



"THE NEXT GENERATION OF ENERGY"

Scale 1:240 Imperial

Well Name: Avery 14-1  
 Surface Location: Sec. 14 - T5S - R37W  
 Bottom Location:  
 API: 15-023-21488-0000  
 License Number: 34917  
 Spud Date: 6/18/2018 Time: 4:15 PM  
 Region: Cheyenne County  
 Drilling Completed: 6/29/2018 Time: 8:50 AM  
 Surface Coordinates: 1335' FSL & 1645' FEL  
 Bottom Hole Coordinates:  
 Ground Elevation: 3322.00ft  
 K.B. Elevation: 3327.00ft  
 Logged Interval: 3700.00ft To: 4950.00ft  
 Total Depth: 4950.00ft  
 Formation: Mississippian  
 Drilling Fluid Type: Chemical/Fresh Water Gel

**OPERATOR**

Company: Bickle Energies, LLC  
 Address: P.O. Box 816  
 Hays, KS 67601  
 Contact Geologist: Matt Bickle  
 Contact Phone Nbr: 785-639-1681  
 Well Name: Avery 14-1  
 Location: Sec. 14 - T5S - R37W  
 API: 15-023-21488-0000  
 Pool:  
 State: Kansas Field: Un-named  
 Country: USA

**SURFACE CO-ORDINATES**

Well Type: Vertical  
 Longitude:  
 Latitude:  
 N/S Co-ord: 1335' FSL  
 E/W Co-ord: 1645' FEL

**LOGGED BY**

***Keith Reavis***  
*Consulting Geologist*

Company: Keith Reavis, Inc.  
 Address: 3420 22nd Street  
 Great Bend, KS 67530  
 Phone Nbr: 620-617-4091  
 Logged By: KLG #136 Name: Keith Reavis

**CONTRACTOR**

Contractor: L.D. Drilling Company  
 Rig #: 1  
 Rig Type: mud rotary  
 Spud Date: 6/18/2018 Time: 4:15 PM  
 TD Date: 6/29/2018 Time: 8:50 AM  
 Rig Release: Time:

**ELEVATIONS**

K.B. Elevation: 3327.00ft  
 K.B. to Ground: 5.00ft

Ground Elevation: 3322.00ft

**NOTES**

Due to positive results of Drill Stem Test #4, 5 1/2" production casing was set and cemented to further test the Pawnee Limestone through perforations and stimulation.

A Bloodhound gas detection system operated by Bluestem Labs was employed during the drilling of this well. ROP and gas data were imported from said system into this geological log. Gamma ray and caliper curves were also imported into the log.

Samples were saved and submitted to the Kansas Geological Survey Well Sample Library located in Wichita, KS.

Respectfully submitted,  
 Keith Reavis

**daily drilling report**

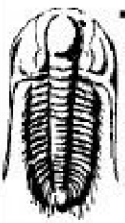
DATE	7:00 AM DEPTH	REMARKS
06/23/2018	3850	Geologist on location 1400 hrs, 3985 ft, drilling ahead, Stotler, Topeka
06/24/2018	4216	drilling ahead, Oread, Heebner, Toronto, Lansing A, shows in Toronto and A zone warrant test, short trip, TOH for DST #1, conduct and complete DST #1, storm delay, TIH w/bit, resume drilling
06/25/2018	4293	drilling ahead, LKC, shows in D and F zones warrant test, TOH w/bit, conduct and complete DST #2, successful test, TIH w/bit, drill ahead
06/26/2018	4414	drilling ahead, LKC, show in J zone warrants test, TOH w/bit, TIH w/tools, conduct DST #3, successful test, TIH w/bit, drill ahead
06/27/2018	4504	drilling ahead, Marmaton, Pawnee, show and kick in Pawnee warrants test, short trip, TOH w/bit, in w/tools, conduct DST #4
06/28/2018	4615	complete DST #4, successful test, release test, TIH w/bit, resume drilling, Myrick, Ft. Scott, Cherokee
06/29/2018	4905	drilling ahead, Cherokee, Mississippian, TD 4950 ft @ 0850 hrs, cfs, short trip, ctch, TOH w/bit, conduct electrical logging operations, geologist off location at noon

**well comparison sheet**

DRILLING WELL					COMPARISON WELL				
Avery #14-1 1335' FSL & 1645' FEL Sec 14-T5S-R37W  3327 KB					McNeish Oil - #1 Yonkey NE SE SE Sec 14-T5S-R37W  3357 KB				
								Structural Relationship	
Formation	Sample	Sub-Sea	Log	Sub-Sea	Log	Sub-Sea	Sample	Log	
Stotler	3882	-555	3884	-557	3915	-558	3	1	
Topeka	4029	-702	4023	-696	4054	-697	-5	1	
Oread	4141	-814	4142	-815	4172	-815	1	0	
Heebner	4162	-835	4162	-835	4192	-835	0	0	
Toronto	4198	-871	4199	-872	4231	-874	3	2	
Lansing	4212	-885	4212	-885	4245	-888	3	3	
Lansing D	4262	-935	4260	-933	4296	-939	4	6	
Lansing G	4314	-987	4315	-988	4348	-991	4	3	
Muncie Creek	4334	-1007	4336	-1009	4370	-1013	6	4	
Stark Shale	4413	-1086	4415	-1088	4445	-1088	2	0	
Base KC	4488	-1161	4493	-1166	4522	-1165	4	-1	
Marmaton	4502	-1175	4506	-1179	4537	-1180	5	1	
Pawnee	4596	-1269	4597	-1270	4632	-1275	6	5	
Myrick Station	4622	-1295	4624	-1297	4657	-1300	5	3	
Fort Scott	4656	-1329	4658	-1331	4692	-1335	6	4	
Cherokee	4678	-1351	4680	-1353	4714	-1357	6	4	

Mississippian	4884	-1557	4885	-1558	4955	-1598	41	40
Total Depth	4950	-1623	4955	-1628	5000	-1643	20	15

