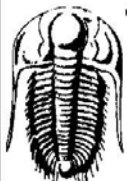


WELL COMPARISON SHEET

	WILLIS #23-4				WILLIS #23-2				WILLIS #23-4				PELAJO #23-1				UPC #23-1													
	3128				3116				3125				3137				3133													
	LOGTOPS		SAMPLETOPS		COMP. CARD		LOG		SMPL.		COMP. CARD		LOG		SMPL.		COMP. CARD		LOG		SMPL.									
	DEPTH	DATUM	DEPTH	DATUM	DEPTH	DATUM	LOG	CORR.	SMPL.	DEPTH	DATUM	LOG	CORR.	SMPL.	DEPTH	DATUM	LOG	CORR.	SMPL.	DEPTH	DATUM	LOG	CORR.	SMPL.						
FORMATION																														
HEEBNER					4152	-1036					4178	-1053			4175	-1038			4510	-1377										
LANSING					4283	-1167									4300	-1163			4271	-1138										
MARMATON	4985	-1857	4983	-1855	4962	-1846	- 11	- 9	4950	-1825	- 32	- 30	4947	-1810			- 45		4940	-1807	- 50	- 48								
CHEROKEE	5147	-2019	5145	-2017	5123	-2007	- 12	- 10	5140	-2015	- 4	- 2	5148	-2011			- 6													
ATOKA																														
MORROW	5659	-2531	5652	-2524	5630	-2514	- 17	- 10	5603	-2478	- 53	- 46	5620	-2483			- 41		5632	-2499	- 32	- 25								
ST. GENEVIEVE	6169	-3041	6180	-3052	6160	-3044	+ 3	- 8																						
ST. LOUIS	6325	-3197	6324	-3196	6300	-3184	- 13	- 12																						
ST. LOUIS 'B'	6373	-3245																												
RTD			6520	-3392	6500	-3384		- 8	6500	-3375		- 17	6500	-3363		- 29			6500	-3367		- 25								
LTD	6522	-3394																												

DST #1 ST. LOUIS 6318' - 6360'

 <p>TRILOBITE TESTING, INC.</p>	<p>DRILL STEM TEST REPORT</p> <p>Palmer Oil Inc. 23-32-37 Stevens Co. KS</p> <p>3116 N Cummings Rd Willis 23-4 P.O. Box 399 Garden City KS 67845 ATTN: Jeff Lawler</p> <p>Job Ticket: 53145 DST#: 1 Test Start: 2013.08.01 @ 16:50:15</p>
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GENERAL INFORMATION:

Formation: **St. Louis**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 20:18:15
Time Test Ended: 01:44:30

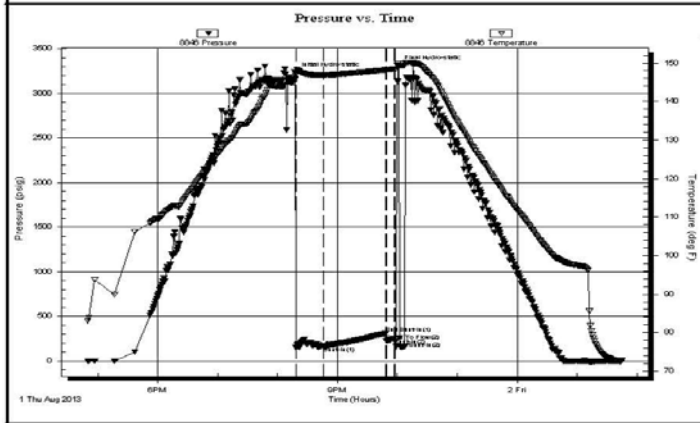
Test Type: Conventional Bottom Hole (Initial)
Tester: Mike Roberts
Unit No: 65

Interval: **6318.00 ft (KB) To 6360.00 ft (KB) (TVD)**
Reference Elevations: 3128.00 ft (KB)
Total Depth: 6360.00 ft (KB) (TVD)
3116.00 ft (CF)
Hole Diameter: 7.88 inches Hole Condition: Fair
KB to GR/CF: 12.00 ft

Serial #: 8846 Inside

Press@RunDepth: 249.08 psig @ 6319.00 ft (KB)
Capacity: 8000.00 psig
Start Date: 2013.08.01 End Date: 2013.08.02
Last Calib.: 2013.08.02
Start Time: 16:50:15 End Time: 01:44:30
Time On Btm: 2013.08.01 @ 20:17:30
Time Off Btm: 2013.08.01 @ 22:00:45

TEST COMMENT: IF: Built to 1" blow died to 1/2" blow
IS: No return blow
FF: No blow --flushed tool--No blow pulled test
FS:



PRESSURE SUMMARY			
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	3220.34	146.56	Initial Hydro-static
1	151.92	147.50	Open To Flow (1)
29	162.36	146.86	Shut-In(1)
91	308.09	148.21	End Shut-In(1)
92	226.67	148.21	Open To Flow (2)
100	249.08	148.40	Shut-In(2)
101	217.79	148.43	End Shut-In(2)
104	3304.09	149.89	Final Hydro-static

