



# Musgrove

**PETROLEUM CORPORATION**  
Clatlin, Kansas

## NOTES

Company: Palmer Oil, Inc.

Lease: Lola 21-4

Field: Cutter South

Location: SW-NW-SE-SE (800' FSL & 1100' FEL)

Sec: 21 Twsp: 31S Rge: 35W

County: Stevens State: Kansas

KB: 3011' GL: 2998'

API #: 15-189-22821-00-00

Contractor: Duke Drilling, Co. (Rig # 9)

Spud: 10/26/2013 Comp: 11/4/2013

RTD: 6400' LTD: 6362'

Mud Up: 4500' Type Mud: Chemical

Samples Saved From: 4600' to RTD

Drilling Time Kept From: 4000' to RTD

Samples Examined From: 4600' to RTD

Geological Supervision From: 4600' to RTD


Geologist on Well: Wyatt Urban

Surface Casing: 8 5/8" @ 1765'

Electronic Surveys: Pioneer Energy Services, DIL, DCP, MICRO,

DRILLING WELL					COMPARISON WELL				COMPARISON WELL			
Palmer Oil - Lola 21-4					EOG Resources 21-1 Lola				EOG Resources 3-21 Lola			
SW-NW-SE-SE					C-SE-SE-SE				C-S2-SW-SE			
21-31S-35W					21-31S-35W				21-31S-35W			
3011 KB					3010 KB				3013 KB			
Formation	Sample	Sub-Sea	Log	Sub-Sea	Log	Sub-Sea	Sample	Log	Log	Sub-Sea	Sample	Log
Heebner	4101	-1090								4097	-1084	
Base Heebner	4108	-1097			4105	-1095	-2				3013	
Lansing	4209	-1198			4210	-1200	2			4218	-1205	7
Marmaton	4898	-1887			4891	-1881	-6			4906	-1893	6
Cherokee	5111	-2100			5114	-2104	4				3013	-5113

<b>Atoka</b>	5396	-2385		5394	-2384	-1	5395	-2382	-3
<b>Morrow</b>	5506	-2495		5506	-2496	1	5512	-2499	4
<b>Chester</b>	5803	-2792		5786	-2776	-16	5797	-2784	-8
<b>Lower Chester</b>	6005	-2994		5985	-2975	-19	6000	-2987	-7
<b>PERFS UPPER</b>				5985	-2975		6000	-2987	
<b>PERFS LOWER</b>				6000	-2990		6018	-3005	
<b>LTD</b>	6362	-3351			3010				
<b>RTD</b>	6400	-3389		6210	-3200		6500	-3487	



**TRILOBITE TESTING, INC**

## DRILL STEM TEST REPORT

Palmer Oil **21-31-35 Stevens, Ks**

3118 N Cummings Rd **Lola #21-4**  
 Garden City, Ks Job Ticket: 54656 **DST#: 1**  
 67846 Test Start: 2013.11.02 @ 07:35:41  
 ATTN: Wyatt Urban

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**GENERAL INFORMATION:**

Formation: **Lower Chester**  
 Deviated: No Whipstock: 0.00 ft (KB)  
 Time Tool Opened: 10:54:41  
 Time Test Ended: 16:20:26

Test Type: Conventional Bottom Hole (Initial)  
 Tester: Shane McBride  
 Unit No: 55

Interval: **5980.00 ft (KB) To 6015.00 ft (KB) (TVD)**  
 Total Depth: 6015.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Fair  
 Reference Elevations: 3011.00 ft (KB)  
 3000.00 ft (CF)  
 KB to GR/CF: 11.00 ft

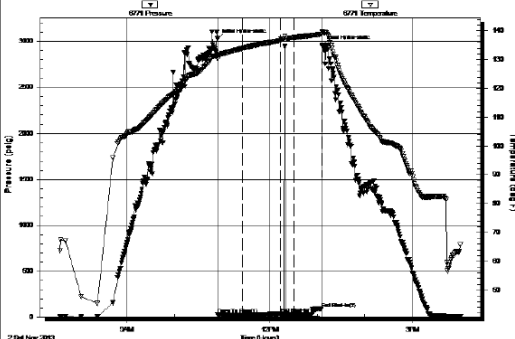
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**Serial #: 6771 Inside**

Press@RunDepth: 25.39 psig @ 5981.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2013.11.02 End Date: 2013.11.02 Last Calib.: 2013.11.02  
 Start Time: 07:35:41 End Time: 16:00:26 Time On Btm: 2013.11.02 @ 10:54:26  
 Time Off Btm: 2013.11.02 @ 13:05:56

**TEST COMMENT:** 1/4" in blow  
 No return  
 No blow, Flush tool after 5 min good surge, No blow  
 No return

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PRESSURE SUMMARY			
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	3029.45	131.57	Initial Hydro-static
1	30.57	130.20	Open To Flow (1)
32	22.54	133.97	Shut-in(1)
79	34.69	136.62	End Shut-in(1)
79	28.22	136.68	Open To Flow (2)
96	25.39	137.67	Shut-in(2)
131	92.62	138.82	End Shut-in(2)
132	2957.75	139.85	Final Hydro-static

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Recovery		
Length (ft)	Description	Volume (bbi)
3.00	mud 100% m	0.01








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

Trilobite Testing, Inc

Ref. No: 54656

Printed: 2013.11.02 @ 17:42:59

### ROCK TYPES

 Dolsec  sdylmst	 Lmst fw<7  Lmst fw>7	 shale, gry  Carbon Sh	 Ss
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### ACCESSORIES

