



Musgrove

Petroleum Geology
212 Main Street, Claflin KS

Geologist's Report

Company: LD Drilling, Inc

Lease: BH Farms #2-20

Field: Mueller

Surface Location: W2-SE-SE-NW (2310' FNL & 2100' FWL)

Sec: 20 Twp: 21S Rge: 12W

County: Stafford State: Kansas

GL: 1858' KB: 1863'

Contractor: Petromark Drilling Rig #2

Spud: 2/11/15 Comp: 2/18/15

RTD: 3675' LTD: 3676'

Mud Up: +/- 2700' Mud Type: Chemical Displaced

Drilling Time Kept From: 2900' to RTD

Samples Saved From: 2900' to RTD

Samples Examined: 2900' to RTD

Geological Supervision: 3075' to RTD

Geologist on Well: Kurt Talbott

Surface Casing: 8 5/8"@ 372'

Production Casing: 5 1/2" @

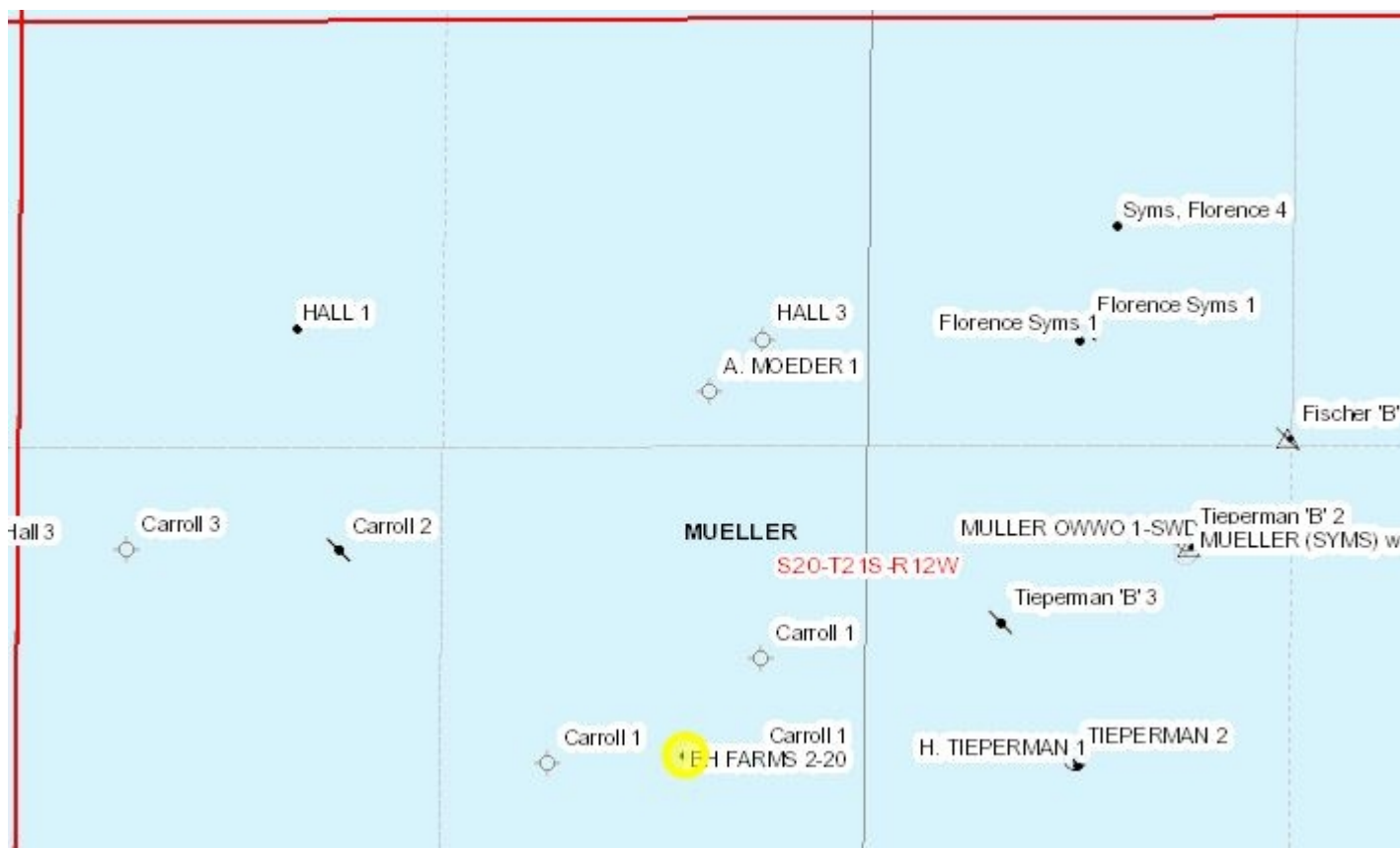
Wireline Logs: By Nabors: CNL/CDL, DIL, MEL

