API # 15-137-20749-00-00

GEOLOGICAL REPORT
DRILLING TIME AND SAMPLE LOG

COMPANY Great Plains Energy, Inc.
LEASE Lang #1
FIELD Wildcat
LOCATION 1650' FSL & 1400 FWL
SEC 32 TWSP 2s RGE 23w
COUNTY Norton STATE Kansas

ELEVATION
KB 2346
DF 2344
GL 2339
Depths Measured From Log KB Drilling KB

CONTRACTOR STP Drlg. Rig #1
SPUD 7-21-18 COMP 7-26-18
SAMPLES SAVED FROM 3100 TO R.T.D.

CASING
Surface 8 5/8" @ 221'
Production 5½"

ELECTRIC LOGS
Pioneer

FORMATION TOPS AND STRUCTURAL POSITION

FORMATION	SAMPLE	E. LOG	DATUM E.log	A	B	C	D
				●			
Anhydrite	1911	1908	+ 438	+434			
Base Anhydrite	1941	1938	+ 408	+404			
Topeka	3165	3159	- 813	-820			
Heebner	3348	3342	- 996	-1003			
Toronto	3376	3371	- 1025	-1032			
Lansing	3389	3383	- 1037	-1046			
Base Kansas City	3571	3565	- 1219	-1226			
Marmaton	3595	3591	- 1245				
Wea Granite	3610	3604	- 1258				
Granite	3624	3618	- 1272	-1275			
Total Depth	3646	3639	- 1293	-1330			

REFERENCE WELLS

A G.P.E.; Moffet #1-32, 2010' FNL & 360' FEL Sec. 32-2s-23W
B
C
D

REMARKS
This well ran 9 feet higher on the Lansing top than the reference well. The Arbuckle was not present in the Lang #1. After reviewing DST and open hole log data, it was decided production casing would be cemented to further test this well. The zones at 3422' to 3424' and 3411' to 3413' should be tested.
Richard B. Bell
7-26-18

7502

LEGEND
Anhydrite · Salt · Sandstone · Shale · Carb sh · Limestone · Ool.Lime · Chert · Dolomite

LOG 7710

DRILLING TIME IN MINUTES PER FOOT
Rate of Penetration Decreases
5" 10" 15" 20" 25"

Drilling time column notes: Anhydrite E.log 1908'; Base Anhydrite E.log 1938'; Topeka E.log 3159'; Heebner E.log 3342'; Toronto E.log 3371'; Lansing E.log 3383'; Muncie Creek Shale; Base Kansas City E.log 3565; Marmaton E.log 3591; Wea Granite E.log 3604; Granite E.log 3618; RTD E.log 3639; conn; CFS; DST ① ② ③

DEPTH	SAMPLE DESCRIPTIONS	OIL SHOWS	REMARKS
1900–3100			Samples are lagged
3120	LS: tn fxlf dns		
	Sltstone: brn + gry		
3140	LS: tn-lt.gry fxlf dns		
	Sltstone: brn + gry		
3160	LS: tn-gry fxlf No Vis φ		
	LS: wh-tn-lt.gry fxlf Trpp φ N.S.O.		
3180	LS: aa, incr. sltstone: brn		
	LS: + sltstone a.a.		
	LS: tn-yel fxlf sli cky dns N.S.O.		
3200	Sltstone: brn		
3220	LS: wh-tn cky fxlf tr. in part φ friable N.S.O.		
	aa incr. sltstone: brn		
3240	LS: tn cky-fxlf pp φ - in part φ N.S.O.; Tr. Sli. Oolc		
	LS: tn-lt.gry fxlf dns		
3260	Sh: blk Carb		
	SS: gry vf-gn consol ingran φ N.S.O.		
3280	Sltstone: brn		
	LS: wh-tn cky-fxln fxlf Tr. in part φ N.S.O.		
3300	Sltstone: gry		
	LS: wh-tn fxlf Tr. in part φ mostly dns N.S.O.		
3320	LS: wh-tn fxln sli. ööl in part φ N.S.O.		Trilobite Testing
3340	LS: wh-tn-lt.gry fxln-fxlf mostly dns Tr Δ wh-tn		DST #1 3347'-3402' 30-60-30-60 IF: wk surface blow FF: No blow Recovery: 30' mud HYd: 1627-1622# FP: 17-22/25-28# BHP: 887-826# BHTemp: 94° F
	Sh: blk Carb		
	LS: tn fxlf dns		
3360	Sltstone: brn		
3380	LS: wh-tn fxln ööl in part φ brn F.O. fr. odor	✓	Strap 3431.80 Board 3431.10 Diff. .70
'A'	LS: wh-tn fxln tr sub ööl Trace pt sptd Stn lt. Cut No F.O. No odor	✓	Incline @ 3431' 1½°
3400	Sltstone: brn		
3420 'C'	LS: wh-tn fxln sli. ööl pp φ Tr. Sli. Vug φ lt. Sptd Stn F.O. No odor	✓	DST #2 3403'-3436' 30-60-45-90 IF: wk blow incr. to 10" ISI: No blow FF: B.O.B. in 41½ min. FSI: wk blow incr. to ½" Recovery: 40' G.I.P. 205' Total
'D'	LS: wh-tn fxln-fxlf in part φ lt. Sptd Stn Tr. rainbow F.O. on crush No odor	✓	
3440	Sltstone: gry		
'F'	LS: wh-tn fxln m sli. ööl pr. in part φ lt. Sptd Stn No odor Tr cut	✓	HYd: 1672-1658# FP: 24-73/85-102# BHP: 885-870# BHTemp: 93°F gravity: 28.6° A.P.I. Chlorides: 44,000 ppm
'G'	LS: wh-tn fxln dns		
	Δ y tn-or		
3480	Sltstone: brn + gry		DST #3 3477'-3502' 30-60-45-90
'H'	LS: wh-tn fxlf Scat in part φ lt. O Stn Tr. pp F.O. No odor	✓	IF: wk blow incr. to 4" ISI: No blow FF: No blow Recovery: 20' mud HYd: 1718-1704# FP: 32-34/35-37# BHP: 1016-992# BHTemp: 94°F
3500	Sltstone: brn		
'J'	LS: wh-tn fxlf pr. in part φ Bin fines better Tr. rainbow F.O. odor	✓	
	SS: lt. v. fn-gn Consol ingran φ friable drk O Sat lt. odor	✓	
'K'	LS: tn fxln-fxlf Scat Vug φ tr. pp φ floating F.O.	✓	
	Sltstone: gry		
3560 'L'	LS: wh-tn fxln dns		
	Sltstone: brn		
3580	SS: tn brn vf-gn consol ingran φ N.S.O.		
	Sltstone: brn		
3600	LS: wh-tn fxlf pr. & gry		
	Qtz ang scat		
3620	Cut incr Qtz		
	Qtz, biotite, feldspar		
3640	Qtz, biotite, feldspar		Incline @ 3645' 1¾°
3660			
3680			