**FOSSIL**

**STRINGER**

**TEXTURE**

Uolite

Chert

FX Finexin

Shale

### OTHER SYMBOLS

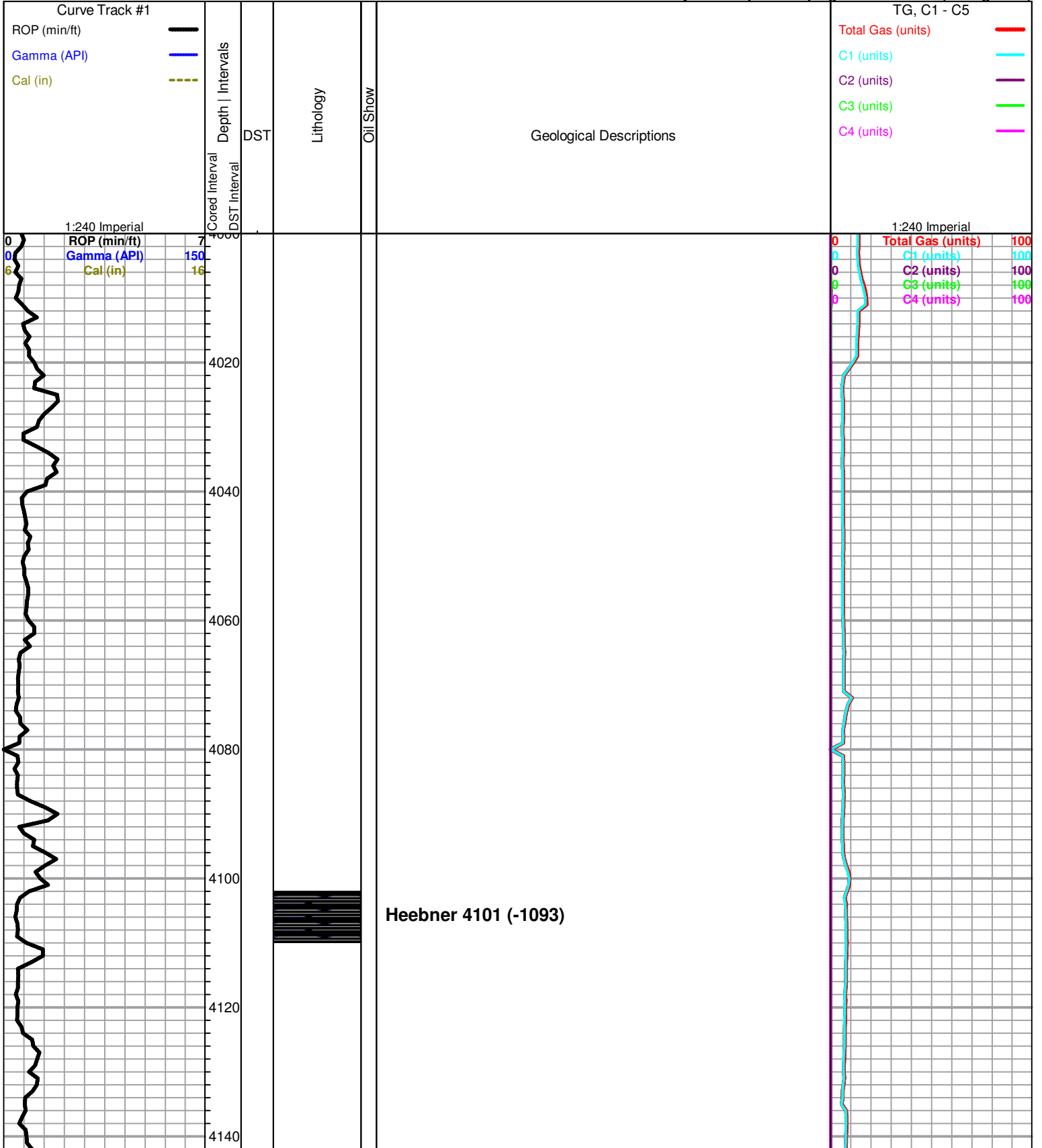
#### Oil Show

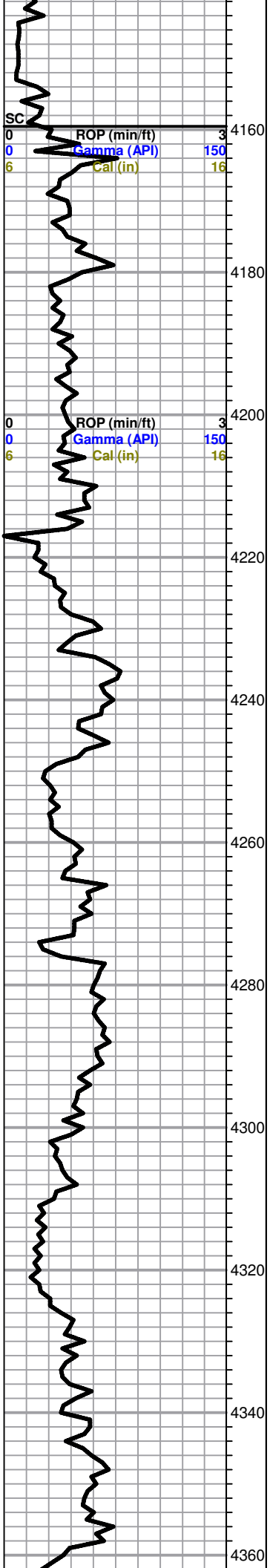
- Good Show
- Fair Show
- Poor Show
- Spotted or Trace
- Questionable Strn
- D Dead Oil Strn
- Fluorescence
- \* Gas

