OPERATOR

Company:	Prater Oil _Gas Operations, Inc.		
Address:	10356 Bluestem Blvd Pratt, KS 67124		
Contact Geologist:	Steve McClain		
Contact Phone Nbr:	620-388-4381		
Well Name:	Sandy Fruit #1-33		
Location:			
API:	15-097-21838		
Pool:	Infield	Field:	Fruit
State:	Kansas	Country:	USA

Scale 1:240 Imperial

Well Name:	Sandy Fruit #1-33		
Surface Location:			
Bottom Location:			
API:	15-097-21838		
License Number:	31000		
Spud Date:	3/29/2018	Time:	12:30 PM
Region:	Midwest		
Drilling Completed:	4/6/2018	Time:	8:45 AM
Surface Coordinates:	805' FNL & 498' FEL		
Bottom Hole Coordinates:			
Ground Elevation:	2119.00ft		
K.B. Elevation:	2130.00ft		
Logged Interval:	350.00ft	To:	4817.00ft
Total Depth:	4820.00ft		
Formation:			
Drilling Fluid Type:	Chemical/Fresh Water Gel (MudCo)		

SURFACE CO-ORDINATES

Well Type:	Vertical
Longitude:	-99.070989388
Latitude:	37.656536793
N/S Co-ord:	805' FNL
E/W Co-ord:	498' FEL

LOGGED BY

Company:	Derek Rebel Consulting		
Address:	504 Tanglewood Dr. Dodge City, KS		
Phone Nbr:	913-687-0164		
Logged By:	Geologist	Name:	DJ Rebel

CONTRACTOR

Contractor:	Sterling Drilling Company		
Rig #:	4		
Rig Type:	Mud Rotary		
Spud Date:	3/29/2018	Time:	12:30 PM
TD Date:	4/6/2018	Time:	8:45 AM
Rig Release:		Time:	

ELEVATIONS

K.B. Elevation:	2130.00ft	Ground Elevation:	2119.00ft
K.B. to Ground:	11.00ft		

NOTES

2 bits were run on this well: A PDC bit was put in from 473' to 4651' and a Tricone bit was run from 4651' to TD (4820').

The GEOlog drill time is up to 2000' to match the downhole log package that we ran on the Sandy Fruit #1-33.

We ran a Microresistivity, Borehole Compensated Sonic, Dual Comp Porosity, and Dual Induction Logs. The Microresistivity and Dual Comp Porosity logs were run from 2000' to TD. The Borehole Compensated Sonic and Dual

Induction Logs were run from 350' to TD.

On the GEOlog I changed the gas rates from 0-500 Units after 4500' to show the major kicks in the Mississippi and Kinderhook section of the log.

3 DST test were ran on the well to evaluate the zones production potential during the geological analysis of the well.

Due the structural position of the well, the geologist description of the cuttings through the major pay zones, and the log package results; they decided to run 5-1/2" casing on the well for it's production potential.

Date	Time	Comments
3/29/2018	12:30 PM	They Spudded the well. Set Surface to 392'. Cement Circulated at 9:30 PM.
3/30/2018	7:00 AM	WOC. Started drilling out plug at 7:34 AM.
3/31/2018	7:00 AM	Drilling @ 2435'. Drilled out the plug.
04/01/2018	7:00 AM	Drilling @ 3590'. Displaced mud at 3266'.
04/02/2018	7:00 AM	Drilling @ 4340'
04/03/2018	7:00 AM	Setting tool on bottom @ 4651'. DST #1 Mississippi (4575' – 4651'). Survey was ¾" off.
04/04/2018	7:00 AM	Circulating @ 4651'. DST #2 - Retest the Mississippi (4575' – 4651'). Strap was 0.15' Short of Board
04/05/2018	7:00 AM	Drilling @ 4782'. DST #3 Kinderhook (4660' – 4694'). Loggers on location at 11:45 AM. The 5-1/2"Casing came from Midwestern Pipeworks out of Hays, KS and Basic out of Pratt, KS ran the cement.
04/06/2018	7:00 AM	Circulating Cement. They will finish rigging down and move on Monday

Prater Oil and Gas Sandy Fruit #1-33 NE/NE Sec 33-27S-16W	Formation Tops (ft.)	Subsea
GL	2119	
KB	2130	
Anhydrite Top	1035	1095
Wabaunsee	3177	-1047
Topeka Top	3622	-1492
Heebner Shale	3945	-1815
Douglas Shale	3975	-1845
Brown Lm.	4103	-1973
Lansing	4119	-1989
BKC	4422	-2292
Marmaton	4436	-2306
Cherokee Shale	4576	-2446
Mississippian Top	4606	-2476
Mississippian Base	4644	-2514
Kinderhook Shale	4651	-2521
Kinderhook SS Top	4668	-2538
Kinderhook SS Base	4692	-2562
Viola	4725	-2595
RTD	4820	

Jim Emerson Clark #1 NW/NW Sec 34-27S-16W	Formation Tops (ft.)	Subsea	Structural Comparison
GL	2111		
KB	2120		
Anhydrite Top	1020	1100	-5
Wabaunsee	3170	-1050	3
Topeka Top	3632	-1512	20
Heebner Shale	3946	-1826	11
Douglas Shale	3988	-1868	23
Brown Lm.	4104	-1984	11
Lansing	4124	-2004	15
BKC	4421	-2301	9
Marmaton			10
Cherokee Shale	4576	-2456	10
Mississippian Top	4625	-2505	29
Mississippian Base	4666	-2546	32
Kinderhook Shale			
Kinderhook SS Top			
Kinderhook SS Base			
Viola			
RTD	4682		

J. Mark Richardson Davis #3 SE/NW Sec. 33-27S-16W	Formation Tops (ft.)	Subsea	Structural Comparison
GL	2129		
KB	2134		
Anhydrite Top	1046	1088	7
Wabaunsee	3202	-1068	21
Topeka Top	3622	-1488	-4
Heebner Shale			
Douglas Shale			
Brown Lm.			
Lansing			
BKC			
Marmaton			
Cherokee Shale	4610	-2476	30
Mississippian Top	4662	-2528	52
Mississippian Base	4697	-2563	49
Kinderhook Shale	4697	-2563	42
Kinderhook SS Top	4712	-2578	40
Kinderhook SS Base	4729	-2595	33
Viola			
RTD	4775		

J. Mark Richardson Davis-White #1 NW/NW Sec. 33-27S-16W	Formation Tops (ft.)	Subsea	Structural Comparison
GL	2109		
KB	2114		
Anhydrite Top	1020	1094	1
Wabaunsee	3150	-1036	-11
Topeka Top	3588	-1474	-18
Heebner Shale	3931	-1817	2
Douglas Shale	3968	-1854	9
Brown Lm.	4093	-1979	6
Lansing	4108	-1994	5
BKC	4409	-2295	3
Marmaton			
Cherokee Shale	4555	-2441	-5
Mississippian Top	4594	-2480	4
Mississippian Base	4652	-2538	24
Kinderhook Shale	4652	-2538	17
Kinderhook SS Top	4672	-2558	20
Kinderhook SS Base	4682	-2568	6
Viola	4732	-2618	23
RTD	4775		

DST #1 (Mississippi)

TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Prater Oil & Gas

10356 Bluesten Blvd
Pratt, KS 67124

ATTN: DJ Rebel

33-27S-16W Kiowa

Sandy Fruit 1-33

Job Ticket: 59853 **DST#: 1**

Test Start: 2018.04.03 @ 04:20:35

GENERAL INFORMATION:

Formation: **Mississippi**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 06:49:22
Time Test Ended: 12:18:37

Test Type: Conventional Bottom Hole (Initial)
Tester: Leal Cason
Unit No: 74

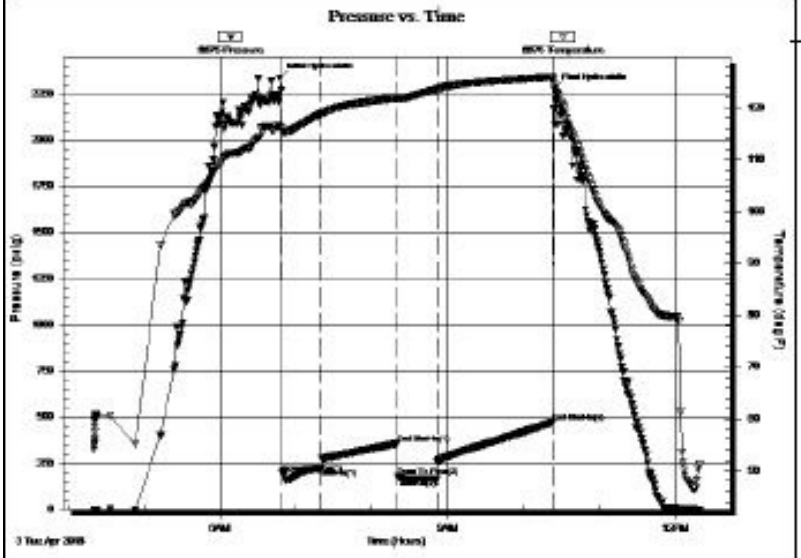
Interval: 4575.00 ft (KB) To 4651.00 ft (KB) (TVD)
Total Depth: 4651.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 2130.00 ft (KB)
2119.00 ft (CF)
KB to GR/CF: 11.00 ft

Serial #: 8875 **Inside**

Press@RunDepth:	165.16 psig @	4576.00 ft (KB)		Capacity:	psig
Start Date:	2018.04.03	End Date:	2018.04.03	Last Calib.:	2018.04.03
Start Time:	04:20:36	End Time:	12:18:37	Time On Btm:	2018.04.03 @ 06:47:37
				Time Off Btm:	2018.04.03 @ 10:24:07

TEST COMMENT: IF: Strong Blow , BOB in 30 seconds, GTS in 8 minutes, Gauged And Caught Sample
ISI: No Blow Back
FF: Strong Blow , BOB & GTS Immediate, Gauged Gas
FSI: No Blow Back



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2336.34	116.63	Initial Hydro-static
2	195.20	115.25	Open To Flow (1)
32	221.93	118.80	Shut-In(1)
93	358.63	121.89	End Shut-In(1)
93	178.52	121.86	Open To Flow (2)
124	165.16	123.57	Shut-In(2)
216	472.43	125.93	End Shut-In(2)
217	2278.77	124.50	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
0.00	GTS	0.00
145.00	SGCM 5%G 95%M	0.71

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
First Gas Rate	0.25	102.00	161.81
Last Gas Rate	0.75	32.00	499.84
Max. Gas Rate	0.25	153.00	242.72

Trilobite Testing, Inc Ref. No: 59853 Printed: 2018.04.03 @ 13:18:01

DST#2 Retest

TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Prater Oil & Gas

10356 Bluesten Blvd
Pratt, KS 67124

ATTN: DJ Rebel

33-27S-16W Kiowa

Sandy Fruit 1-33

Job Ticket: 59854 **DST#: 2**

Test Start: 2018.04.03 @ 18:10:59

GENERAL INFORMATION:

Formation: **Mississippi**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 20:34:46
Time Test Ended: 03:24:46

Test Type: Conventional Bottom Hole (Reset)
Tester: Leal Cason
Unit No: 74

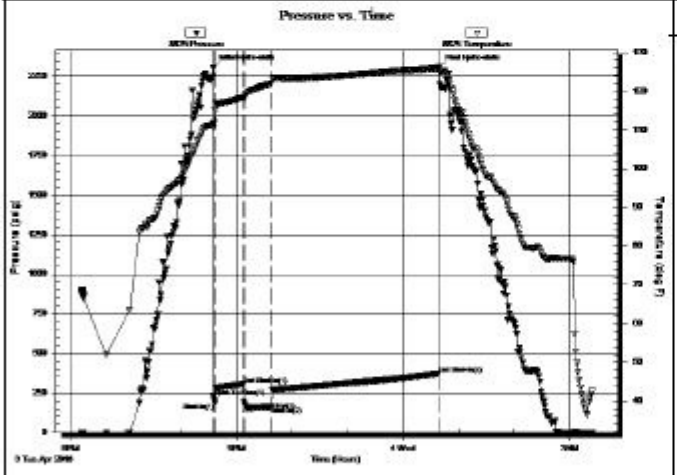
Interval: 4575.00 ft (KB) To 4651.00 ft (KB) (TVD)
Total Depth: 4651.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 2130.00 ft (KB)
2119.00 ft (CF)
KB to GR/CF: 11.00 ft

