



Scale 1:240 Imperial

Well Name: Bognar 'A' #1  
 Surface Location: 1825' FSL and 3145' FEL  
 Bottom Location:  
 API: 15-035-24538-0000  
 License Number: 34320  
 Spud Date: 11/9/2013 Time: 10:00 AM  
 Region: Sec. 22 - T33S - R05E, Cowley County  
 Drilling Completed: 11/14/2013 Time: 7:05 PM  
 Surface Coordinates:  
 Bottom Hole Coordinates:  
 Ground Elevation: 1215.00ft  
 K.B. Elevation: 1223.00ft  
 Logged Interval: 2000.00ft To: 3633.00ft  
 Total Depth: 3633.00ft  
 Formation: Mississippian  
 Drilling Fluid Type: Chemical/Fresh Water Gel

### OPERATOR

Company: Lasso Energy LLC  
 Address: P.O. Box 465  
 1125 S. Main St.  
 Chase, KS 67524  
 Contact Geologist: Bruce Kelso  
 Contact Phone Nbr: 918.633.9655  
 Well Name: Bognar 'A' #1  
 Location: 1825' FSL and 3145' FEL API: 15-035-24538-0000  
 Pool: Lorton  
 State: Kansas Country: USA

### LOGGED BY



Company: Valhalla Exploration, LLC  
 Address: 8100 E. 22nd St. North  
 Building 1800-2  
 Wichita, KS 67226  
 Phone Nbr: 316.655.3550  
 Logged By: Geologist Name: Derek W. Patterson

### REMARKS

After review of the geologic log and open hole electric logs for the Bognar 'A' #1, it was decided upon by operator to run 5 1/2" production casing for further evaluation of said well.

Note: the RTD was 3633' and the LTD 3626'. Drill time, lithology, and gas curves have been shifted 6' shallow/higher to correspond with the electric log curves. All circulation and connections points have also been moved to match the overall shift. The hole deviation at TD was 9°, however it was angled at a straight line with no doglegs.

The well samples were saved, submitted, and will be available for review at the Kansas Geologic Survey's Well Sample Library located in Wichita, KS.

Respectfully Submitted,

Derek W. Patterson

### GENERAL INFORMATION

#### Service Companies

Drilling Contractor: Fossil Drilling - Rig #2  
 Tool Pusher: Glen Holmes  
 Daylight Driller: Kerry Clark

Drilling Fluid: Mud-Co/Service Mud Inc.  
 Engineer: Terry Ison

Evening Driller: Jesse Reynolds  
 Morning: Michael Moore  
 Relief: Edward Raney

Logging Company: Halliburton  
 Engineer: Andrew Hofkamp  
 Logs Ran: DI, CDNL, Micro, MRIL

Gas Detector: Bluestem Environmental  
 Engineer: Sidney Edelbrock  
 Unit: 0258  
 Operational By: 500'

Testing Company: No DSTs

Deviation Survey	
Depth	Survey
316'	3/4°
936'	3/4°
1311'	1/4°
1844'	1/2°
2475'	1 1/2°
3005'	5°
3068'	4°
3085'	5 1/4°
3131'	4°
3246'	4 1/2°
3560'	7°
RTD - 3633'	7°

Pipe Strap	
Depth	Pipe Strap
None Performed	

Bit Record								
Bit #	Size	Make	Type	Serial Number	Depth In	Depth Out	Feet	Hours
1	12 1/4"	Ultrerra	RR	--	40'	316'	276'	3.75
2	7 7/8"	Ultrerra	U516M	22683	316'	3633'	3317'	63.5

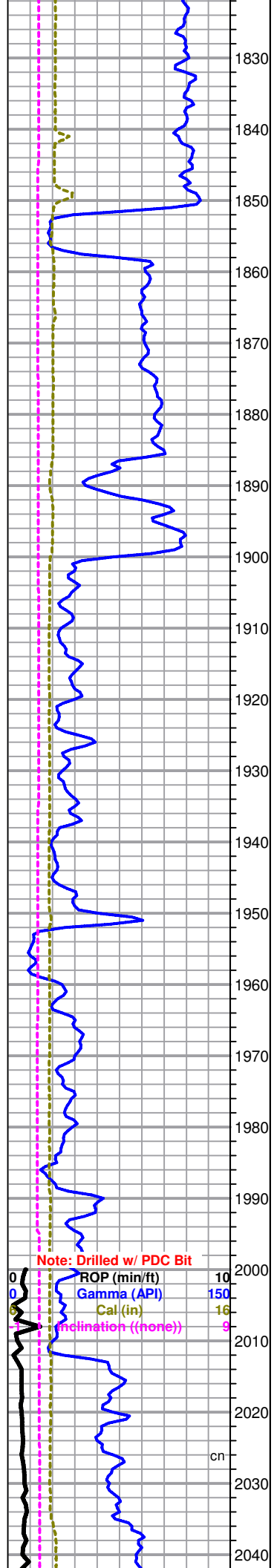
Surface Casing	
11.9.2013	Ran 7 joints of new 24#/ft 8 5/8" casing, tallying 305.01', set @ 316' KB. Cemented with 200 sacks Class A (3% CC, 2% gel, 1/2 lb poly flake). Cement did circulate. Plug down @ 2130 hrs 11.9.13. By Consolidated Oil Well Services.

Production Casing	
11.16.2013	Ran 86 joints of new 15.5#/ft 5 1/2" production casing, tallying 3621.94', set @ 3622' KB. Cemented with 245 sacks AA2, 69# cello flake for long string casing, 30 sacks AA2 for rathole. Plug down @ 1830 hrs 11.16.13. By Basic Energy Services.