### Drill Stem Test #1

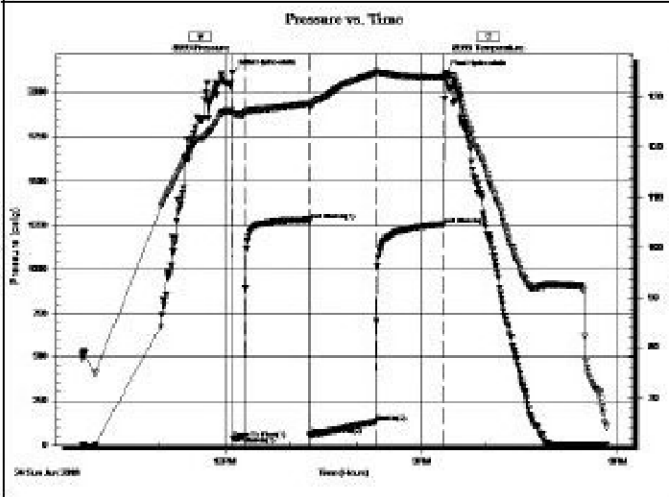
 <b>TRILOBITE TESTING, INC.</b>	<b>DRILL STEM TEST REPORT</b>	
	Bickle Energies LLC	14-5S.-37W Cheyenne Co.
	P.O. Box 816 Hays, KS 67601	<b>Avery #14-1</b>
ATTN: Keith Reavis	Job Ticket: 64182	<b>DST#:1</b>
	Test Start: 2018.06.24 @ 09:50:00	

**GENERAL INFORMATION:**

Formation: <b>Toronto/Lansing A</b>	Test Type: Conventional Bottom Hole (Initial)
Deviated: No Whipstock: ft (KB)	Tester: Martine Salinas
Time Tool Opened: 12:07:40	Unit No: 62
Time Test Ended: 17:49:39	Reference Elevations: 3327.00 ft (KB)
Interval: <b>4156.00 ft (KB) To 4216.00 ft (KB) (TVD)</b>	3322.00 ft (CF)
Total Depth: 4216.00 ft (KB) (TVD)	KB to GR/CF: 5.00 ft
Hole Diameter: 7.88 inches -hole Condition: Good	

<b>Serial #: 8959</b>	<b>Inside</b>	Capacity: 8000.00 psig
Press@RunDepth: 131.77 psig @ 4157.00 ft (KB)	Start Date: 2018.06.24	Last Calib.: 2018.06.24
Start Time: 09:50:01	End Date: 2018.06.24	Time On Btm: 2018.06.24 @ 12:07:20
	End Time: 17:49:40	Time Off Btm: 2018.06.24 @ 15:21:50

**TEST COMMENT:** 10-F-S blow built to 4"  
60-SI-No blow  
60-FF-S blow built to B.O.B (12 inches) @ 47 mins  
60-FSI-No blow



PRESSURE SUMMARY			
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2109.93	127.24	Initial Hydro-static
1	35.40	128.52	Open To Flow (1)
11	49.92	128.56	Shut-In(1)
71	1281.99	128.50	End Shut-In(1)
71	56.55	127.87	Open To Flow(2)
131	131.77	134.75	Shut-In(2)
193	1255.71	133.77	End Shut-In(2)
195	2108.63	134.34	Final Hydro-static

Recovery		
Length (ft)	Description	Volume (bbl)
242.00	OS/HMCW 4%O, 38%M, 59%W	3.39
1.00	CO 100%	0.01

Gas Rates			
	Choke (Inches)	Pressure (psig)	Gas Rate (Mcf/D)

### Drill Stem Test #2

 <b>TRILOBITE TESTING, INC.</b>	<b>DRILL STEM TEST REPORT</b>	
	Bickle Energies LLC	14-5S.-37W Cheyenne Co.
	P.O. Box 816	<b>Avery #14-1</b>



Hays, KS 67601

Job Ticket: 64183

DST#: 2

ATTN: Keith Reavis

Test Start: 2018.06.25 @ 11:06:00

**GENERAL INFORMATION:**Formation: **LKC D,E & F**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 12:33:10

Time Test Ended: 17:34:39

Test Type: Conventional Bottom Hole (Reset)

Tester: Martine Salinas

Unit No: 82

Interval: **4249.00 ft (KB) To 4307.00 ft (KB) (TVD)**

Reference Elevations: 3327.00 ft (KB)

Total Depth: 4307.00 ft (KB) (TVD)

3322.00 ft (CF)

Hole Diameter: 7.88 inches -hole Condition: Good

KB to GR/CF: 5.00 ft

**Serial #: 8959**

Inside

Press@RunDepth: 51.15 psig @ 4250.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2018.06.25

End Date:

2018.06.25

Last Calib.: 2018.06.25

Start Time: 11:06:01

End Time:

17:34:40

Time On Btm: 2018.06.25 @ 12:33:00

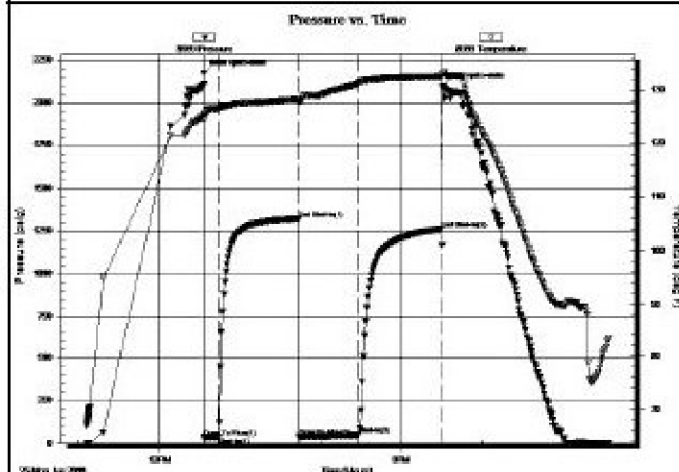
Time Off Btm: 2018.06.25 @ 15:31:00

**TEST COMMENT:** 10-F-S.blow built to 3/4"

60-SI-No blow

45-FF-S.blow @ 8 mins built to 1 1/2"

