

OPERATOR

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

Contact Geologist: ALAN VONFELDT
 Contact Phone Nbr: 785-483-0252
 Well Name: BOXBERGER # 18
 Location: NW SE SW Sec.3-14s-14w
 Pool: IN FIELD
 State: KANSAS

API: 15-167-23,932-00-00
 Field: HALL-GURNEY
 Country: USA

Scale 1:240 Imperial

Well Name: BOXBERGER # 18
 Surface Location: NW SE SW Sec.3-14s-14w
 Bottom Location:
 API: 15-167-23,932-00-00
 License Number: 7281
 Spud Date: 12/26/2013 Time: 9:15 AM
 Region: RUSSELL COUNTY
 Drilling Completed: 12/30/2013 Time: 3:34 PM
 Surface Coordinates: 990' FSL & 1650' FWL
 Bottom Hole Coordinates:
 Ground Elevation: 1819.00ft
 K.B. Elevation: 1824.00ft
 Logged Interval: 2250.00ft To: 3245.00ft
 Total Depth: 3245.00ft
 Formation: LANSING-KANSAS CITY
 Drilling Fluid Type: CHEMICAL/FRESH WATER GEL

SURFACE CO-ORDINATES

Well Type: Vertical
 Longitude: -98.8669984 Latitude: 38.8590759
 N/S Co-ord: 990' FSL
 E/W Co-ord: 1650' 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: 12/26/2013 Time: 9:15 AM
 TD Date: 12/30/2013 Time: 3:34 PM
 Rig Release: 12/31/2013 Time: 10:00 PM

ELEVATIONS

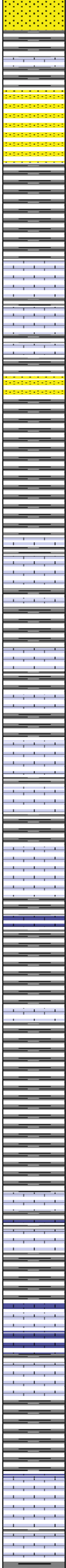
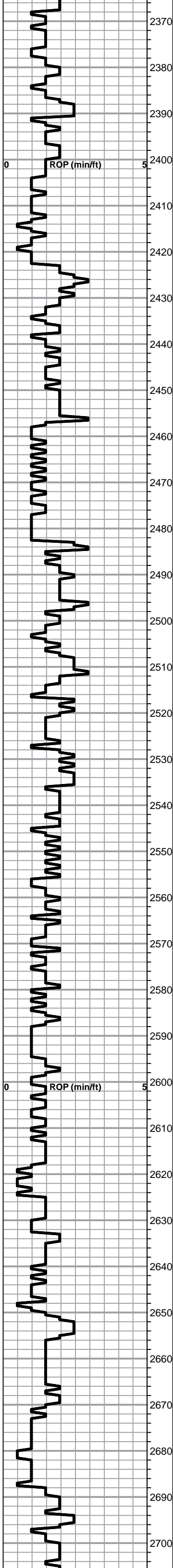
K.B. Elevation: 1824.00ft Ground Elevation: 1819.00ft
 K.B. to Ground: 5.00ft

NOTES

RECOMMENDATION TO RUN PRODUCTION CASING BASED ON FAVORABLE STRUCTURE AND LOG ANALYSIS
 OPEN HOLE LOGGING BY PIONEER ENERGY SERVICES: RADIATION GUARD LOG, MICRORESISTIVITY LOG
 NO DRILL STEM TESTS WERE RAN ON THIS WELL