Serial #: 8875 **Inside**

Press@RunDepth:	161.19 psig @	4576.00 ft (KB)		Capacity:	psig
Start Date:	2018.04.03	End Date:	2018.04.04	Last Calib.:	2018.04.04
Start Time:	18:11:00	End Time:	03:24:46	Time On Btm:	2018.04.03 @ 20:34:16
				Time Off Btm:	2018.04.04 @ 00:38:16

TEST COMMENT: IF: Strong Blow , BOB in 30 seconds, Built to 284 inches
ISI: No Blow Back, GTS during Bleed Off
FF: Strong Blow , BOB & GTS Immediate, Gauged W/ Merla
FSI: No Blow Back



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2304.41	111.42	Initial Hydro-static
1	226.74	110.60	Open To Flow (1)
2	188.72	114.89	Shut-In(1)
33	303.90	118.33	End Shut-In(1)
34	191.96	117.56	Open To Flow (2)
63	161.19	122.00	Shut-In(2)
244	369.98	125.87	End Shut-In(2)
245	2302.58	126.25	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
0.00	GTS	0.00
128.00	SGCM 5%G 95%M	0.63

* Recovery from multiple tests

Gas Rates

	Choke (Inches)	Pressure (psig)	Gas Rate (Mcf/d)
10 Min. Gas Rate	0.75	30.0	581.20
20 Min. Gas Rate	0.75	32.0	644.90
30 Min.Gas Rate	0.75	33.0	657.69

* Used a 3/4" Merla Plate

DST #3 (Kinderhook Sand)

TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Prater Oil & Gas

10356 Bluesten Blvd
Pratt, KS 67124

ATTN: DJ Rebel

33-27S-16W Kiowa

Sandy Fruit 1-33

Job Ticket: 59855 **DST#: 3**

Test Start: 2018.04.04 @ 13:46:00

GENERAL INFORMATION:

Formation: **Kinderhook**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 15:37:32
Time Test Ended: 21:04:02

Test Type: Conventional Bottom Hole (Reset)
Tester: Leal Cason
Unit No: 74

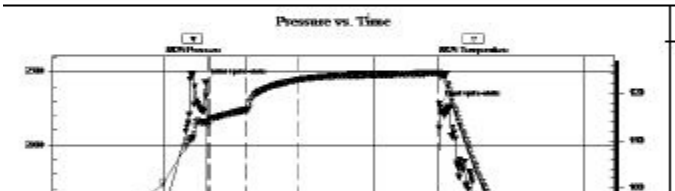
Interval: 4660.00 ft (KB) To 4694.00 ft (KB) (TVD)
Total Depth: 4694.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 2130.00 ft (KB)
2119.00 ft (CF)
KB to GR/CF: 11.00 ft

Serial #: 8875 **Inside**
Press@RunDepth: 24.60 psig @ 4661.00 ft (KB)
Start Date: 2018.04.04 End Date: 2018.04.04
Start Time: 13:46:01 End Time: 21:04:02

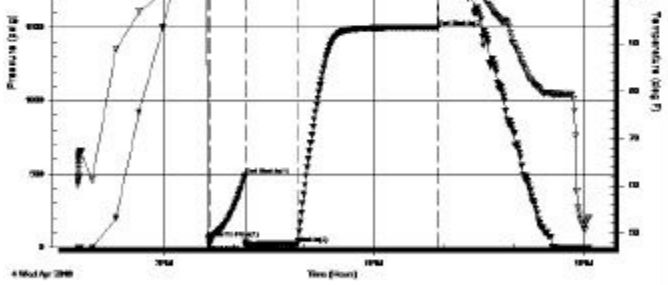
Capacity: psig
Last Calib.: 2018.04.04
Time On Btm: 2018.04.04 @ 15:34:32
Time Off Btm: 2018.04.04 @ 18:55:47

TEST COMMENT: IF: Fair Blow , Built to 4 inches
FSI: No Blow Back
FF: Strong Blow , BOB in 1 minute, Built to 137 inches
FSI: No Blow Back



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2429.64	113.61	Initial Hydro-static
3	62.67	113.16	Open To Flow (1)
5	24.77	114.68	Shut-In(1)



35	491.81	116.36	End Shut-In(1)
36	14.46	116.35	Open To Flow (2)
80	24.60	122.84	Shut-In(2)
201	1501.62	124.26	End Shut-In(2)
202	2282.32	123.74	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
0.00	662 GIP	0.00
20.00	VSGCM 2%G 98%M	0.10

* Recovery from multiple tests

Gas Rates

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

FF: Bottom of the bucket in 1 minute, which calculated out to be 137 inches. The flow was still building before we shut the tool.

Trilobite Testing, Inc Ref. No: 59855 Printed: 2018.04.04 @ 22:16:34

ROCK TYPES

Cht, Cht vari, Clystgy, Dolprim, Lmst fw<7, shale, grn, shale, gry, Carbon Sh, shale, red, Shcol, Ss

ACCESSORIES

MINERAL
- Mineral Crystals
- Pyrite
- Chert White

FOSSIL
- Bioclastic or Fragmental
- Crinoids
- Oolite
- Fussilinid

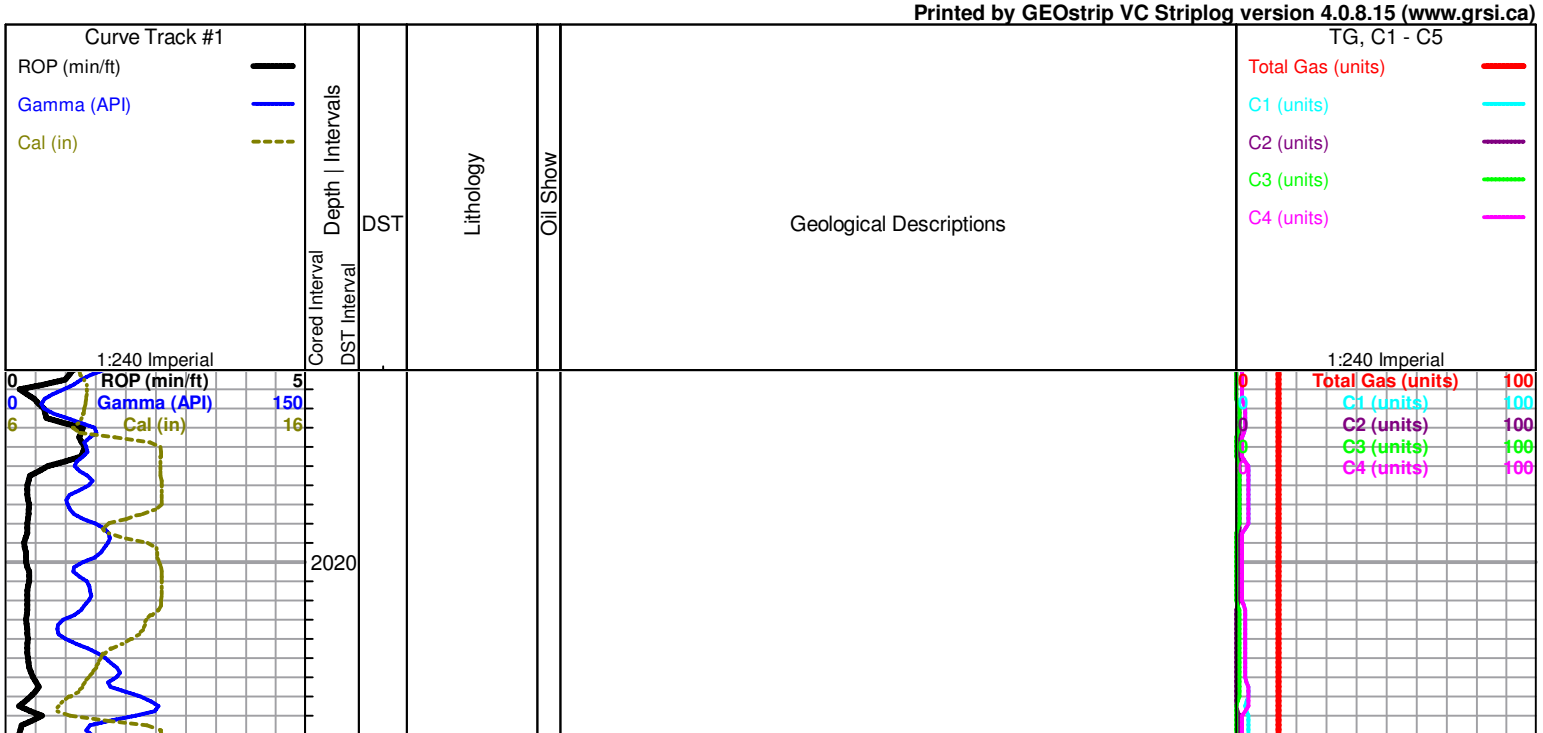
STRINGER
- Chert
- Dolomite
- Sandstone
- Siltstone