#### DST

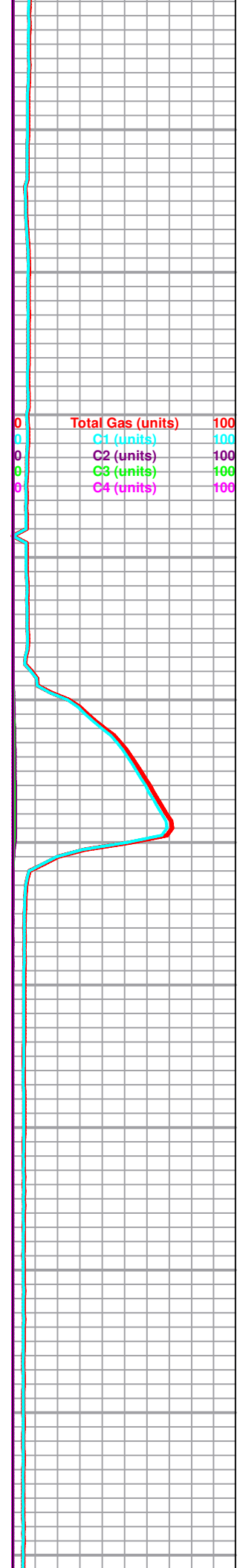
- DST Int
- DST alt
- Core
- tail pipe

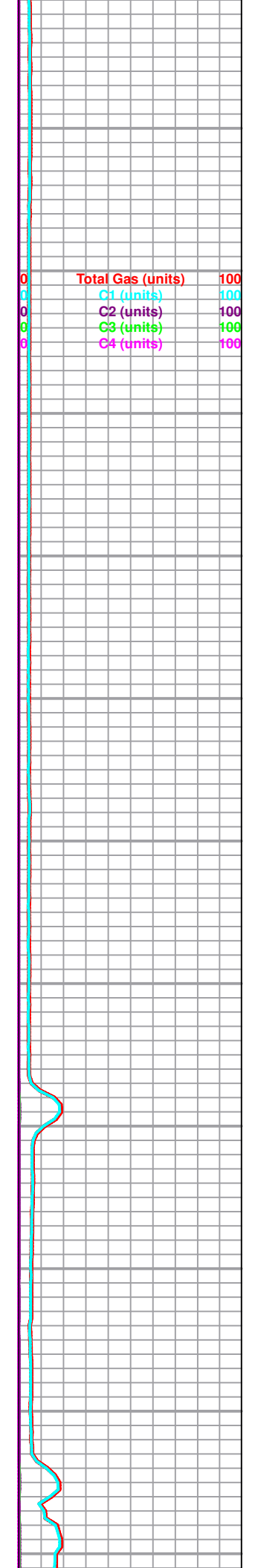
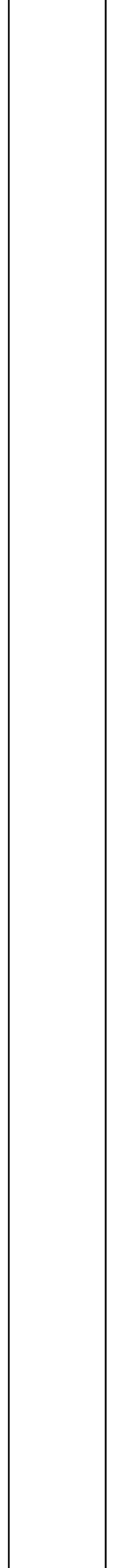
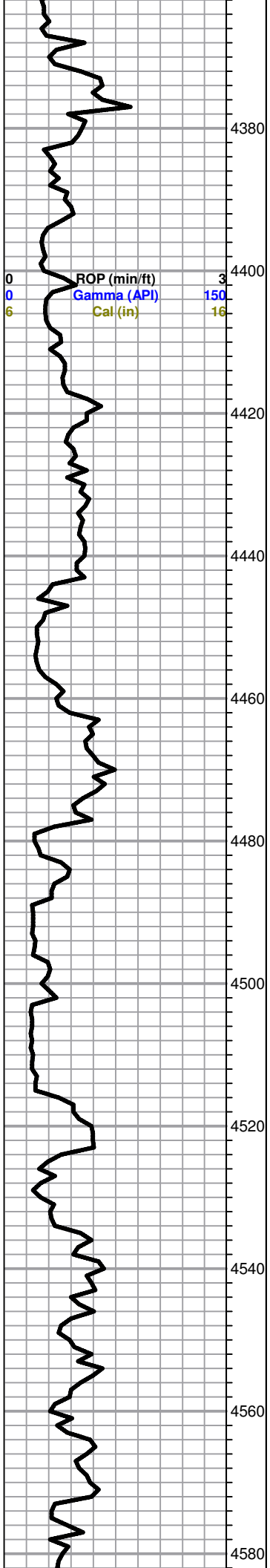
Printed by GEOstrip VC Striplog version 4.0.7.0 (www.grsi.ca)

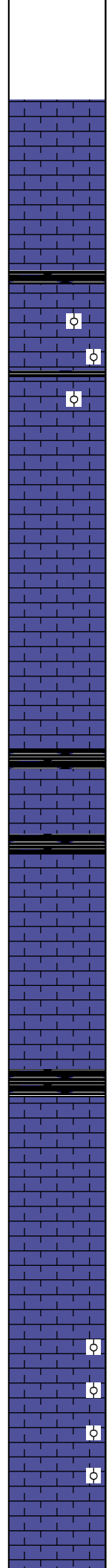
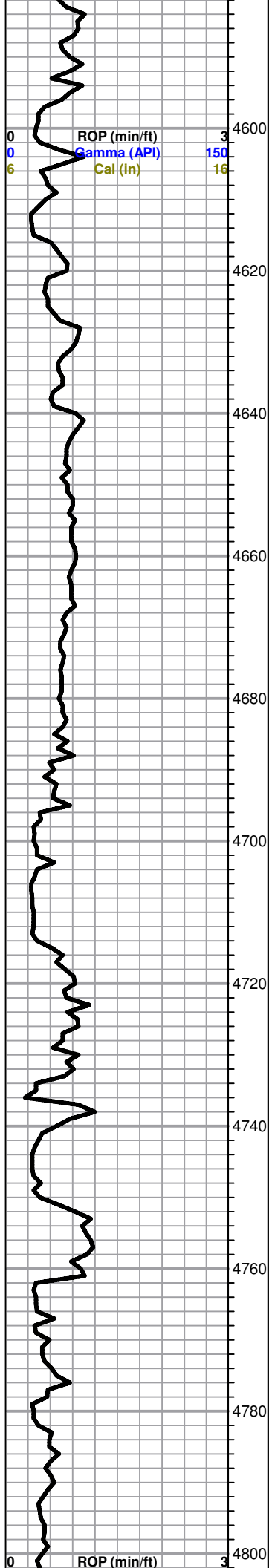




