	Last Calib.: 2019.06.10
Start Date: 2019.06.10	End Date: 2019.06.10
Start Time: 03:01:14	End Time: 10:14:19
	Time On Btm: 2019.06.10 @ 06:06:49
	Time Off Btm: 2019.06.10 @ 08:10:04

TEST COMMENT: 30- IF- BOB 6mins. Built to 45.90'
 30- IS- No blow
 30- FF- BOB 3mins. Built to 50.91"
 30- FS- No blow



PRESSURE SUMMARY			
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1726.06	104.18	Initial Hydro-static
1	27.58	103.80	Open To Flow (1)
31	74.19	105.53	Shut-In(1)
62	762.11	106.42	End Shut-In(1)
63	75.99	106.35	Open To Flow (2)
89	110.41	107.17	Shut-In(2)
122	748.45	107.73	End Shut-In(2)
124	1666.27	108.71	Final Hydro-static

Recovery		
Length (ft)	Description	Volume (bbl)
125.00	GMVCO, 20%G 65%O 10%W 5%M	1.77
95.00	GOCM, 20%G 10%O 70%M	1.35
0.00	725' GIP	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

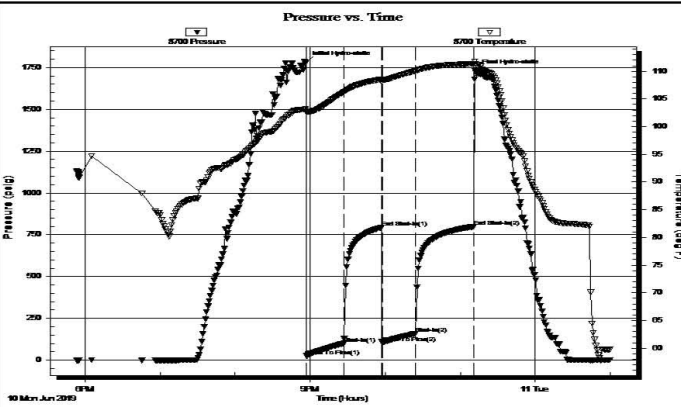
26-13S-19W Ellis, KS
Matlock #1
Job Ticket: 65693 **DST#: 2**
Test Start: 2019.06.10 @ 17:53:25

GENERAL INFORMATION:

Formation: **LKC "F&G"**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 20:56:46
Time Test Ended: 00:59:31
Test Type: Conventional Bottom Hole (Reset)
Tester: Brannan Lonsdale
Unit No: 73
Interval: **3534.00 ft (KB) To 3580.00 ft (KB) (TVD)**
Total Depth: 3580.00 ft (KB) (TVD)
Reference Elevations: 2172.00 ft (KB)
2163.00 ft (CF)
Hole Diameter: 7.88 inches Hole Condition: Fair
KB to GR/CF: 9.00 ft

Serial #: 8700 Outside
Press@RunDepth: 159.09 psig @ 3535.00 ft (KB) Capacity: 8000.00 psig
Start Date: 2019.06.10 End Date: 2019.06.11 Last Calib.: 2019.06.11
Start Time: 17:53:26 End Time: 00:59:31 Time On Btm: 2019.06.10 @ 20:56:31
Time Off Btm: 2019.06.10 @ 23:12:01

TEST COMMENT: 30- IF- BOB 13mins. Built to 18.44"
30- IS- No blow
30- FF- BOB 21mins. Built to 12.45"
30- FS- No blow



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1782.51	103.21	Initial Hydro-static
1	25.33	102.62	Open To Flow (1)
31	100.00	106.24	Shut-In(1)
61	793.30	108.54	End Shut-In(1)
61	104.52	108.43	Open To Flow (2)
88	159.09	110.08	Shut-In(2)
135	798.50	111.36	End Shut-In(2)
136	1729.38	111.37	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbt)
190.00	MW, 20% M 80% W	2.69
110.00	WM, 15% W 85% M	1.56