60-FSI-No blow

**PRESSURE SUMMARY**

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2173.59	125.43	Initial Hydro-static
1	34.62	124.44	Open To Flow (1)
11	37.56	128.54	Shut-In(1)
71	1321.67	128.25	End Shut-In(1)
71	40.08	127.73	Open To Flow (2)
116	51.15	131.32	Shut-In(2)
177	1262.40	132.50	End Shut-In(2)
178	2095.58	133.03	Final Hydro-static

**Recovery**

Length (ft)	Description	Volume (bbl)
68.00	SOSM 1%O, 99%M	0.95

\* Recovery from multiple tests

**Gas Rates**

	Choke (inches)	Pressure (psig)	Gas Rate (Mcfd)

**Drill Stem Test #3****TRILOBITE TESTING, INC.****DRILL STEM TEST REPORT**

Bicke Energies LLC

14-5S.-37W

Cheyenne Co.

P.O. Box 816

Hays, KS 67601

Avery #14-1

Job Ticket: 64184

DST#: 3

ATTN: Keith Reavis

Test Start: 2018.06.26 @ 11:54:00

**GENERAL INFORMATION:**Formation: **LKC " J "**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 13:49:50

Time Test Ended: 18:59:20

Test Type: Conventional Bottom Hole (Reset)

Tester: Martine Salinas

Unit No: 82

Interval: **4360.00 ft (KB) To 4414.00 ft (KB) (TVD)**

Reference Elevations: 3327.00 ft (KB)

Total Depth: 4414.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches-hole Condition: Good

3322.00 ft (CF)  
 KB to GR/CF: 5.00 ft

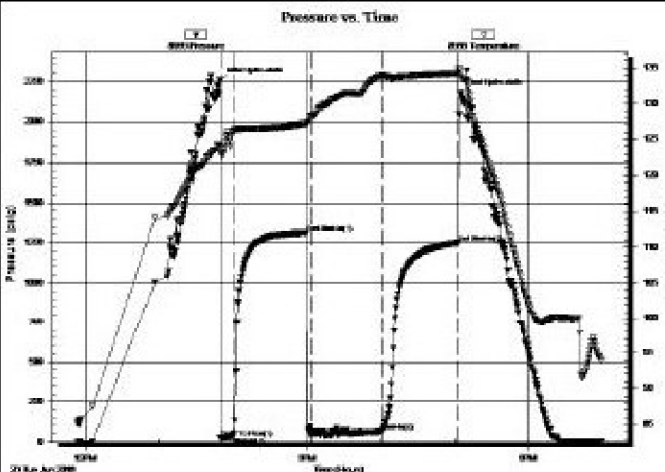
Serial #: 8959

Inside

Press@RunDepth: 66.27 psig @ 4361.00 ft (KB)  
 Start Date: 2018.06.26 End Date: 2018.06.26  
 Start Time: 11:54:01 End Time: 18:59:20

Capacity: 8000.00 psig  
 Last Calib.: 2018.06.26  
 Time On Btm: 2018.06.26 @ 13:49:10  
 Time Off Btm: 2018.06.26 @ 17:04:30

TEST COMMENT: 10-F-S.blow built to 2"  
 60-IS-No blow  
 45-FF-S.blow @ 1 mins built to 9"  
 60-FSI-No blow



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2256.91	124.17	Initial Hydro-static
1	24.75	123.19	Open To Flow (1)
11	34.93	126.21	Shut-In(1)
71	1314.20	127.28	End Shut-In(1)
75	43.96	128.25	Open To Flow (2)
132	66.27	133.88	Shut-In(2)
194	1248.33	134.23	End Shut-In(2)
196	2179.91	134.74	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
63.00	SOCM 8%O, 92%M	0.88
31.00	GOC/WCM 3%G, 15%O, 22%W, 60%M	0.43
1.00	CO 100%O	0.01

\* Recovery from multiple tests

Gas Rates

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

Drill Stem Test #4



**TRIOBITE TESTING, INC.**

**DRILL STEM TEST REPORT**

Bickle Energies LLC

P.O. Box 816  
Hays, KS 67601

ATTN: Keith Reavis

**14-5S.-37W Cheyenne,KS**

**Avery #14-1**

Job Ticket: 64185      **DST#:4**

Test Start: 2018.06.27 @ 22:10:00

GENERAL INFORMATION:

Formation: Pawnee  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 00:02:30  
 Time Test Ended: 07:34:19

Test Type: Conventional Bottom Hole (Reset)  
 Tester: Martine Salinas  
 Unit No: 82

Interval: 4580.00 ft (KB) To 4615.00 ft (KB) (TVD)  
 Total Depth: 4615.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches-hole Condition: Good

Reference Elevations: 3327.00 ft (KB)  
 3322.00 ft (CF)  
 KB to GR/CF: 5.00 ft

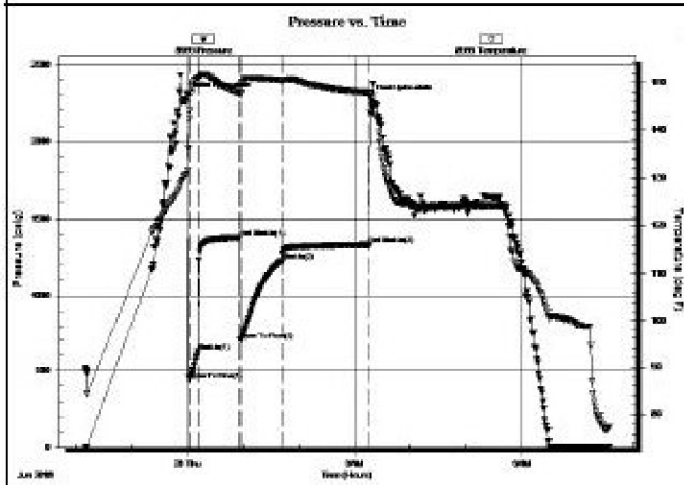
Serial #: 8959

Inside

Press@RunDepth: 1224.51 psig @ 4581.00 ft (KB)  
 Start Date: 2018.06.27 End Date: 2018.06.28  
 Start Time: 22:10:01 End Time: 07:34:19