### DAILY DRILLING REPORT

Date	0700 Hrs Depth	Previous 24 Hours of Operations
11.13.2013	3085'	Drilling and connections Perry and into Kansas City. Geologist Derek W. Patterson on location 0920 hrs 11.12.13. Resume drilling and connections Kansas City, Base Kansas City, Oswego, Pawnee, Fort Scott, and into Cherokee. Drilling and connections Cherokee. Stop at 3085' to evaluate penetration rates. Decision made to run bit trip @ 3085' due to poor penetration rates. CTCH, short trip 21 stands. CTCH when back on bottom, drop survey. TOH for bit trip 0330 hrs 11.13.13. Current bit was balled up. Clean bit, TIH with same bit. Made 635' over past 24 hrs of operations. WOB: 12-15k RPM: 85 PP: 950 SPM: 60 DMC: \$4,146.50 CMC: \$7,421.65
11.14.2013	3371'	TIH with bit. Resume drilling following bit trip 0730 hrs 11.13.13. Drilling and connections Cherokee and into Mississippian. Drilling and connections Mississippian. Decision made by rig to trip up collars to add 6 more collars in order to try and straighten out hole. CTCH, TOH 1345 hrs 11.13.13. TIH, CTCH. Resume drilling following trip 1900 hrs 11.13.13. Drilling and connections Mississippian. Made 286' over past 24 hrs of operations. WOB: 8k RPM: 100+ PP: 950 SPM: 60 DMC: \$2,241.30 CMC: \$9,662.95
11.15.2013	RTD - 3633' LTD - 3626'	Drilling and connections Mississippian, Gilmore City, Kinderhook, Woodford, and into Arbuckle. Drilling and connections Arbuckle ahead to RTD of 3633'. RTD reached 1905 hrs 11.14.13. Rig ordered to circulate hole while waiting on loggers. Geologist Derek W. Patterson off location 2030 hrs 11.14.13. Made 262' over past 24 hrs of operations. WOB: 4-6k RPM: 80-100 PP: 950 SPM: 60 DMC: \$615.60 CMC: \$10,278.55
11.16.2013	RTD - 3633' LTD - 3626'	Rig continue to circulate while waiting on loggers. Halliburton on site and rigged up. Conduct open hole logging operations. Orders received to run 5 1/2" production casing for further evaluation of the Bognar 'A' #1.





1830  
1840  
1850  
1860  
1870  
1880  
1890  
1900  
1910  
1920  
1930  
1940  
1950  
1960  
1970  
1980  
1990  
2000  
2010  
2020  
2030  
2040

Note: Drilled w/ PDC Bit

ROP (min/ft) 10  
Gamma (API) 150  
Cal (in) 16  
inclination ((none)) 9

**IATAN 1851' (-628')**

Displace Mud System @ 1867'

**STALNAKER 1886' (-663')**

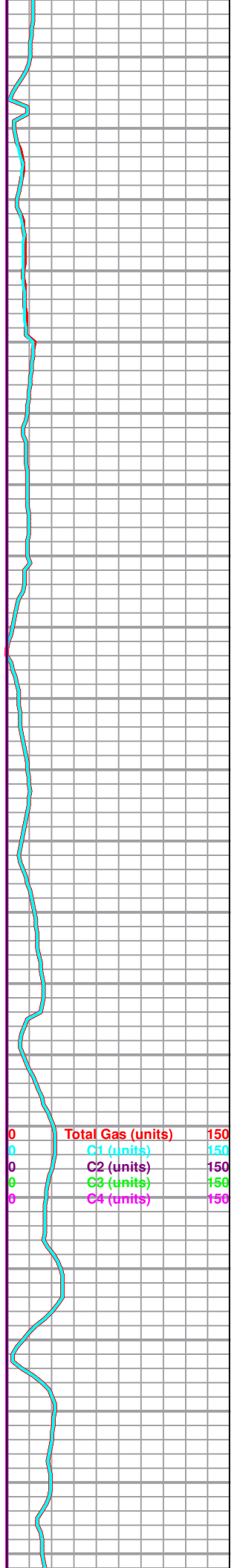
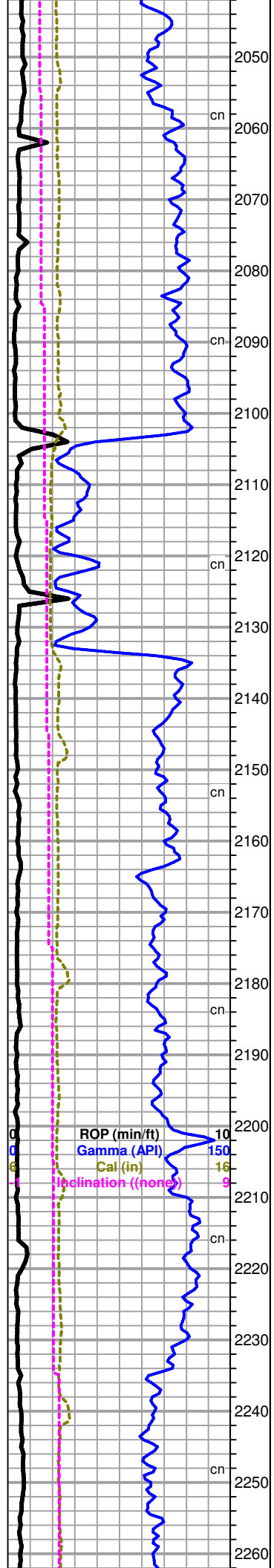
Start Drill Time and Gas Readings @ 2000'

