

**OPERATOR**

Company: Younger Energy Company  
 Address: 9415 E. Harry  
 Bldg. 400 Suite 403  
 Wichita, KS 67207

Contact Geologist:  
 Contact Phone Nbr: 316-681-2542  
 Well Name: Zackary #1-2  
 Location: Sec. 2 - T29S - R1W  
 API: 15-173-21047-0000  
 Pool:  
 State: Kansas

Field: Wildcat  
 Country: USA



Scale 1:240 Imperial

Well Name: Zackary #1-2  
 Surface Location: Sec. 2 - T29S - R1W  
 Bottom Location:  
 API: 15-173-21047-0000  
 License Number: 30705  
 Spud Date: 1/28/2017 Time: 4:00 PM  
 Region: Sedgwick  
 Drilling Completed: 2/5/2017 Time: 1:55 PM  
 Surface Coordinates: 2270' FNL & 1100' FEL  
 Bottom Hole Coordinates:  
 Ground Elevation: 1292.00ft  
 K.B. Elevation: 1302.00ft  
 Logged Interval: 2400.00ft To: 3767.00ft  
 Total Depth: 3767.00ft  
 Formation: Arbuckle  
 Drilling Fluid Type: Chemical/Fresh Water Gel

**SURFACE CO-ORDINATES**

Well Type: Vertical  
 Longitude: -97.39247  
 Latitude: 37.557952  
 N/S Co-ord: 2270' FNL  
 E/W Co-ord: 1100' 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: EC Services, LLC  
 Rig #: 6  
 Rig Type: mud rotary  
 Spud Date: 1/28/2017 Time: 4:00 PM  
 TD Date: 2/5/2017 Time: 1:55 PM  
 Rig Release: Time:

**ELEVATIONS**

**ELEVATIONS**

K.B. Elevation: 1302.00ft  
K.B. to Ground: 10.00ft

Ground Elevation: 1292.00ft

**NOTES**

Due to negative drill stem tests in the Simpson Sand and no other test-worthy formations, it was decided that the Zackary #1-2 be plugged and abandoned as a dry test.

A Bloodhound gas detection unit operated by Bluestem Labs was employed during the drilling of this well. ROP and gas data were imported into this log.

Respectfully submitted,  
Keith Reavis


## Younger Energy Company daily drilling report

DATE	7:00 AM DEPTH	REMARKS
02/01/2017	2163	Geologist Keith Reavis on location @ 1200 hrs, 2332 ft, displacing mud, drill ahead, Iatan, KC lime
02/02/2017	2942	drilling KC, Stark, Swope, Hertha, BKC, Marmaton, Cherokee
02/03/2017	3394	drilling ahead, Mississippian, Kinderhook
02/04/2017	3711	drilling Simpson sand, show warrants test, short trip, strap out, TIH w/tools conduct and complete DST #1, successful test, TIH w/bit, show in B sand warrants test, conducting DST #2
02/05/2017	3734	complete DST #2, successful test, TIH w/bit, resume drilling, lower Simpson and Arbuckle, cfs, orders to P&A, geologist off location @ 1445 hrs

## Younger Energy Company well comparison sheet

DRILLING WELL					COMPARISON WELL				COMPARISON WELL			
Well # 2270' FNL & 1100' FEL Sec 2 - T29S - R1W					Slawson - Blood F #1 SE SE SE Sec 2 - T29S - R1W				E.F. Adair - Blood #1 NW NW SE Sec 2 - T29S - R1W			
1302 KB					1294 KB		Structural Relationship		1299 KB		Structural Relationship	
Formation	Sample	Sub-Sea	Log	Sub-Sea	Log	Sub-Sea	Sample	Log	Log	Sub-Sea	Sample	Log
Iatan	2429	-1127			2430	-1136	9		2451	-1152	25	
Kansas City	2751	-1449			2752	-1458	9		2768	-1469	20	
Stark	2861	-1559			2861	-1567	8					
Swope	2865	-1563			2868	-1574	11		2858	-1564	1	
Hertha	2900	-1598			2902	-1608	10		2920	-1626	28	
Base KC	2948	-1646			2948	-1654	8		2964	-1670	24	
Marmaton	3036	-1734			3036	-1742	8					
Cherokee	3201	-1899			3200	-1906	7					
Mississippian	3294	-1992			3280	-1986	-6		3305	-2011	19	
Kinderhook	3618	-2316			3606	-2312	-4		3642	-2348	32	
Simpson Sand	3697	-2395			3678	-2384	-11		3707	-2413	18	
Arbuckle	3761	-2459			3746	-2452	-7					
Total Depth	3767	-2465			3779	-2485	20		3757	-2463	-2	