Recovery		
Length (ft)	Description	Volume (bbl)
190.00	mud 100% m	0.97

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

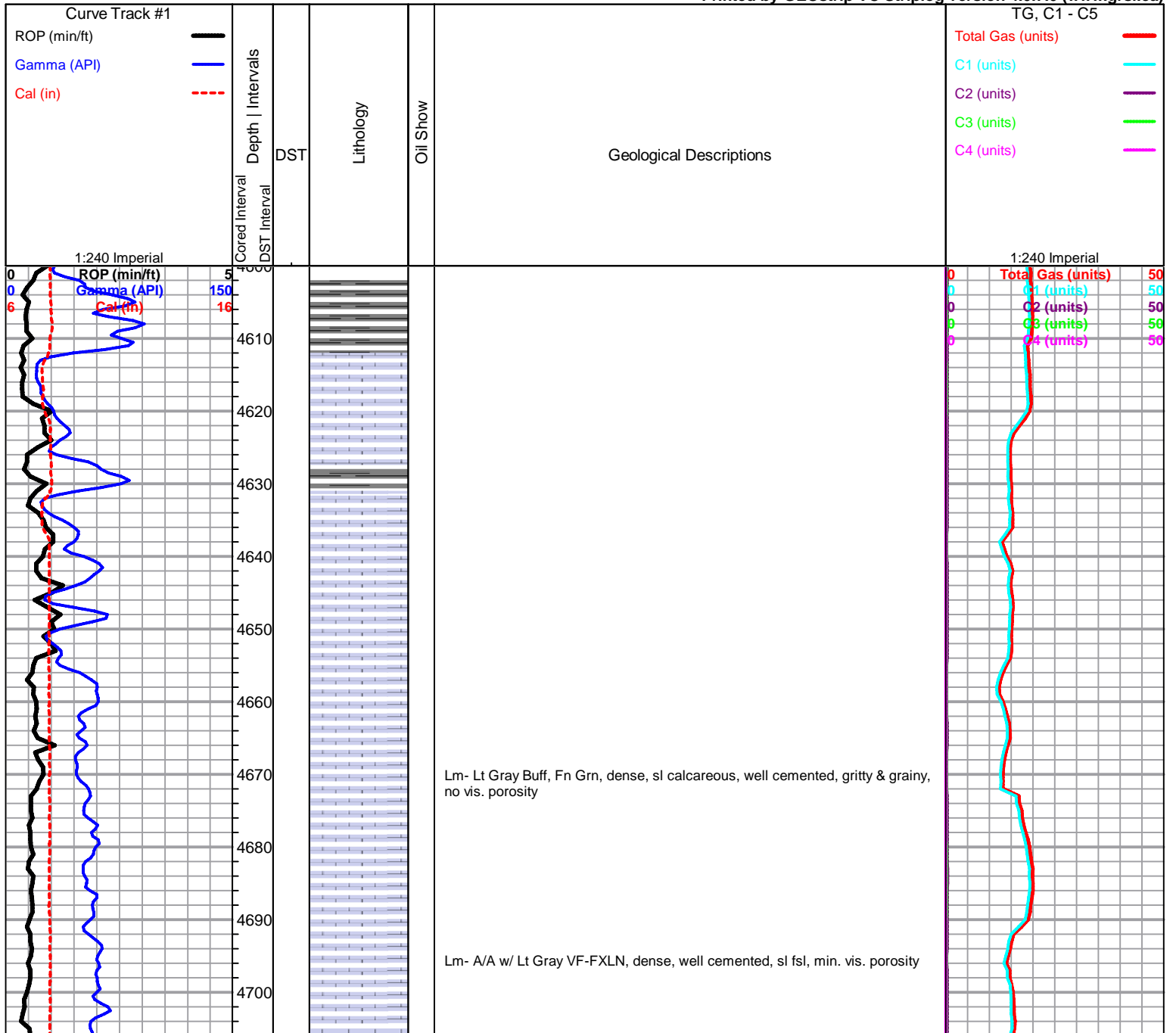
ROCK TYPES



OTHER SYMBOLS



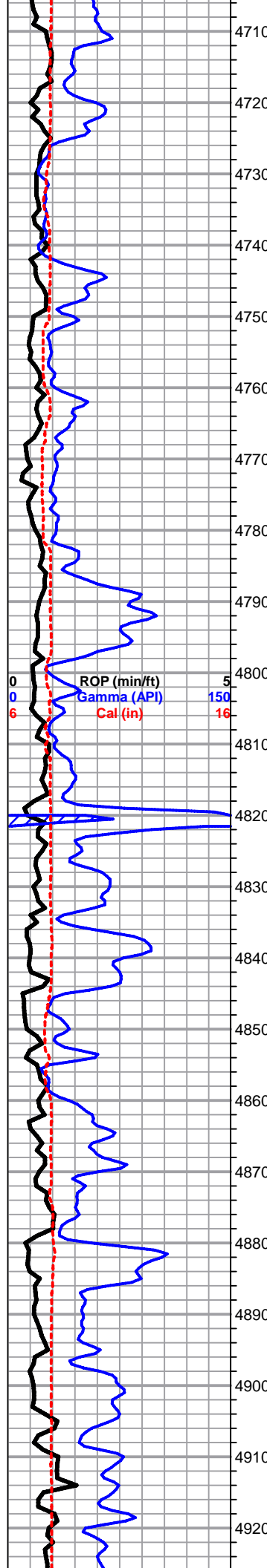
Printed by GEOstrip VC Striplog version 4.0.7.0 (www.grsi.ca)



4710
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4780
4790
4800
4810
4820
4830
4840
4850
4860
4870
4880
4890
4900
4910
4920

ROP (min/ft) 5
Gamma (API) 150
Cal (in) 16

0
0
6



Lm- Lt Gray, Vf-Fn Grn, grainy siltstone, well cemented, soft & calcareous, no vis. porosity

Lm- Lt Gray Cream, Fn Grn FXLN, mostly fn grn mud supported matrix, chalky cementation, sl fsl, some FXLN sl bioclastic, poor porosity, soft

Lm- Off White, Fn Grn FXLN, soft & chalky, fsl, some w/ sctrd micro XLN porosity & secondary micro ppt porosity, poorly developed, some soft white chalk

Lm- Cream Off White, FXLN Vf Grn, vry chalky & soft, much soft white chalk pcs, sl oolitic, poorly developed w/ minimal cementation & crumbly, hvy mottling

Lm- Buff, Fn Grn, soft & crumbly, chalky, vry hvy mottling, some w/ interbedded crinoids