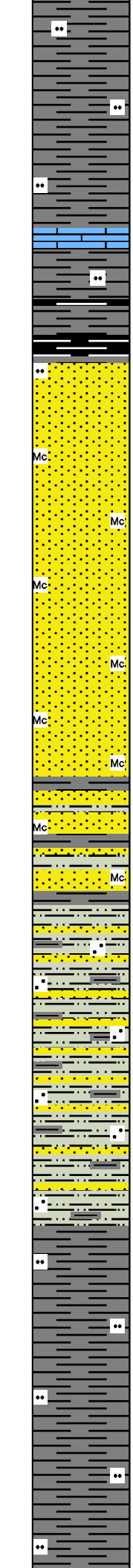
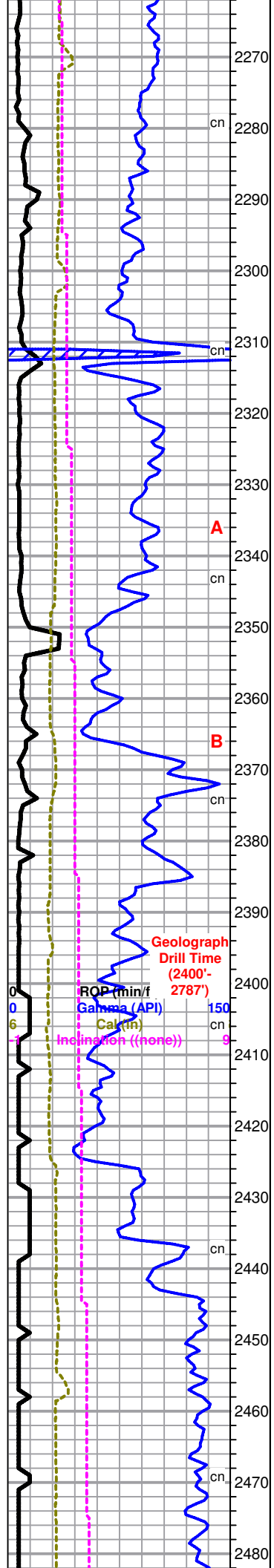
Mud-Co Mud Ck  
@ 1844'  
1145 hrs 11.11.13  
Vis: 34 Wt: 10.1  
PV: 6 YP: 8  
WL: N/A  
CHL: 1,200 ppm  
Cal: 160  
Solids: 12.8  
LCM: 0 #/bbl  
DMC: \$1,172.90  
CMC: \$3,275.15

Vis: 60  
Wt: 8.6+  
LCM: 6 #/bbl

Total Gas (units) 150  
C1 (units) 150  
C2 (units) 150  
C3 (units) 150  
C4 (units) 150

**PERRY 2103' (-880')**





Shale: gray lt gray, blocky and firm, some waxy in part, silty in part.

Shale: gray lt gray, blocky and firm, some waxy in part, silty in part.

Limestone: dk brown tan, dense tight matrix, poo-no visible porosity, no shows, no fluorescence.

**Start 20' Wet & Dry Samples @ 2300'**

Shale: gray lt gray, blocky and firm, some waxy in part, silty in part, with Shale: black, carbonaceous, blocky and hard, no gas show.

**LAYTON 2313' (-1090')**

Sandstone: lt gray off white lt cream, mostly dense well cemented matrix, few slightly friable pieces, vfgrained, well sorted, micaceous in part, fair-poor intergranular porosity, no shows, no fluorescence.

Sandstone: lt gray off white lt cream, mostly dense well cemented matrix, few slightly friable pieces, vfgrained, well sorted, micaceous in part, fair-poor intergranular porosity, no shows, no fluorescence.

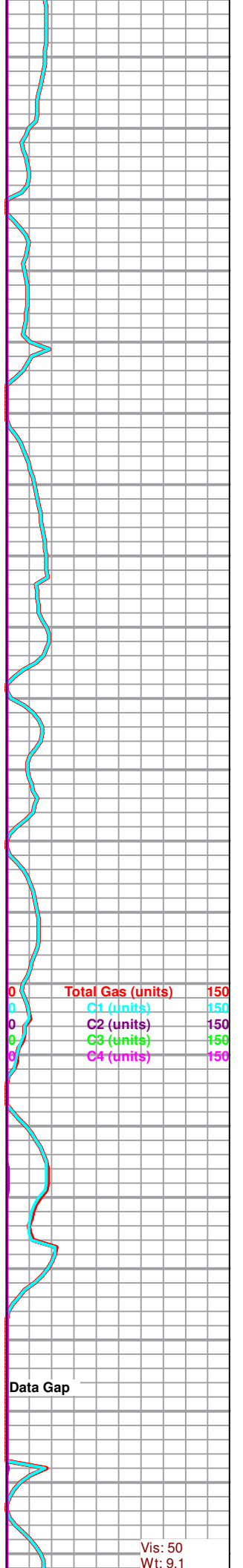
Sandstone: lt gray off white, sub-friable to fairly cemented matrix, f-vfgrained, fairly sorted, micaceous in part, fair intergranular porosity, no shows, no fluorescence.

Sandstone: lt gray off white, sub-friable to fairly cemented matrix, f-vfgrained, fairly sorted, micaceous in part, fair intergranular porosity, no shows, no fluorescence, with scattered Shale/Siltstone: gray lt gray, blocky to rounded, most dense.

Siltstone: gray smokey gray, dense tight well cemented matrix, vfgrained, shaley/sandy, poor visible porosity, no shows, no fluorescence, with scattered Sandstone as above.

Siltstone: gray smokey gray, dense tight well cemented matrix, vfgrained, shaley/sandy, poor visible porosity, no shows, no fluorescence, with scattered Sandstone as above.

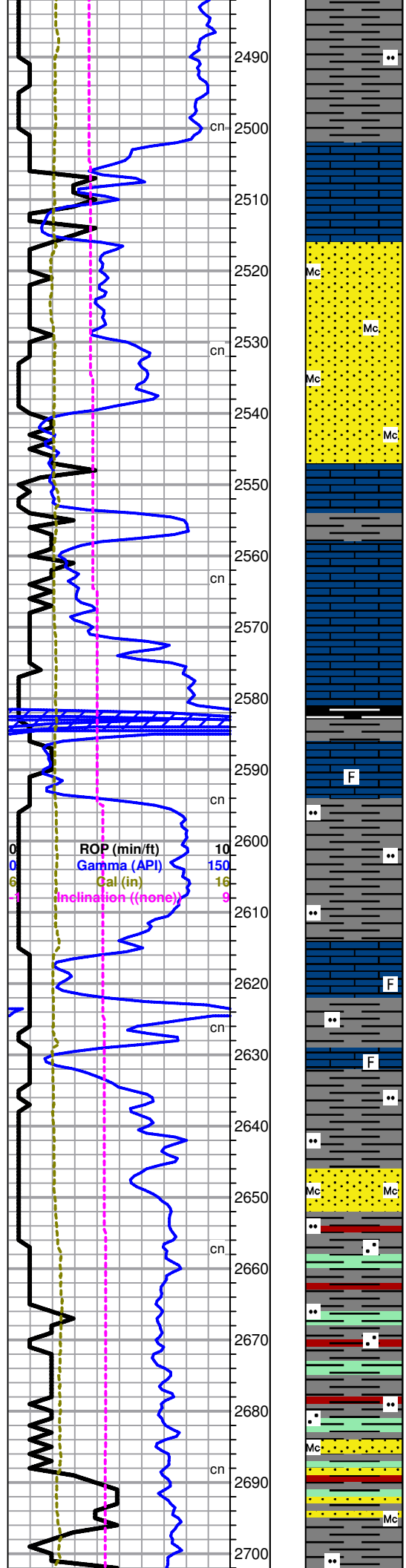
Shale: gray lt gray dk gray, blocky, firm and hard to waxy and gummy, most silty.