Well Comparison

FORMATION	WELL BEING DRILLED		OFFSET		OFFSET	
	LD	LD SS	LD	SS	LD	SS
	LD DRILLING		SAGE		MIDSTATES	
	BH FARMS #2-20		#1 LUCY WALTER		BH FARMS #1-20	
	1863 KB		1870 KB		1865 KB	
ANHYDRITE			677	1193	673	
BASE ANHYDRITE					694	
HEEBNER	3112	-1249	3118	-1248	3122	-1257
TORONTO	3130	-1267	3138	-1268	3140	-1275
DOUGLAS	3144	-1281	3152	-1282	3154	-1289
BROWN LIME	3242	-1379	3249	-1379	3252	-1387
LANSING	3256	-1393	3265	-1395	3268	-1403
BASE KC	3471	-1611	3484	-1614	3484	-1619

VIOLA	3480	-1617	3504	-1634	3500	-1635
SIMPSON SHALE	3510	-1647	3521	-1651	3530	-1665
ARBUCKLE	3564	-1701	3579	-1709	3583	-1718
TOTAL DEPTH	3676	-1813	3680	-1810	3674	-1809

Spot Location



ROCK TYPES

Cht	Lmst fw<7	shale, gry	Ss
Dolprim	shale, grn	Carbon Sh	Slst

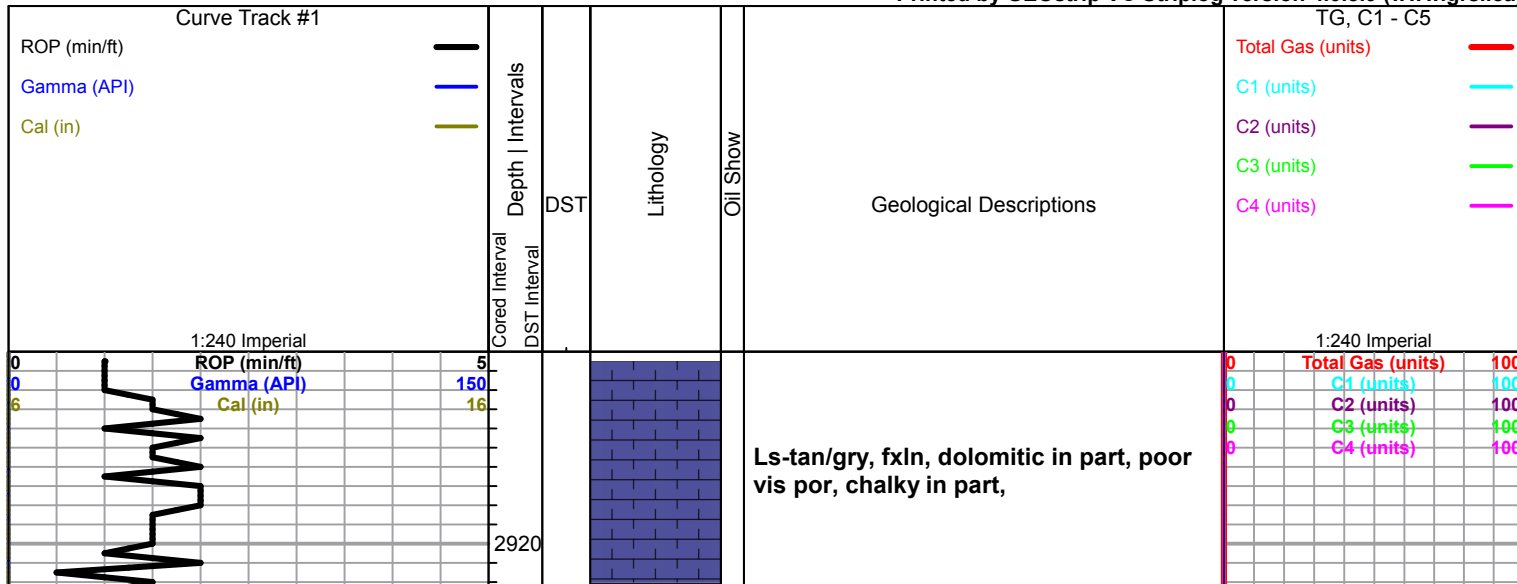
OTHER SYMBOLS

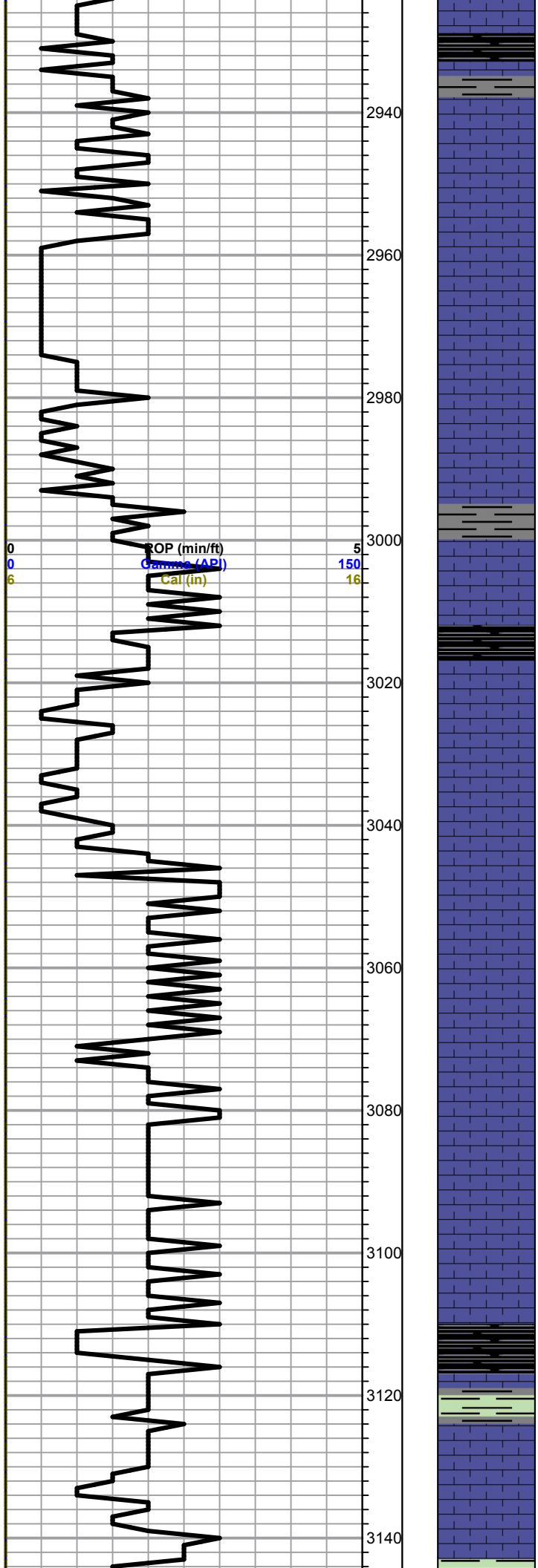
- EVENTS**
- ⌋ Casing Shoe
 - ▽ RTF
 - ▶ Sidewall
 - ▲ Left Casing Shoe
 - ▼ Right Casing Shoe

- INTERVALS**
- Core
 - DST

- DST**
- DST Int
 - DST alt

Printed by GEOstrip VC Striplog version 4.0.8.9 (www.grsi.ca)





A/A plus Black carbon shale

Ls-gry, ool, few fossils, poor vis por, chert-gry/tan

Ls-crm/tan, fine to med xln, dolomitic in part, poor to fair iner xln to oom por, chalky

Ls-crm, fxln, dolomitic in part, poor iner xln to scattered oom por, chalky

Ls-crm/tan, fxln, ol/fossils, poor vis por, chert-gry/tan

A/A Trace black carbon shale

Ls-lt gry/crm, fxln, oo/fossils, scattered iner xln por, chalky, chert-boney wht

A/A

Ls-crm/lt gry/ wht, fxln, dolomitic in part, poor vi spor, chert-boney wht/crm

Ls-gry/tan, fxln, ool, few fossils, poor vis por, cherty in part,

Ls-gry/tan, fxln, ool/few fossils, poor vis por, cherty in part,

Heebner 3110.0 (-1247.0)
(-1249.0)