Sh- Black, soft, fissile, carbonaceous

Lm- Ivory Cream, FXLN, dense, vry well cemented, few pcs of sl cherty ls w/ micro XLN porosity, sl fsl

Lm- Cream Lt Gray, FXLN, sl oolitic, poorly developed, min. vis. porosity w/ soft gray siltstone

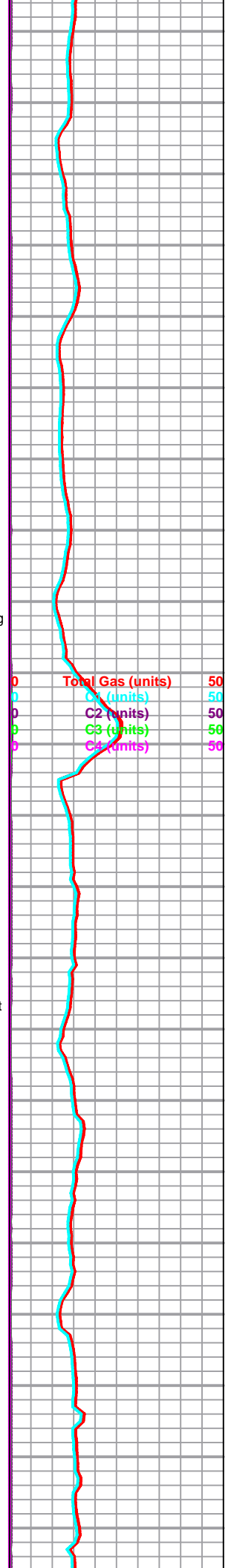
Lm- Cream Dove Gray, F-Med XLN Vf Grn, fsl & sl oolitic w/ rare oomoldic minimal skeletal dissolution, poorly dev. w/ micro XLN porosity, few w/ sctrd secondary recrystallization veins, much calcareous siltstone

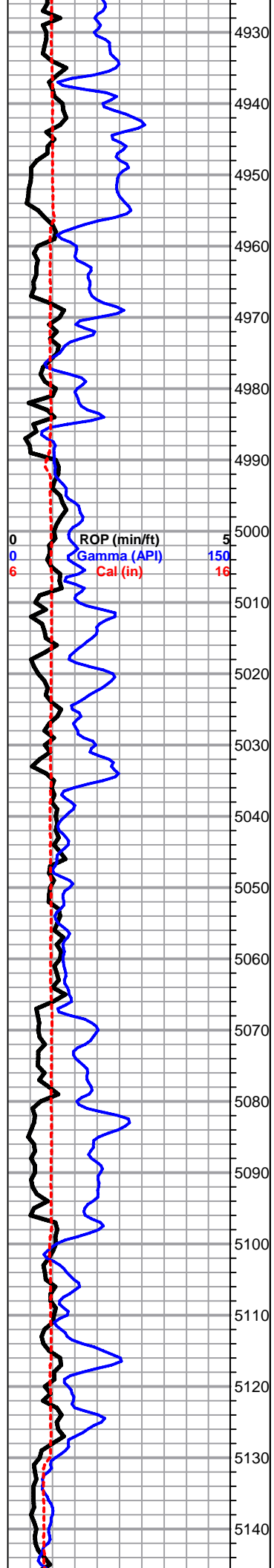
Lm- Tan Cream, FXLN, oolitic/oomoldic w/ partial skeletal dissolution, poorly dev w/ no intervugular connectivity, some sandy dove gray lime/shale

Lm- White Off White, Fn Grn, soft, vry chalky, sctrd mottling, poor intersitial porosity, crumbly Sh- Gray Maroon, gritty & calcareous, gritty & earthy maroon pcs

Lm- Lt Gray, Fn Grn, mud supported, sctrd mottling, soft & crumbly, gritty & grainy, poorly dev. w/ minimal vis. porosity, sl trashy

Total Gas (units) 50
C1 (units) 50
C2 (units) 50
C3 (units) 50
C4 (units) 50





Lm- Cream Tan, FXLN, dense, sl fsl, loosely to well cemented, sctrd XLN porosity, some pcs w/ secondary recrystallization porosity, sctrd mottling

Lm- Lt Gray Buff, FXLN, dense, brittle, sl fsl, sl trashy, sctrd XLN porosity, some calcareous & chalky

Sh- Gray, silty, sl calcareous

MARMATON 4983' (-1855) E-LOG 4985' (-1857) Lm- Lt Gray, FXLN, gritty & grainy, dense, well cemented, no vis. porosity

Lm- White Ivory, FXLN Fn Grn, mostly soft mud supported matrix, chalky in part, loosely cemented & crumbley, some oolitic / sl oomoldic, poorly dev. w/ sctrd micro XLN porosity, all barren

Lm- White Off White, FXLN, clean, few sl fsl, most w/ XLN porosity, poorly dev. & barren

Lm- A/A w/ gritty & silty lt gray shale

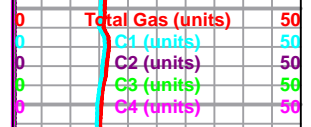
Lm- Gray, F-Med Grn, loosely cementend, gritty & grainy, poor intergranular vis. porosity, sl trashy

Lm- A/A w/ buff FXLN, dense, sl fsl, well cemented & poorly dev. w/ sctrd XLN porosity

Lm- Cream Off White, FXLN, loosely cemented & crumbly, some sl fsl, poor vis. porosity to sctrd XLN porosity

Lm- Buff Tan, VF-FXLN, dense, vry well cemented, sub-lithographic, poorly dev. w/ minimal vis. porosity, tight

Lm- Tan Buff, Fn Grn, sub-sucrosic, gritty, sl sandy, loosely cemented & poorly dev., some sl chalky and soft



CHEROKEE SHALE 5145' (-2017) E-LOG 5147' (-2019) Sh- Black, fissile, carbonaceous

