

OPERATOR

Company: ALAN J. VONFELDT
 Address: PO BOX 611
 RUSSELL, KANSAS 67665

Contact Geologist: ALAN VONFELDT
 Contact Phone Nbr: 785-483-0252
 Well Name: MICHAELIS # 3
 Location: W2 SE SW SW SEC.33-T14S-R13W
 API: 15-167-24,055-00-00
 Pool: IN FIELD
 State: KANSAS
 Field: HALL-GURNEY
 Country: USA

Scale 1:240 Imperial

Well Name: MICHAELIS # 3
 Surface Location: W2 SE SW SW SEC.33-T14S-R13W
 Bottom Location:
 API: 15-167-24,055-00-00
 License Number: 7281
 Spud Date: 3/13/2017 Time: 3:00 PM
 Region: RUSSELL COUNTY
 Drilling Completed: 3/18/2017 Time: 4:06 AM
 Surface Coordinates: 330' FSL & 751' FWL
 Bottom Hole Coordinates:
 Ground Elevation: 1718.00ft
 K.B. Elevation: 1724.00ft
 Logged Interval: 2100.00ft To: 3202.00ft
 Total Depth: 3202.00ft
 Formation: TARKIO SAND
 Drilling Fluid Type: CHEMICAL/FRESH WATER GEL

SURFACE CO-ORDINATES

Well Type: Vertical
 Longitude: -98.7777589
 Latitude: 38.7847878
 N/S Co-ord: 330' FSL
 E/W Co-ord: 751' FWL

LOGGED BY

Company: SOLUTIONS CONSULTING, INC.
 Address: 108 W 35TH
 HAYS, KS 67601

Phone Nbr: (785) 639-1337
 Logged By: GEOLOGIST Name: HERB DEINES

CONTRACTOR

Contractor: ROYAL DRILLING INC.
 Rig #: 1
 Rig Type: MUD ROTARY
 Spud Date: 3/13/2017 Time: 3:00 PM
 TD Date: 3/18/2017 Time: 4:06 AM
 Rig Release: 3/18/2017 Time: 10:00 PM

ELEVATIONS

K.B. Elevation: 1724.00ft Ground Elevation: 1718.00ft
 K.B. to Ground: 6.00ft

NOTES

RECOMMENDATION TO RUN PRODUCTION CASING BASED ON SAMPLE EVALUATION AND LOG ANALYSIS.

NO DRILL STEM TESTS WERE RAN ON THIS WELL.






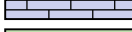


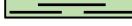

MICHAELIS #3	MICHAELIS # 1	HEFFERNAN # 2
W2 SE SW SW	SE NE SW SW	NW NW NW
SEC.33-14S-13W	SEC.33-14-13W	SEC.4-15-13W
1724'KB	KB 1733'	KB 1740'

<u>FORMATION</u>	<u>LOG TOPS</u>	<u>LOG TOPS</u>	<u>LOG TOPS</u>
Anhydrite	NOT LOGGED	+1048	+1037
B-Anhydrite	708+1016	+1015	+1004
Grand Haven	2227- 503	- 501	- 513
Dover Lime	2249- 525	- 524	- 536
Stotler/Tarkio	2298- 574	- 572	- 582
Topeka	2574 - 858	- 852	- 859
Heebner Sh.	2803-1079	-1084	-1087
Toronto	2822-1098	-1102	-1106
Douglas Shale	2838-1114	-1117	-1122
LKC	2872-1148	-1152	-1156
BKC	3131-1407	-1409	-1415
Arbuckle	3161-1437	-1433	-1446
RTD	3202-1478	-1485	-1586

SUMMARY OF DAILY ACTIVITY

3-13-17 Spud 4:15 PM,
3-14-17 698', set 8 5/8" surface casing to 698' w/ 350 sxs 60/40 pos 2%gel
 4%CC, WOC 10 hrs, plug down 11:00 AM
3-15-17 1285', drilling
3-16-17 2100', drilling, displaced 2100'
3-17-17 2795', drilling
3-18-17 3202, CFS 3158', RTD @4:06AM, short trip, TOWB, logs, TIWB,
 LDDP, run and cement production casing, RD