FORMATION TOPS SUMMARY AND CHRONOLOGY OF DAILY ACTIVITY

	BOXBERGER #18	# H-5	# H-14
	NW SE SW	S2 SW/4	C SW/4
	SEC.3-14S-14W	SEC.3-14-14W	SEC.3-14-14W
	1819'GL 1824'KB	KB 1819'	KB 1828'
<u>FORMATION</u>	<u>LOG TOPS</u>	<u>LOG TOPS</u>	<u>LOG TOPS</u>
Anhydrite	806+1018	+1015	+1005
B-Anhydrite	847+ 977	+ 977	
Grand Haven	2351- 527		
Tarkio Lime	2422- 598	- 597	
Topeka	2685- 861	- 860	- 866
Heebner Sh.	2915-1091	-1085	-1092
Toronto	2934-1110	-1105	-1111
LKC	2976-1152	-1147	-1153
BKC	3228-1404	-1397	-1406
Gorham Sand	NONE	-1408	-1421



Sandstone, lt gray, very fine grained-gritty, micaceous, NS

DOVER LIME 2378-554

2ND TARKIO SAND

Sandstone, fn-vf grained, micaceous, slightly glauconitic, well cemented top and bottom of section, few chips with lt even saturated stain, good streaming wet cut, NSFO

ZONE GENERALLY RESPONDS TO LIGHT FRAC TREATMENT. AVOID ANY USE OF FRESH WATER IN ZONE DUE TO NATURE OF SWELLING CLAYS IN SAND

Shale, lt-med gray, soft blocky-slivers, waxy in part

TARKIO LIME 2422-598

Lime, crm-lt gray, fnxln-granular, slight bedded chalk

Lime, crm-tan, fnxln chalk, slightly fossiliferous

3RD TARKIO SAND

Sandstone, VF grained-fine gritty, poorly sorted, micaceous, laminated, NS

Shale, med gray with shades of green, soft-firm blocky, waxy in part

ELMONT 2482-658

Lime, tan-lt brn, fnxln

Lime, crm-tan, fnxln-granular, slight bedded chalk, slightly fossiliferous

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

Lime, lt-med brn, fnxln, slightly fossiliferous

Lime, crm-lt-med brn, fnxln, slightly fossiliferous in part

Lime, lt-med brn-lt grayish brn, fnxln, soft on crush, fusulinids in part

Lime, lt-med brn-lt grayish brn, fnxln, soft on crush

Lime, crm-tan, fnxln-granular

Shale, lt-med gray, slivers-firm blocky, waxy

Lime, med brn, fnxln

Shale, dove gray-lt-med gray with depth, slivers and soft-firm blocky

Lime, tan-med brn, fnxln, some dark brn, vfxln lime in part, slight bedded chalk

Shale, lt gray, soft forming soft sticky clumps

Lime, med brn-med grayish brn, bedded chalk with sticky clumps in part, slightly fossiliferous

FINISH DISPLACEMENT FOR MUD UP @2651'

Lime, med brn-med grayish brn, fnxln-granular, chalky matrix in part, slightly fossiliferous

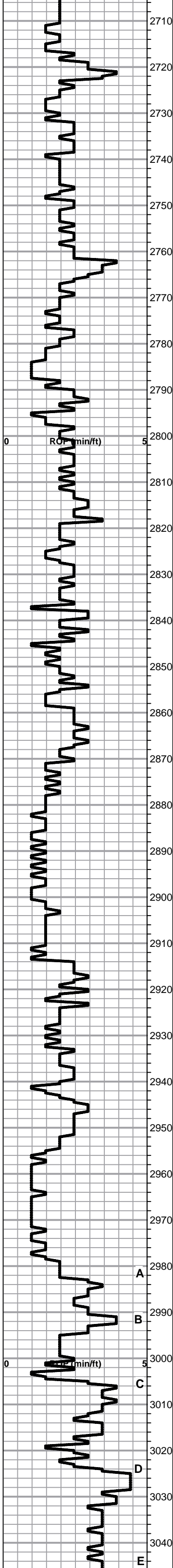
Shale, lt-med gray, soft blocky with sticky clumps in part

TOPEKA 2685-861

Lime, fn-micro xln, few chips fine grained with fine inter xln and scattered fine vuggy porosity, scattered to saturated light staining, NFO.