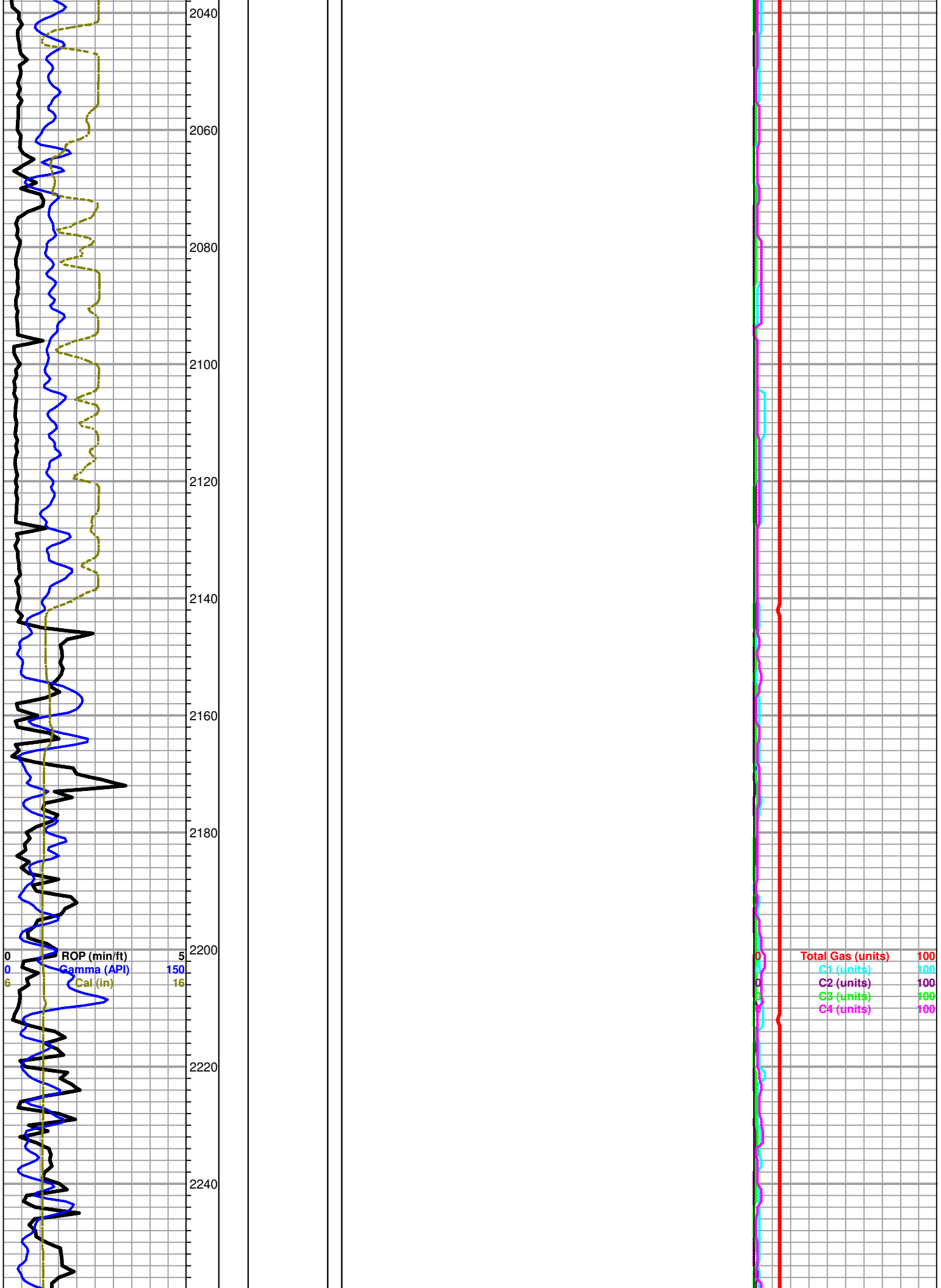
OTHER SYMBOLS

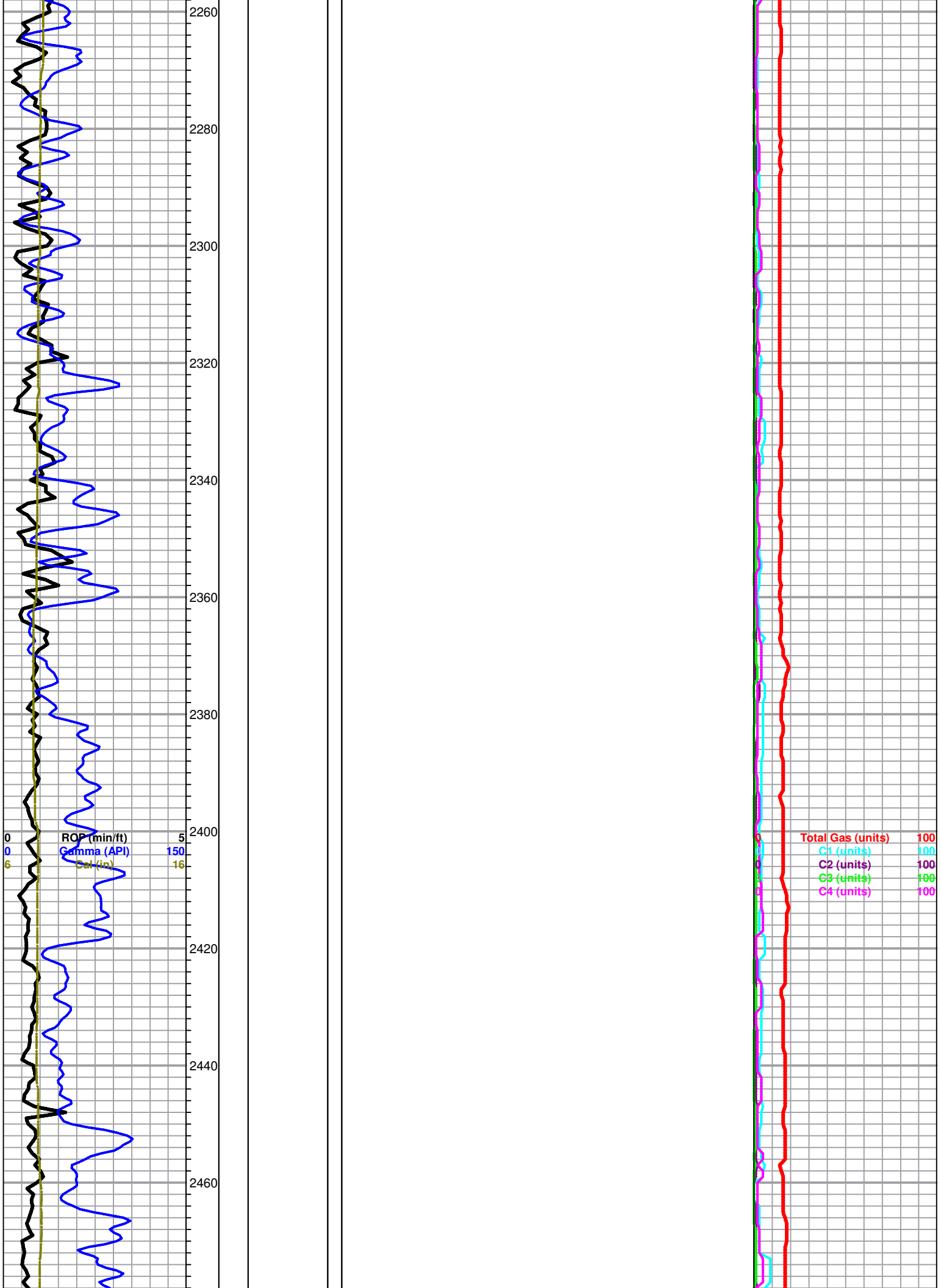
Oil Show
- Good Show
- Fair Show
- Poor Show
- Spotted or Trace
- Questionable Stn
- Dead Oil Stn
- Fluorescence
- Gas

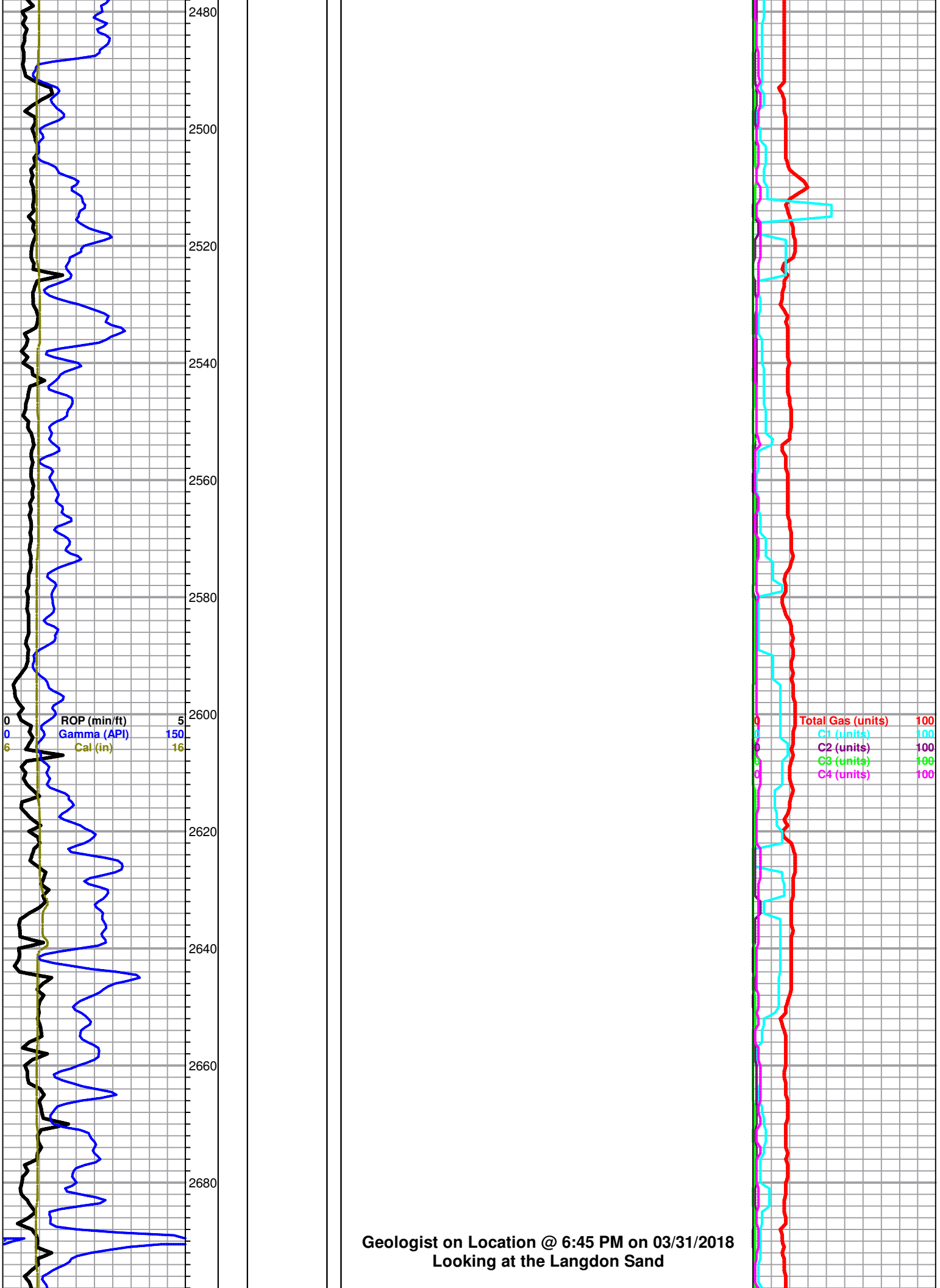
DST
- DST Int
- DST alt
- Core
- tail pipe

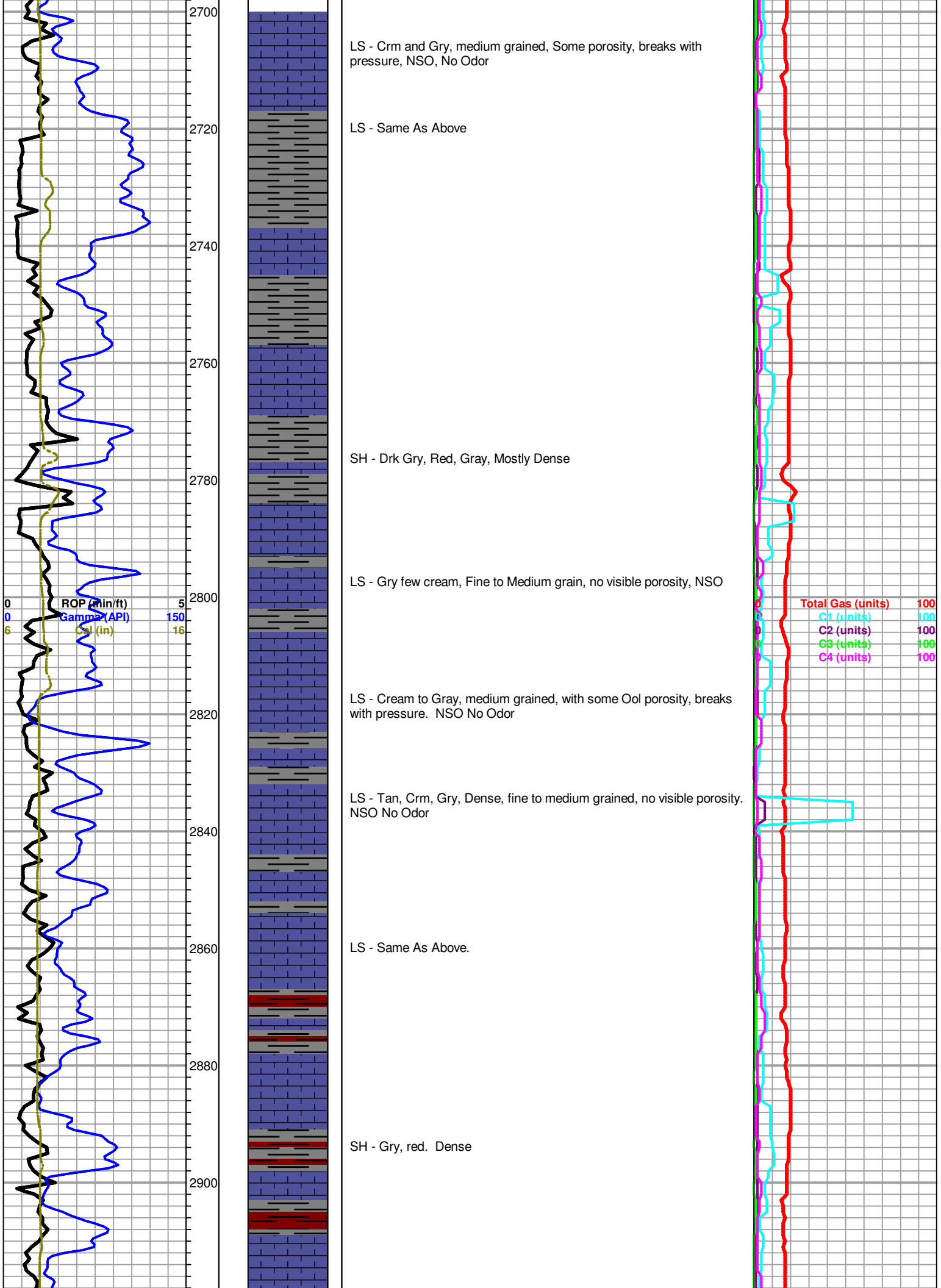
Printed by GEOstrip VC Striplog version 4.0.8.15 (www.grsi.ca)