**Drill Stem Test #1**

	<b>DRILL STEM TEST REPORT</b>	
	YOUNGER ENERGY COMPANY  9415 EAST HARRY SUITE 403 WICHITA, KANSAS 67207-5083  ATTN: KEITH REAVIS	2-29S-1W SEDGWICK  <b>ZACKARY 1-2</b>  Job Ticket 01145      DST#:1  Test Start: 2017.02.04 @ 08:36:00

GENERAL INFORMATION:

Formation: **SIMPSON**  
 Deviated: No Whipstock ft (KB)  
 Time Tool Opened: 11:50:00  
 Time Test Ended: 14:00:00

Test Type: Conventional Bottom Hole (Initial)  
 Tester: GENE BUDIG  
 Unit No: 1 135

Interval: **3613.00 ft (KB) To 3711.00 ft (KB) (TVD)**  
 Total Depth: 3711.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches -hole Condition: Fair

Reference Elevations: 1302.00 ft (KB)  
 1292.00 ft (CF)  
 KB to GR/CF: 10.00 ft

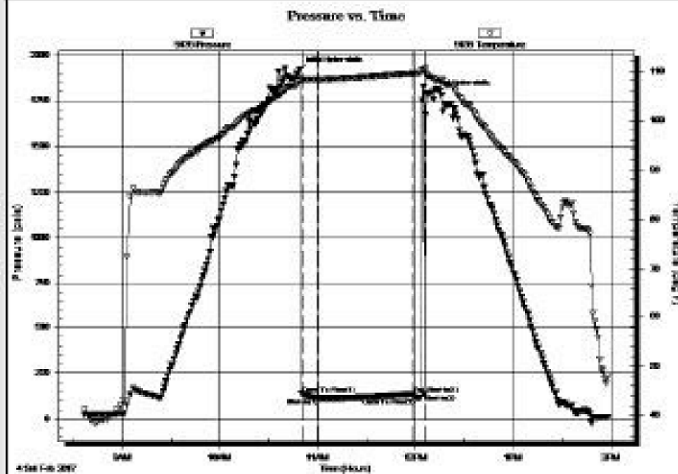
**Serial #: 9139**

**Inside**

Press@RunDepth: 134.55 psia @ 3706.03 ft (KB)  
 Start Date: 2017.02.04 End Date: 2017.02.04  
 Start Time: 08:37:00 End Time: 13:58:00

Capacity: 5000.00 psia  
 Last Calib.: 2017.02.04  
 Time On Btm: 2017.02.04 @ 10:49:00  
 Time Off Btm: 2017.02.04 @ 12:08:00

TEST COMMENT: 1ST OPENING 10 MINUTES VERY WEAK SURFACE BLOW FOR 8 MINUTES AND DIED  
 1ST SHUT-IN 60 MINUTES NNO BLOW BACK  
 2ND OPENING 15 MINUTES NO BLOW-FLUSHED TOOL-GOOD SURGE-NO HELP  
 2ND SHUT-IN NONE TAKEN



**PRESSURE SUMMARY**

Time (Min.)	Pressure (psia)	Temp (deg F)	Annotation
0	1918.58	108.35	Initial Hydro-static
2	135.76	108.12	Open To Flow (1)
12	112.03	108.23	Shut-In(1)
70	134.55	109.42	End Shut-In(1)
71	116.33	109.45	Open To Flow (2)
77	135.54	109.66	Shut-In(2)
79	1788.48	108.85	Final Hydro-static

**Recovery**

Length (ft)	Description	Volume (bbl)
10.00	DRILLING MUD	0.14

**Gas Rates**

Choke (inches)	Pressure (psia)	Gas Rate (M d/d)

**Drill Stem Test #2**



**DRILL STEM TEST REPORT**

YOUNGER ENERGY COMPANY  
 9415 EAST HARRY SUITE 403  
 WICHITA, KANSAS 67207-5083  
 ATTN: KEITH REAVIS

**2-29S-1W SEDGWICK**  
**ZACKARY 1-2**  
 Job Ticket: 01146 **DST#:2**  
 Test Start: 2017.02.04 @ 21:29:00

**GENERAL INFORMATION:**

Formation: **SIMPSON B**  
 Deviated: No Whipstock ft (KB)  
 Time Tool Opened: 23:28:00  
 Time Test Ended: 06:27:00