LOG INTERVAL 2686-95 SHOULD BE PERFORATED AND TESTED PRIOR TO ABANDONMENT OF WELL

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



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

Lime, lt-med brn-med grayish brn near shale boundary, fn-vfxln, fusulinids, dark gray, fresh, sharp chert

Lime, lt brn, granular, slight chalky matrix

Lime, lt brn-med grayish brn, fn-vfxln, fusulinids in part

Lime, lt-med brn, mostly fnxln with vfxln in part, scattered fusulinids

Lime, lt-med brn, fn-vfxln, slightly fossiliferous in part

Lime, tan-lt brn, fnxln-granular, slightly fossiliferous

Shale, gray-black carbonaceous, blocky

Shale, dove gray, soft forming sticky clumps

● Lime, crm-lt brn,fn-vfxln, thin zone with inter xln and vuggy porosity, spotty-saturated staining, lt odor, VMSFO, lt gassy bubbles, some oolitic/oomoldic material in part

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

Lime, lt-med brn, fnxln, trashy in part

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

Lime, lt-med brn, fnxln

Shale, dark gray-black carbonaceous, blocky

Lime, tan-lt brn-med grayish brn, fnxln-granular, thin beds of fusulinids in part

Lime, lt-med brn, fn-vfxln

Lime, lt-med brn-med grayish brn, fn-vfxln, bedded chalk in part

● Lime, lt-med brn, fnxln-granular grading into oolitic/oomoldic/ fossil fragment zone with interparticle porosity with scattered vugs, scattered to saturated staining, VLT Odor

Lime, tan-lt brn, fnxln-granular, bedded chalk

Lime, tan-lt brn, fnxln, soft on crush, bedded chalk in chalky matrix

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

HEEBNER SHALE 2915-1091
Shale, black carbonaceous, fissile, blocky
Lime, med brn, micro xln

Shale, lime green, soft forming sticky clumps

TORONTO 2934-1110

● Lime, crm-reddish tan, fnxln-granular, No Odor, V LT Wet Cut in fine grained lime with no visible porosity

Lime, crm-tan, fn-vfxln, bedded chalk

Shale, reddish brn grading into lt gray, soft sticky clumps

LKC 2976-1152

● Lime, tan, fnxln with fossiliferous beds with inter particle and scattered vuggy porosity, sparry calcite backfill in part, spotty to saturated staining, lt odor with visible gas bubbles,

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

● Lime, tan, fine oolitic/oomoldic/fossil fragments, fair odor, scattered to saturated staining, NFO

Lime, tan, fnxln, bedded chalk

● Lime, crm, oolitic/oomoldic/fossil fragments with dark semi dead oil staining, lt sulfur odor with lt gray, slightly dolomitic lime with vuggy porosity. Zone appears washed out

Lime, crm-off white, fn-vfxln, slight bedded chalk

Shale, dark gray-black carbonaceous
Lime, lt gray, fn-vfxln

LOG INTERVAL FROM 2784-88 SHOULD BE PERFORATED AND TESTED PRIOR TO ABANDONMENT OF WELL.