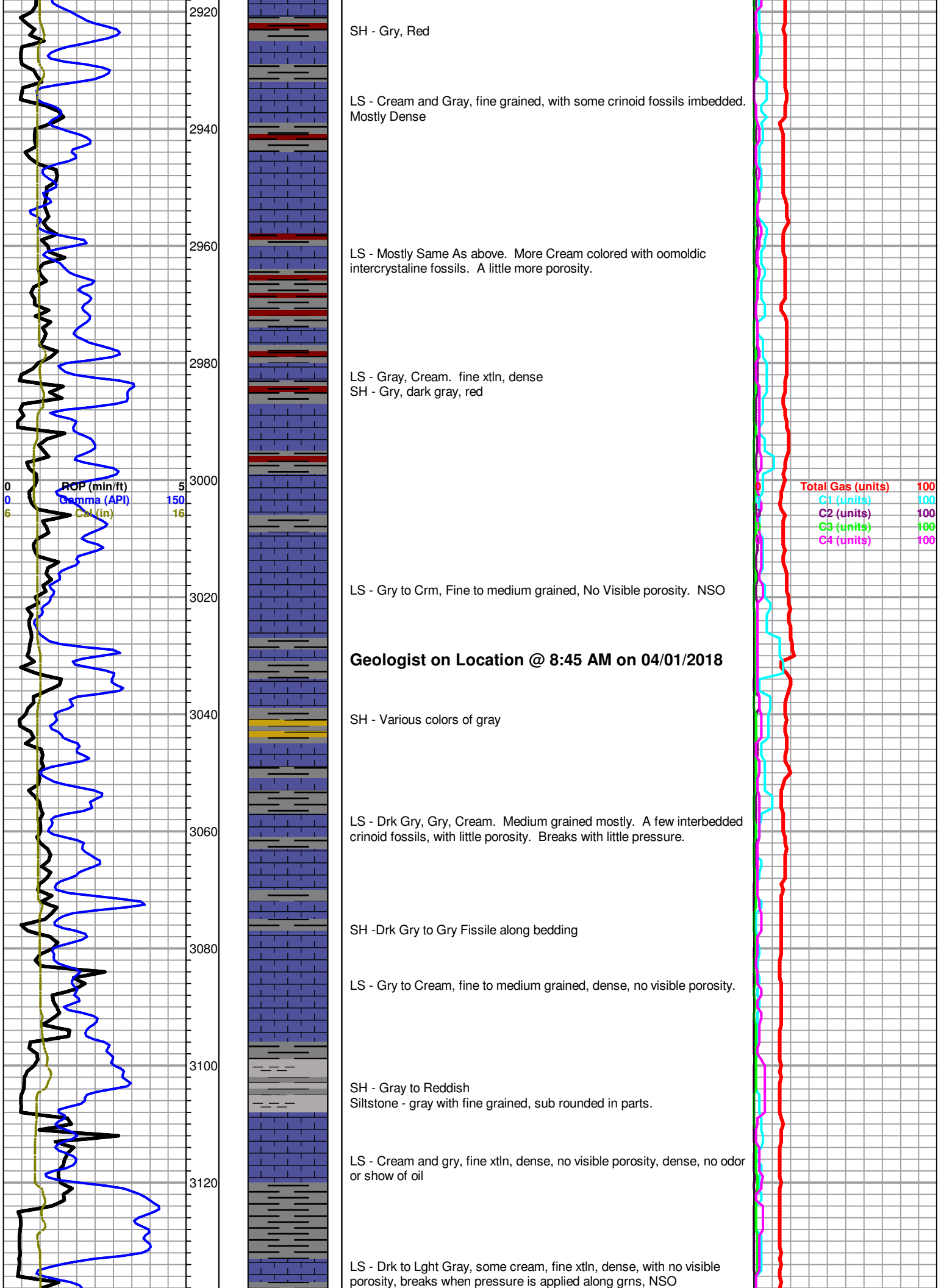


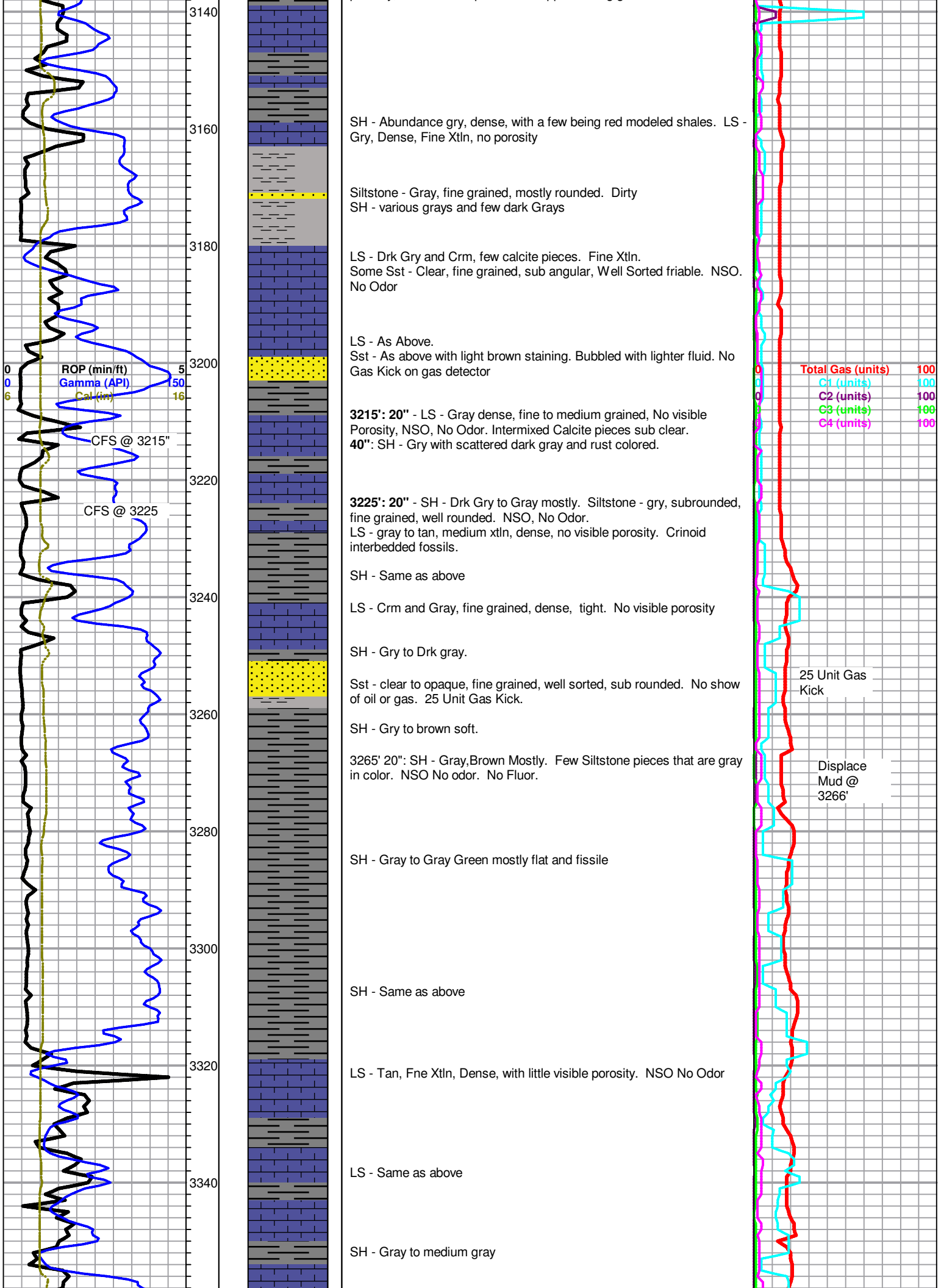

2040
2060
2080
2100
2120
2140
2160
2180
2200
2220
2240
0 ROP (min/ft) 5
0 Gamma (API) 150
6 Cal (in) 16
0 Total Gas (units) 100
C1 (units) 100
0 C2 (units) 100
C3 (units) 100
C4 (units) 100