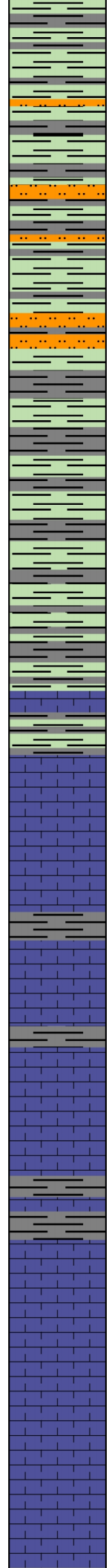
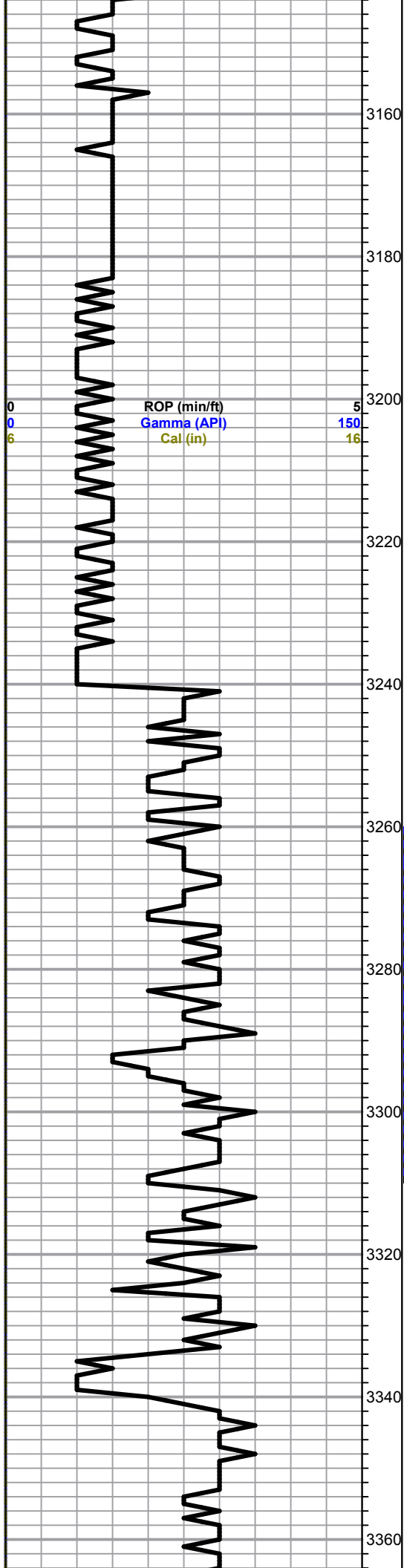
Black carbon shale

Toronto 3127.0 (-1264.0)
(-1267.0)

Ls-wht/crm, fxln, sucrosic in part, scattered ppt to iner xln por, chalky in part

Douglas 3143.0 (-1280.0)

0	Total Gas (units)	100
0	C1 (units)	100
0	C2 (units)	100
0	C3 (units)	100
0	C4 (units)	100



(-1281.0)

Shale-brwn/grn/gry

Shale-maroon/gry/grn, soft, silty in part, mica

A/A

Shale-maroon/gry/grn, soft, silty, mica

A/A

Brown Lime 3240.0 (-1377.0)
(-1379.0)

Ls-tan/buff, fxln, dense, cherty in part, poor vis por

Lansing 3255.0 (-1392.0)
(-1393.0)

Ls-tan/crm, fxln, fossils/ool, poor vis por, cherty in part, slightly chalky

Ls-lt gry/crm, fossils, poor inner xln por, dark brown stains, TrSFO, fair odor, slightly chalky

Ls-gry/tan, fxln, fossils, poor to fair inner particle to vuggy por, dark brown stains, SFO, odor

Ls-gry/crm, fxln, ool, few fossils, poor scattered inner xln por, Trace dark brown stains, NSFO, shale-gry/brwn

Ls-crm/lt gry, fxln, ool, poor inner xln por, Trace spotty stains, NSFO, shale-gry/grn

Ls-wht/crm, fxln, ool, oom por, dark brown to black stains, NSFO, chalky

Ls-crm/tan, ool, scattered sub oom por, Trace stains, NSFO, chalky, Shale-gry/grn