Total Gas (units)	150
C1 (units)	150
C2 (units)	150
C3 (units)	150
C4 (units)	150

Data Gap

Chalc. gray lt gray dk gray, blocky, firm and hard to waxy and gummy, most silty.



### KANSAS CITY 2502' (-1279')

Limestone: tan brown, dense tight matrix, microxln, barren, poor-no visible porosity, no shows, no fluorescence.

Sandstone: off white lt gray, sub-friable to fairly cemented matrix, vf-grained, micaceous, fair-good intergranular porosity throughout, no shows, no fluorescence.

Limestone: cream tan, dense tight matrix, micro-cryptoxln, barren, no visible porosity, no shows, no fluorescence.

Limestone: cream tan, dense tight matrix, micro-cryptoxln, barren, no visible porosity, no shows, no fluorescence.

### STARK 2581' (-1358')

Shale: black dk gray, most carbonaceous, blocky and firm, some softer and waxy, no gas show.

Limestone: cream tan gray mottled, most dense matrix, vf-fxl, scattered imbedded calcite shards, few scattered fossils, poor-no visible porosity, no shows, no fluorescence.

**Geologist Derek W. Patterson On Location, 0920 hrs 11.12.13**

Shale: gray dk gray, dense limey matrix, blocky to rounded, silty in part.

Limestone: brown cream gray mottled/specked, dense matrix, micro-vfxln, grainy in part, fossiliferous, poor visible porosity, no shows, no fluorescence.

Shale: gray dk gray, blocky, most firm, some waxy, silty in part.

### BASE KANSAS CITY 2632' (-1409')

Shale: gray dk gray, blocky, most firm, some waxy, silty in part.

### CLEVELAND 2646' (-1423')

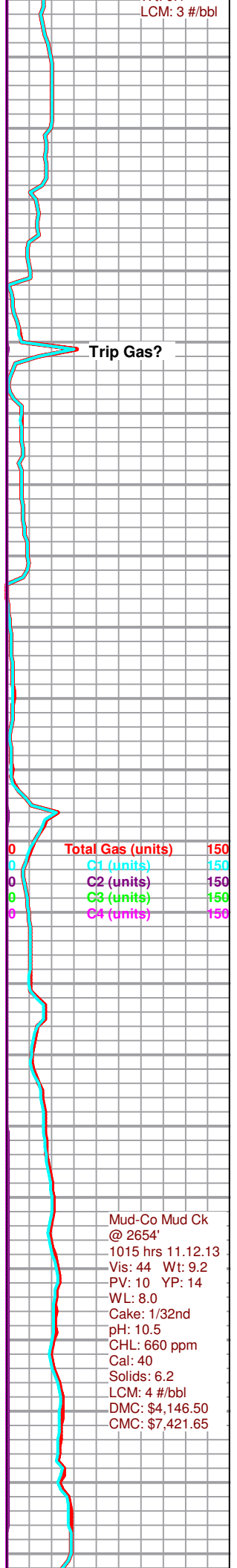
Sandstone: off white lt gray, sub-friable matrix, vfgrained, well sorted, pyritic, some micaceous in part, poor intergranular porosity, no shows, no fluorescence.

Shale: gray dk gray pale green some dk red, blocky to rounded, nearly all soft and waxy, silty/sandy in part.

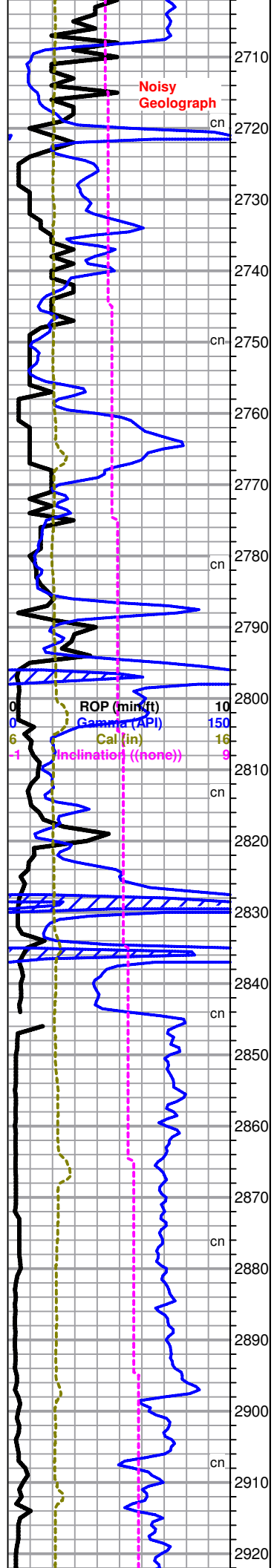
Shale: gray dk gray pale green some dk red, blocky to rounded, nearly all soft and waxy, silty/sandy in part.

INFLUX - Sandstone: off white lt gray, sub-friable matrix, vfgrained, well sorted, pyritic, some micaceous in part, poor intergranular porosity, no shows, no fluorescence, with fair amount of Shale as above.

**Start 10' Wet & Dry Samples @ 2700'**



Mud-Co Mud Ck @ 2654'  
 1015 hrs 11.12.13  
 Vis: 44 Wt: 9.2  
 PV: 10 YP: 14  
 WL: 8.0  
 Cake: 1/32nd  
 pH: 10.5  
 CHL: 660 ppm  
 Cal: 40  
 Solids: 6.2  
 LCM: 4 #/bbl  
 DMC: \$4,146.50  
 CMC: \$7,421.65



Noisy Geograph

**OSWEGO 2708' (-1485')**

Shale: gray dk gray pale green, blocky to rounded, soft to waxy, some silty.