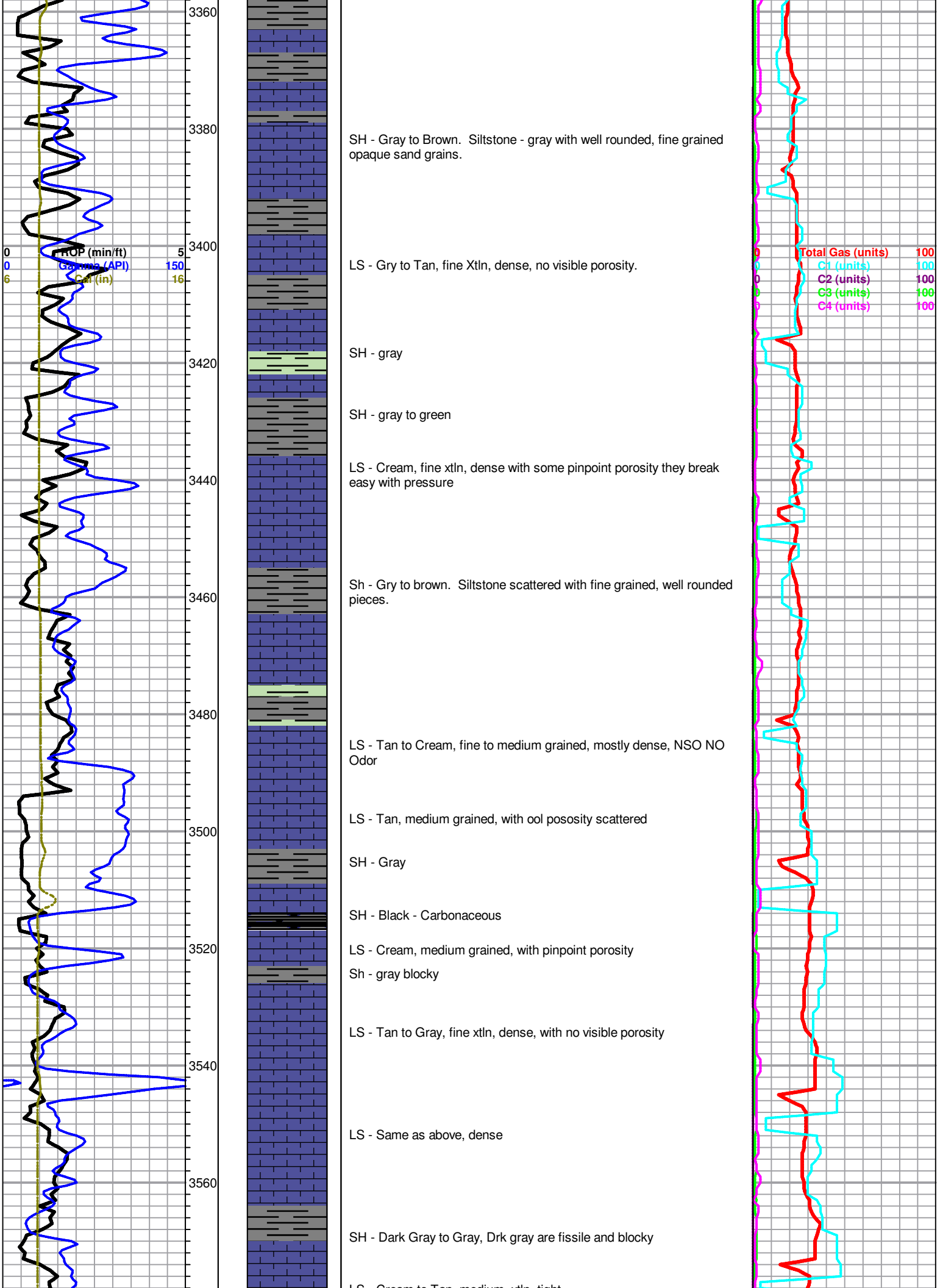

2260
2280
2300
2320
2340
2360
2380
2400
2420
2440
2460
0
ROP (min/ft)
5
0
Gamma (API)
150
6
Cal (in)
16
0
Total Gas (units)
100
C1 (units)
100
0
C2 (units)
100
C3 (units)
100
C4 (units)
100

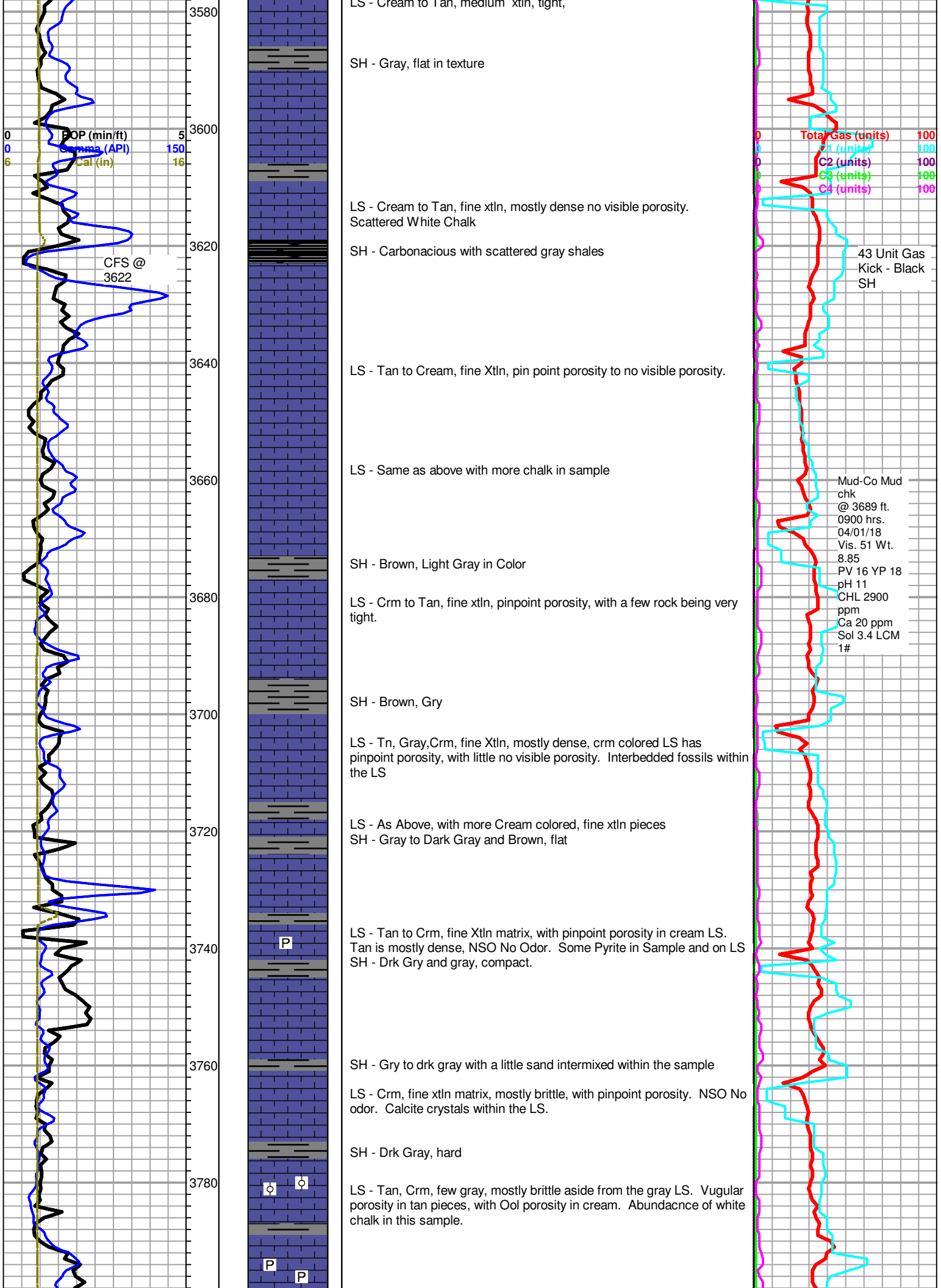

2480
2500
2520
2540
2560
2580
2600
2620
2640
2660
2680
0 ROP (min/ft) 5
0 Gamma (API) 150
6 Cal (in) 16
0 Total Gas (units) 100
0 C1 (units) 100
0 C2 (units) 100
0 C3 (units) 100
0 C4 (units) 100
Geologist on Location @ 6:45 PM on 03/31/2018
Looking at the Langdon Sand


2700
2720
2740
2760
2780
2800
2820
2840
2860
2880
2900
0 ROP (min/ft) 5
0 Gamma(API) 150
6 Cal (in) 16
LS - Crm and Gry, medium grained, Some porosity, breaks with pressure, NSO, No Odor
LS - Same As Above
SH - Drk Gry, Red, Gray, Mostly Dense
LS - Gry few cream, Fine to Medium grain, no visible porosity, NSO
LS - Cream to Gray, medium grained, with some Ool porosity, breaks with pressure. NSO No Odor
LS - Tan, Crm, Gry, Dense, fine to medium grained, no visible porosity. NSO No Odor
LS - Same As Above.
SH - Gry, red. Dense
0 Total Gas (units) 100
0 C1 (units) 100
0 C2 (units) 100
0 C3 (units) 100
0 C4 (units) 100


2920
2940
2960
2980
3000
3020
3040
3060
3080
3100
3120
0 ROP (min/ft) 5
0 Gamma (API) 150
6 Cal (in) 16
0 Total Gas (units) 100
C1 (units) 100
C2 (units) 100
C3 (units) 100
C4 (units) 100
SH - Gry, Red
LS - Cream and Gray, fine grained, with some crinoid fossils imbedded. Mostly Dense
LS - Mostly Same As above. More Cream colored with oomoldic intercrystaline fossils. A little more porosity.
LS - Gray, Cream. fine xtln, dense
SH - Gry, dark gray, red
LS - Gry to Crm, Fine to medium grained, No Visible porosity. NSO
Geologist on Location @ 8:45 AM on 04/01/2018
SH - Various colors of gray
LS - Drk Gry, Gry, Cream. Medium grained mostly. A few interbedded crinoid fossils, with little porosity. Breaks with little pressure.
SH -Drk Gry to Gry Fissile along bedding
LS - Gry to Cream, fine to medium grained, dense, no visible porosity.
SH - Gray to Reddish
Siltstone - gray with fine grained, sub rounded in parts.
LS - Cream and gry, fine xtln, dense, no visible porosity, dense, no odor or show of oil
LS - Drk to Lght Gray, some cream, fine xtln, dense, with no visible porosity, breaks when pressure is applied along grns, NSO


3140
3160
3180
3200
3220
3240
3260
3280
3300
3320
3340
0
ROP (min/ft)
5
0
Gamma (API)
150
6
Cal (in)
16
CFS @ 3215"
CFS @ 3225
SH - Abundance gry, dense, with a few being red modeled shales. LS - Gry, Dense, Fine Xtln, no porosity
Siltstone - Gray, fine grained, mostly rounded. Dirty
SH - various grays and few dark Grays
LS - Drk Gry and Crm, few calcite pieces. Fine Xtln.
Some Sst - Clear, fine grained, sub angular, Well Sorted friable. NSO. No Odor
LS - As Above.
Sst - As above with light brown staining. Bubbled with lighter fluid. No Gas Kick on gas detector
3215': 20" - LS - Gray dense, fine to medium grained, No visible Porosity, NSO, No Odor. Intermixed Calcite pieces sub clear.
40": SH - Gry with scattered dark gray and rust colored.
3225': 20" - SH - Drk Gry to Gray mostly. Siltstone - gry, subrounded, fine grained, well rounded. NSO, No Odor.
LS - gray to tan, medium xtln, dense, no visible porosity. Crinoid interbedded fossils.
SH - Same as above
LS - Crm and Gray, fine grained, dense, tight. No visible porosity
SH - Gry to Drk gray.
Sst - clear to opaque, fine grained, well sorted, sub rounded. No show of oil or gas. 25 Unit Gas Kick.
SH - Gry to brown soft.
3265' 20": SH - Gray,Brown Mostly. Few Siltstone pieces that are gray in color. NSO No odor. No Fluor.
SH - Gray to Gray Green mostly flat and fissile
SH - Same as above
LS - Tan, Fne Xtln, Dense, with little visible porosity. NSO No Odor
LS - Same as above
SH - Gray to medium gray
0
Total Gas (units)
100
0
C1 (units)
100
0
C2 (units)
100
C3 (units)
100
C4 (units)
100
25 Unit Gas Kick
Displace Mud @ 3266'


0 ROP (min/ft) 5
0 Gamma (API) 150
6 Cal (in) 16
0 Total Gas (units) 100
0 C1 (units) 100
0 C2 (units) 100
0 C3 (units) 100
0 C4 (units) 100
3360
3380
3400
3420
3440
3460
3480
3500
3520
3540
3560
SH - Gray to Brown. Siltstone - gray with well rounded, fine grained opaque sand grains.
LS - Gry to Tan, fine Xtln, dense, no visible porosity.
SH - gray
SH - gray to green
LS - Cream, fine xtln, dense with some pinpoint porosity they break easy with pressure
Sh - Gry to brown. Siltstone scattered with fine grained, well rounded pieces.
LS - Tan to Cream, fine to medium grained, mostly dense, NSO NO Odor
LS - Tan, medium grained, with ool pososity scattered
SH - Gray
SH - Black - Carbonaceous
LS - Cream, medium grained, with pinpoint porosity
Sh - gray blocky
LS - Tan to Gray, fine xtln, dense, with no visible porosity
LS - Same as above, dense
SH - Dark Gray to Gray, Drk gray are fissile and blocky



LS - Cream to Tan, medium xtln, tight,

SH - Gray, flat in texture

LS - Cream to Tan, fine xtln, mostly dense no visible porosity. Scattered White Chalk

SH - Carbonacious with scattered gray shales

LS - Tan to Cream, fine Xtln, pin point porosity to no visible porosity.