* Recovery from multiple tests

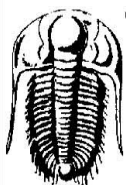
Gas Rates

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

Trilobite Testing, Inc

Ref. No: 65693

Printed: 2019.06.11 @ 07:18:20



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

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

26-13S-19W Ellis, KS
Matlock #1
Job Ticket: 65694 **DST#: 3**
Test Start: 2019.06.11 @ 11:00:55

GENERAL INFORMATION:

Formation: **LKC "I"**

Formation: LKC 3
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 13:31:01
 Time Test Ended: 18:22:46

Test Type: Conventional Bottom Hole (Reset)
 Tester: Brannan Lonsdale
 Unit No: 73

Interval: 3638.00 ft (KB) To 3660.00 ft (KB) (TVD)
 Total Depth: 3660.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2172.00 ft (KB)
 2163.00 ft (CF)
 KB to GR/CF: 9.00 ft

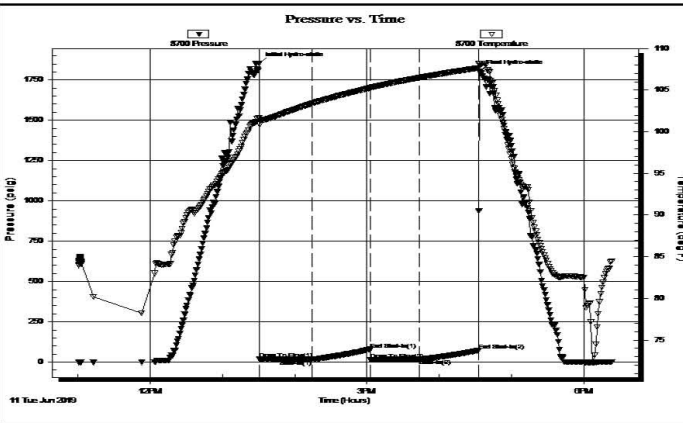
Serial #: 8700

Outside

Press@RunDepth: 17.83 psig @ 3639.00 ft (KB)
 Start Date: 2019.06.11 End Date: 2019.06.11
 Start Time: 11:00:56 End Time: 18:22:46

Capacity: 8000.00 psig
 Last Calib.: 2019.06.11
 Time On Btm: 2019.06.11 @ 13:30:46
 Time Off Btm: 2019.06.11 @ 16:33:31

TEST COMMENT: 45- IF- Slow ly built to 2.45"
 45- IS- No blow
 45- FF- Initial surge 1.68" then built slow ly to 2.95"
 45- FS- No blow



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1852.99	101.70	Initial Hydro-static
1	17.87	100.89	Open To Flow (1)
44	16.75	103.39	Shut-In(1)
92	79.53	105.26	End Shut-In(1)
92	15.21	105.28	Open To Flow (2)
133	17.83	106.49	Shut-In(2)
182	73.28	107.65	End Shut-In(2)
183	1803.65	108.16	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
30.00	GHOCM, 15%G 25%O 60%M	0.43
0.00	30' GIP	0.00

Gas Rates

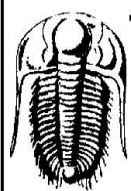
Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)

* Recovery from multiple tests

Trilobite Testing, Inc

Ref. No: 65694

Printed: 2019.06.11 @ 22:23:45



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

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

26-13S-19W Ellis, KS
Matlock #1
 Job Ticket: 65695 **DST#: 4**
 Test Start: 2019.06.12 @ 20:31:31

GENERAL INFORMATION:

Formation: LKC "K"
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 22:33:07
 Time Test Ended: 03:02:07

Test Type: Conventional Straddle (Reset)
 Tester: Brannan Lonsdale
 Unit No: 73

Interval: 3657.00 ft (KB) To 3707.00 ft (KB) (TVD)
 Total Depth: 3902.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2172.00 ft (KB)
 2163.00 ft (CF)
 KB to GR/CF: 9.00 ft