Lansing 4209 (-1198)







LS, gray to tan, FXL, few foss, dense, poor visible porosity, slightly cherty

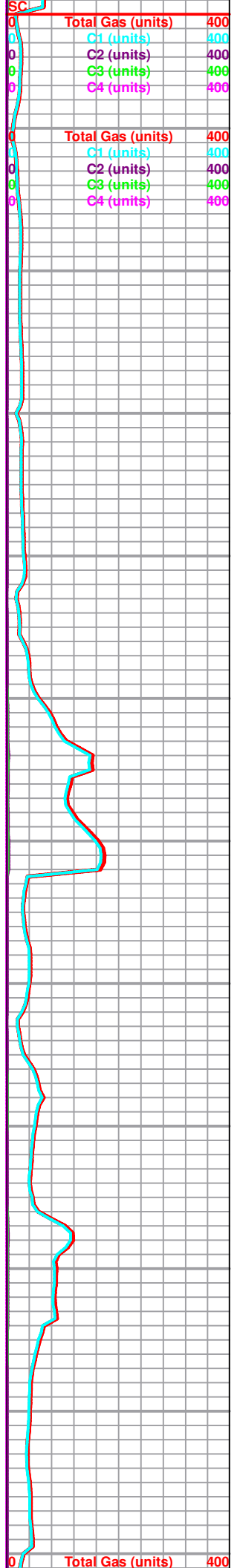
LS, tan to buff, ool, good oomoldic porosity, chalky, foss in parts, trace white chert, no shows

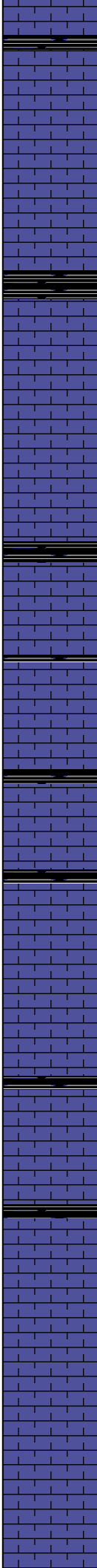
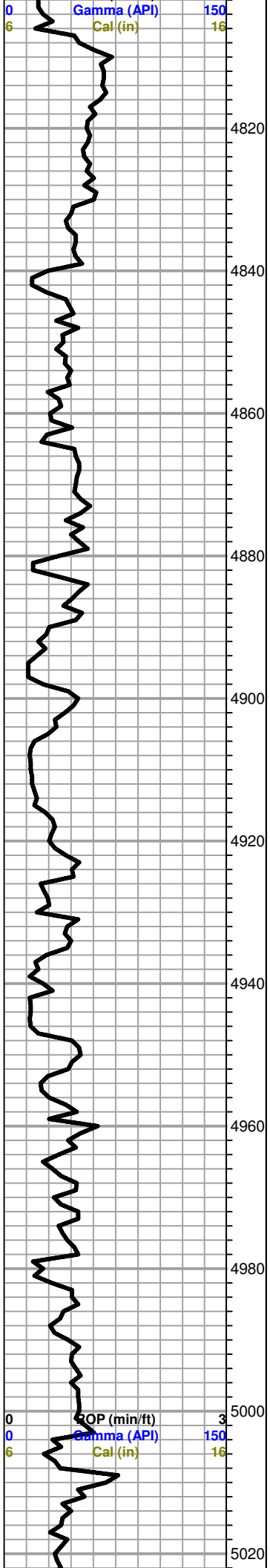
LS, gray, FXL, foss, dense, slightly chalky, poor visible porosity, no shows

LS, gray, FXL, dense, chalky poor visible porosity, slightly cherty, trace green shale

LS, tan to brown, dense, poor visible porosity, trc black shale, no shows

LS, tan, FXL, ool, poorly developed, dense, poor scattered porosity, no shows





LS, cream to tan, slightly chalky in parts, poor visible porosity

LS, gray to light gray, mott, foss, poor visible porosity, dense, no shows

LS, gray, FXL, dense, foss, poor visible porosity, dense, slightly chalky, no shows

**Marmaton 4898 (-1887)**

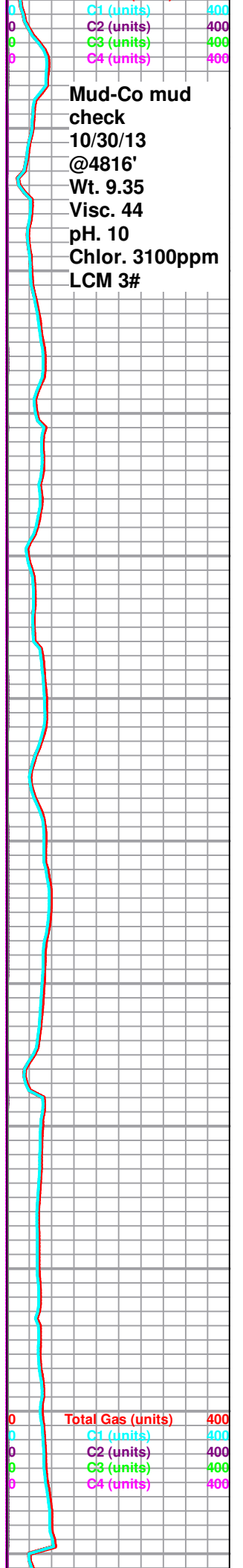
LS, gray to brown, FXL, foss, dense, slightly cherty trace green shale

LS, brown to tan, FXL, ool in parts, poorly developed, dense, slightly cherty, poor vis porosity