LS - Same as above with more chalk in sample

SH - Brown, Light Gray in Color

LS - Crm to Tan, fine xtln, pinpoint porosity, with a few rock being very tight.

SH - Brown, Gry

LS - Tn, Gray,Crm, fine Xtln, mostly dense, crm colored LS has pinpoint porosity, with little no visible porosity. Interbedded fossils within the LS

LS - As Above, with more Cream colored, fine xtln pieces
SH - Gray to Dark Gray and Brown, flat

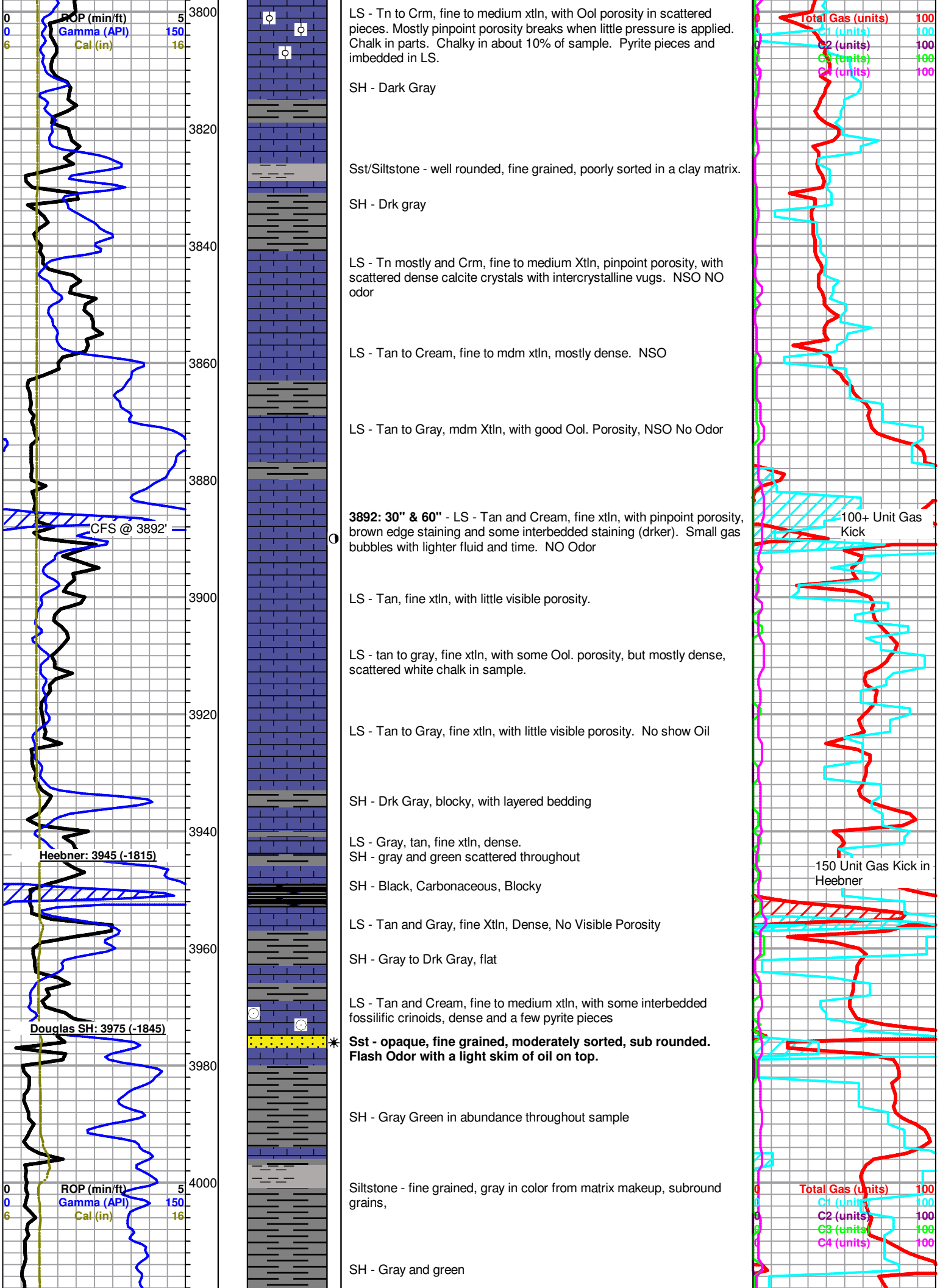
LS - Tan to Crm, fine Xtln matrix, with pinpoint porosity in cream LS. Tan is mostly dense, NSO No Odor. Some Pyrite in Sample and on LS
SH - Drk Gry and gray, compact.

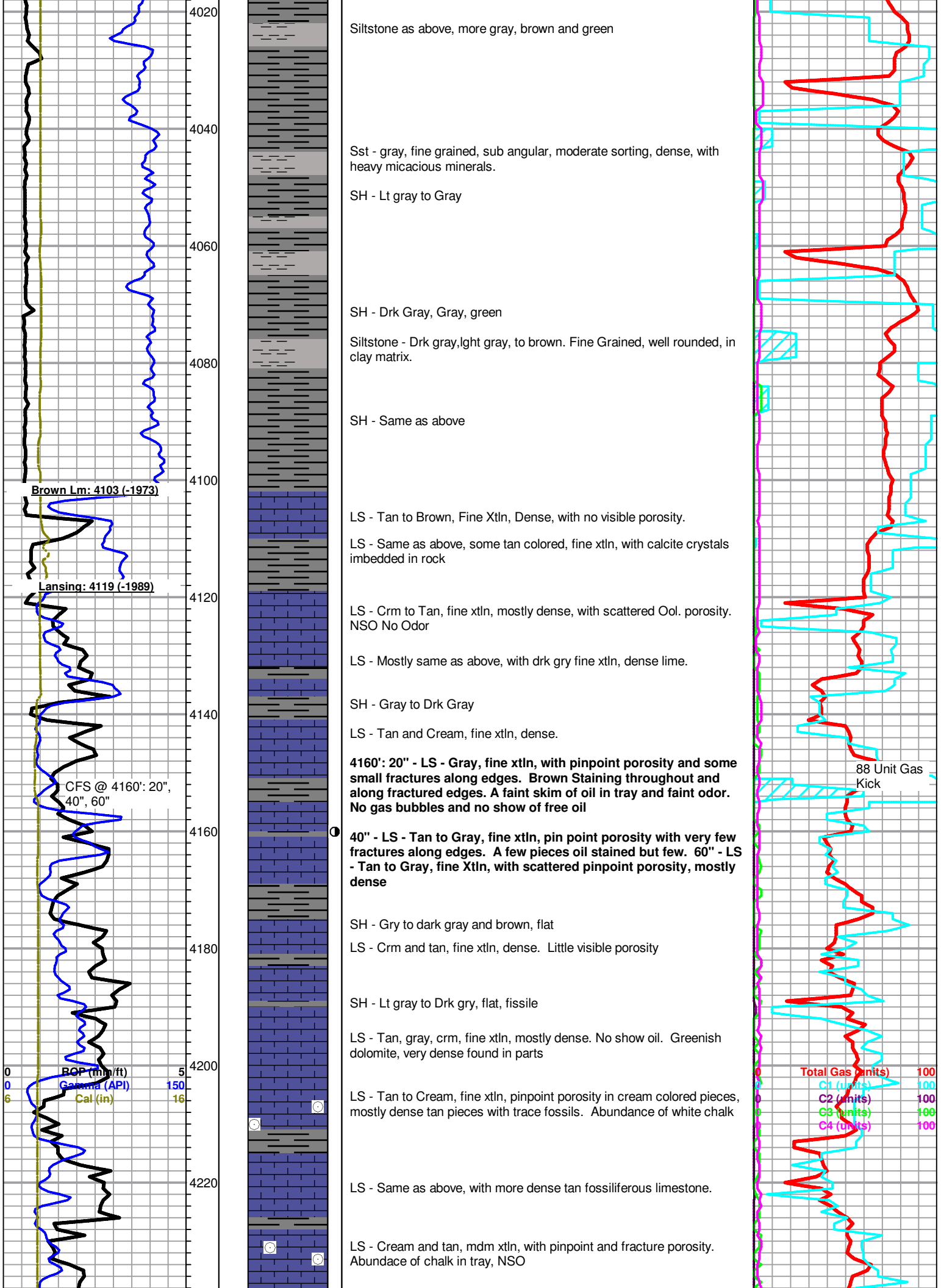
SH - Gry to drk gray with a little sand intermixed within the sample

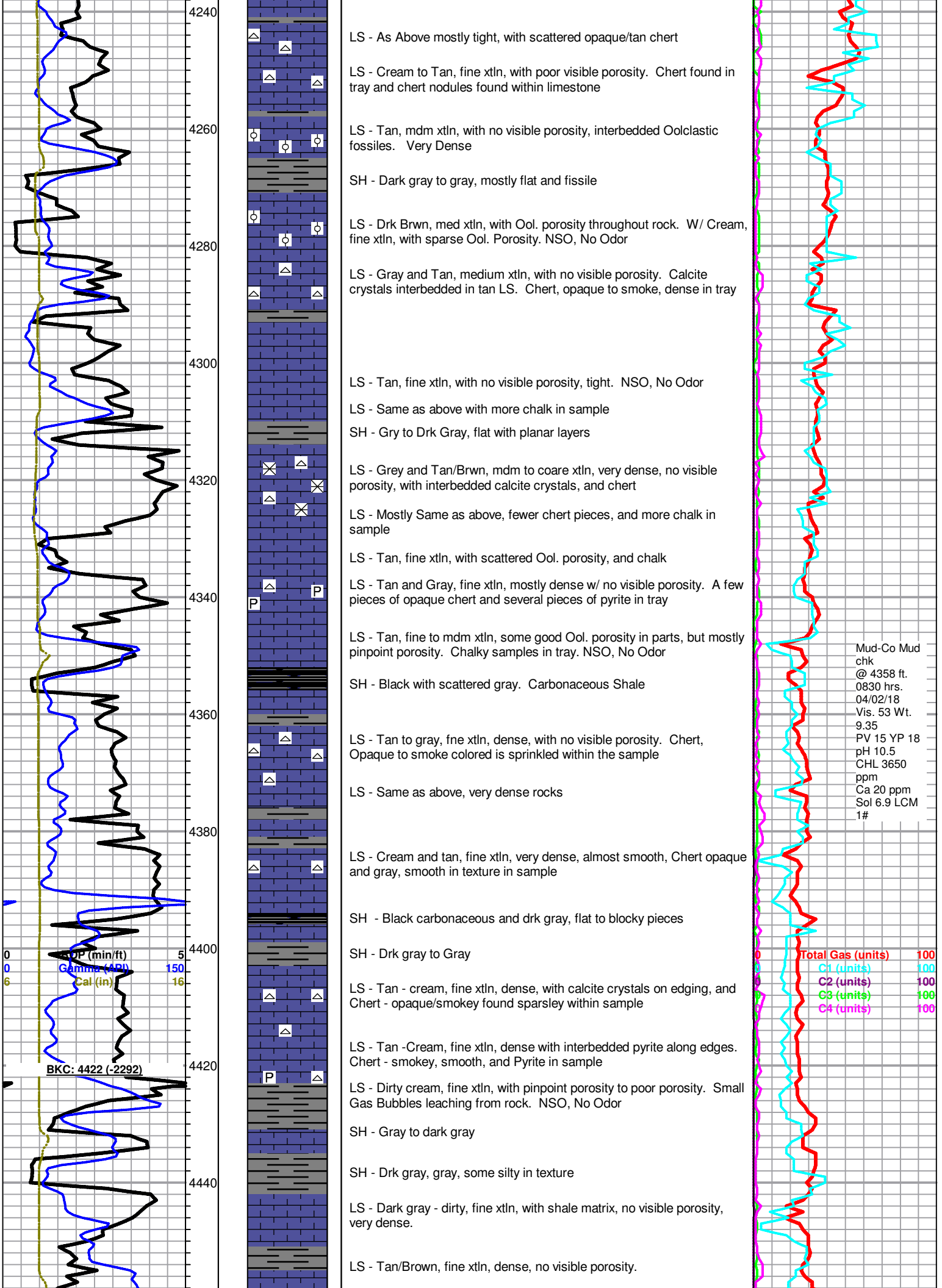
LS - Crm, fine xtln matrix, mostly brittle, with pinpoint porosity. NSO No odor. Calcite crystals within the LS.