Limestone: It cream off white, dense matrix, micro-cryptoxln, oolitic-fossiliferous, poor-no visible porosity, no shows, no fluorescence.

Limestone: It gray cream off white, dense tight matrix, crypto-microxln, barren, poor visible porosity, no shows, no fluorescence.

Limestone: It cream tan brown, dense tight matrix, microxln, sub-fossiliferous to barren, poor visible porosity, no shows, no fluorescence.

Limestone: It cream lt tan, dense tight matrix, microxln, sub-fossiliferous to barren, poor visible porosity, no shows, no fluorescence.

**PAWNEE 2767' (-1544')**

Limestone: It cream off white lt tan, dense matrix, micro-vfxln, most barren with some scattered sub-fossiliferous, poor visible porosity, no shows, no fluorescence.

Limestone: It cream off white lt tan, softer matrix, micro-vfxln, scattered fossiliferous, fair interxln porosity in few pieces, no shows, no fluorescence.

Limestone: It cream lt tan, dense matrix, micro-vfxln, most barren with some scattered sub-fossiliferous, poor visible porosity, no shows, no fluorescence.

Shale: black dk gray, most carbonaceous, blocky and firm, few pieces with fair show gas upon break.

**FORT SCOTT 2804' (-1581')**

Limestone: cream lt cream, dense tight matrix, vf-microxln. most fossiliferous, poor visible porosity, no shows, even bright lt yellow/orange mineral fluorescence, no cut, no odor.

Limestone: It cream lt tan, softer sub-friable matrix, vfxln, sub-fossiliferous to barren, fair interxln porosity, poor-fair show lt brown oil droplets/trace gas upon break, even lt yellow fluorescence, bluish-white cut, moderate odor.

**CHEROKEE 2835' (-1612')**

Shale: black dk gray, most carbonaceous, blocky and firm, very sandy/silty, some pyritic, poor gas show upon break.

Shale: gray lt gray some dk gray, blocky to rounded, hard to soft, very silty/sandy, sample washes gray.

Shale: gray lt gray some dk gray, blocky to rounded, hard to soft, very silty/sandy, sample washes gray.

Shale: as above, with scattered Sandstone: It gray off white, poorly cemented friable matrix, fgrained, well sorted, most heavily pyritic, fair-good intergranular porosity, no shows, no fluorescence.

Data Gap

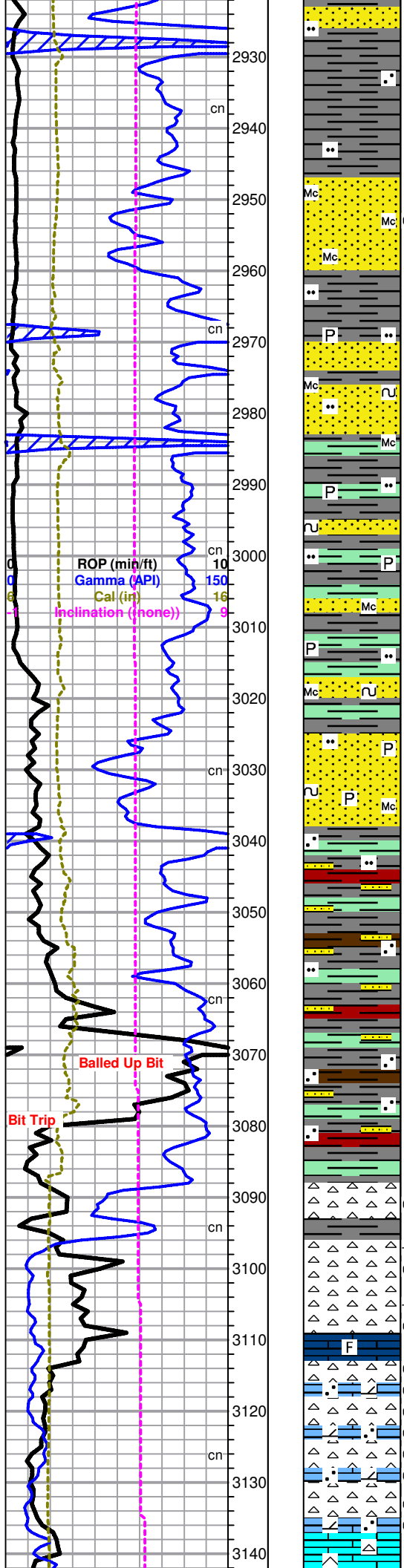
Data Gap

Total Gas (units)	150
C1 (units)	150
C2 (units)	150
C3 (units)	150
C4 (units)	150

Shale Kick

Data Gap





Shale: gray lt gray some dk gray, blocky to rounded, hard to soft, very silty/sandy, sample washes gray.

**CATTLEMAN 2947' (-1724')**

Sandstone: lt gray off white cream, mostly dense well cemented matrix, f-vgrained, well sorted, most micaceous, poor intergranular porosity, 5% poor show lt brown oil droplets upon break, most shows are stringy oil residue, even dull lt yellow fluorescence, good bluish-white cut, very faint odor.

Shale: gray dk gray pale green, blocky, hard and firm to slightly soft and waxy, pyritic and silty in part, with abundant Sandstone: lt gray off white pale green, mostly dense well cemented matrix, f-vgrained, well sorted, most micaceous, some glauconitic, poor-fair intergranular porosity, no shows, no fluorescence.

Shale: gray dk gray pale green, blocky, hard and firm to slightly soft and waxy, pyritic and silty in part, with abundant Sandstone: lt gray off white pale green, mostly dense well cemented matrix, f-vgrained, well sorted, most micaceous, some glauconitic, poor-fair intergranular porosity, no shows, no fluorescence.

**BARTLESVILLE 3025' (-1802')**

Sandstone: off white lt gray pale green, sub-friable to fairly cemented matrix, fgrained, micaceous/glauconitic/pyritic, fair-good intergranular porosity, no shows, no fluorescence, no odor.