ROCK TYPES

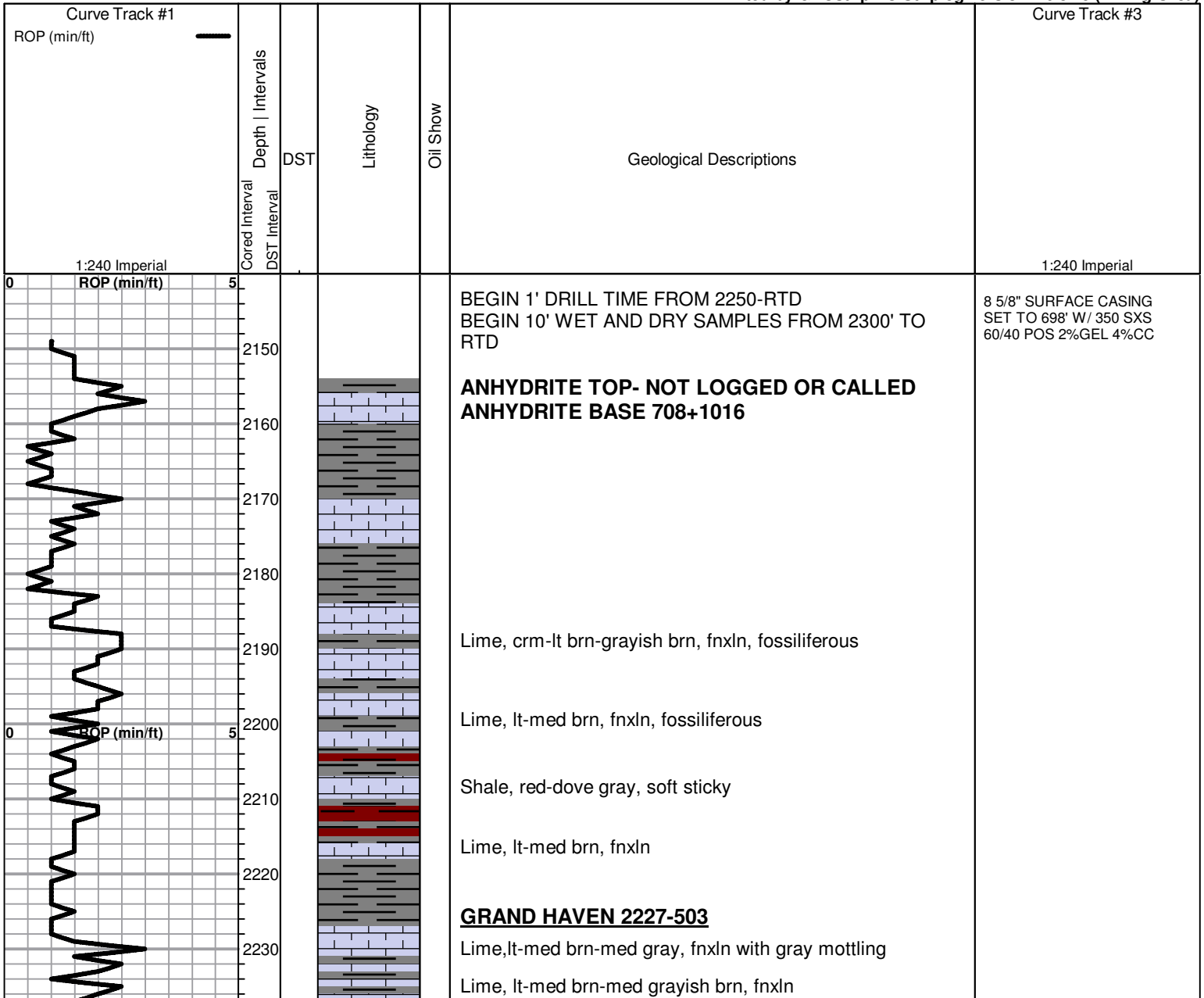
 Clystgy	 Lmst fw<7	 shale, gry	 Ss
 Chtcongl	 Lmst fw7>	 Carbon Sh	
 Dolprim	 shale, grn	 shale, red	