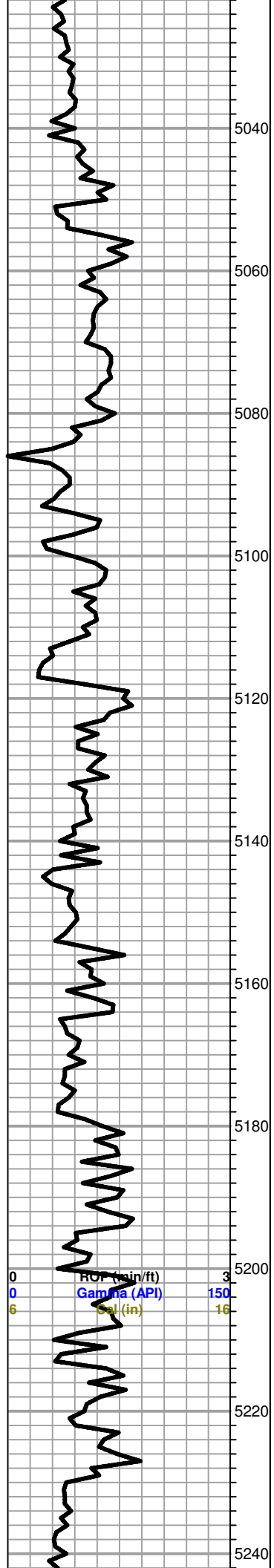
LS, gray to mott, FXL, dense, few ool, cherty, slightly chalky, poor visible porosity, no shows

LS, cream to gray dense, FXL, FEw foos, poor scattered porosity, No shows

LS, tan to cream FXL, dense few foss, poor scattered porosity, slightly cherty, no shows



Mud-Co mud check  
10/30/13  
@4816'  
Wt. 9.35  
Visc. 44  
pH. 10  
Chlor. 3100ppm  
LCM 3#



scattered porosity, slightly cherty, no shows

LS, cream to tan, FXL, dense, few foss, oom in parts, poor oom porosity, no shows

LS, tan to gray, FXL, sandy in parts, slightly cherty, poor visible porosity, dense, trace, white soft cherty

Cherokee Shale 5111 (-2100)

LS, cream to tan FXL, cherty, poor visible porosity, dense, no shows

A/A

LS, cream to tan FXL, cherty, dense, poor scattered porosity, trc white chert

LS, gry to black, FXL, slighty cherty, poor visible porosity, no shows

LS, cream to gray, FXL, few ool, poorly developed, dense, slightly chalky, poor visible porosity

LS, cream to tan FXL, few ool, poorly developed, dense, slightly chalky, no shows





5260  
5280  
5300  
5320  
5340  
5360  
5380  
5400  
5420  
5440  
5460

LS, cream to gray, FXL, dense, poor visible porosity, no shows

LS, gray to black, FXL, dense, poor scattered porosity, no shows

Sh, black to gray, silty, soft, trc. LS, cream to tan FXL, dense, poor visible porosity

LS, tan to buff, FXL, dense, cherty, chalky, poor visible porosity

Ls, tan FXL chalky, poor visible porosity, no shows  
Sh, black, silty

LS, cream to tan FXL, ool, chalky, poorly developed, poor scattered porosity, no shows

**Atoka 5396 (-2385)**

LS, cream to tan, FXL, mottled, dense, poor visible porosity, no shows

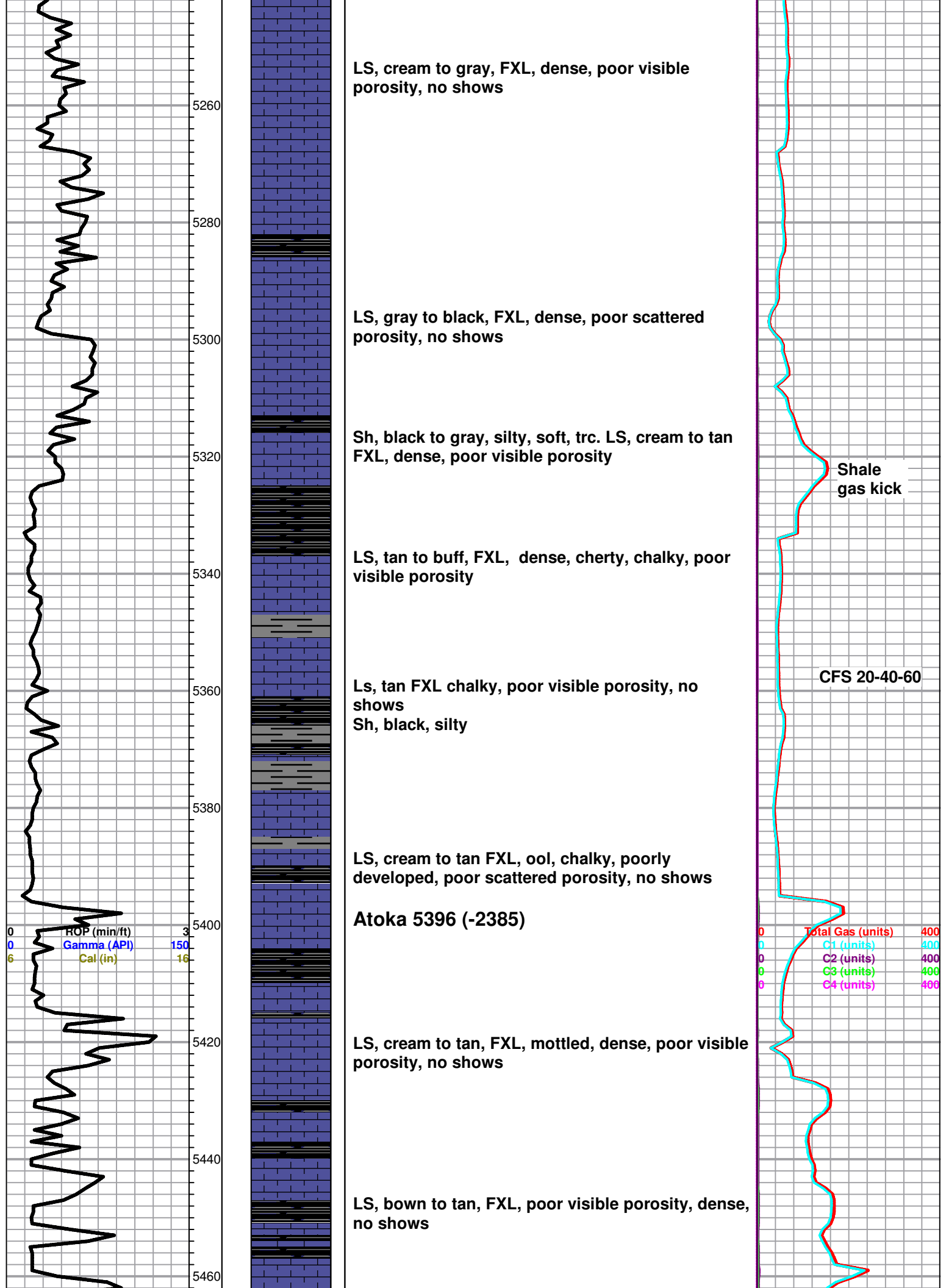
LS, brown to tan, FXL, poor visible porosity, dense, no shows