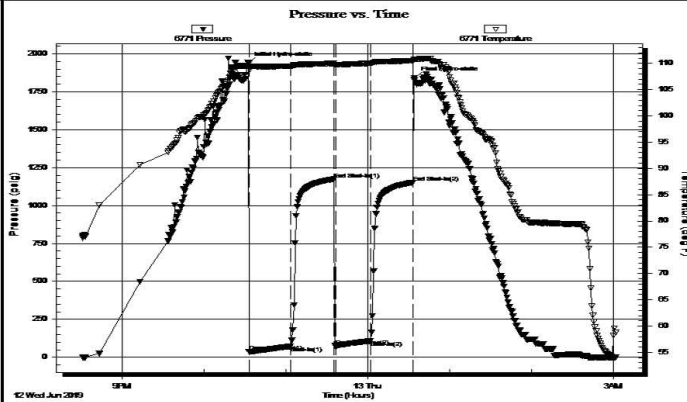
Serial #: 6771

Inside

Press@RunDepth: 108.74 psig @ 3658.00 ft (KB)
 Start Date: 2019.06.12 End Date: 2019.06.13
 Start Time: 20:31:32 End Time: 03:02:07

Capacity: 8000.00 psig
 Last Calib.: 2019.06.13
 Time On Btm: 2019.06.12 @ 22:32:52
 Time Off Btm: 2019.06.13 @ 00:34:22

TEST COMMENT: 30- IF- BOB 5mins. Built to 54.96"
 30- IS- Slow ly built to 4.37"
 30- FF- BOB 90secs. Built to 41.05"
 30- FS- Slow ly built to 5 15"



PRESSURE SUMMARY			
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1937.02	109.41	Initial Hydro-static
1	36.19	108.99	Open To Flow (1)
31	74.35	109.48	Shut-In(1)
63	1173.67	110.00	End Shut-In(1)
65	74.09	109.72	Open To Flow (2)
90	108.74	110.02	Shut-In(2)
121	1151.74	110.52	End Shut-In(2)
122	1841.75	110.77	Final Hydro-static

Recovery		
Length (ft)	Description	Volume (bbl)
60.00	HOCM, 30%O 70%M	0.85
60.00	GMCO, 30%G 50%O 20%M	0.85
130.00	CGO, 20%G 80%O	1.84
0.00	1000' GIP	0.00

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

* Recovery from multiple tests

Trilobite Testing, Inc

Ref. No: 65695

Printed: 2019.06.13 @ 08:10:14

ROCK TYPES

	Cht vari		Lmst fw<7		shale, grn		shale, red
	Chtcongl		Lmst fw>7		shale, gry		
	Dolprim		Lscongl		Carbon Sh		

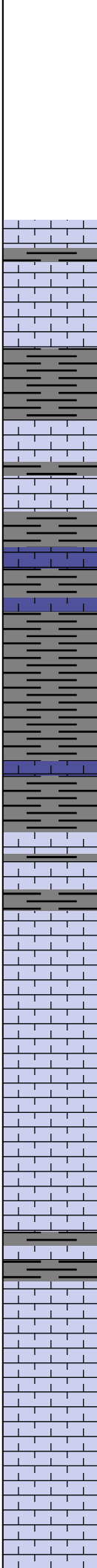
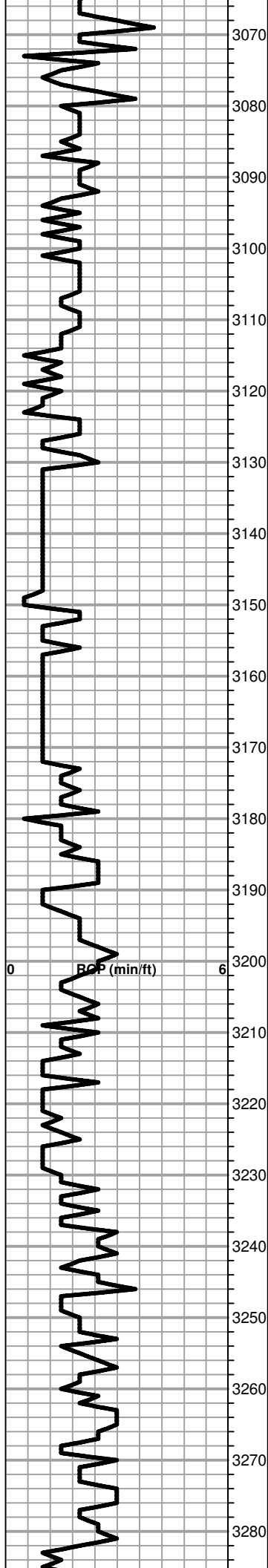
ACCESSORIES