Shale: gray dk gray pale green dk red, blocky to rounded, hard to soft and waxy, most silty/sandy, with moderate amount of Sandstone stringers: lt gray pale green off white, mostly dense well cemented matrix, f-vgrained, well sorted, most micaceous, glauconitic in part, fair-poor intergranular porosity, no shows, no fluorescence.

Predominately Shale: gray dk gray dk red brown pale green, blocky and firm, large percentage of arenaceous material, fissile in part, with some scattered Sandstone stringers as above.

**EROSIONAL MISSISSIPPIAN 3088' (-1865')**

Chert: lt cream off white, fresh and sharp, with some poorly weathered pieces, poor show in few weathered pieces, poor fluorescence, faint odor.

**MISSISSIPPIAN CHERT 3096' (-1873')**

Chert: lt cream off white, large portion fresh and sharp, with gradual increase in weathered to sub-tripolitic material, fair visible porosity, most carrying good golden saturated stain, fair-good show golden brown oil and trace gas upon break, spotty lt yellow fluorescence, milky-white cut, moderate odor.

INFLUX - Limestone: cream lt cream lt tan, dense sub-chalky matrix, vxln, most fossiliferous, poor interxln porosity, no shows, no fluorescence, no cut.

Chert: cream tan, fresh and sharp to slightly weathered/tripolitic, slight stain in most, poor-fair show golden brown oil upon break in much of sample, milky-white cut, with Limestone: tan cream, slightly friable dolomitic matrix, fxln, grainy/arenaceous texture, good interxln porosity in most, golden saturated stain, fair show golden brown oil upon break, even-spotty lt yellow fluorescence, milky-white cut, moderate odor.

**MISSISSIPPIAN LIME 3137' (-1914')**

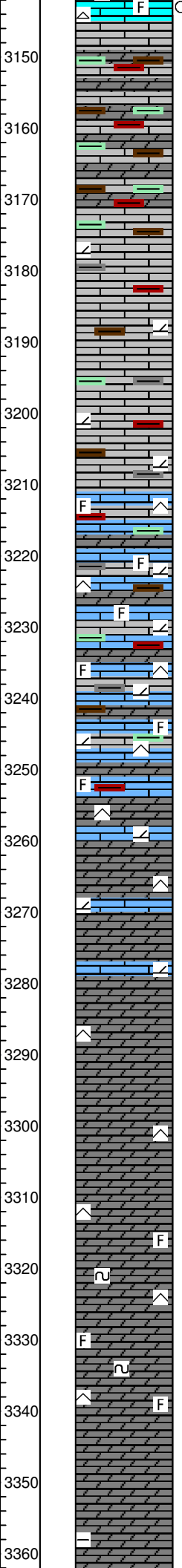
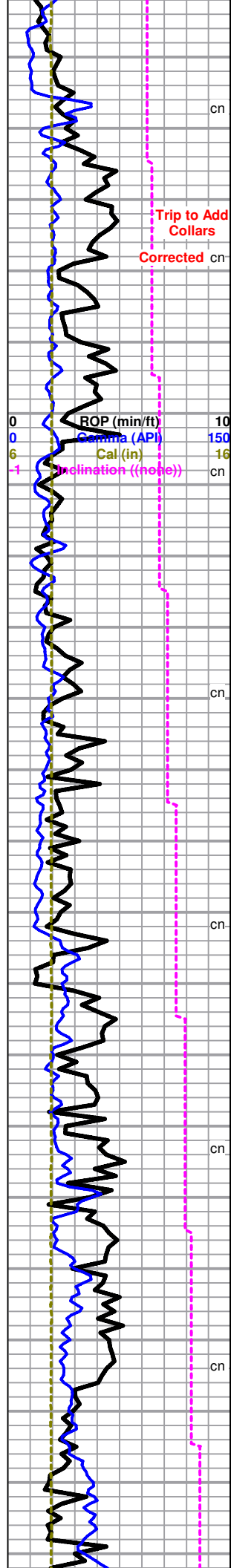
Limestone: tan brown dk gray, dense very siliceous matrix, micro-cryptoxln, most fossiliferous, poor visible porosity, few pieces with questionable edge

0	Total Gas (units)	150
0	C1 (units)	150
0	C2 (units)	150
0	C3 (units)	150
0	C4 (units)	150

Vis: 42  
Wt: 9.3  
LCM: 4 #/bbl

62u Total

65u Total



stain, no live shows, no fluorescence, no cut, with scattered Chert: tan brown dk gray, fresh and sharp to slightly weathered, few pieces with questionable edge stain, no live shows, no fluorescence, no cut, no odor.

Limestone (dolomitic)/Dolomite (limey): dk gray brown, dense matrix, vfxln, sucrosic texture, fair-poor interxln porosity, no shows, no fluorescence, no cut, no odor, Chert drops out, and fair amount of Shale content (sluff?).

3179' cfs - Limestone (dolomitic): dk gray brown, dense matrix, vfxln, sucrosic texture, fair-poor interxln porosity, no shows, no fluorescence, no cut, no odor, and continued Shale content (sluff?).

Limestone (dolomitic): dk gray gray brown, dense tight matrix, vfxln, sucrosic texture, poor visible porosity, no shows, no fluorescence, no cut, no odor, with slight decrease in Shale content from above.

Limestone (dolomitic): dk gray gray brown, dense tight matrix, vfxln, sucrosic texture, poor visible porosity, no shows, no fluorescence, no cut, no odor, with continued scattered Shale as above.

INFLUX - Limestone: cream lt cream tan brown mottled, dense sub-cherty matrix, vf-fxln, fossiliferous, fair interxln porosity, no shows, no fluorescence, no cut, with scattered Limestone (dolomitic)/Dolomite (limey) as above, no shows, no fluorescence, no cut, no odor, and continued Shale in sample.

Limestone: cream lt cream tan brown mottled, dense sub-cherty to cherty matrix, vf-fxln, fossiliferous, fair interxln porosity, no shows, no fluorescence, no cut, with scattered Limestone (dolomitic)/Dolomite (limey) as above, no shows, no fluorescence, no cut, no odor, and continued Shale.

Limestone: cream lt cream tan brown mottled, dense sub-cherty to cherty matrix, vf-fxln, fossiliferous, fair interxln porosity, no shows, no fluorescence, no cut, with scattered Limestone (dolomitic)/Dolomite (limey) as above, no shows, no fluorescence, no cut, no odor, and continued Shale.