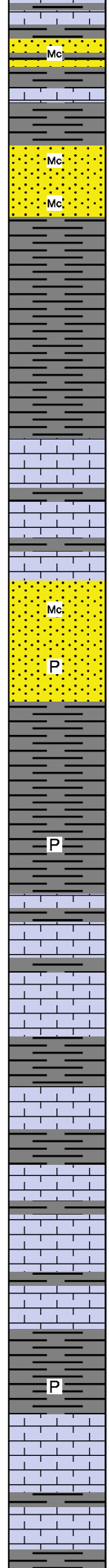
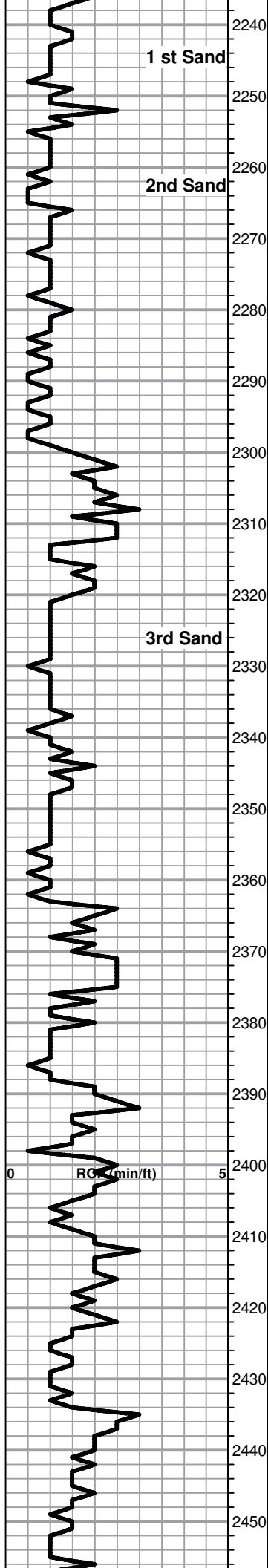
ACCESSORIES

- MINERAL**
- ▲ Chert, dark
 - P Pyrite
 - Sandy
 - Mc Mica

- FOSSIL**
- ⊕ Oolite
 - ⊕ Oomoldic

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Sandstone, fine grained, poorly sorted, gritty, micaceous, spotty stain in part

DOVER LIME 2249-525

Sandstone, fine grained, lt gray-lt brn, friable, micaceous, scattered to saturated staining, lt odor and show of lt gassy oil

Shale, lt-med gray, soft blocky with sticky clumping in part

TARKIO LIME/STOTLER 2298-574

Lime, lt brn-gray, fnxln

Lime, lt brn-lt gray, fnxln

Lime, lt brn-tan, fnxln

Sandstone, lt gray-lt brn, fine grained, poorly sorted, micaceous, pyritic clusters, spotty staining

Shale, lt gray, soft blocky forming soft sticky clumps in large part

Lime, lt-med brn, fnxln

Lime, lt brn-lt gray, fnxln, hard on crush

Shale, lt-med gray, soft blocky

Lime, med gray, fnxln

Lime, lt brn-med grayish brn, fnxln

Lime, lt-med brn-med gray, fnxln

Lime, lt-med brn, fnxln

Shale, lt gray, soft sticky

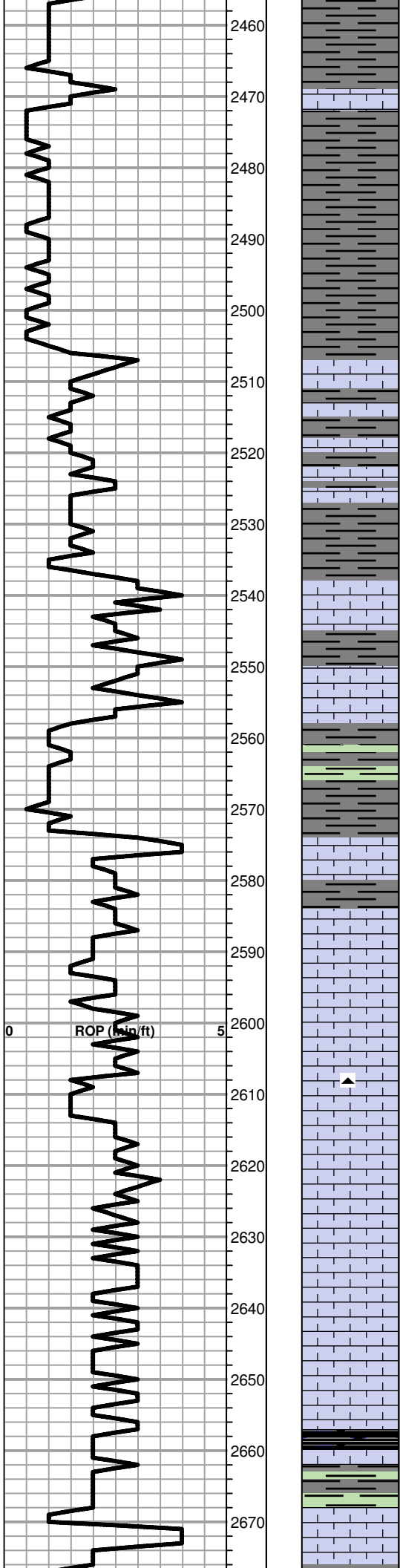
Lime, lt-med brn-med grayish brn, fn-vfxln, slightly fossiliferous