Test Type: Conventional Bottom Hole (Initial)  
 Tester: GENE BUDIG  
 Unit No: 1

Interval: **3614.00 ft (KB) To 3734.00 ft (KB) (TVD)**  
 Total Depth: 3734.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches -hole Condition: Fair

Reference Elevations: 1302.00 ft (KB)  
 1292.00 ft (CF)  
 KB to GR/CF: 10.00 ft

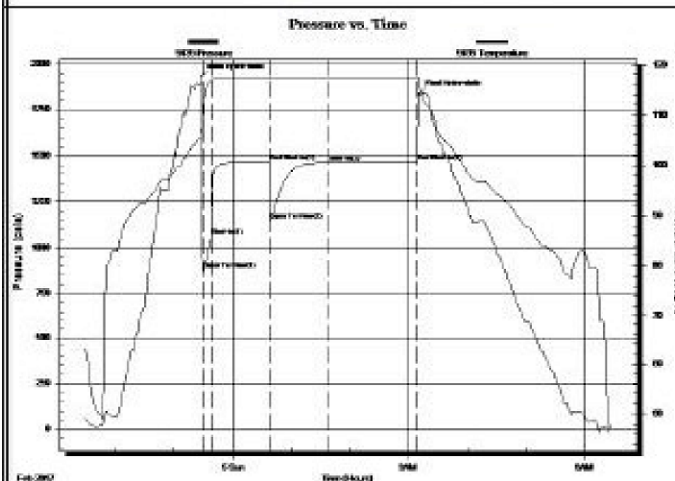
**Serial #: 9139**

**Inside**

Press@RunDepth: 1467.83 psia @ 3729.04 ft (KB)

Capacity: 5000.00 psia

TEST COMMENT: 1ST OPENING 10 MINUTES STRONG BLOW LBOTTOM OF THE BUCKET IN ONE MINUTE  
 1ST SHUT-IN 60 MINUTES NO BLOW BACK  
 2ND OPENING 60 MINUTES STRONG BLOW DECREASED AND DIED IN 60 MINUTES  
 2ND SHUT-IN 90 MINUTES NO BLOW BACK



Time (Min.)	Pressure (psia)	Temp (deg F)	Annotation
0	1928.25	106.29	Initial Hydro-static
2	883.76	107.86	Open To Flow (1)
11	1064.88	116.91	Shut-In (1)
70	1468.14	117.38	End Shut-In (1)
70	1147.70	117.12	Open To Flow (2)
131	1464.27	117.52	Shut-In (2)
221	1467.83	117.55	End Shut-In (2)
222	1835.28	116.77	Final Hydro-static

Length (ft)	Description	Volume (tbi)
140.00	DRILLING MUD	1.96
120.00	WATERY MUD	1.68
240.00	MUDDY WATER	3.37
2800.00	SALT WATER CHLORIDES 50,000	36.47

Choke (inches)	Pressure (psia)	Gas Rate (M dkt)

### ROCK TYPES

<ul style="list-style-type: none"> <li> Cht</li> <li> Dolprim</li> <li> sdy lmst</li> </ul>	<ul style="list-style-type: none"> <li> Lmst fw&lt;7</li> <li> Lmst fw&gt;7</li> <li> shale, grn</li> </ul>	<ul style="list-style-type: none"> <li> shale, gry</li> <li> Carbon Sh</li> <li> shale, red</li> </ul>	<ul style="list-style-type: none"> <li> Shcol</li> <li> Ss</li> <li> Slst</li> </ul>
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### ACCESSORIES