Predominately Dolomite: dk gray brown, dense tight siliceous matrix, vfxln, barren, poor visible porosity, no shows, few pieces with some poor edge fluorescence, no cut, no odor, with some scattered Limestone (dolomitic), nearly all Shale drops out.

Dolomite: dk gray brown, dense tight siliceous matrix, vfxln, barren, poor visible porosity, no shows, no fluorescence, no cut, no odor, with scattered Limestone (dolomitic).

Dolomite: dk gray brown, dense tight siliceous matrix, vfxln, barren, poor visible porosity, no shows, no fluorescence, no cut, no odor.

Dolomite: dk gray brown, dense tight siliceous matrix, vfxln, barren, poor visible porosity, no shows, no fluorescence, no cut, no odor.

Dolomite: dk gray brown trace lt gray, dense tight siliceous matrix, vfxln, picking up some glauconitic material, some fossiliferous/spiculitic in part, poor visible porosity, no shows, no fluorescence, no cut, no odor.

Dolomite: dk gray brown trace lt gray, dense tight siliceous matrix, vfxln, some glauconitic material, some fossiliferous/spiculitic in part, poor visible porosity, no shows, no fluorescence, no cut, no odor.

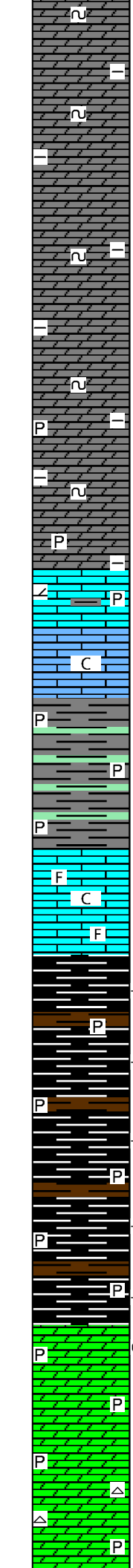
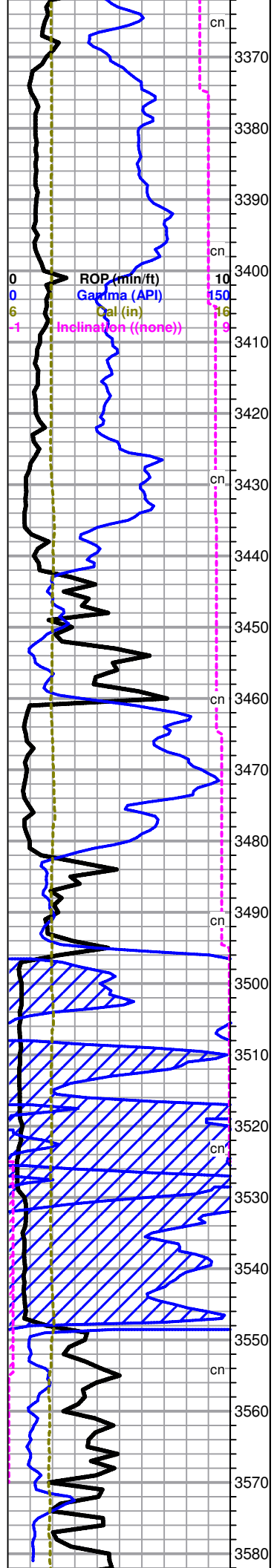
Dolomite: dk gray dk brown, dense matrix, vfxln, barren, poor xln development with associated poor porosity, no shows, no fluorescence, no odor.

Dolomite: dk gray some dk brown, dense matrix, vfxln, overall poor xln development and associated porosity, most argillaceous with fair amount of

Mud-Co Mud Ck @ 3179'  
1615 hrs 11.13.13  
Vis: 40 Wt: 9.4  
PV: 10 YP: 12  
WL: 8.8  
Cake: 1/32nd  
pH: 10.5  
CHL: 1,800 ppm  
Cal: 40  
Solids: 7.3  
LCM: 2 #/bbl  
DMC: \$2,241.30  
CMC: \$9,662.95

Total Gas (units)	150
C1 (units)	150
C2 (units)	150
C3 (units)	150
C4 (units)	150

Mud-Co Mud Ck @ 3357'  
0600 hrs 11.14.13  
Vis: 38 Wt: 9.5  
PV: 8 YP: 12  
WL: 8.8  
Cake: 1/32nd  
pH: 9.5  
CHL: 1,800 ppm  
Cal: 40  
Solids: 7.5  
LCM: 2 #/bbl  
DMC: \$615.60  
CMC: \$10,278.55



glauconitic material, no fluorescence, no cut, no odor.

Dolomite: dk gray, dense matrix, vfxln, overall poor xln development and associated porosity, most argillaceous with fair amount of glauconitic material, no shows, no fluorescence, no cut, no odor.

Dolomite: dk gray gray, dense matrix, vfxln, overall poor xln development and associated porosity, most argillaceous with fair amount of glauconitic material, no shows, no fluorescence, no cut, no odor.

Dolomite: dk gray gray, dense matrix, vfxln, overall poor xln development and associated porosity, most argillaceous with fair amount of glauconitic material, no shows, no fluorescence, no cut, no odor.

Dolomite: gray dk gray, dense matrix, vfxln, fair xln development and associated porosity, most argillaceous, heavily glauconitic/chloritic, pyritic in part, no shows, no fluorescence, no cut, no odor.

Dolomite: gray dk gray, dense matrix, vfxln, fair xln development and associated porosity, most argillaceous, heavily glauconitic/chloritic, pyritic in part, no shows, no fluorescence, no cut, no odor.

**GILMORE CITY 3442' (-2219')**

Limestone: lt gray, sub-friable dolomitic matrix, vfxln, pyritic in part, fair interxln porosity, no shows, no fluorescence, with scattered Shale, no odor.

Limestone: off white lt cream lt gray, dense sub-chalky matrix, vfxln, barren, poor visible porosity, no shows, no fluorescence, no odor.