Capacity: 8000.00 psig  
 Last Calib.: 2018.06.28  
 Time On Btm: 2018.06.28 @ 00:00:40  
 Time Off Btm: 2018.06.28 @ 03:16:50

TEST COMMENT: 10-F-5" blow built to B.O.B (12 inches) @ 45 secs (blow increased to 265")  
 60-IS-Blow back built to B.O.B (12 inches) @ 4 mins (blow increased to 335")  
 45-FF-Blow built to B.O.B (12 inches) @ 45 mins (blow increased to 240")



**PRESSURE SUMMARY**

Time (Mn.)	Pressure (psig)	Temp (deg F)	Annotation
0	2302.19	131.76	Initial Hydro-static
2	440.60	142.37	Open To Flow (1)
11	626.64	150.81	Shut-In(1)
56	1378.42	147.79	End Shut-In(1)
57	694.80	147.27	Open To Flow (2)
102	1224.51	150.43	Shut-In(2)
195	1332.94	147.84	End Shut-In(2)
197	2283.10	146.69	Final Hydro-static

**Recovery**

Length (ft)	Description	Volume (bbl)
127.00	GOCM 20%G, 25%O, 55%M	1.78
2954.00	CGO 25%G, 75%O Reversed	41.44
221.00	CGO 16%G, 84%O	3.10
0.00	GTS	0.00

\* Recovery from multiple tests

**Gas Rates**

	Choke (inches)	Pressure (psig)	Gas Rate (McfD)

**ROCK TYPES**

Dolprim	Lmst fw7>	Carbon Sh	Ss
sdy lmsl	shale, grn	shale, red	Siltst
Lmst fw<7	shale, gry	Shcol	

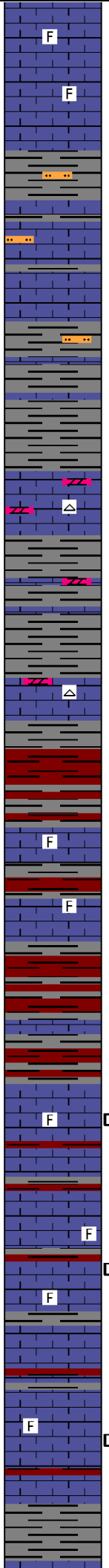
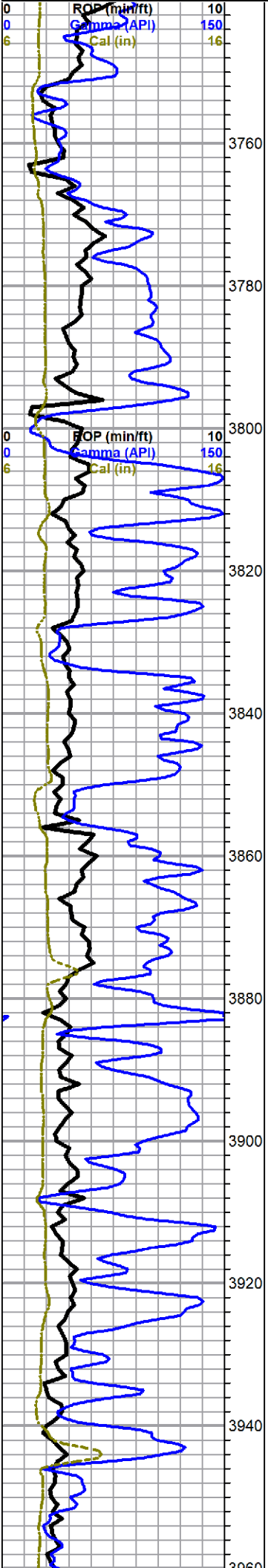
**ACCESSORIES**

<b>MINERAL</b>	<b>FOSSIL</b>	<b>STRINGER</b>	<b>TEXTURE</b>
⊥ Calcareous	∩ Bioclastic or Fragmental	Dolomite	C Chalky
▲ Chert, dark	∩ Coral	Limestone	L Lithogr
∩ Glauconite	F Fossils < 20%	Sandstone	
× Mineral Crystals	⊕ Oolite	Siltstone	
P Pyrite	∩ Pellets	Shale	
• Silty		red shale	
△ Chert White			

**OTHER SYMBOLS**

<b>Oil Show</b>	<b>DST</b>
● Good Show	DST Int
● Fair Show	DST alt
● Poor Show	Core
○ Spotted or Trace	tail pipe
○ Questionable Stn	
D Dead Oil Stn	
■ Fluorescence	
* Gas	

Curve Track #1				TG, C1 - C5				
ROP (min/ft)		Depth   Intervals	DST	Lithology	Oil Show	Geological Descriptions	Total Gas (units)	
Gamma (API)							C1 (units)	
Cal (in)							C2 (units)	
							C3 (units)	
							C4 (units)	
							C5 (units)	



**20 ft wet and dry samples**

limestone, light gray, mostly cryptocrystalline, slightly fossiliferous to sub-lithographic, dense, no shows

mostly dark gray mixed limestone, dense gray limey shale, some lavender siltstone

limestone, cream to light gray, some white, micro-cryptocrystalline, fossiliferous to sub-lithographic, trace spongy pinpoint porosity, with dolomite, light gray, microcrystalline, sub-sucrosic, poor visible porosity, no shows, some scattered light gray chert, no shows

a.a.

flood shale, red, silty, with lavender, red wash in samples, cream and light gray fossiliferous limestone, maroon tinting, with some arenaceous dense maroon limestone, no shows