Lm- Cream Tan, VF-FXLN, dense, vry well cemented, tight w/o vis. porosity, sl cherty

Lm- Dove Gray Cream, Fn Grn, mud supported matrix, sl sandy & gritty, well cemented w/ poor intergranular vis. porosity, some chalky in part & soft

Lm- White Off White, Vf-Fn Grn, soft, chalky, loosely cemented & crumbly

Lm- Drk Gray, Fn Grn, dense gritty siltstone

Lm- A/A, mostly well cemented & tight, some loosely cemented & limey

Lm- A/A w/ some pcs of FXLN w/ bioclasts, sctrd micro XLN & XLN porosity

Lm- Drk Gray, Fn Grn, gritty & well cemented, tight w/o vis. porosity

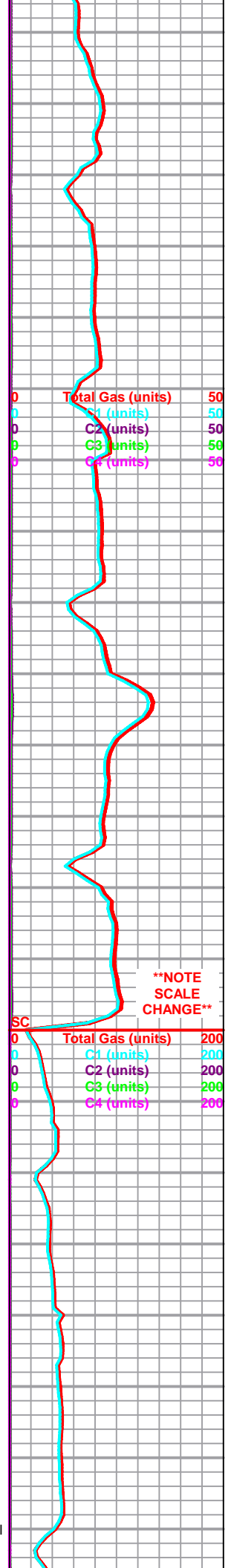
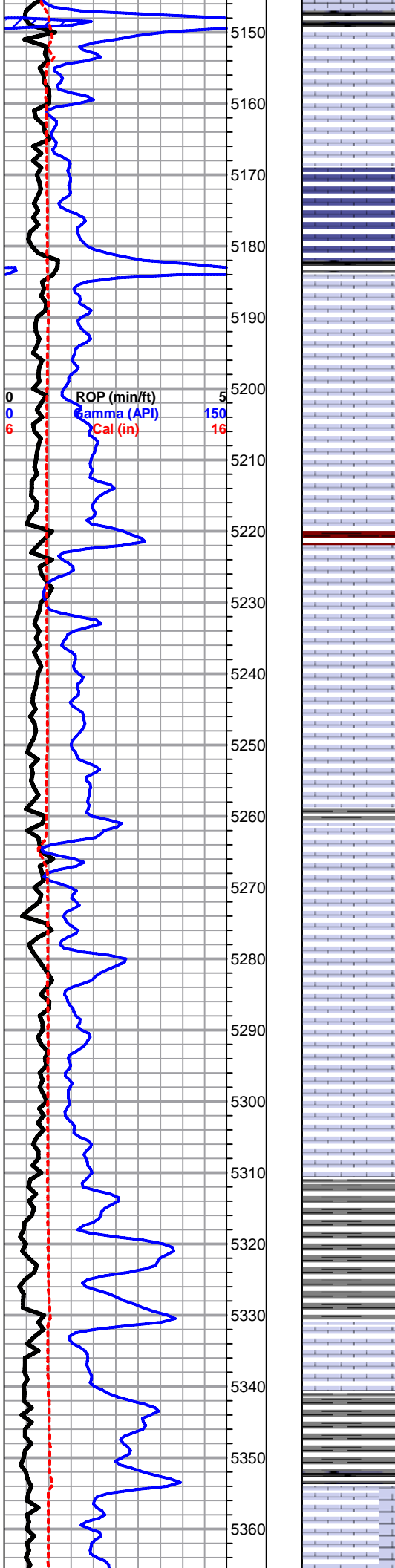
Sh- Drk Gray, silty & dense, gritty, few chips of lt gray sl sandy lime, Chert-Ivory, gritty sl dolomitic chert w/ micro pyrite inclusions