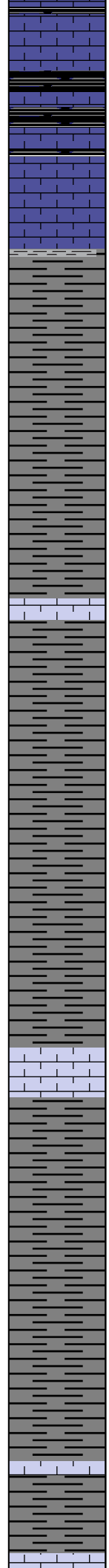
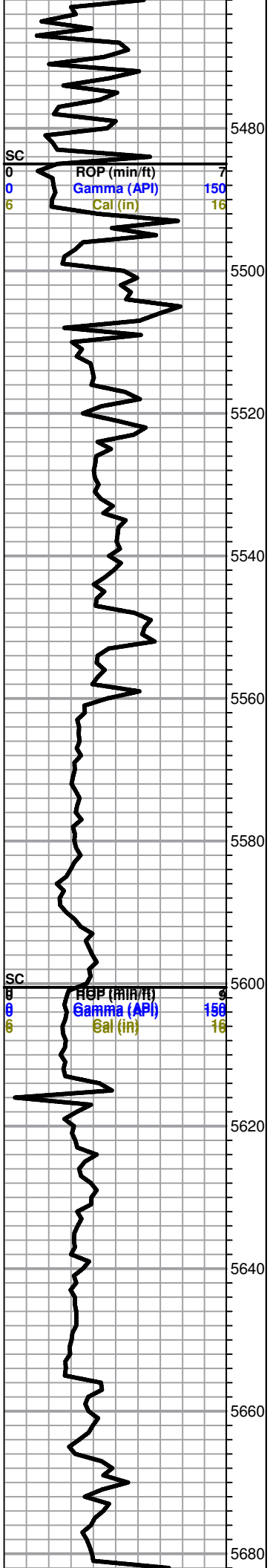
Shale gas kick

CFS 20-40-60

ROP (min/ft) 3  
Gamma (API) 150  
Cal (in) 16

Total Gas (units) 400  
C1 (units) 400  
C2 (units) 400  
C3 (units) 400  
C4 (units) 400





Black carb shale, trc LS, white to cream, FXL, dense, poor scattered porosity

Sh, black to gray, silty

Morrow 5509 (-2495)

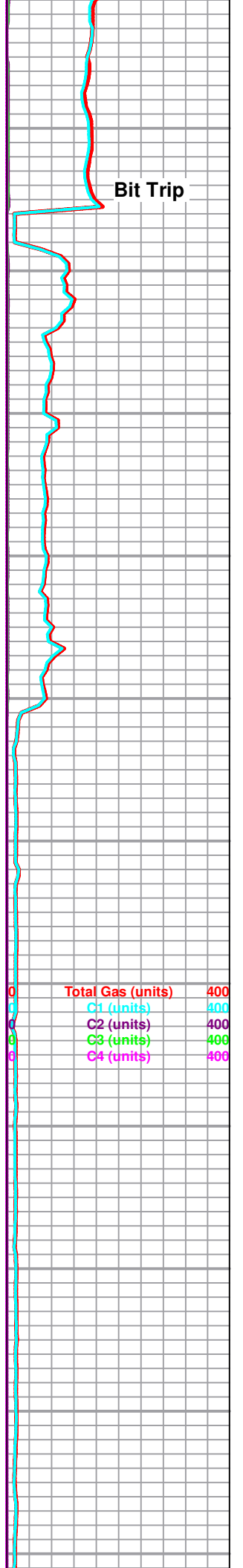
Sh, black, gray, brick red, silty, trc LS, brown mottled, poor visible porosity

Sh, black to gray

Black shale

Sh, black to gray silty soft, s

shale A/A

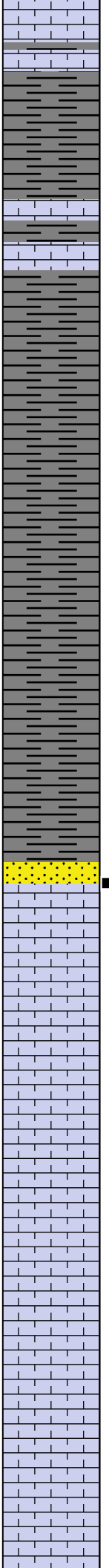


Bit Trip

Total Gas (units) 400  
 C1 (units) 400  
 C2 (units) 400  
 C3 (units) 400  
 C4 (units) 400

5700  
5720  
5740  
5760  
5780  
5800  
5820  
5840  
5860  
5880  
5900

ROP (min/ft) 9  
Gamma (API) 150  
Cal (in) 16



LS, brown tan mottled, FXL, dense, poor scattered porosity, slightly chalky, no shows