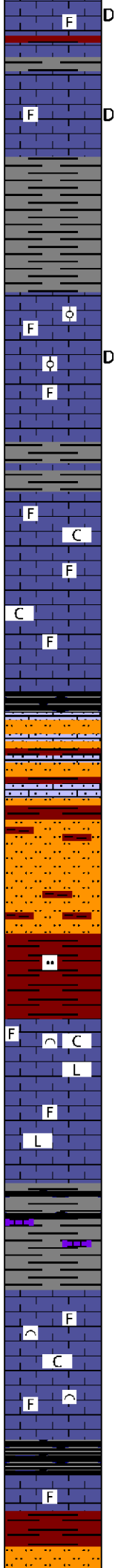
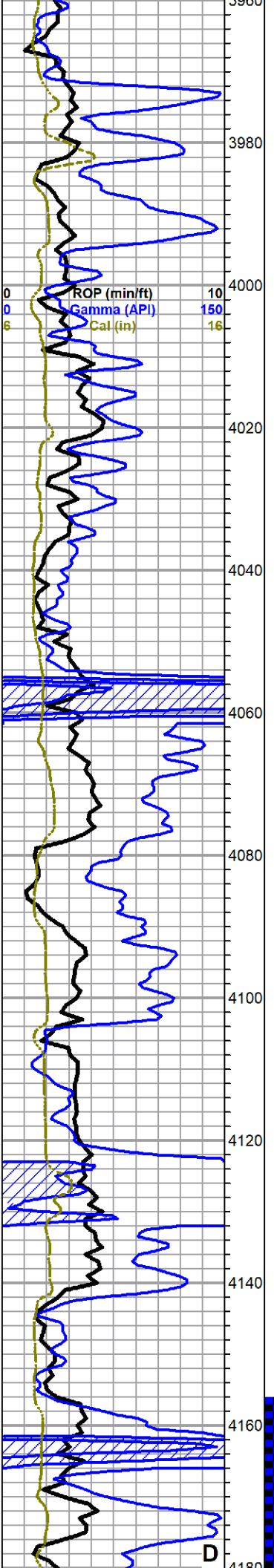
**Stotler 3882 -555**

limestone, variable gray, micro-cryptocrystalline, fossiliferous, trace dark gray pelletal, trace black solid stained asphaltic, leached, no free oil, no odor

limestone, white, light gray and cream, chalky, fossiliferous, some mottling, scattered black dead stain (no cut), some surface etching, trace pinpoint porosity, trace solid black leached asphaltic (good cut), dense, no show free oil, no odor, some scattered fair fluorescence

limestone, light gray, mostly cryptocrystalline, fossiliferous, grainy and chalky in part, scattered dead black stain, poor visible porosity, scaly dead oil with some sheen on break, scattered light fluorescence, no other shows free oil, no odor, poor to no cut, 4000 sample shows more evident solution vugs, good staining, but mostly dead, one rock with some very tarry oil





limestone a.a.

limestone, cream to light gray, microcrystalline, fossiliferous to oolitic, recrystallized in part, poor visible porosity, fairly dense, spotty to heavy black dead staining, no show free oil, no odor, light fluorescence, fair milky white to bluish white cut

begin 10 ft wet and dry samples @ 4030 ft

**Topeka 4029 -702**

limestone, white to light gray and cream, micro-cryptocrystalline, fossiliferous, grain in part, chalky in part, scattered small vugs, barren, abundant chalk

shale, black carbonaceous

light gray siltstone and silty limestone

soft red shale and red siltstone

limestone, light gray to cream, fossiliferous, fine grained bioclastic, chalky in part, some pinpoint porosity, no shows

grades to limestone, gray, cryptocrystalline, lithographic and fossiliferous, dense, no shows

black and gray shale, with gray argillaceous limestone, trace light gray limestone, cryptocrystalline, slightly fossiliferous, trace stain, no show free oil, no odor

**Oread 4141 -814**

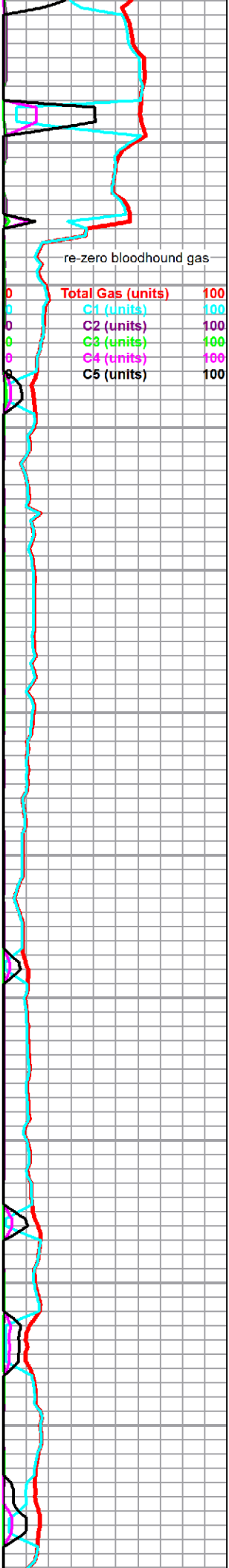
limestone, white to cream, bioclastic to fossiliferous, grainy, chalky, some pinpoint porosity, abundant chalk in samples, no shows

