

Musgrove
 Petroleum Geology
 212 Main Street, Claflin KS

Geologist's Report

Company: LD Drilling Inc
 Lease: Blankenship #3-2
 Field: Otis-Albert
 Surface Location: C-SE/4 (1320' FSL & 1320' FEL)
 Sec: 2 Twp: 19S Rge: 15W
 County: Barton State: Kansas
 GL: 1952' KB: 1957'

Contractor: Petromark Drilling Rig #4
 Spud: 9/24/14 Comp: 10/3/14
 RTD: 3660' LTD: 3658'
 Mud Up: +/- 3100' Mud Type: Chemical Displaced

Drilling Time Kept From: 3100' to RTD
 Samples Saved From: 3100' to RTD
 Samples Examined: 3100' to RTD
 Geological Supervision: 3250' to RTD
 Geologist on Well: Jim Musgorbe Kurt Talbott

Surface Casing: 8 5/8" @ 225'
 Production Casing: 5 1/2" @

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

Well Comparison

FORMATION	WELL BEING DRILLED		OFFSET	
	LD	LD SS	LD	SS
ANHYDRITE	926	1031	921	1028
BASE ANHYDRITE				
HEEBNER	3182	-1225	3173	-1224
TORONTO	3196	-1239		
DOUGLAS	3209	-1252		
BROWN LIME	3258	-1301	3251	-1302
LANSING	3266	-1309	3258	-1309
BASE KC	3480	-1523	3466	-1517
CONGLOMERATE	3494	-1537		
ARBUCKLE	3549	-1592	3540	-1591
TOTAL DEPTH	3658	-1701	3551	-1602

Spot Location



ROCK TYPES

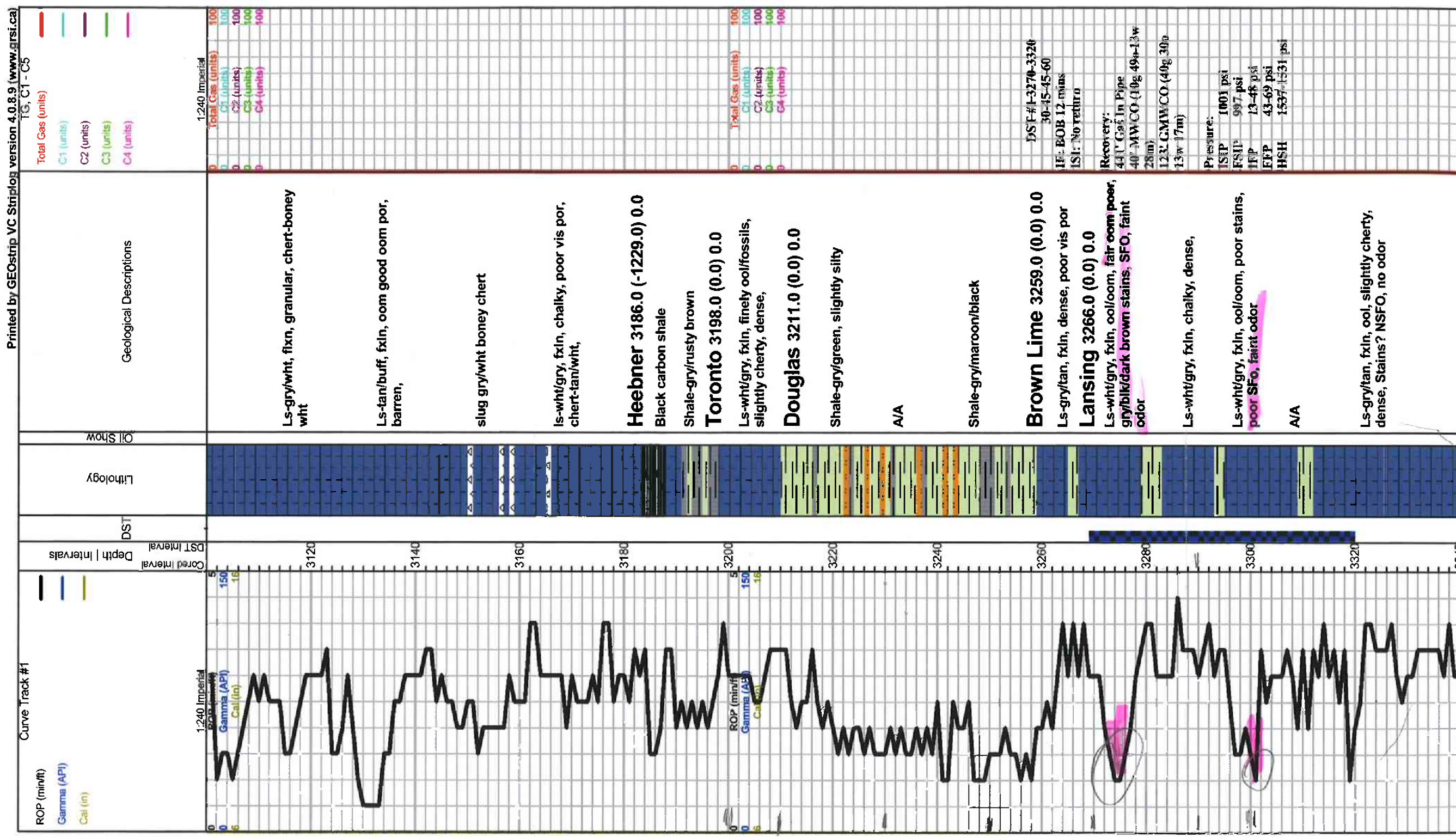
- ▲▲▲▲▲ Cht
- ▲▲▲▲▲ Chtcong
- ▲▲▲▲▲ Dolprim
- Lmst fw<7 shale, gm shale, gry
- Carbon Sh
- Sincol
- Sst