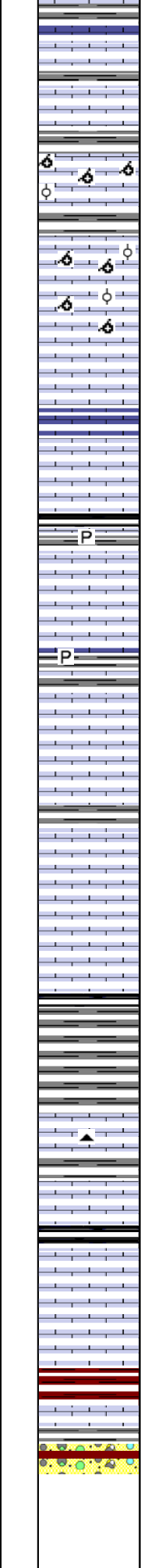
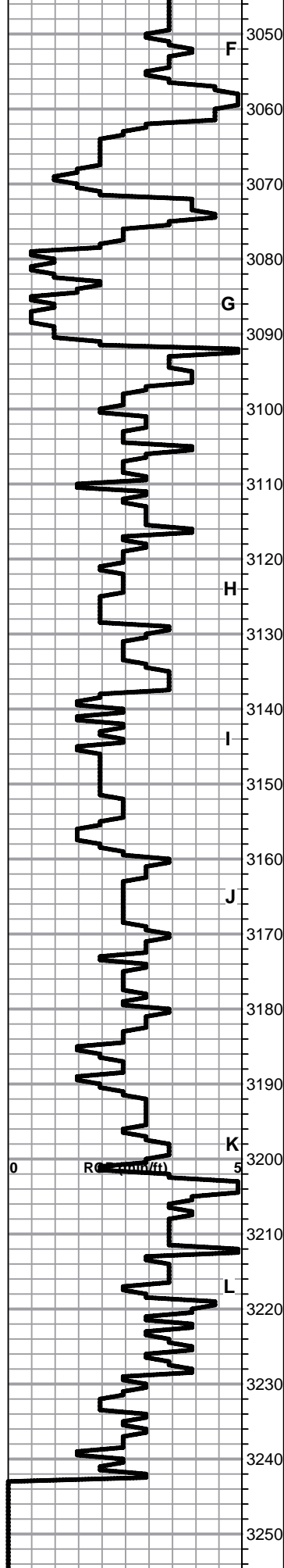
LOG INTERVAL 2868-71 SHOULD BE PERFORATED AND TESTED PRIOR TO ABANDONMENT OF WELL

LOG INTERVAL 2938-42 SHOULD BE PERFORATED AND TESTED PRIOR TO ABANDONMENT OF WELL. DIDN'T LOOK GOOD IN SAMPLES BUT APPEARS TO HAVE GOOD PERMEABILITY

LOG INTERVAL 2977-80 SHOULD BE PERFORATED AND TESTED. MICROLOG INDICATES ZONE MAY HAVE SOME PERMEABILITY ISSUES AND MAY NOT BE AS WELL DEVELOPED AS HIGHER WELLS IN FIELD

LOG INTERVAL 3000-04 SHOULD BE PERFORATED AND TESTED. THIS ZONE LOOKED THE BEST IN THE SAMPLES AND IS A PRIMARY ZONE IN THE FIELD

LOG INTERVAL 3017-19 THIN AND MAY HAVE PERMEABILITY ISSUES. SAMPLES DIDN'T LOOK GOOD IN INTERVAL BUT MAY WANT TO PERFORATE AND TEST PRIOR TO ABANDONMENT OF WELL



Lime, tan, mostly fnxln, trashy near shale boundaries , NS

Lime, tan-lt brn, fn-vfxln, slight bedded chalk

Lime, white-crm, oomoldic, barren, chalky in part, NS

Lime, crm, fnxln grading into oomoldic interval, barren, bedded chalk, NS

Lime, crm-lt brn, fn-vfxln

Lime, crm-lt brn grading into dark brn, fnxln

Lime, crm-lt brn, fnxln

Lime, lt brn, fnxln, pyritic grading into grayish brn lime near shale boundary

Lime, white-crm, fnxln, slight bedded chalk, NS

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

Lime, crm-tan, fn-micro xln in part, slight bedded chalk, NS

Lime, crm-tan, fnxln, slight bedded chalk

Lime, crm-tan-lt brn, fnxln

Lime, crm-tan, fnxln, slight bedded chalk

Shale, dark gray-black carbonaceous, blocky grading into dove gray-lime green shale forming soft mud clumps in part

Lime, crm-lt brn, fn-vfxln
Chert, lt orange, oolitic

Lime, crm-lt brn, fn-vfxln

Lime, crm-lt brn, fn-vfxln

Lime, crm-lt brn, fn-vfxln

BKC 3228-1404

Lime, crm-tan, fnxln, pyrite inclusions, slightly dolomitic

Shale, red with chert mix and reworked material

RTD 3245-1421 LTD 3242-1418

**NO SAND OR ARBUCKLE
DOLOMITE NOTED IN
SAMPLES**