Lime, med brn-med grayish brn, fnxln, slightly fossiliferous

Perf 2238-42 Does not appear well developed on the logs but is productive in the field

Perf 2259-2268

This sand is the thickest but produces only in the higher wells.



Shale, lt gray, soft blocky, sticky clumping in part

Lime, lt-med brn, fnxln, slightly fossiliferous-fusulinids

Shale, lt-med gray-dark gray, soft blocky

Lime, lt med-dark brn, fnxln, slightly fossiliferous

Lime, lt-dark brn, fnxln, slightly fossiliferous

Shale, lt-med gray, soft blocky

Lime, lt-med brn-med grayish brn, fnxln, slightly fossiliferous

Lime, med brn-med gray, fn-vfxln, slightly fossiliferous

Shale, lime green-med gray, soft blocky

TOPEKA 2574-858

Lime, lt-med brn, fn-micro xln

Lime, lt-med brn-gray, fn-vfxln

Lime, lt-med brn-med grayish brn, fn-vfxln

Lime, lt brn-lt grayish brn, fnxln, NS

Lime, lt brn-lt grayish brn, fn-vfxln

Lime, lt brn-lt gray, lt chalk wash with bedded chalk and chalky matrix

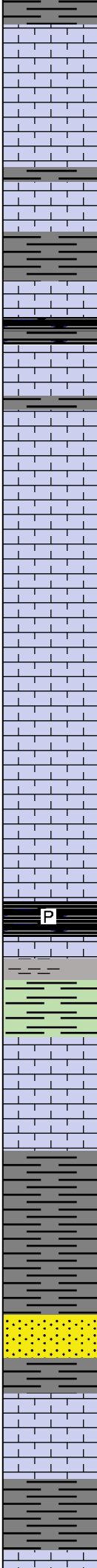
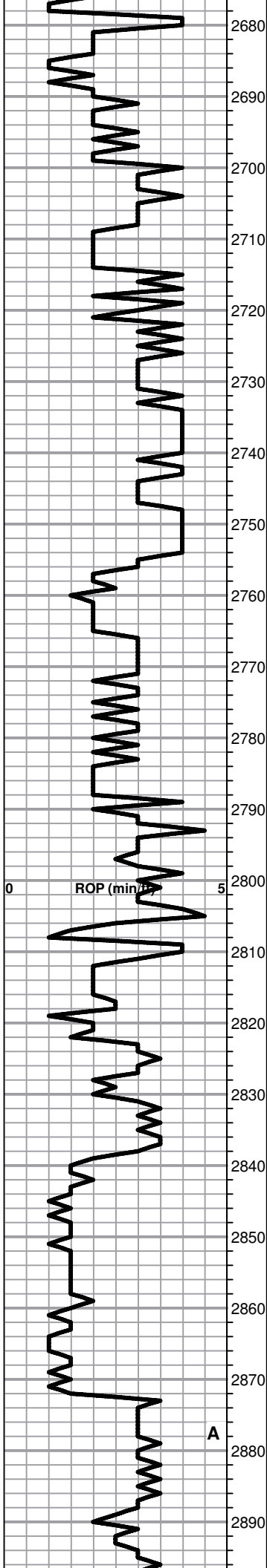
Lime, lt-med brn, fnxln, slight bedded chalk