**Heebner 4162 -835**

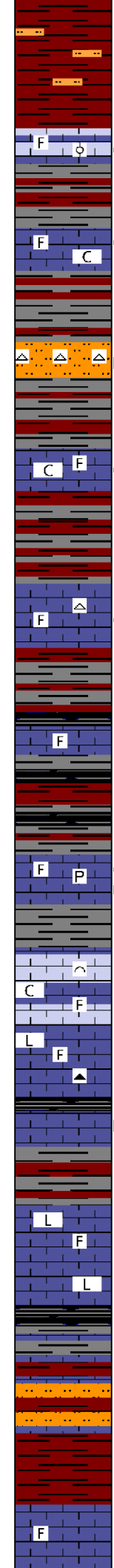
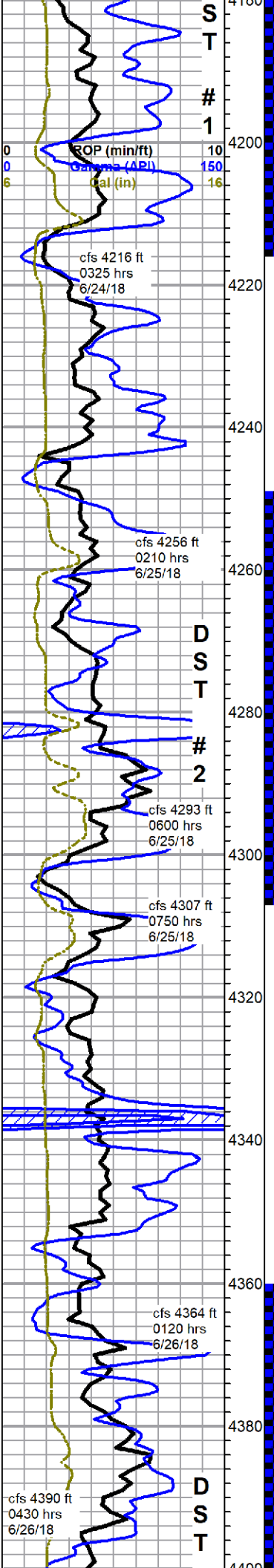
shale, black carbonaceous

limestone, gray to brown, cryptocrystalline, fossiliferous, some large clasts, no shows

shale red, silty, siltstone, pink to red







**Toronto 4198 -871**

limestone, white to light gray, grainy fossiliferous to oolitic, chalky and weathered in part, some fair vuggy porosity, fairly even black stain, questionable odor, show slow bleeding free oil and heavy sheen, light fluorescence, slow streaming milky cut with halo

**Lansing 4212 -885**

limestone, white to light gray and cream, micro-cryptocrystalline, fossiliferous, grainy in part, some chalky and weathered, spotty to even black staining, fair odor, steaming sheen with slight show heavy bleeding oil, good fluorescence, slow steaming milky cut with halo

4240 & 50 samples, B zone, light gray siltstone, pyritic with large chert nodules, well cemented, slight lightly black mottled staining, no show free oil, poor fluorescence, light blue cut with halo

C zone - limestone, white to light gray, cryptocrystalline, fossiliferous, chalky, poor visible porosity, spotty speckled black gilstonitic/asphalt staining, no show free oil, no odor, fair fluorescence, fair cut

D zone - limestone, white to light gray, microcrystalline, sub-lithographic to fossiliferous, spotty black dead stain, few pieces nice vugs with oily stain and heavy clingy oil, trace free oil in tray, fleeting odor, spotty fluorescence, good cut, with; smokey gray to white chert, spotty stain

E zone - light gray to blue gray, cryptocrystalline, fossiliferous, some large clasts, poor visible porosity, no shows

F zone - limestone, white to gray, microcrystalline, fossiliferous, some re-crystallized, trace pyritic, fair scattered pinpoint to interclast porosity, spotty to fair overall black oily stain, streaming sheen in tray, good show oil on break, questionable odor, variable fair to good fluorescence, excellent cut

G zone - limestone, white to cream, grainy bioclastic to fossiliferous, very chalky, no shows grades to cream to gray, cryptocrystalline, fossiliferous to lithographic, dense, no shows

limestone, dark gray to mottled gray, cyptocrystalline, fossiliferous to lithographic, dense, cherty, no shows

**Muncie Creek 4334 -1007**

shale, black carbonaceous

H zone - limestone, light gray to white, chalky fossiliferous, poor visible porosity, scattered light to even spotty black staining, no show free oil, no odor, light fluorescence, poor cut

H zone - limestone, cream to light gray, cryptocrystalline, lithographic to fossiliferous, trace chalky, no visible porosity, mostly dense, no shows

gray and black shales, with olive gray fossiliferous limestone, abundant carry-over from above

siltstone, red, with red sandy shale, abundant very fine mixed limestone, some scattered black staining, no free oil or odor

cfs sample, a.a. with flood soft mushy pink/red shale, heavy red wash

4400 sample, limestone, olive/gray to red/brown, microcrystalline, arenaceous to fossiliferous, some large clasts and secondary calcite, trace oolitic with light stain, abundant shale from above

J Porosity - limestone, white to light gray, cryptocrystalline, lithographic

Total Gas (units)	100
C1 (units)	100
C2 (units)	100
C3 (units)	100
C4 (units)	100
C5 (units)	100

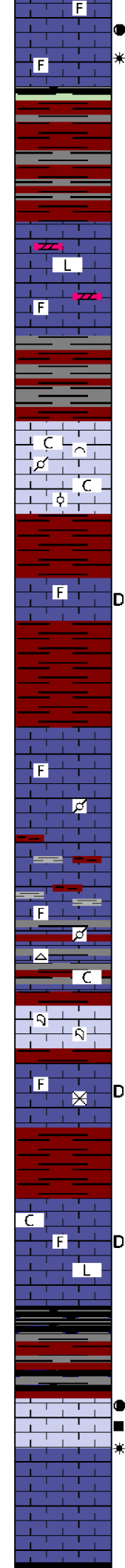
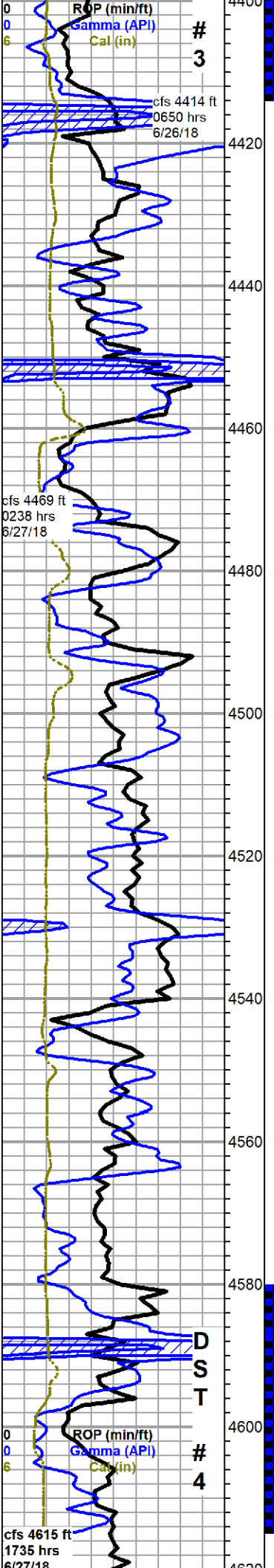
Strap 0.44 ft LTB  
deviation 3/4 deg