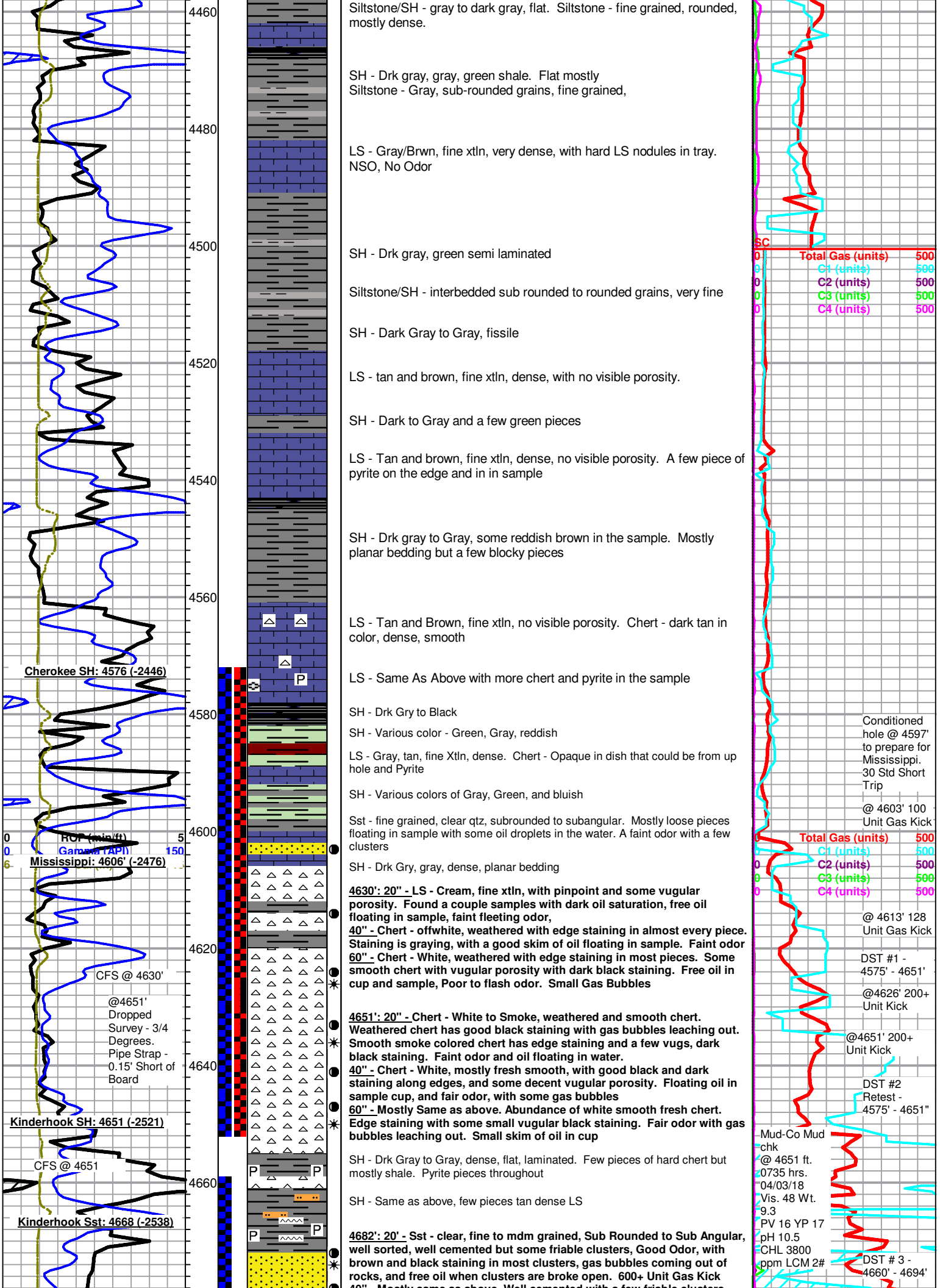
SH - Drk Gray, hard

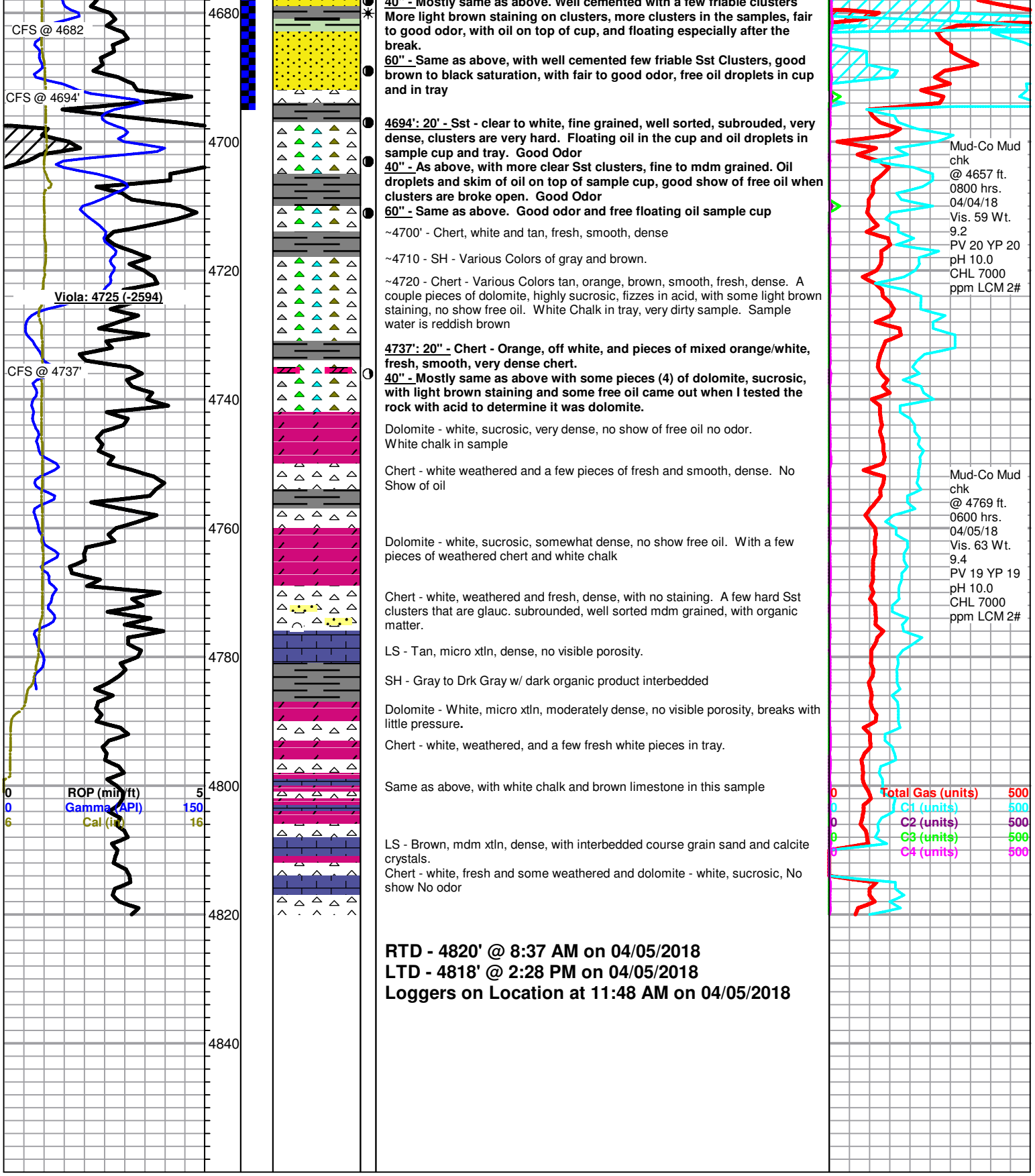
LS - Tan, Crm, few gray, mostly brittle aside from the gray LS. Vugular porosity in tan pieces, with Ool porosity in cream. Abundacnce of white chalk in this sample.


0 ROP (min/ft) 5
0 Gamma (API) 150
6 Cal (in) 16
3800
3820
3840
3860
3880
3900
3920
3940
3960
3980
4000
CFS @ 3892'
Heebner: 3945 (-1815)
Douglas SH: 3975 (-1845)
0 ROP (min/ft) 5
0 Gamma (API) 150
6 Cal (in) 16
LS - Tn to Crm, fine to medium xtln, with Ool porosity in scattered pieces. Mostly pinpoint porosity breaks when little pressure is applied. Chalk in parts. Chalky in about 10% of sample. Pyrite pieces and imbedded in LS.
SH - Dark Gray
Sst/Siltstone - well rounded, fine grained, poorly sorted in a clay matrix.
SH - Drk gray
LS - Tn mostly and Crm, fine to medium Xtln, pinpoint porosity, with scattered dense calcite crystals with intercrystalline vugs. NSO NO odor
LS - Tan to Cream, fine to mdm xtln, mostly dense. NSO
LS - Tan to Gray, mdm Xtln, with good Ool. Porosity, NSO No Odor
3892: 30" & 60" - LS - Tan and Cream, fine xtln, with pinpoint porosity, brown edge staining and some interbedded staining (drker). Small gas bubbles with lighter fluid and time. NO Odor
LS - Tan, fine xtln, with little visible porosity.
LS - tan to gray, fine xtln, with some Ool. porosity, but mostly dense, scattered white chalk in sample.
LS - Tan to Gray, fine xtln, with little visible porosity. No show Oil
SH - Drk Gray, blocky, with layered bedding
LS - Gray, tan, fine xtln, dense.
SH - gray and green scattered throughout
SH - Black, Carbonaceous, Blocky
LS - Tan and Gray, fine Xtln, Dense, No Visible Porosity
SH - Gray to Drk Gray, flat
LS - Tan and Cream, fine to medium xtln, with some interbedded fossilific crinoids, dense and a few pyrite pieces
Sst - opaque, fine grained, moderately sorted, sub rounded. Flash Odor with a light skim of oil on top.
SH - Gray Green in abundance throughout sample
Siltstone - fine grained, gray in color from matrix makeup, subround grains,
SH - Gray and green
0 Total Gas (units) 100
0 C1 (units) 100
0 C2 (units) 100
0 C3 (units) 100
0 C4 (units) 100
100+ Unit Gas Kick
150 Unit Gas Kick in Heebner
0 Total Gas (units) 100
0 C1 (units) 100
0 C2 (units) 100
0 C3 (units) 100
0 C4 (units) 100