<b>MINERAL</b> <ul style="list-style-type: none"> <li> Cht, dark</li> <li> Dolomitic</li> <li> Pyrite</li> <li> Silty</li> <li> Chert White</li> <li> Mica</li> </ul>	<b>FOSSIL</b> <ul style="list-style-type: none"> <li> Fossils &lt; 20%</li> <li> Oolite</li> <li> Pellets</li> <li> Oomoldic</li> </ul>	<b>STRINGER</b> <ul style="list-style-type: none"> <li> Limestone</li> <li> Siltstone</li> <li> red shale</li> <li> carb shale</li> </ul>	<b>TEXTURE</b> <ul style="list-style-type: none"> <li> Chalky</li> <li> Lithogr</li> </ul>
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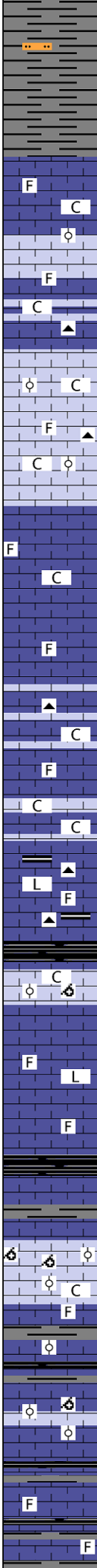
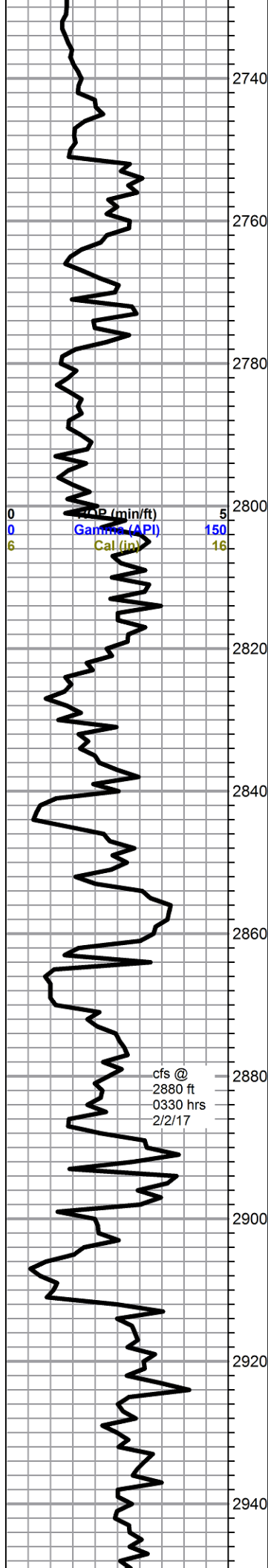
### OTHER SYMBOLS

<b>Oil Show</b> <ul style="list-style-type: none"> <li> Good Show</li> <li> Fair Show</li> <li> Poor Show</li> <li> Spotted or Trace</li> <li> Questionable Stn</li> <li> Dead Oil Stn</li> <li> Fluorescence</li> <li> Gas</li> </ul>	<b>DST</b> <ul style="list-style-type: none"> <li> DST Int</li> <li> DST alt</li> <li> Core</li> <li> tail pipe</li> </ul>
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<p>Curve Track #1</p> <ul style="list-style-type: none"> <li> ROP (min/ft)</li> <li> Gamma (API)</li> <li> Cal (in)</li> </ul>	<p>Depth   Intervals</p>	<p>DST</p>	<p>Lithology</p>	<p>Oil Show</p>	<p>Geological Descriptions</p>	<p>TG, C1 - C5</p> <ul style="list-style-type: none"> <li> Total Gas (units)</li> <li> C1 (units)</li> <li> C2 (units)</li> <li> C3 (units)</li> <li> C4 (units)</li> </ul>
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**Kansas City 2751 -1449**

limestone, light gray to tan, crypto-microcrystalline, fossiliferous, some grainy, poor visible porosity, no shows

grades to: limestone, white, cream and light gray, microcrystalline, fossiliferous, to oolitic, grainy in part, chalky in part, moderate chalk in samples, no shows

a.a., influx gray oolitic cherts

a.a., grainier, chalkier

limestone, light gray to gray and cream, micro-cryptocrystalline, fossiliferous, some large clasts, dense, no visible porosity, no shows, still carrying moderate chalk in samples

limestone, mixed, light gray to cream, with light yellow cast, grainy fossiliferous, chalky, to dense cryptocrystalline fossiliferous, moderate chalk, some scattered gray fossiliferous cherts, no shows

a.a., with increase chalk

limestone, light brown to gray, cryptocrystalline, fossiliferous, dense, abundant dense black shale, black chert, gray chert, no shows