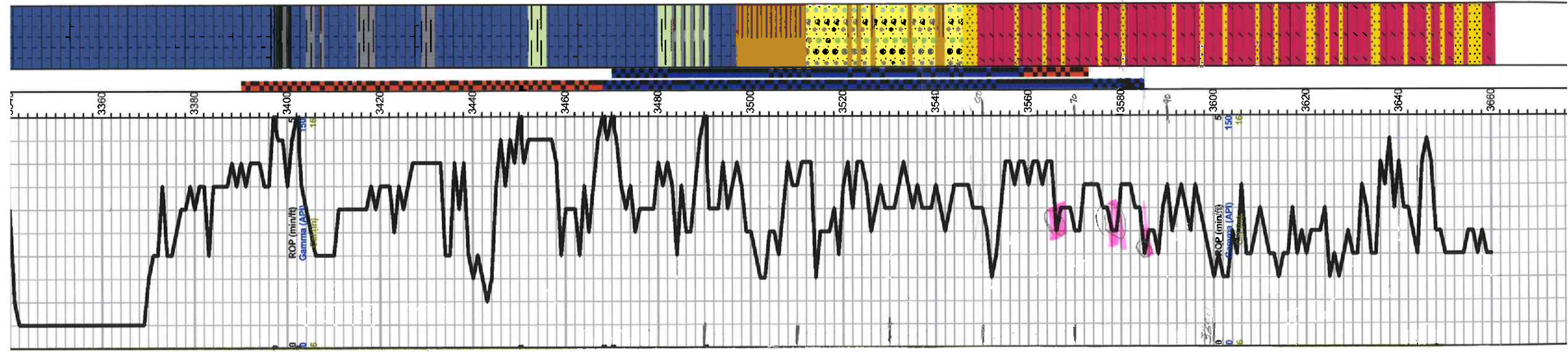
OTHER SYMBOLS

- EVENTS**
- ▲ Casing Shoe
 - ▶ RTF
 - ▶ Sidewall
 - ▶ Left Casing Shoe
 - ▶ Right Casing Shoe

- INTERVALS**
- Core
 - DST

- DST**
- DST Int
 - DST alt





Ls-wh/gy, ool/oom fair oom por, No vis shows, no odor, slightly chalky
 A/A fair to good oom por, no vis shows, no odor, chalky
 Ls-tan/brwn, fxln, slightly cherty, poor vis por, dense,
 Shale-gray/blk
 Ls-ry, ool, sub oom por, chalky, cherty in part, no vis shows,
 Ls-wh/gy, fxln, ool/fossils, slightly cherty
 poor vis por, stains?, NSFO, faint odor,
 Ls-ry/wht, fxln, oom, chalky, poorly developed oom por, trace poor stains, NSOF, no odor
 A/A
 Ls-wht, ool, chalky, trace brown stains, TRSFO, no odor
 Ls-wht/crm, fxln, ool, oom por, dark brown stains, TRSFO, no odor, chalky
Base KC 3482.0 (0.0) 0.0
 Shale-ry/maroon/gm
Conglomerate 3498.0 (0.0) 0.0
 Shale- A/A, cherty varying color
 Ls- wh/tan, fxln, dense, poro vis por,
 Shale- red/brwn soft,
 Chert-orange/yellow, ool
 A/A Shale-ry/maroon, Trace sand grains,
Arbuckle 3550.0 (0.0) 0.0
 Dol- wh/crm, fine to few med xln, poor ine xln por, golden brown stains, SFO, good odor, slightly sandy
 Dol-wht/crm, sandy in part, poor to fair iner xln por, golden brown stains, SFO, fair odor
 Dol-wht/, fine xln, sandy in part, qtz granulars, poor iner xln por, scattered dark brown stains, TRSFO, weak odor
 Dol-wht/tan, sandy, poor to fair iner xln por, scattered stains, NSFO, faint odor
 Dol- A/A sandy
 Sandy Dolomite/Dolomitic Sand, fair iner xln/iner gran por, Scattered black stains, NSFO, no odor
 A/A
 Dol- wh/crm, sandy, poor to fair iner xln por por, no vis shows, no odor, chert-crm/boney wht
Total Depth 3660.0 (0.0) 0.0

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

DST #2 3391-3475
 30-30-30-30
 IF: Dead in 24 Min

Recovery:
 5' Mud

Pressures:
 ISIP 60 psi
 FSIP 40 psi
 IFP 11-14 psi
 FFP 14-15 psi
 HSH 1600-1599 psi

DST #3 3470-3560
 30-30-30-30
 IF: Built to 9"

Recovery:
 160' Gas In Pipe
 30' VSOCM (to 99m)
 62' SLOCM (to 92m)

Pressures:
 ISIP 172 psi
 FSIP 169 psi
 IFP 17-45 psi
 FFP 43-59 psi
 HSH 1663-1661 psi

DST #4 3470-3571
 30-30-60-60
 IF: Built to 6"

Recovery:
 209' Gas In Pipe
 40' VSOCM (to 99m)
 63' SLOCM (to 92m)

Pressures:
 ISIP 134 psi
 FSIP 224 psi
 IFP 22-45 psi
 FFP 48-62 psi
 HSH 1673-1672 psi

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

DST #5 3468-3582
 30-45-45-60
 IF: ROB 1 L runs

Recovery: 229' Gas In Pipe
 83' VSOCM (56-12w 83m)
 315' SLOCM (50-35w 60m)
 187' SLOCM (50-70w 25m)

Pressures:
 ISIP 1972 psi
 FSIP 1070 psi
 IFP 25-152 psi
 FFP 159-276 psi
 HSH 1654-1620 psi