Andy's Mud chk  
@ 4216 ft  
1230 hrs 6/24/18  
Vis. 45 Wt. 9.3  
PV 18 YP 9  
WL 7.6  
Cake 1/32  
pH 9.5  
CHI 500 ppm  
Ca 36 ppm  
Sol 4.1 LCM 2#  
DMC \$1019.40  
CMC \$8869.15

Andy's Mud chk  
@ 4307 ft  
1045 hrs 6/25/18  
Vis. 46 Wt. 9.3  
PV 20 YP 10  
WL 7.2  
Cake 1/32  
pH 10.5  
CHI 750 ppm  
Ca 40 ppm  
Sol 4.1 LCM 1.5#  
DMC \$673.30  
CMC \$9542.45

SCALE CHANGE

Total Gas (units)	100
G1 (units)	100
G2 (units)	100
G3 (units)	100
G4 (units)	100
G5 (units)	100



to fossiliferous, dense to friable, scattered slight surface etching with spotty to even light golden stain, slight show free oil and fair show gassy oil on break, faint to fleeting gassy odor, scattered fair fluorescence with variable poor to good cut with halo

**Stark Shale 4413 -1086**  
 mixed shales and abundant trip trash

K zone - limestone, light gray, microcrystalline, arenaceous to sub-sucrosic, dolomite, light tan, microcrystalline, sub-sucrosic, limestone, white to light gray, cryptocrystalline, fossiliferous to sub-lithographic, dense, some chalk, no shows

L zone - limestone, gray, grainy bioclastic to fine oolitic/pelletal, good interclast porosity, no shows, poor fluorescence, flood chalk in samples

limestone, light gray, fossiliferous to pelletal, recrystallized in part, some arenaceous, scattered spotty to fair speckled black dead stain, no show free oil, no odor, poor fluorescence and cut

**Base KC 4488 -1161**

**Marmaton 4502 -1175**  
 limestone, gray to lavender to tan, fossiliferous to pelletal, some large clasts, poor visible porosity, abundant lavender gray shaley lime to limey shale, some silty, lithographic to arenaceous texture, soft to dense, abundant shale, no shows

mixed red and gray shales with limestone a.a.

limestone, olive gray, cream, maroon, microcrystalline, fossiliferous/pelletal, some large clasts, some scattered chert, abundant chalk, some scattered coral fan fragments, no shows

4550 flood translucent coral fan fragementes with red siltstones

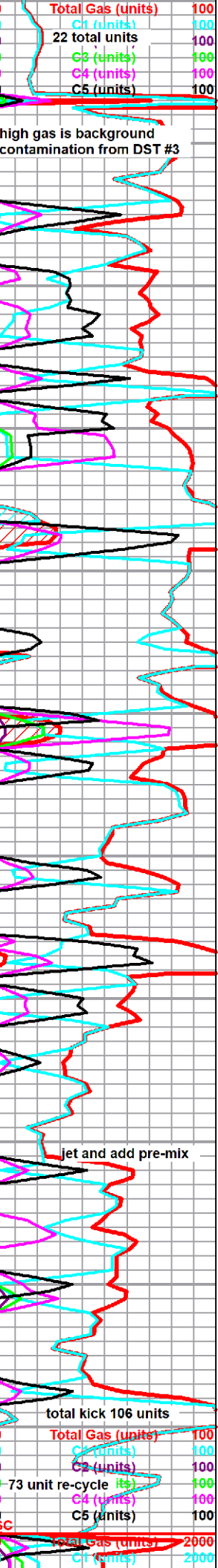
limestone, light gray to cream, cryptocrystalline, recrystallized fossiliferous, secondary calcite, dense, with variable white to gray chalky fossiliferous, no visible porosity, trace of spotty black dead stain, no free oil or odor

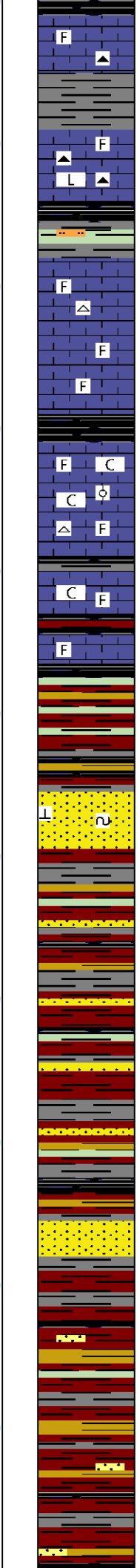
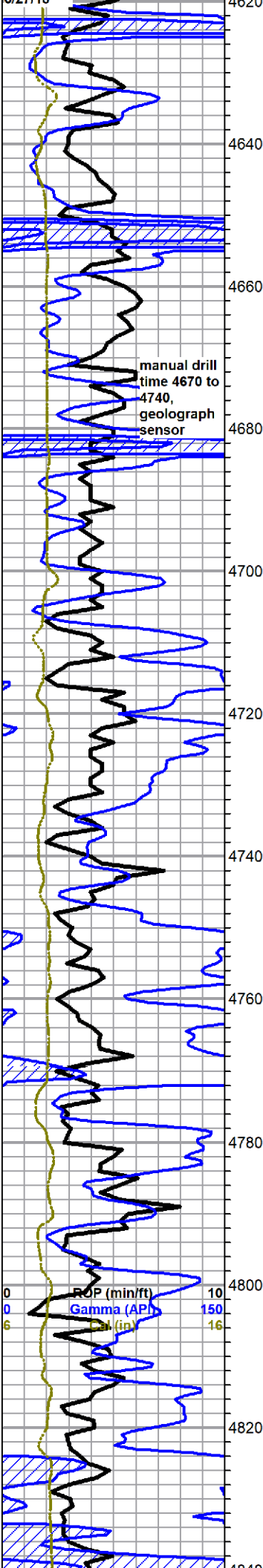
variable limestone, white to gray chalky fossiliferous, gray arenaceous and gray cryptocrystalline, compact, lithographic, some dark gray fossiliferous, cryptocrystalline, cherty, dense, trace scattered spotty black dead stain, no free oil, no odor