Lime, lt brn, fnxln with chalky matrix and bedded chalk

Shale, black carbonaceous, blocky

Shale, dove gray-lime green, soft sticky clumps

Lime, crm, fn-micro xln



Lime, crm-lt brn-lt gray, fn-vfxln

Lime, crm-lt brn, fnxln-granular in part, bedded chalk with sticky clumps in part

Lime, lt-med brn, fn-vfxln, bedded chak

Shale, med gray, soft blocky

Lime, lt brn-lt gray, fnxln, chalky

Shale, black carbonaceous, fissile, blocky

Lime, crm-lt brn, fnxln-granular in part, NS

Lime, crm-lt brn, fnxln-slightly granular in part, slight bed chalk

Lime, lt brn, fn-vfxln

Lime, lt brn-lt gray, fn-micro xln, white chalk wash

Lime, crm-lt brn, fnxln-granular, scattered fusulinids, lt white chalk wash

Lime, crm-lt brn, fnxln

Lime, lt-med brn, fn-vfxln

Lime, lt brn, fn-micro xln

Lime, lt-med brn, fn-micro xln

HEEBNER SHALE 2803-1079

Shale, black carbonaceous, fissile, blocky
Lime, lt grayish brn, micro xln, pyritic

Shale, dove gray-lime green, soft sticky

TORONTO 2822-1098

Lime, white-crm, fnxln-fine granular, very lt staining with lt gas odor, NFO

Lime, crm-lt brn, fnxln

DOUGLAS SHALE 2838-1114

Shale, lt gray, soft blocky to soft mud

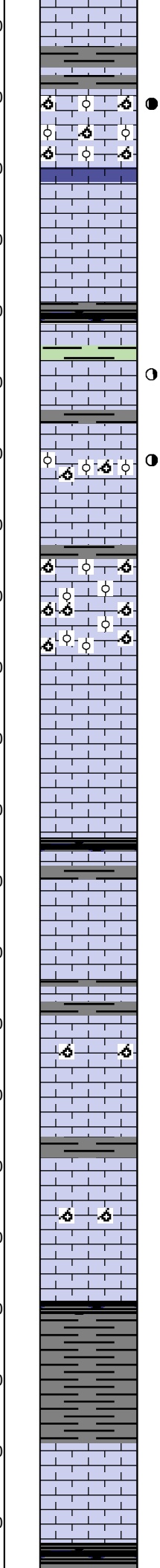
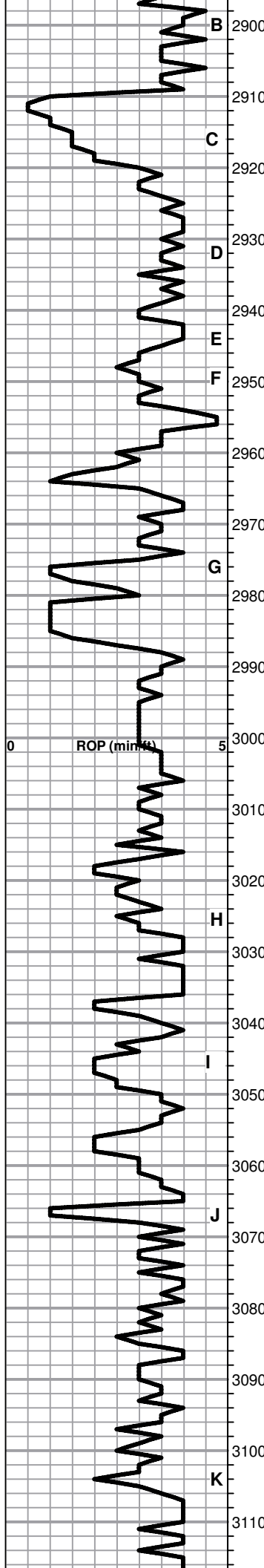
LKC 2872-1148

Lime, crm, fnxln with bedded chalk, noted 1 chip with trace of staining but microlog shows no development

Lime, lt brn, fn-micro xln

This appears to be a fine grained limestone bearing mostly gas. Would recommend perforating and testing to eliminate possible fracture potential before abandonment of well.