**Stark Shale 2861 -1559**

shale, black carbonaceous

**SWOPE LS** limestone, light gray to cream, fine grainy oolitic with some scattered oomoldic, some pinpoint porosity and oomold porosity, abundant chalk, some scattered gray frosted chert, no shows dull green fluorescence, no odor

limestone, variable gray, mixed cryptocrystalline sub-lithographic to fossiliferous and grainy fossiliferous, chalky to dense, no shows

shale, black carbonaceous

**Hertha 2900 -1598**

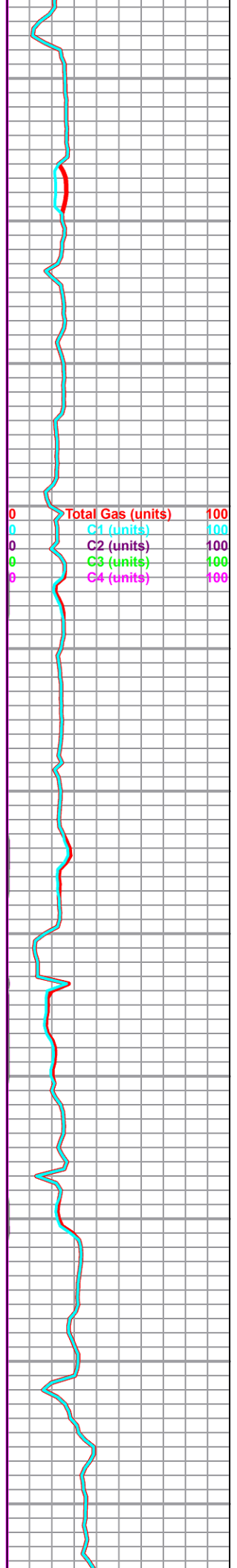
limestone, light gray to cream, fine grainy oolitic to sub-oomoldic, small fragments large oomoldic, some fair porosity, barren, no odor, some scattered fair bright fluorescence, abundant chalk

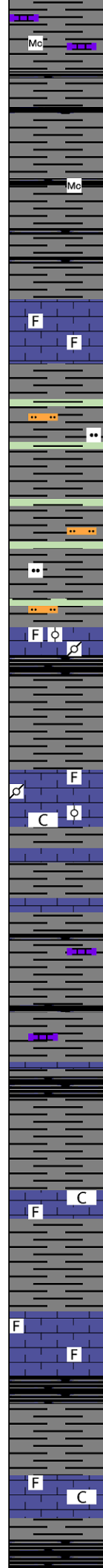
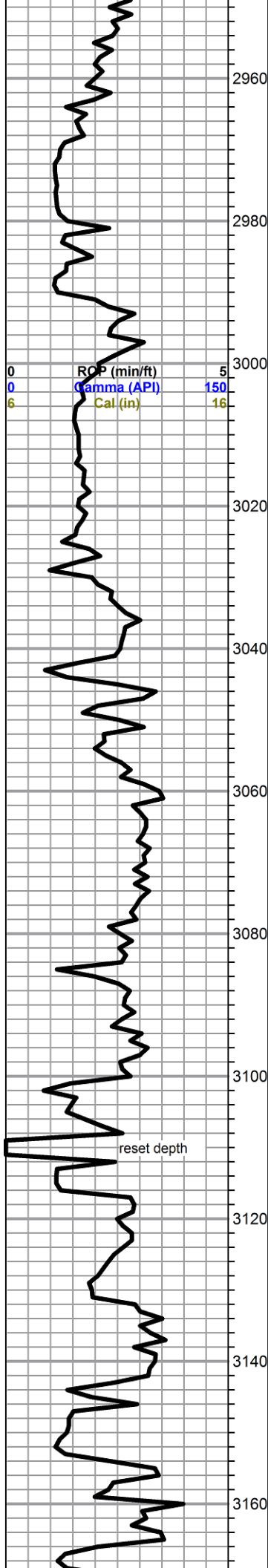
limestone, mixed gray and cream, fossiliferous, grainy, some oolitic, abundant black and gray shales, some chalk

mixed limestone with cream oolitic to oomoldic, some good porosity, barren, some chalk

limestones a.a. with influx dense gray to tan, mottled fossiliferous, abundant black and gray shales, no show

**Base KC 2948 -1646**





shale, mixed gray and black, some micaceous, fine cuttings, carrying abundant fine white cream and gray limestones, grainy, chalky (from above?)