4020
4040
4060
4080
4100
4120
4140
4160
4180
4200
4220
Brown Lm: 4103 (-1973)
Lansing: 4119 (-1989)
CFS @ 4160': 20", 40", 60"
0 ROP (min/ft) 5
0 Gamma (API) 150
6 Cal (in) 16
Siltstone as above, more gray, brown and green
Sst - gray, fine grained, sub angular, moderate sorting, dense, with heavy micacious minerals.
SH - Lt gray to Gray
SH - Drk Gray, Gray, green
Siltstone - Drk gray,lght gray, to brown. Fine Grained, well rounded, in clay matrix.
SH - Same as above
LS - Tan to Brown, Fine Xtln, Dense, with no visible porosity.
LS - Same as above, some tan colored, fine xtln, with calcite crystals imbedded in rock
LS - Crm to Tan, fine xtln, mostly dense, with scattered Ool. porosity. NSO No Odor
LS - Mostly same as above, with drk gry fine xtln, dense lime.
SH - Gray to Drk Gray
LS - Tan and Cream, fine xtln, dense.
4160': 20" - LS - Gray, fine xtln, with pinpoint porosity and some small fractures along edges. Brown Staining throughout and along fractured edges. A faint skim of oil in tray and faint odor. No gas bubbles and no show of free oil
40" - LS - Tan to Gray, fine xtln, pin point porosity with very few fractures along edges. A few pieces oil stained but few. 60" - LS - Tan to Gray, fine Xtln, with scattered pinpoint porosity, mostly dense
SH - Gry to dark gray and brown, flat
LS - Crm and tan, fine xtln, dense. Little visible porosity
SH - Lt gray to Drk gry, flat, fissile
LS - Tan, gray, crm, fine xtln, mostly dense. No show oil. Greenish dolomite, very dense found in parts
LS - Tan to Cream, fine xtln, pinpoint porosity in cream colored pieces, mostly dense tan pieces with trace fossils. Abundance of white chalk
LS - Same as above, with more dense tan fossiliferous limestone.
LS - Cream and tan, mdm xtln, with pinpoint and fracture porosity. Abundace of chalk in tray, NSO
88 Unit Gas Kick
0 Total Gas (units) 100
0 C1 (units) 100
0 C2 (units) 100
0 C3 (units) 100
0 C4 (units) 100


4240
4260
4280
4300
4320
4340
4360
4380
4400
4420
4440
0 ROP (min/ft) 5
0 Gamma (API) 150
6 Cal (in) 16
BKC: 4422 (-2292)
P
P
P
LS - As Above mostly tight, with scattered opaque/tan chert
LS - Cream to Tan, fine xtln, with poor visible porosity. Chert found in tray and chert nodules found within limestone
LS - Tan, mdm xtln, with no visible porosity, interbedded Oolclastic fossiles. Very Dense
SH - Dark gray to gray, mostly flat and fissile
LS - Drk Brwn, med xtln, with Ool. porosity throughout rock. W/ Cream, fine xtln, with sparse Ool. Porosity. NSO, No Odor
LS - Gray and Tan, medium xtln, with no visible porosity. Calcite crystals interbedded in tan LS. Chert, opaque to smoke, dense in tray
LS - Tan, fine xtln, with no visible porosity, tight. NSO, No Odor
LS - Same as above with more chalk in sample
SH - Gry to Drk Gray, flat with planar layers
LS - Grey and Tan/Brwn, mdm to coare xtln, very dense, no visible porosity, with interbedded calcite crystals, and chert
LS - Mostly Same as above, fewer chert pieces, and more chalk in sample
LS - Tan, fine xtln, with scattered Ool. porosity, and chalk
LS - Tan and Gray, fine xtln, mostly dense w/ no visible porosity. A few pieces of opaque chert and several pieces of pyrite in tray
LS - Tan, fine to mdm xtln, some good Ool. porosity in parts, but mostly pinpoint porosity. Chalky samples in tray. NSO, No Odor
SH - Black with scattered gray. Carbonaceous Shale
LS - Tan to gray, fne xtln, dense, with no visible porosity. Chert, Opaque to smoke colored is sprinkled within the sample
LS - Same as above, very dense rocks
LS - Cream and tan, fine xtln, very dense, almost smooth, Chert opaque and gray, smooth in texture in sample
SH - Black carbonaceous and drk gray, flat to blocky pieces
SH - Drk gray to Gray
LS - Tan - cream, fine xtln, dense, with calcite crystals on edging, and Chert - opaque/smokey found sparsley within sample
LS - Tan -Cream, fine xtln, dense with interbedded pyrite along edges. Chert - smokey, smooth, and Pyrite in sample
LS - Dirty cream, fine xtln, with pinpoint porosity to poor porosity. Small Gas Bubbles leaching from rock. NSO, No Odor
SH - Gray to dark gray
SH - Drk gray, gray, some silty in texture
LS - Dark gray - dirty, fine xtln, with shale matrix, no visible porosity, very dense.
LS - Tan/Brown, fine xtln, dense, no visible porosity.
Mud-Co Mud chk
@ 4358 ft.
0830 hrs.
04/02/18
Vis. 53 Wt. 9.35
PV 15 YP 18
pH 10.5
CHL 3650 ppm
Ca 20 ppm
Sol 6.9 LCM 1#
0 Total Gas (units) 100
0 C1 (units) 100
0 C2 (units) 100
0 C3 (units) 100
0 C4 (units) 100


4460
4480
4500
4520
4540
4560
4580
4600
4620
4640
4660
Cherokee SH: 4576 (-2446)
Mississippi: 4606' (-2476)
Kinderhook SH: 4651 (-2521)
Kinderhook Sst: 4668 (-2538)
0 ROP (min/ft) 5
0 Gamma (API) 150
6
CFS @ 4630'
@4651' Dropped Survey - 3/4 Degrees. Pipe Strap - 0.15' Short of Board
CFS @ 4651
Siltstone/SH - gray to dark gray, flat. Siltstone - fine grained, rounded, mostly dense.
SH - Drk gray, gray, green shale. Flat mostly
Siltstone - Gray, sub-rounded grains, fine grained,
LS - Gray/Brwn, fine xtln, very dense, with hard LS nodules in tray. NSO, No Odor
SH - Drk gray, green semi laminated
Siltstone/SH - interbedded sub rounded to rounded grains, very fine
SH - Dark Gray to Gray, fissile
LS - tan and brown, fine xtln, dense, with no visible porosity.
SH - Dark to Gray and a few green pieces
LS - Tan and brown, fine xtln, dense, no visible porosity. A few piece of pyrite on the edge and in in sample
SH - Drk gray to Gray, some reddish brown in the sample. Mostly planar bedding but a few blocky pieces
LS - Tan and Brown, fine xtln, no visible porosity. Chert - dark tan in color, dense, smooth
LS - Same As Above with more chert and pyrite in the sample
SH - Drk Gry to Black
SH - Various color - Green, Gray, reddish
LS - Gray, tan, fine Xtln, dense. Chert - Opaque in dish that could be from up hole and Pyrite
SH - Various colors of Gray, Green, and bluish
Sst - fine grained, clear qtz, subrounded to subangular. Mostly loose pieces floating in sample with some oil droplets in the water. A faint odor with a few clusters
SH - Drk Gry, gray, dense, planar bedding
4630': 20" - LS - Cream, fine xtln, with pinpoint and some vugular porosity. Found a couple samples with dark oil saturation, free oil floating in sample, faint fleeting odor,
40" - Chert - offwhite, weathered with edge staining in almost every piece. Staining is graying, with a good skim of oil floating in sample. Faint odor
60" - Chert - White, weathered with edge staining in most pieces. Some smooth chert with vugular porosity with dark black staining. Free oil in cup and sample, Poor to flash odor. Small Gas Bubbles
4651': 20" - Chert - White to Smoke, weathered and smooth chert. Weathered chert has good black staining with gas bubbles leaching out. Smooth smoke colored chert has edge staining and a few vugs, dark black staining. Faint odor and oil floating in water.
40" - Chert - White, mostly fresh smooth, with good black and dark staining along edges, and some decent vugular porosity. Floating oil in sample cup, and fair odor, with some gas bubbles
60" - Mostly Same as above. Abundance of white smooth fresh chert. Edge staining with some small vugular black staining. Fair odor with gas bubbles leaching out. Small skim of oil in cup
SH - Drk Gray to Gray, dense, flat, laminated. Few pieces of hard chert but mostly shale. Pyrite pieces throughout
SH - Same as above, few pieces tan dense LS
4682': 20' - Sst - clear, fine to mdm grained, Sub Rounded to Sub Angular, well sorted, well cemented but some friable clusters, Good Odor, with brown and black staining in most clusters, gas bubbles coming out of rocks, and free oil when clusters are broke open. 600+ Unit Gas Kick
SC
0 Total Gas (units) 500
0 C1 (units) 500
0 C2 (units) 500
0 C3 (units) 500
0 C4 (units) 500
Conditioned hole @ 4597' to prepare for Mississippi. 30 Std Short Trip
@ 4603' 100 Unit Gas Kick
0 Total Gas (units) 500
0 C1 (units) 500
0 C2 (units) 500
0 C3 (units) 500
0 C4 (units) 500
@ 4613' 128 Unit Gas Kick
DST #1 - 4575' - 4651'
@4626' 200+ Unit Kick
@4651' 200+ Unit Kick
DST #2 Retest - 4575' - 4651"
Mud-Co Mud chk @ 4651 ft. 0735 hrs. 04/03/18 Vis. 48 Wt. 9.3 PV 16 YP 17 pH 10.5 CHL 3800 ppm LCM 2#
DST # 3 - 4660' - 4694'



40" - Mostly same as above. Well cemented with a few friable clusters More light brown staining on clusters, more clusters in the samples, fair to good odor, with oil on top of cup, and floating especially after the break.

60" - Same as above, with well cemented few friable Sst Clusters, good brown to black saturation, with fair to good odor, free oil droplets in cup and in tray

4694': 20' - Sst - clear to white, fine grained, well sorted, subrouded, very dense, clusters are very hard. Floating oil in the cup and oil droplets in sample cup and tray. Good Odor

40" - As above, with more clear Sst clusters, fine to mdm grained. Oil droplets and skim of oil on top of sample cup, good show of free oil when clusters are broke open. Good Odor

60" - Same as above. Good odor and free floating oil sample cup

~4700' - Chert, white and tan, fresh, smooth, dense

~4710 - SH - Various Colors of gray and brown.

~4720 - Chert - Various Colors tan, orange, brown, smooth, fresh, dense. A couple pieces of dolomite, highly sucrosic, fizzes in acid, with some light brown staining, no show free oil. White Chalk in tray, very dirty sample. Sample water is reddish brown

4737': 20' - Chert - Orange, off white, and pieces of mixed orange/white, fresh, smooth, very dense chert.

40" - Mostly same as above with some pieces (4) of dolomite, sucrosic, with light brown staining and some free oil came out when I tested the rock with acid to determine it was dolomite.

Dolomite - white, sucrosic, very dense, no show of free oil no odor.
White chalk in sample

Chert - white weathered and a few pieces of fresh and smooth, dense. No Show of oil

Dolomite - white, sucrosic, somewhat dense, no show free oil. With a few pieces of weathered chert and white chalk

Chert - white, weathered and fresh, dense, with no staining. A few hard Sst clusters that are glauc. subrounded, well sorted mdm grained, with organic matter.

LS - Tan, micro xtln, dense, no visible porosity.

SH - Gray to Drk Gray w/ dark organic product interbedded

Dolomite - White, micro xtln, moderately dense, no visible porosity, breaks with little pressure.

Chert - white, weathered, and a few fresh white pieces in tray.

Same as above, with white chalk and brown limestone in this sample

LS - Brown, mdm xtln, dense, with interbedded course grain sand and calcite crystals.
Chert - white, fresh and some weathered and dolomite - white, sucrosic, No show No odor

Mud-Co Mud chk
@ 4657 ft.
0800 hrs.
04/04/18
Vis. 59 Wt. 9.2
PV 20 YP 20
pH 10.0
CHL 7000
ppm LCM 2#

Mud-Co Mud chk
@ 4769 ft.
0600 hrs.
04/05/18
Vis. 63 Wt. 9.4
PV 19 YP 19
pH 10.0
CHL 7000
ppm LCM 2#

RTD - 4820' @ 8:37 AM on 04/05/2018
LTD - 4818' @ 2:28 PM on 04/05/2018
Loggers on Location at 11:48 AM on 04/05/2018