Sh, black, trc LS, A/A

Sh, black to gray, soft, silty

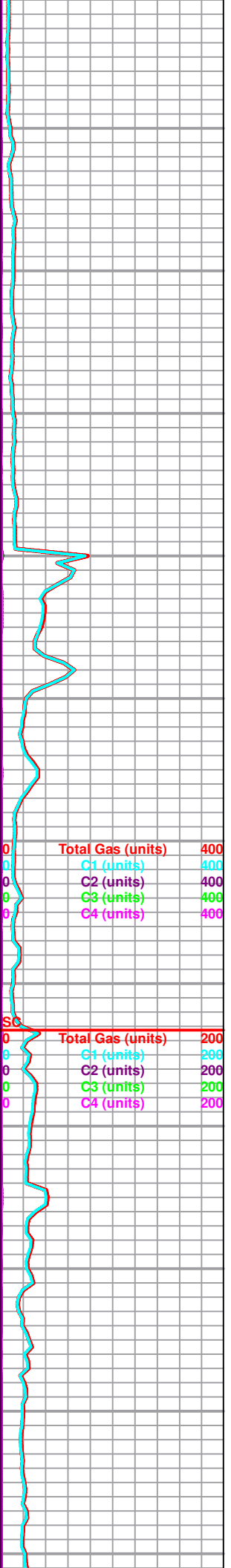
Sh, black gray, silty, trc LS, tan buff, FXL, slightly cherty, dense no shows

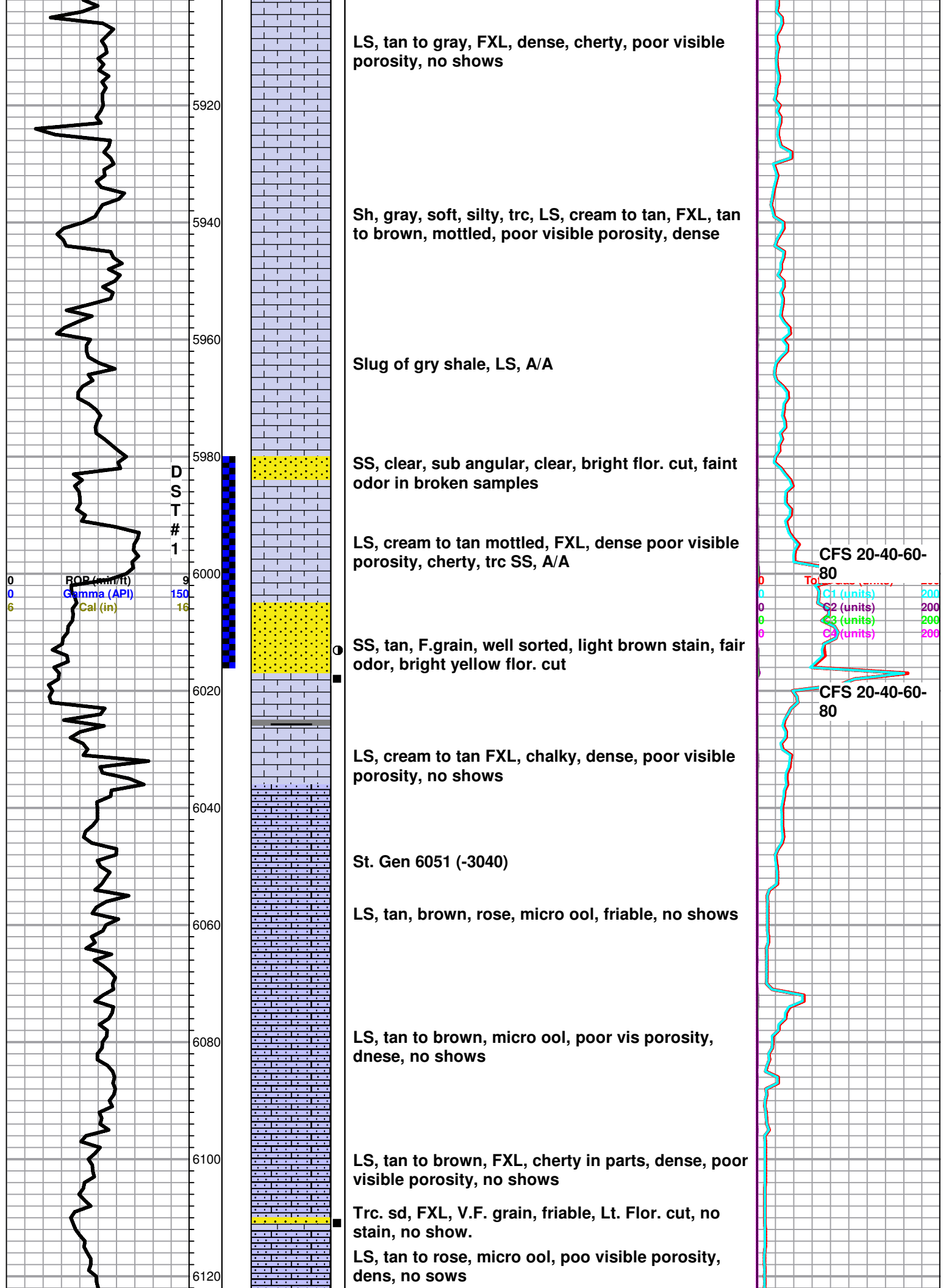
**CHESTER 5803 (-2792)**  
SS, tan to brown, sub angular, friable, light yellow flor. cut, no staining, odor???