increasing shale, heavy gray wash

limestone, cream to light gray, microcrystalline, grainy, chalky fossiliferous, with tan, cryptocrystalline, fossiliferous, dense, no shows

shale, gray black and pale green, silty in part, some pale green siltstones

**Marmaton 3036 -1734**

limestone, light gray to cream, chalky pelletal, microcrystalline, oolitic, crypto-microcrystalline, dense, poor porosity, brown, cryptocrystalline, dense fossiliferous, no shows

limestone, white to cream, cryptocrystalline, fossiliferous, trace pelletal and oolitic, mostly chalky, some dense gray, sub-lithographic, no visible porosity, no shows

shale, gray, black/brittle and lavender, with smooth compact shaley limestone, lavender, dense

limestone, brown, dense, fossiliferous

shale, black carbonaceous

mixed black and gray shales

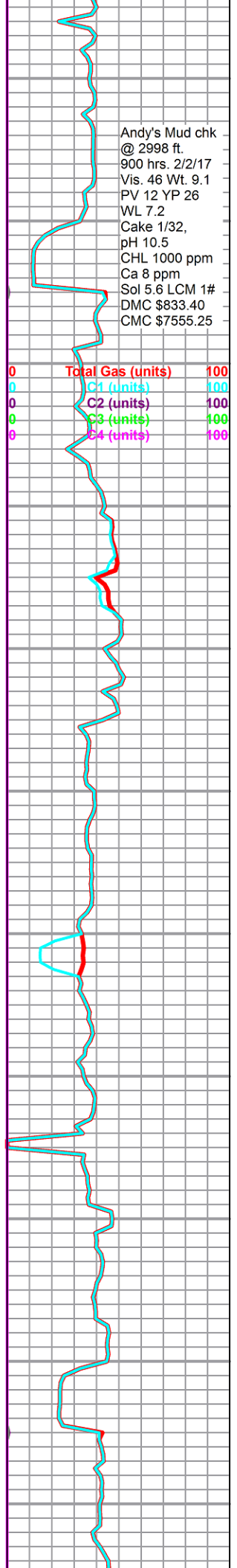
limestone, cream to light gray, chalky, fossiliferous, with olive chert, abundant chalk

limestone, gray to light gray, cryptocrystalline, chalky to dense, fossiliferous, with limestone, olive/brown, cryptocrystalline, dense, cherty, fossiliferous to sub-lithographic, no shows

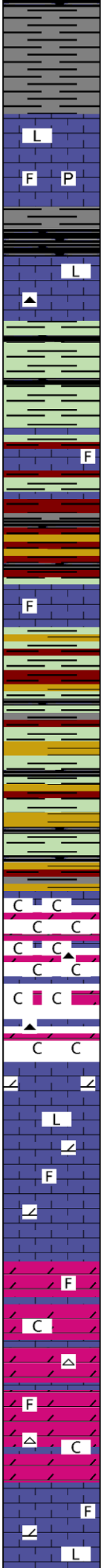
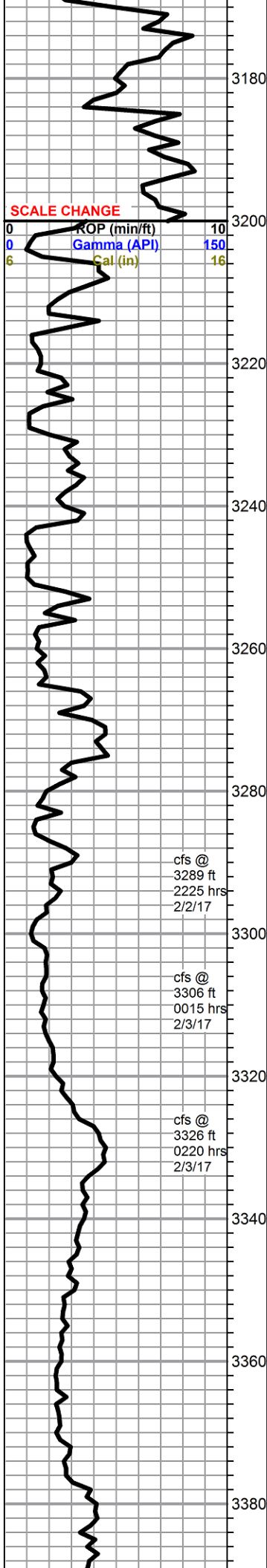
shale, black carbonaceous

limestone, light gray, micro-cryptocrystalline, fossiliferous, poor visible porosity, chalky in part, no shows, abundant chalk

shale, black carbonaceous







shale, light gray, silty, some soft

limestone, variable gray, cream and white, mostly cryptocrystalline and lithographic, slightly fossiliferous, dense, trace pyritic, no shows

**Cherokee 3201 -1899**

shale, black carbonaceous

limestone a.a., with tan cherts, some chalk, scattered weathered olive shales

shale, green, dense, limey, some olive and black

limestone, mixed cream to white, chalky, fossiliferous, brown, cryptocrystalline, cherty, dense, fossiliferous, green, maroon and lavender shales, some black shale

a.a., increase olive shales, green shales lighter and softer, silty in part

cfs samples - mixed shales, with abundant olive/green, mixed limestones, some weathered to chalk, abundant chalk in samples, trace white sandy limestone, some pock-marked pyrite nodules