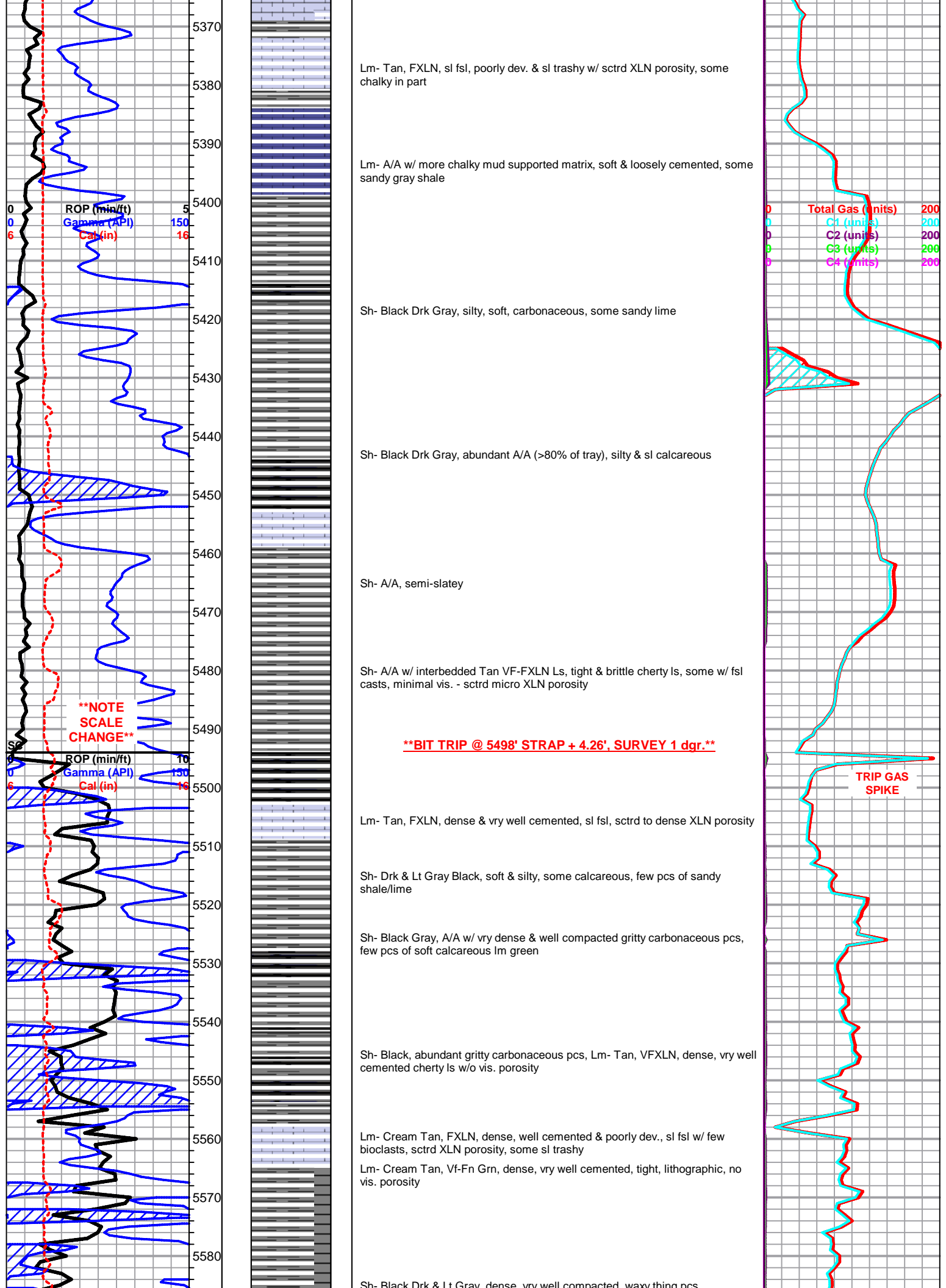
Sh- A/A Lm- Lt Gray, Fn Grn, dense, gritty, sl calcareous, siltstone w/o vis. porosity, mostly well cemented

Interbedded Sh & Lm benches A/A w/ more drk gray shale

Sh- Black, soft, fissile, carbonaceous

Lm- Cream Off White, Fn Grn FXLN, all loosely cemented & crumbly, FXLN sl fsl & poorly dev. w/ sctrd XLN porosity, all barren w/ sl sctrd mottling





Lm- Tan, FXLN, sl fsl, poorly dev. & sl trashy w/ sctrd XLN porosity, some chalky in part

Lm- A/A w/ more chalky mud supported matrix, soft & loosely cemented, some sandy gray shale

Sh- Black Drk Gray, silty, soft, carbonaceous, some sandy lime

Sh- Black Drk Gray, abundant A/A (>80% of tray), silty & sl calcareous

Sh- A/A, semi-slaty

Sh- A/A w/ interbedded Tan VF-FXLN Ls, tight & brittle cherty ls, some w/ fsl casts, minimal vis. - sctrd micro XLN porosity

****BIT TRIP @ 5498' STRAP + 4.26', SURVEY 1 dgr.****

Lm- Tan, FXLN, dense & vry well cemented, sl fsl, sctrd to dense XLN porosity

Sh- Drk & Lt Gray Black, soft & silty, some calcareous, few pcs of sandy shale/lime

Sh- Black Gray, A/A w/ vry dense & well compacted gritty carbonaceous pcs, few pcs of soft calcareous lm green

Sh- Black, abundant gritty carbonaceous pcs, Lm- Tan, VFXLN, dense, vry well cemented cherty ls w/o vis. porosity

Lm- Cream Tan, FXLN, dense, well cemented & poorly dev., sl fsl w/ few bioclasts, sctrd XLN porosity, some sl trashy

Lm- Cream Tan, Vf-Fn Grn, dense, vry well cemented, tight, lithographic, no vis. porosity

Sh- Black Drk & Lt Gray, dense, vry well compacted, waxy thin pcs

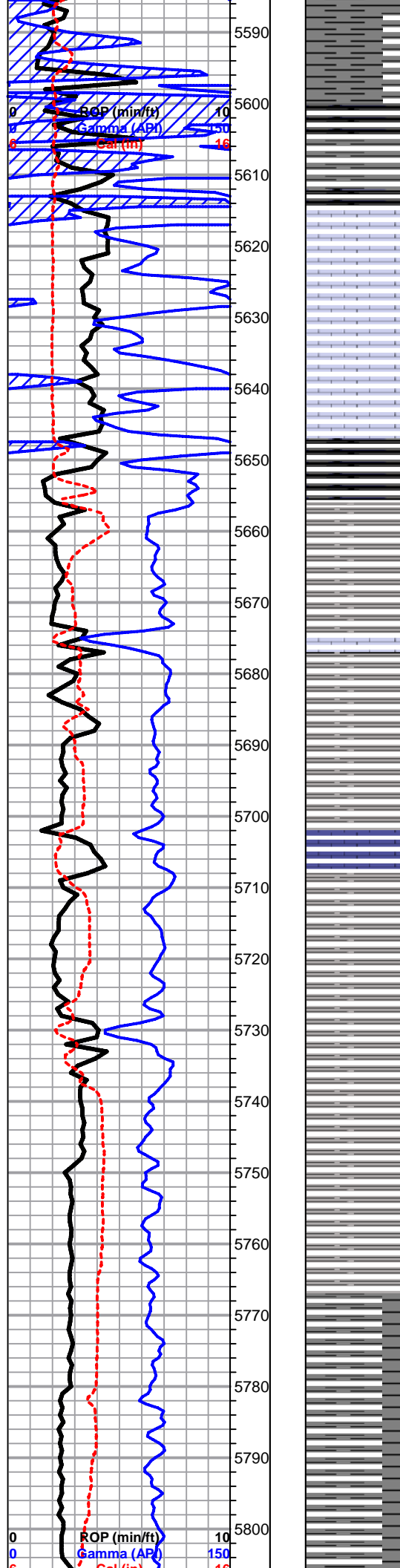
Total Gas (units) 200
 C1 (units) 200
 C2 (units) 200
 C3 (units) 200
 C4 (units) 200