Ls-tan/gry, fxln, dense, poor vis por

0	Total Gas (units)	100
0	C1 (units)	100
0	C2 (units)	100
0	C3 (units)	100
0	C4 (units)	100

DST #1 3260-3310
30-45-45-60
IF: BOB 40 sec; GTS 7 min. Measured as follows:
10 min 654 MCF/D
20 min 654 MCF/D
30 min 654 MCF/D

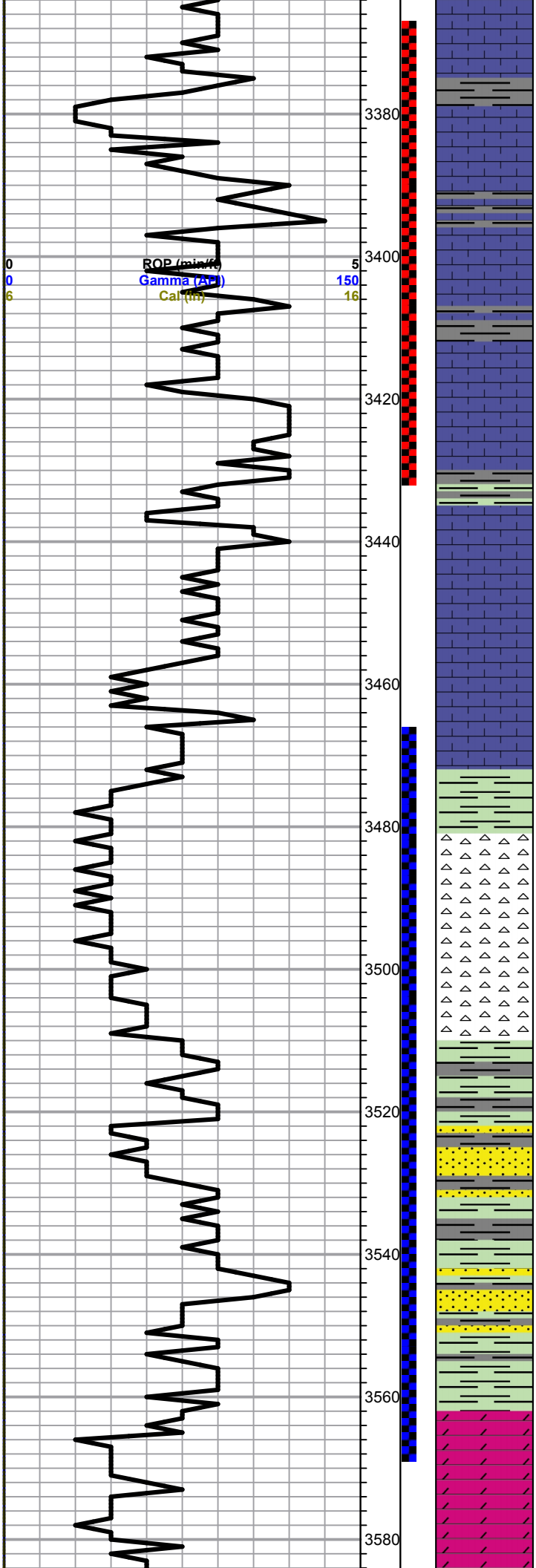
Final Flow measured as follows:
10 min 527 MCF/D
30min 527 MCF/D
45min 527 MCF/D

Recovery:
128' Mud

Pressures:
ISIP 1054 psi
FSIP 1011 psi
IFP 49-49 psi
FFP 51-46 psi
HSH 1554-1544 psi

DST #2 3368-3431
30-45-45-60
IF:BOB 18 min

Recovery:
182' GIP
67' SIOC MW
(10o 10w 80m)



Ls-tan/gry, fxln, dense, poor vis por, cherty in part,

Ls-crm/tan, fxln, ool, scattered oom to vug por, brown stains, SFO, odor, slightly chalky

Ls-crm/wht/lt gry, fxln, ool, poor vis por, cherty in part,

Ls-crm/tan, fxln, ool, fair scattered vug por, dark brown stains, SFO, good odor,

Ls-wht/lt gry, fxln, scattered iner xln por, SFO, good odor

Ls-wht/crm, fxln, ool, poor vis por, chalky, Cherty in part, Shale-gry/grn

Ls-crm/tan, fxln, poor vis por, cherty, chalky, shale-gry/grn

Ls-tan/gry, fxln, ool, scattered iner ool por, cherty in part, Trace Stains, NSFO, chalky