4600, brown carbonaceous shale, gray and red silty shale

**Pawnee 4596 -1269**  
 limestone, white to light gray, cryptocrystalline, fossiliferous, chalky and dense, mostly barren, with limestone, bioclastic to oolitic, good interclast and oolite porosity, fair light brown interclast and oolite staining, fair show free oil, good odor, bright green/yellow fluorescence, excellent cut, abundant frosted white chert, fresh, sharp

shale, black carbonaceous





shale, black carbonaceous

**Myrick Station 4622 -1295**

limestone, brown to tan and cream, microcrystalline, fossiliferous, grainy in part, some brown fossiliferous chert, no shows

limestone, light gray, micro-cryptocrystalline, fossiliferous to lithographic, chalky in part, abundant smokey gray chert, fossiliferous, no shows

**Fort Scott 4656 -1329**

limestone, light gray to cream, microcrystalline, fossiliferous, chalky in part, some scattered chert, no shows

**Cherokee 4678 -1351**

limestone, mixed, cream to gray and white, some brown, fossiliferous, trace recrystallized oolitic, abundant chalk, poor visible porosity, no shows

increasing chalk

limestone stringers a.a. with influx multicolored shales

sandstone, cream, very fine to medium grain mix, some scattered coarse grains, poorly sorted, fair rounding, silty, dirty, some feldspars and glauconite, mostly well cemented, calcareous, no shows

mixed shale, predominately red and gray, with sandstone stringers a.a.

sandstone, white, quartz, very fine to medium grain, poorly sorted, well rounded, well cemented, some large loose quartz grains, poor visible porosity, barren

variable shale, predominately red, heavy red was, scattered variable dirty sandstone stringers



manual drill time 4670 to 4740, geolograph sensor

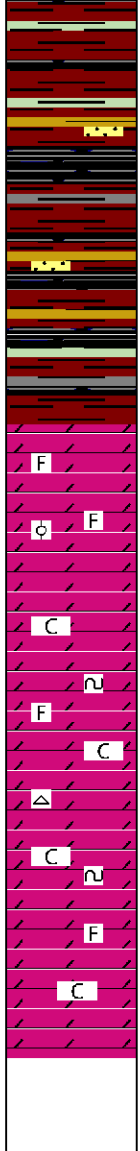
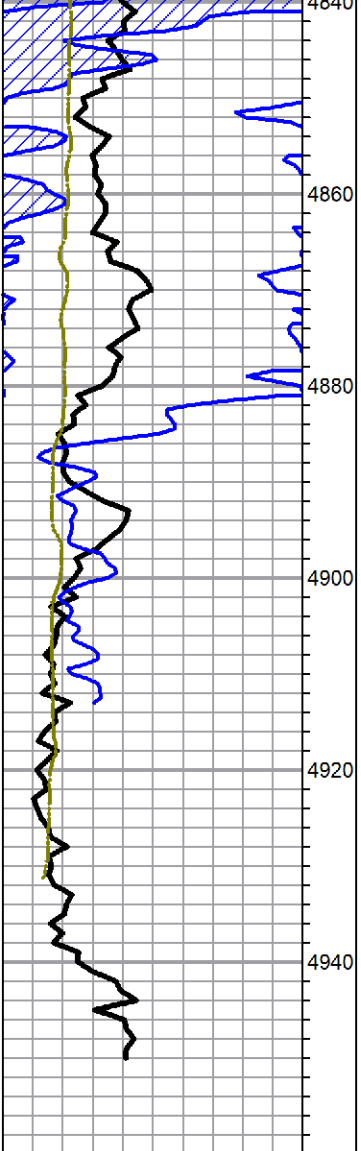
ROP (min/ft) 10  
Gamma (API) 150  
Gamma (in) 16

Andy's Mud chk @ 4628 ft  
1100 hrs 6/28/18  
Vis. 57 Wt. 9.2  
PV 24 YP 20  
WL 7.2  
Cake 1/32  
pH 10.0  
CHI 500 ppm  
Ca 20 ppm  
Sol 3.4LCM 0.5#  
DMC \$1047.80  
CMC \$11216.25

extractor flow line blocked, condensate

reset bloodhoun parameters

Total Gas (units) 2000  
C2 (units) 2000  
C3 (units) 2000  
C4 (units) 2000  
C5 (units) 2000



shales grade to predominately black and gray, still scattered sandstone clusters a.a.

**Mississippian 4884 -1557**

dolomite, brown/gray mottled, microcrystalline, sub-sucrosic, recrystallized fossiliferous, poor visible porosity, some chalk, no shows

dolomite to dolomitic limestone, light gray to tan mottled, flattened oolitic to recrystallized fossiliferous, poor visible porosity, no shows

grades to: dolomite, mixed gray to cream, mostly microcrystalline, fossiliferous in part, sub-sucrosic to sub-rhombic, some weathered, some glauconitic, some large secondary dolomite crystals, abundant chalk in samples, trace chert

a.a., no shows

rotary TD 4950 ft @ 0850 hrs 6/29/18  
 Gemini Wireline TD 4955 ft