TRIP GAS SPIKE

ROP (min/ft) 5
 Gamma (API) 150
 Cal (in) 16

ROP (min/ft) 10
 Gamma (API) 130
 Cal (in) 16

****NOTE SCALE CHANGE****



Sh- Black Drk & Lt Gray, dense, vry well compacted, waxy thin pcs, carbonaceous, silty, sl calcareous & soft, sl sandy lime

Sh- Black, dense, soft, fissile & carbonaceous

Lm- Brown, VFXLN, dense tight cherty ls w/o vis. porosity, few pcs w/ interbedded chlorite & pyrite inclusions

Lm- Tan Brown, VFXLN, dense cherty ls w/o vis. porosity, some sub-cryptocrystalline

Lm- Cream Off White, Vf-Fn Grn, dense, soft & loosely cemented, chalky w/ no vis. to poor intergranular vis., w/ much soft white chalk, vry clean

MORROW 5652' (-2524) E-LOG 5659' (-2531) Sh- Black, gritty & soft, many waxy dense & blocky pcs, carbonaceous

Sh- Black, soft, platy, vry organic rich, sl micaceous, pyritic, carbonaceous

Lm- Tan Cream, VFXLN Vf Grn, thin interbedded lenses, mix of tight cherty ls w/o vis. porosity & chalky, loosely cemented & crumbley w/ poor vis. intergranular porosity

Sh- Black, thin waxy, dense & vry well compcated thin slivers

Lm- White Off White, Vf Grn, soft & dense, loosely cemented mud supported matrix, chalky, no vis. porosity

Sh- Black Gray, fissile, soft & carbonaceous, sl calcareous, waxy & soft, sl pebbly

Sh- Gray, soft & silty, some gray wash & semi-gummy clumps

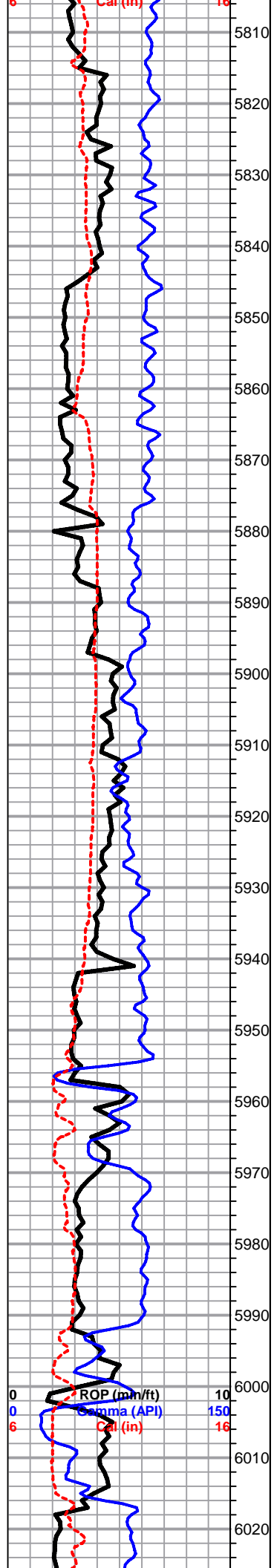
Sh- Drk Gray Black, soft & sl silty, some dense thin slivers, fissile & carbonaceous

Sh- A/A w/ increasing amount of black shale & silty calcareous lt gray pcs

Sh- Black Drk & Lt Gray, thin slivers, carbonaceous, soft & silty mix, some calcareous

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

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



Sh- A/A w/ increasing amount of drk gray slivers

Sh- A/A w/ few pcs of earthy brick red

Sh- Black Drk Gray, abundant amount of thin carbonaceous slivers & drk gray slivers

Sh- A/A w/ few lt gray gummy argillaceous clumps

Sh- A/A w/ increasing amount of silty soft calcareous lt gray pcs

Sh- Thin slivers, black carbonaceous & drk gray, semi-waxy, soft & silty lt gray pcs

Sh- A/A

****SAMPLES STILL CONTAMINATED W/ MUCH DARK SHALE****

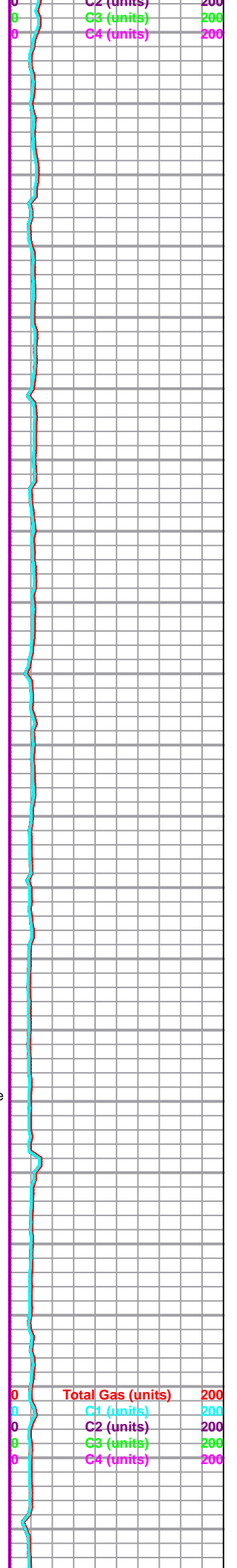
Lm- Tan Cream, Med-Crs XLN, unconsolidated & sl trashy, speckled w/ chlorite inclusions, weathered appearance w/ sctrd recrystallization, XLN porosity