FOSSIL

- Oolite
- Oomoldic

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

Curve Track #1	Depth Intervals	DST	Lithology	Oil Show	Geological Descriptions	Curve Track #3
ROP (min/ft)						
1:240 Imperial	Cored Interval DST Interval					1:240 Imperial
	3040 3050 3060				<p>BEGIN 1' DRILL TIME FROM 3050' TO RTD BEGIN 10' WET AND DRY SAMPLES FROM 3150' TO RTD</p> <p>ANHYDRITE TOP 1468+704 ANHYDRITE BASE 1505+667</p>	<p>8 5/8" SURFACE CASING SET TO 212' W/ 180 SXS 60/40 2%GEL 3%CC.</p> <p>SLOPE 3/4 DEGREE @212'</p>



Shale, lt-med gray, soft blocky

Lime, lt-med brn, fnxln, fossiliferous in part

Shale, lt-med -dark gray, soft blocky

Lime, lt-med brn, fnxln, fossiliferous with fusulinids and crinoid fragments.

Shale, lt-med gray, soft blocky

Lime, crm-lt brn-lt gray, fnxln
Sandstone, fine grained, gritty, NS, micaceous

TOPEKA 3182-1010

Lime, crm-lt brn, fn-vfxln, slight bedded chalk, slightly fossiliferous in part

Lime, crm-lt brn, fn-vfxln, slightly fossiliferous

Lime, lt-dark brn-med gray, fn-vfxln, fossiliferous-fusulinids

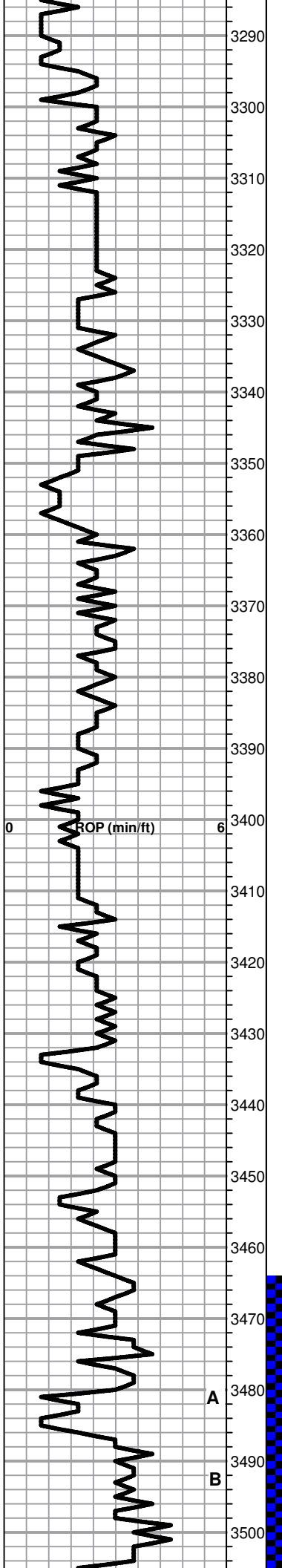
Lime, crm-lt-med brn, fn-vfxln, slightly granular in part, NS

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

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

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

Lime, lt-med brn, fn-vfxln with granular in part



Lime, med brn, granular, slightly fossiliferous, some sticky chalk

Shale, dark gray-black carbonaceous, blocky

Lime, lt-med brn, fnxln

Lime, crm, fn-vfxln, lithographic

Lime, crm, fn-vfxln

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

Shale, black carbonaceous

Lime, offwhite-med brn, fn-vfxln

Lime, lt brn, fn-vfxln

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

Lime, offwhite-lt brn, fn-vfxln

○ * Lime, mostly offwhite-lt brn, fnxln, 1 chip granular with trace of stain and very lt odor.