**KINDERHOOK 3460' (-2237')**

Shale: gray lt gray scattered pale green, blocky to slightly rounded, most firm, fissile/platy, pyritic, no gas show.

Shale: gray lt gray scattered pale green, blocky to slightly rounded, most firm, fissile/platy, pyritic, no gas show.

**COMPTON 3481' (-2258')**

Limestone: lt gray off white, dense sub-chalky matrix, microxln, scattered sub-fossiliferous, poor visible porosity, no shows, no fluorescence, no odor.

**WOODFORD 3496' (-2273')**

Shale: black dk brown, carbonaceous, blocky and firm, fair-good show gas upon break/under lamp, no fluorescence, no cut, fair gassy odor in wet cup.

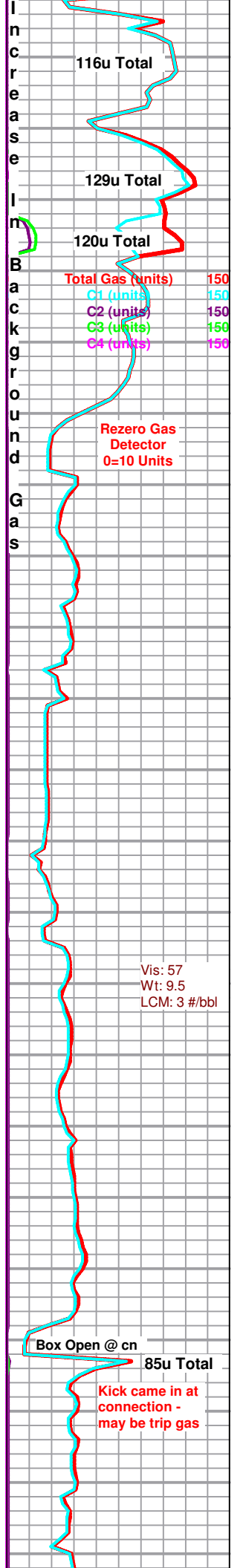
Shale: black dk brown, carbonaceous, blocky and firm, pyritic in part, fair-good show gas upon break/under lamp, no fluorescence, no cut, with scattered Pyrite nodules, fair gassy odor in wet cup.

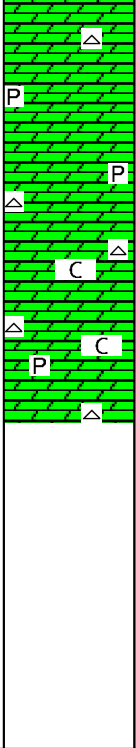
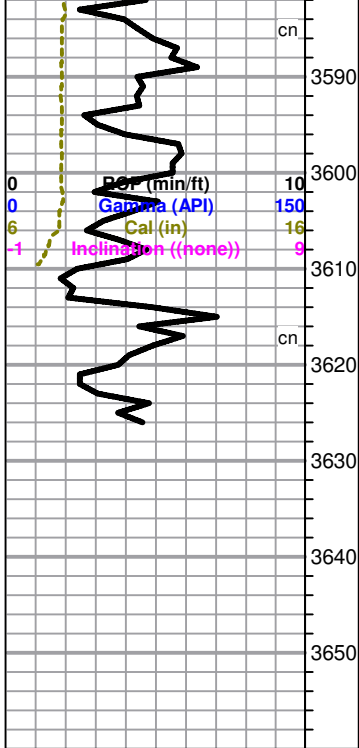
Shale: black dk brown, carbonaceous, blocky and firm, pyritic, fair-good gas show upon break/under lamp, no fluorescence, no cut, with large Pyrite nodules, strong oily odor in wet cup.

**ARBUCKLE 3548' (-2325')**

Dolomite: off white lt cream, mostly dense with some scattered sub-friable, vfxln, pyritic in part, fair rhombic development, some better xln development and associated porosity, few pieces with fair golden saturated stain, stained rocks carry poor-fair show lt brown oil droplets upon break, spotty greenish-yellow fluorescence, fair bluish-white cut on break, good odor.

Dolomite: cream lt cream tan, dense tight matrix, micro-vfxln, poor xln development in most with associated poor porosity, no shows, dull yellow mineral fluorescence, no cut, with Chert: bone white, opaque, fresh and sharp, most pyritic, fair odor in wet cup.





Dolomite: gray cream tan, dense tight matrix, microxln with some scattered fxln, overall poor xln development, poor visible porosity, no shows, dull yellow mineral fluorescence, no cut, with Chert: bone white, opaque, fresh and sharp, most pyritic, no odor in wet cup.

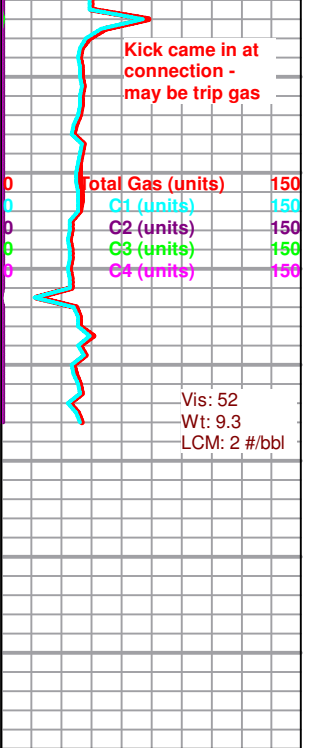
Dolomite: cream lt cream, dense tight matrix, most fxln, good visible rhombic development but poor porosity due to chalk/mineral fill, no shows, dull yellow mineral fluorescence, no cut, with Chert: bone white cream, fresh and sharp, scattered pyritic, no odor in wet cup.

3626' cfs - Dolomite: gray lt cream, dense tight matrix, f-vfxln, pyritic, overall poor xln development and associated porosity, no shows, dull yellow mineral fluorescence, no cut, with trace Chert as above.

**LTD 3626' (-2403')**  
**RTD 3633' (-2410')**

**Geologist Derek W. Patterson Off Location 2030 hrs 11.14.13**  
**Orders Received to Run 5 1/2" Production Casing**

**Respectfully Submitted,**  
*Derek W. Patterson*



Vis: 52  
 Wt: 9.3  
 LCM: 2 #/bbl