LS, gry FXL, dense, poor visible porosity, no shows

LS, A/A

LS, cream to gray, mottled, FXL, cherty, dense, no shows

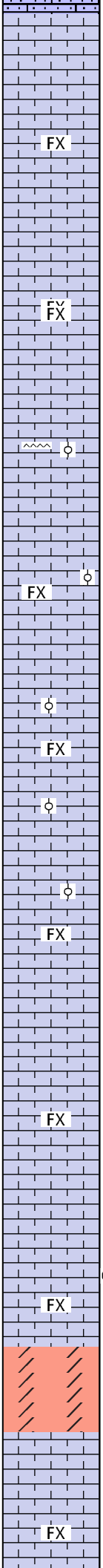
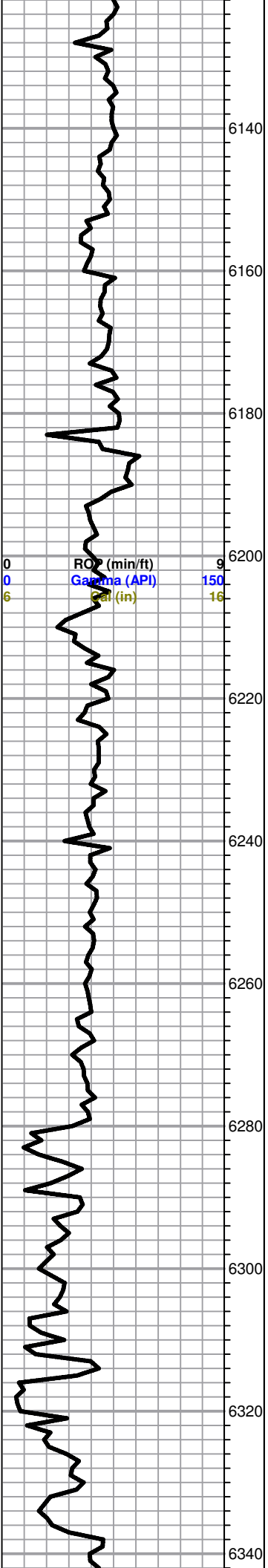




**St. Louis 6131 (-3120)**

6140  
6160  
6180  
6200  
6220  
6240  
6260  
6280  
6300  
6320  
6340

0 ROF (min/ft) 9  
0 Gamma (API) 150  
6 Cal (in) 16



LS, cream to tan, FXL, cherty, poor scattered porosity, dense, no shows

LS, cream to rose, FXL, dense, cherty, poor scattered porosity, no shows

Chert, orange, white, cream, few ool, FXL, LS, cream to white, FXL, dense, poor visible porosity, no show

LS, white to cream, FXL, dense, poorly developed ool, poor scattered porosity, slightly cherty

LS, cream to tan FXL, dense poorly developed ool, no shows

LS, gray to tan, mott, FXL, dense, cherty, few foss, poorly developed ool, poorly scattered porosity, no shows

LS, cream to tan, mott, FXL dense, foss, poor visible porosity, no shows

LS, cream to tan, chalky, FXL, trc chert, clear to opaque, trc, lt. brown stain, no flor cut, no odor

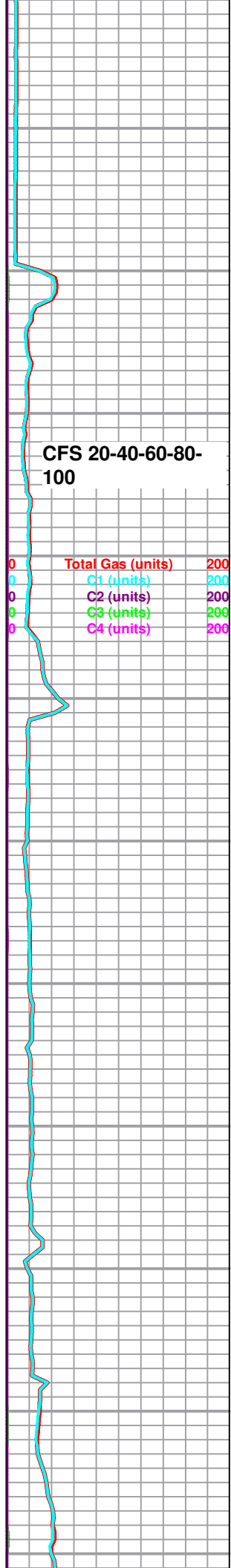
**Spergen 6314 (-3303)**

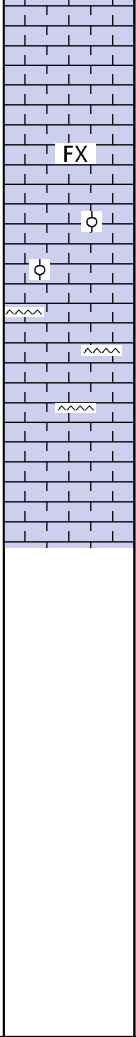
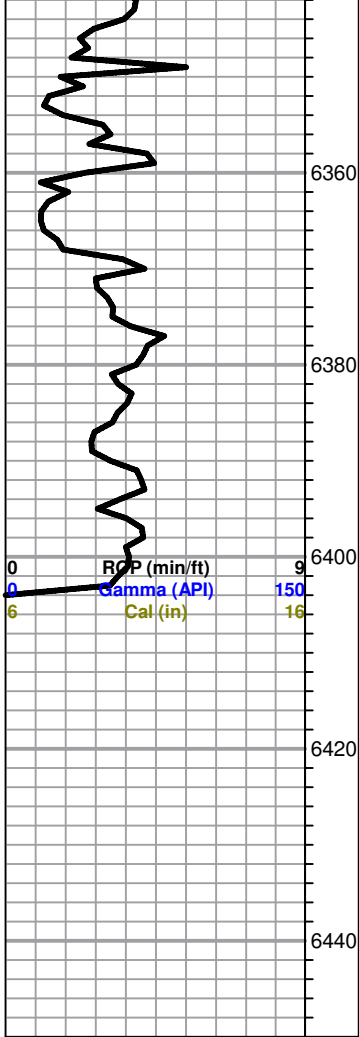
Dol, tan to brown, sucrosic, m. grain, no flor. cut, no odor, no show of free oil

LS, gry to brown, mottled, FXL, dense, poor visible porosity, no shows

**CFS 20-40-60-80-100**

0 Total Gas (units) 200  
0 C1 (units) 200  
0 C2 (units) 200  
0 C3 (units) 200  
0 C4 (units) 200





LS, brown to tan , mottled, FXL, dense,poor visible porosity, cherty, no shows

LS, A/A , trc, white to opaque chert, ool in parts, trc, LS, tan, micro ool, no shows

LS, tan to brown, mottled, FXL, foss, dense, cherty, poor visible porosity, no shows

RTD 6400  
LTD 6362