Lime, lt brn, fn-vfxln

HEEBNER SHALE 3432-1260

Shale, black carbonaceous, blocky
Lime, med brn, vf-micro xln

Shale, lt gray to lime green, soft

TORONTO 3452-1280

○ Lime, crm-lt brn, fnxln, scattered to few saturated chips in fine interxln and pinpoint vuggy porosity. Lt odor, NFO

Lime, white-crm, fn-vfxln

Shale, red-gray, soft blocky

LKC 3477-1305

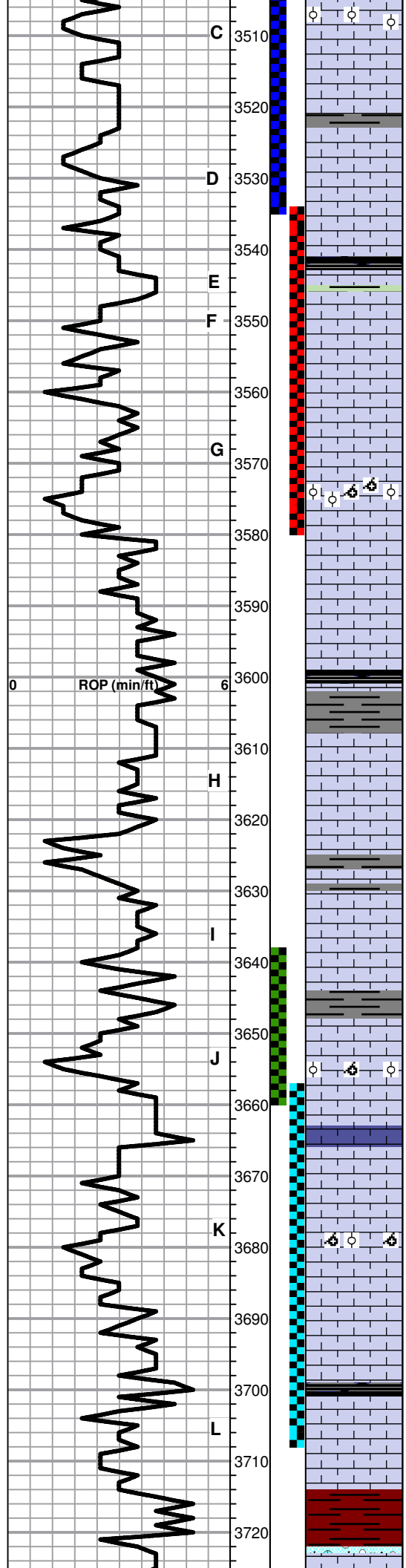
Lime, lt brn, vf-micro xln
Shale, red with lt red wash

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

lime, lt brn-lt gray, fn-vfxln

CFS 3475', SHORT TRIP 20 STANDS

DST#1 3464' TO 3535' SEE HEADER FOR TEST SUMMARY



○ Lime, lt brn, few oolitic chips with spotty staining, NFO and very lt odor

Lime, lt-med brn, fn-vfxln

○ Lime, lt brn, fnxln, oolitic and oomoldic with dark spotty to saturated staining lt odor, NFO

Lime, lt brn, fn-vfxln

Shale, black carbonaceous

○ Lime, lt brn, fnxln, fossiliferous in part with spotty lt staining in interfossiliferous and fine inter xln porosity, lt odor, NFO

○ Lime, crm-lt brn, fnxln, bedded chalk with lt white wash, few chips with spotty lt stain and lt odor, NFO

Lime, lt-med brn, fn-vfxln, brittle in part

○ Lime, crm-lt brn, fnxln, few oolitic and oomoldic chips with scattered to saturated stain, lt odor and VMSFO, lt gassy.