The Douglas sand did not show up in samples but logs indicate some development. Recommend perforating from 2863-68 and testing prior to abandonment of well.



Lime, med , fn-micro xln, slightly fossiliferous

● Lime, crm, oolitic/oomoldic, good odor, show of lt gassy oil, spotty-saturated staining

Lime, offwhite-crm, fn-micro xln, slight bedded chalk

Lime, offwhite-crm, fn-micro xln

Shale, black carbonaceous, blocky
Lime, lt brn with gray tint, micro xln

○ Lime, lt-dark brn, fn-vfxln with few chips with trace of lt staining, NFO or odor

● Lime, crm-lt brn, fn-micro xln grading into oolitic/oomoldic zone, lt odor, lt show of free oil, scattered to saturated stain

Lime, crm-lt brn, fn-micro xln

● Lime, white, oomoldic, NS

Lime, lt brn-lt grayish brn, micro xln, slight bedded chalk

Lime, lt-med brn, fn-micro xln

Lime, lt-med brn, micro xln

Lime, crm-lt brn-lt gray, fn-micro xln , NS

Lime, crm-lt brn, fn-micro xln

Lime, crm-tan, fn-micro xln, few oolmoldic chips but barren

Lime, crm-lt brn, fn-micro xln

Lime, crm, fn-micro xln

● Lime, white, oomoldic, NS , no wet cut

Lime, crm-lt brn-lt gray, fn-micro xln

Shale, med gray to black carbonaceous, soft blocky

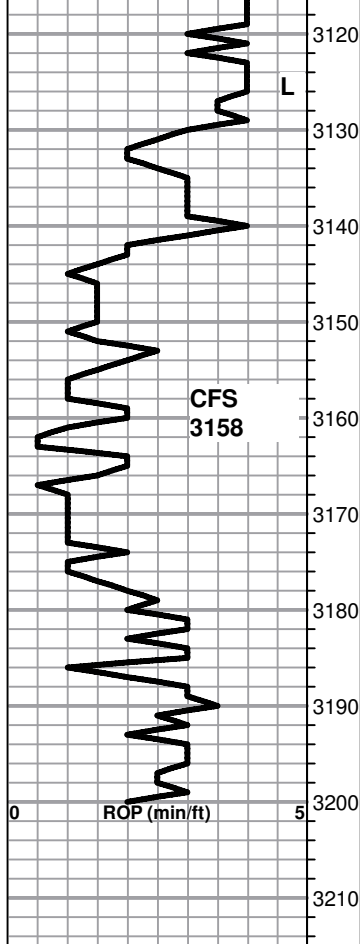
Lime, lt brn, fn-vfxln, hard chalk beds in part, NS

Lime, lt brn-lt gray, fn-micro xln

Recommend perforating from 2910-15 to test. Favorable structure may favor development of permeability in this interval

The "F" zone is typically a fossiliferous zone with staining in fossil casts. Microlog shows some perms from 2748-50 which should be perforated and tested prior to abandonment of well.

Recommend perforating and testing from 2962-66 prior to abandonment of well. The logs indicate permeability but also that the zone may be water bearing even though there was a show of oil and lt odor in the samples.



Lime, crm, fn-vfxln, bedded chalk with lt chalk wash, NS

BKC 3131-1407

Shale, red-reddish brn, soft mud to soft blocky

Lime, crm, fnxln, chalky, NS

Shale, lt gray to red, soft mud with red wash

Shale, red and vari colored cherts, NS

ARBUCKLE 3161-1437

Dolomite, lt brn, fnxln, fine grain sucrosic, strong sulfur odor, saturated staining

Dolomite, lt brn, fnxln-granular, lt chalk wash

Dolomite, lt brn, fnxln-granular with quartz grain inclusions

Dolomite, lt brn, fnxln-granular with abundant individual and fused quartz grains. The clarity of the quartz grains and lack of abrasion evidence suggest dissolution of the soluble dolomite leaving a bed of unworked quartz material.

Although there was strong odor and staining noted in the samples, it is felt that the finer sucrosic dolomite will not give up oil but will give up water in the coarser grained dolomite. The zone has also been produced over the years in area wells and likely has been depleted of oil leaving saltwater.