**Mississippian 3294 -1992**

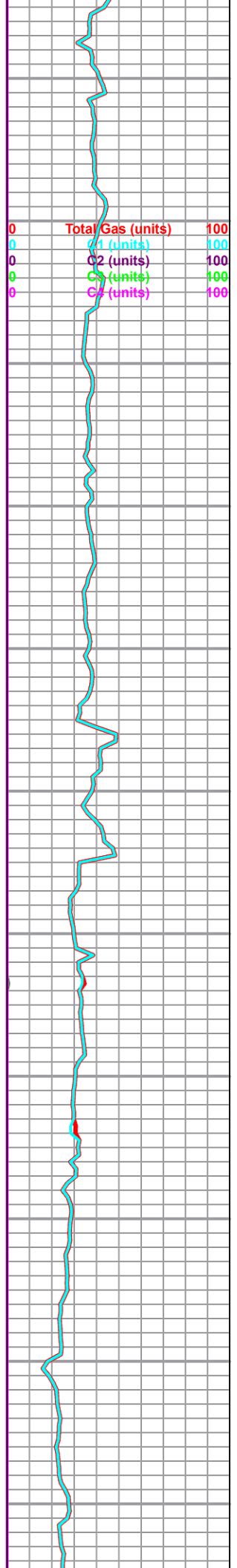
sample appx 60-70% chalk, with dolomite to dolomitic limestone, tan to gray, microcrystalline, sub-sucrosic to fossiliferous, poor visible porosity, yellow fluorescence, some oolitic gray chert, no shows

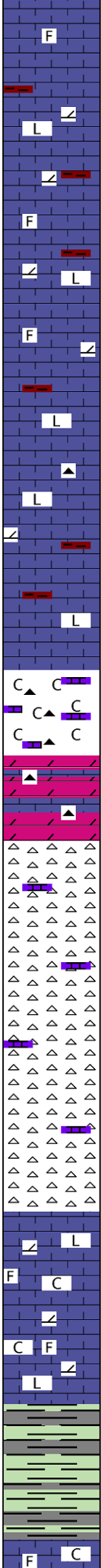
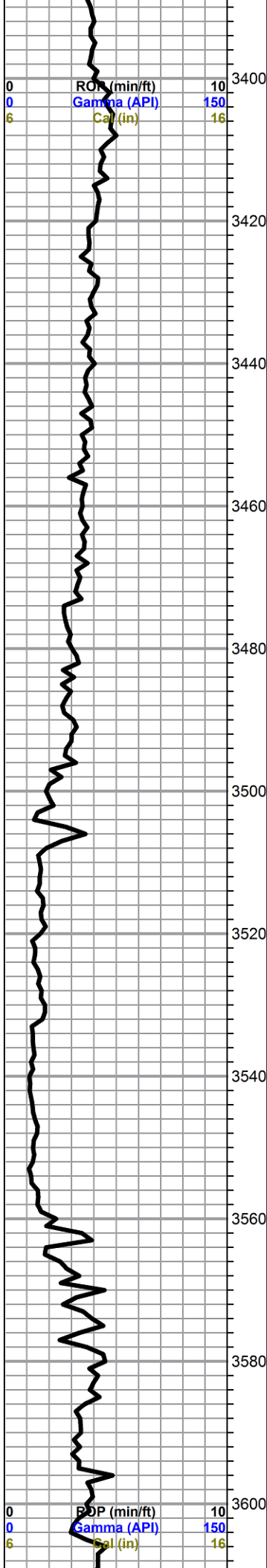
limestone, dolomitic, olive gray, microcrystalline, arenaceous, some gray lithographic limestone, abundant chalk, no visible porosity, no shows, poor fluorescence

limestone, dolomitic, gray to olive gray, microcrystalline, arenaceous, fossiliferous, fairly dense, no visible porosity, no shows, poor fluorescence

dolomite to dolomitic limestone, light mottled gray, microcrystalline, fossiliferous, grainy, some chert inclusions, poor visible porosity, abundant chalk, with: chert, gray mottled fossiliferous

limestone, dolomitic, dark gray to olive gray, microcrystalline, arenaceous, slightly fossiliferous, with: limestone, dark gray-brown, smooth compact lithographic, dense, no visible porosity, no shows, poor fluorescence





a.a. with influx maroon and lavender shales

a.a.