Lime, crm-lt brn, fn-micro xln

Lime, dark brn, fn-vfxln

Lime, white-crm-lt brn, fn-micro xln, slight bed chalk

Lime, crm-lt brn, fn-micro xln

Lime, lt brn, fn-micro xln

Lime, crm-lt brn, fn-micro xln

Lime, lt brn, fn-vfxln, zone of oolitic/oomoldic lime, lt odor, dark scattered to saturated staining, NFO

Shale, gray, platy, calcareous

Lime, crm-tan, fnxln-oolitic, lt staining, good odor, fair SFO

○ Lime, offwhite, fnxln, slightly chalky

Lime, crm-tan, fn-vfxln

BKC 3714-1542

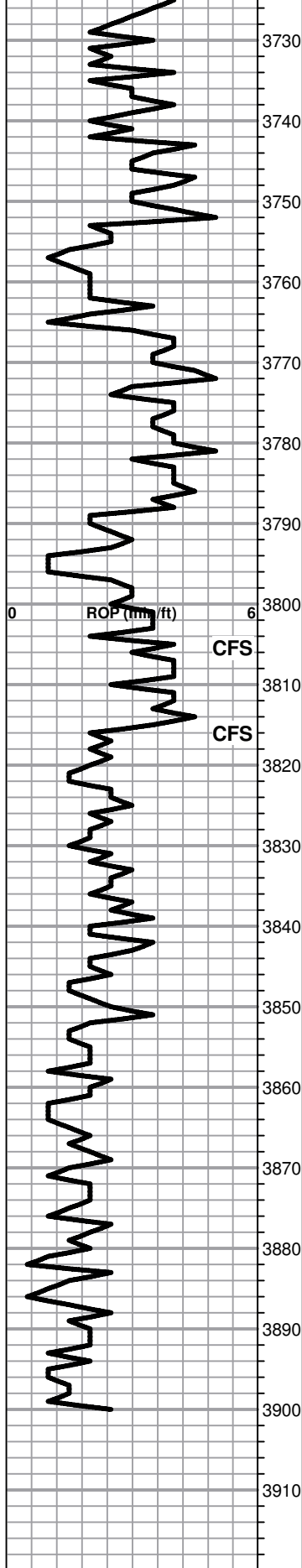
Shale, gray-reddish brn

Lime, crm, chalky, soft on crush, NS

SLOPE 1 1/2 DEGREE @
3535'
PIPE STRAP 3544.85'
BOARD 3544.78'

DST # 2 3534' TO 3580'
SEE HEADER FOR TEST
SUMMARY

DST # 4 STRADDLE TEST
3657' TO 3707'. SEE
HEADER FOR TEST
SUMMARY



Shale, varicolor grays and greens, dense, gritty

Lime, crm-offwhite, fnxln, slightly fossiliferous

Chert, maroon-vari colored, dense, no visible porosity, gummy red shale

Chert, lt color, barren, NS, clastic mix with some dolomite

Conglomerate mix of vari colored cherts and red shales

Chert, varicolored, some tarry residue, red wash shale, NS

Chert, lt colored mix, NS, some sand, NS

ARBUCKLE 3814-1642

Dolomite, crm, fn-vfxln, tight, poorly developed porosity, NS

Dolomite, offwhite-white, fn-med xln, slightly friable, NS, few qtz inclusions.

Dolomite, offwhite-buff, medxln-sucrosic, NS, few chips of oolitic chert

Dolomite, offwhite-buff, fnxln-granular

Dolomite, buff-crm, fn-med xln, sucrosic in part-granular, some rhombic xln development

Dolomite, crm-buff, fnxln-granular in part

Dolomite, crm-buff, medxln

5 1/2" PRODUCTION CASING SET TO 3899' WITH 150 SXS EA2. DV SET AT 1494' W/ 170 SXS SMD. 30 SXS RATHOLE. COMPLETED 7:00PM 6/13/2019

SLOPE 1 1/2 DEGREES @ 3692'