Lm- Cream, Med-Crs XLN, unconsolidated bio-clastic w/ interbedded black oolites, high-energy w/ fsl fragments

Ss- Clear, Med Grn, consolidated & sub-rounded, loosely cemented & friable, chlorite & pyrite inclusions, NS

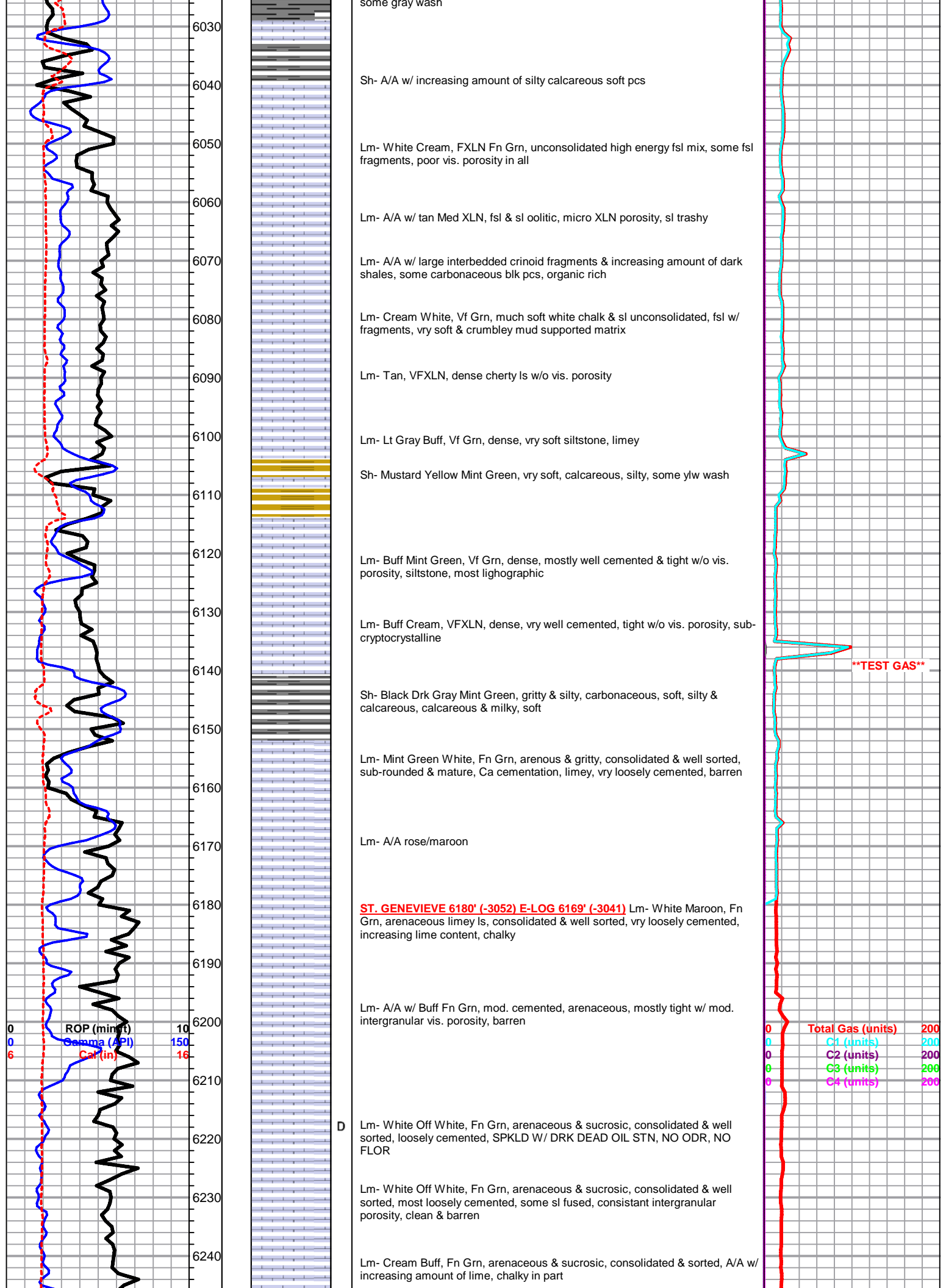
Lm- Cream Off White, F-Crs XLN, unconsolidated A/A, bioclastic w/ fsl fragments, few vry clean pcs of mud supported matrix w/o vis. porosity

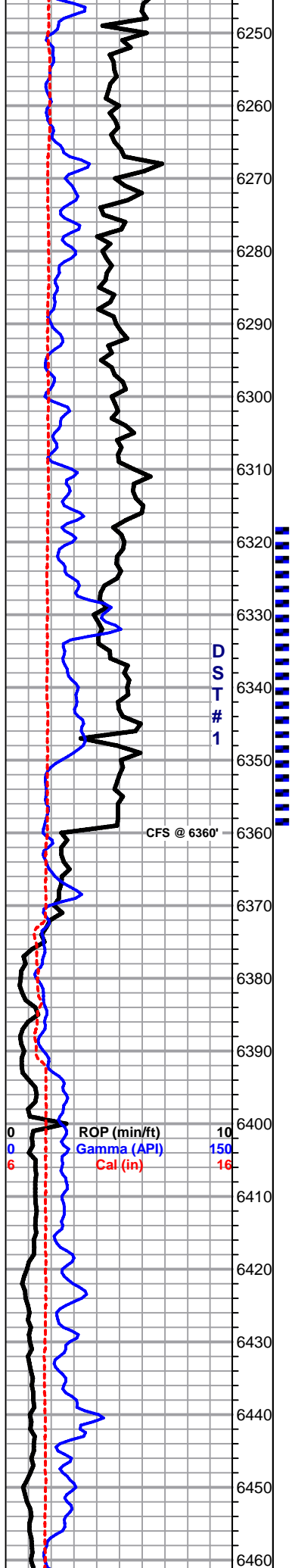
Sh- Black Drk & Lt Gray, thin waxy slivers, soft & silty pcs, some calcareous,