as above, mostly the lithographic facies, trace dark gray chert

3500 sample, flood chalk, light gray/white mottled limestone, heavily weathered, weathered mottled chert

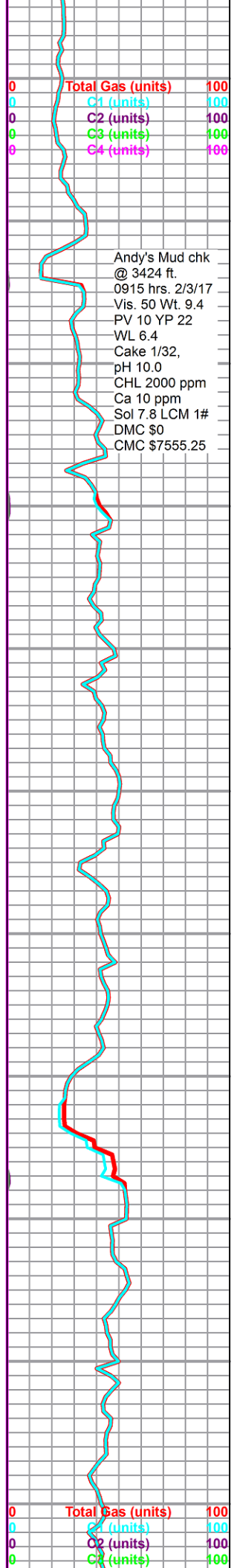
3510 sample, dolomite, light gray to brown, microcrystalline, arenaceous, limestone, dolomitic, brown to tan, recrystallized fossiliferous, grainy, poor visible porosity, chert, white to blue/gray, fossiliferous, no shows

chert, brown to white mottled, tripolitic to rotten weathered, some visible porosity, with some brown sucrosic limestone, no fluorescence

limestone, dolomitic, light blue/gray, microcrystalline, some secondary large crystals, altered/weathered, recrystallized fossiliferous, very chalky, with limestone, dolomitic, blue/gray, dense compact lithographic, abundant chalk, no shows

shale, light green, green and gray, dense to soft, calcareous, milky heavy wash in samples

limestone, light gray to cream, microcrystalline arenaceous to smooth dense compact lithographic. chalky in part. some slightly



Andy's Mud chk  
@ 3424 ft.  
0915 hrs. 2/3/17  
Vis. 50 Wt. 9.4  
PV 10 YP 22  
WL 6.4  
Cake 1/32,  
pH 10.0  
CHL 2000 ppm  
Ca 10 ppm  
Sol 7.8 LCM 1#  
DMC \$0  
CMC \$7555.25

fossiliferous, abundant chalk, no shows

### Kinderhook 3618 -2316

shale, dark gray to black, brown, some carbonaceous, with pyrite nodules

a.a.

grading to mostly brownish/gray shales, fairly homogenous, gold specks of fluorescence, (seems to be clear viscous droplets, adheres to shale, some floating)

### Simpson Sand 3697 -2395 ( also Simpson Top )

sandstone, very fine-fine grain, well sorted and rounded, well cemented, some fair intergranular porosity, pyritic, some shale inclusions, abundant pock marked pyrite nodules, fair to weak odor in wet cup, slight show free oil, mostly barren, few specimens good show on break with odor, poor staining in wet samples, light spotty stain in dry samples, few specimens bright green fluorescence, no cut barren samples, poor cut oily samples

sandstone, quartz, fine grain, sub-angular to sub-round, fair sorting, well cemented to slightly friable, silica cement, some dark shale inclusions, fair porosity in dry samples, very slight stain in dry samples only, appx 50-60% saturated with clear oil (or condensate) and excellent bright green fluorescence, good show oil on break, little free oil in tray, strong odor, no cut fluorescence until sample broken, then streaming good cut

30 min sample, flood chalk with sand, decreasing sand and odor

sandstone, quartz, fine to very fine grain, round to sub-round, fair sorting, fair cementing to friable, some fair intergranular porosity, some shale inclusions, mostly very clean, no staining, no shows, no fluorescence

3763 cfs samples: flood mixed shales, some chert, with pyrite, trace dolomite, light gray, microcrystalline arenaceous, no shows

### Arbuckle 3761 -2549

dolomite, a.a., fair fluorescence, some cream weathered cherts

**TD @ 3767 ft 1355 hrs 2/5/17**