Base KC 3474.0 (-1611.0)
(-1611.0)

Shale-gry/grn/maroon

Viola 3480.0 (-1617.0)
(-1617.0)

Chert-crm/tan/gry, semi-trip, dark brown to black stains, NSFO, very faint odor

Chert-boney wht/crm, scattered por, Trace black stains, NSFO, faint gassy odor

Simpson 3511.0 (-1648.0)
(-1647.0)

Shale-brwn/maroon/gry

Shale A/A, Trace sand-wht/clear, fine grained, poor vis por, friable

Shale-gry/maroon/aqua green

Arbuckle 3560.0 (-1697.0)
(-1701.0)

Dol-crm/tan, fxln poor iner xln por, golden to dark brown stains, SFO, good odor

Dol-cm/tan/buff, fine to med xln, fair iner xln to vuggy por, brown stains, SFO, good odor

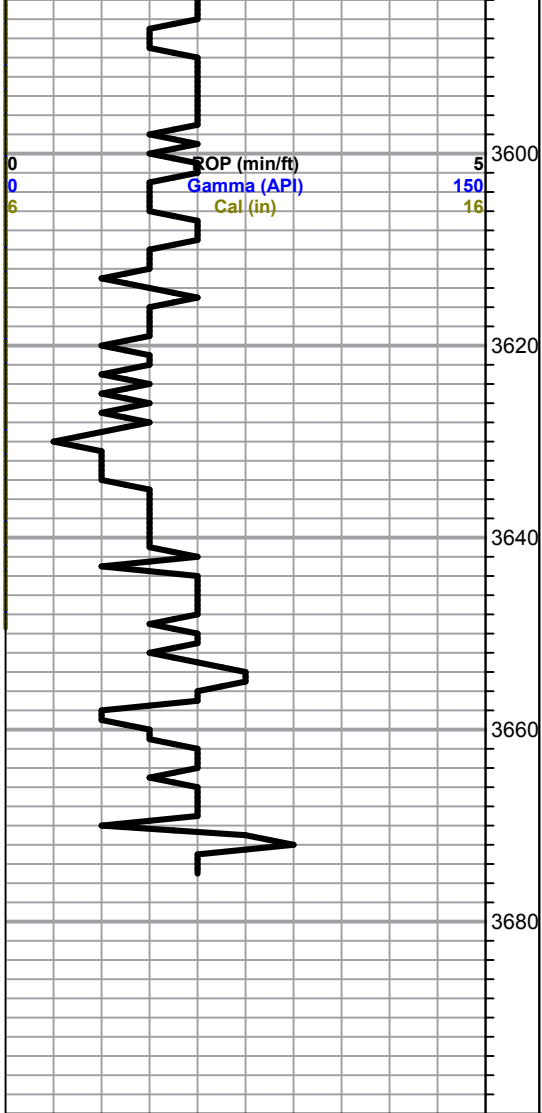
Pressures:
ISIP 597 psi
FSIP 592 psi
IFP 16-33 psi
FFP 35-48 psi
HSH 1604-1600 psi

Total Gas (units) 100
C1 (units) 100
C2 (units) 100
C3 (units) 100
C4 (units) 100

DST #3 3467-3567
30-45-45-60
IF: BOB 4 1/2 min
ISI: BOB

Recovery:
1702' GIP
286' Clean Oil
406' HOGCM
(32g 38o 30m)

Pressures:
ISIP 840 psi
FSIP 809 psi
IFP 28-161 psi
FFP 174-275 psi
HSH 1669-1669 psi



Dol-tan/buff, f-med xln, poor to fair iner xln por, golden to dark brown stains, TrSFO, fair odor, chalky in part,

Dol-tan/buff, f-med xln, few rhomb xln, fair iner xln por, scattered brown stains, dark brown to black stains, NSFO, sour odor

Dol-crm/tan, fxln, fair iner xln por, dark brown to black spotty stains, NSFO,

A/A Chalky
Chert-tan/buff

Dol-crm/tan, fine to med xln, poor to fair iner xln por, spotty dark brwn stains, NSFO, faint odor, Chert-boney wht/crm

Dol-crm/tan, fine to med xln, poor iner xln por, spotty stains, NSFO, faint odor, chert-boney wht/crm

Total Depth 3675.0 (-1812.0)
(-1813.0)

0	Total Gas (units)	100
0	C1 (units)	100
0	C2 (units)	100
0	C3 (units)	100
0	C4 (units)	100