0 ROP (mm/ft) 10
0 Sigma (API) 150
6 Cal (in) 16

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





Lm- A/A

Lm- A/A, some w/ increasing amount of lime, chalky

Lm- Cream Buff, Fn Grn, arenaceous & sucrosic, consolidated & mod. sorted, most loosely cemented w/ increasing amount fused & brittle

Lm- Cream Tan Buff, FN-Med XLN, arenaceous sucrosic ls, some well cemented & brittle w/ consistant to sctrd XLN porosity, 2-3 pcs of sl oolitic cherty ls

Lm- A/A

Lm- A/A, mix of FXLN & Fn-Med Grn arenaceous, sucrosic ls, few pcs of semi-translucent, vitreous, sl oolitic fresh bedded chert

Lm- Cream Off White, Fn-Med Grn, sl unconsolidated w/ small oolite inclusions, vry loosely cemented & chalky in part, clean & barren, fec pcs of golden brown, semi-translucent, salmon, & lm green speckled chert & cherty ls

ST. LOUIS 6324' (-3196) E-LOG 6325' (3197) Lm- White Cream, Fn Grn FXLN, mix of loosely cemented to mod cemented & fused, arenaceous sucrosic ls, mod dev. w/ mostly consistant intergranular porosity, sl chalky in part, SL WK BRWN STN, NO SFO, NO ODR, NO FLOR., increasing amount of clean clear-white & semi-translucent fresh bedded chert

Lm- A/A

○ Lm- A/A w/ WK SPOTTY STN, NO SFO, NO ODR, VR SL GSSY SHEEN, WK LT YLW FLOR UPON CRUSH

****TIH W/ PDC BIT AFTER DST #1****

ST. LOUIS 'B' E-LOG 6373' (-3245) Lm- White Off White, Fn Grn, arenaceous, chalky, loosley cemented, mod. intergranular porosity, WK SPOTTY STN, SL GSY SHN, NO SFO, FR ODR, BRT YLW FLOR. UPON CRUSH

○ Lm- White Off White, F-Med Grn, oolitic mud supported matrix, chalky cementation, mod. dev. w/ sctrd fn ppt interoolite porosity, SCTRD LT STN, FR GSY SHN, SL SFO, GD ODR

Lm- A/A transgressing w/ deplishing dev, very chalky, loosely cemented w/ poor intergranular porosity, barren

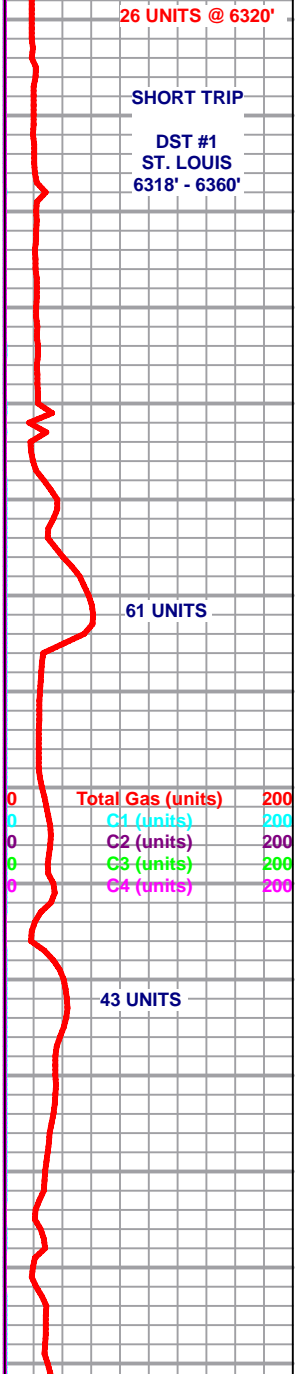
○ Lm- Off White Cream, F-MED XLN, fsl, mod. dev. w/ consistant XLN porosity, some sl chalky in part, WK SPOTTY STN, NO SFO, VRY SL GSY SHN, FNT ODR

Lm- A/A w/ increasing amount of chalk, all loosely cemented & crumbly, barren

Lm- Tan Cream, Fn Grn, dense, mud supported matrix, vry loosely cemented & crumbly, chalky in part, dense fenestral porosity, barren

Lm- A/A w/ tan cryptocrystalline cherty ls w/o vis. porosity

Lm- Cream Off White, FXLN, poorly dev., sl oolitic w/ poor chalky inter oolitic porosity, loosely cemented & crumbly, chalky in part, dense fenestral porosity, barren



6470
6480
6490
6500
6510
6520
6530
6540

Lm- A/A w/ increasing amount of buff vf-fn grn arenaceous ls, gritty & sub-sucrosic, loosely cemented, poor-mod vr fn ppt intergranular porosity, barren, sl chalky in part

Lm- Cream Off White, A/A w/ sctrd mottling & vry soft white chalk

Lm- Cream Buff, FXLN, dense, poorly dev., well cemented, no vis. porosity, tight

Lm- A/A w/ much snow white soft chalk

**RTD 6520' (-3392) LTD 6522' (-3394) @ 09:20
8/2/2013**

