

GEOLOGICAL REPORT
DRILLING TIME AND SAMPLE LOG

COMPANY Great Plains Energy, Inc.

LEASE Odle 1-8

FIELD Wildcat

LOCATION SW SE SW (1650' FWL, 480' FSL)

SEC 8 TWSP 7S RGE 18W

COUNTY Rooks STATE Kansas

CONTRACTOR WW Drilling, Rig #12

SPUD 7 June 2013 COMP 14 June 2013

SAMPLES SAVED FROM 2800 feet TO TD

ELEVATION

KB 1945 feet

DF —

GL 1937 feet

Depths Measured From
Log KB Drilling KB

CASING

Surface 8 5/8" to 219 ft.

Production

ELECTRIC LOGS
Pioneer Energy Services:
CND/DIL/MRES/BHCS/FracFader

FORMATION TOPS AND STRUCTURAL POSITION

FORMATION	SAMPLE	E. LOG	DATUM
Anhydrite		1425	+520
Basal Anhydr.		1457	+488
Topeka	2902	2900	-955
Heebner	3106	3103	-1168
Lansing	3149	3142	-1197
Basal Kansas City	3373	3368	-1423
Penn. Conglomerate	Absent	Absent	—
Arbuckle	3457	3452	-1507

	B	C	D
1519			
+487			
-968			
-1174			
-1214			
-1437			
-1517			
-1553			

REFERENCE WELLS

Production casing was run for the following reasons:

- High structural position
 - Multiple fair - excellent shows
 - Encouraging DST results
 - Favorable evaluation of electric logs
- Milo Madela air, 06
20 June 2013

LEGEND

DEPTH	LITHOLOGY	OIL SHOWS	REMARKS
0-1000	Anhydrite	/	
1000-1500	Salt		
1500-2000	Sandstone		
2000-2500	Shale		
2500-3000	Limestone		
3000-3500	Ool. Lime		
3500-4000	Chert		
4000-4500	Dolomite		

Dolomite

Chart

Oil

Lime

Ool.

Shale

Sandstone

Salt

Anhydrite

LING TIME IN MINUTES
PER FOOT
of Penetration Decreases

5" 10" 15" 20" 25"

SAMPLE DESCRIPTIONS

REMARKS

Survey @ 220 ft: 1/2°

Samples are lagged

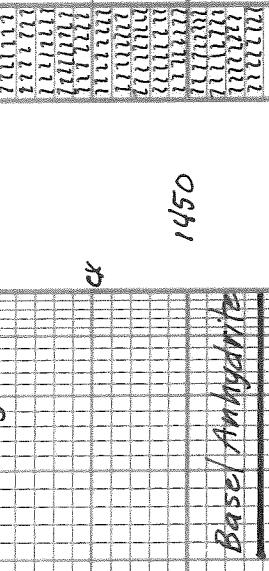
DEPTH

LITHOLOGY

OIL SHOWS

Anhydrite

E-log 1425

Basal Anhydrite

E-log 1453

Not
Recorded

↓
↓

2800

LS, crn. lbr. g. bri. f-c gn wst,
dns, fs/f, w/mist towards
base, tr. glauc.

ex

SH, dg. fgn, w/pyrte

el. oil
LS, AA; sl. ool'c w/tr glauc. NSO
SD, g. nbr w/tr. pink & ylw

2850

SH, dg. g. w/occ rhr

change pump gauge

cx

LS, crn. 16-17, f-c gn, dns, NSO
w/minor wt mist, w/pgr.

LS, crn. 4-5, ool. post in upper
m-c gn wst yellow, tr glauc. NSO

SH, g

Topka

E-log 2900

cx

LS, 4-5, tan, fgn mst/wst, w/gn
mgn post. NSO

Mud Wt: 8.8
Visc: 67 ccm/ft

Mud Wt: 8.8
Visc: 67 ccm / #

LS, tan-wt, fgn mst/wst, w/gn
mgn pst. NSO
SH, g, wt, ls, g, wt, crm, fgn wst,
w/minor fsp. NSO
SH, brn, fs/f

cr

LS, tan-g.wt, vt-f gn mst,
m-c gn fs/f gst. NSO
SH, AA

LS, AA, ool/c, w/pgr. NSO

SH, AA

LS, tan-g.wt, vt-f gn mst,
m-c gn fs/f gst. NSO

SH, g, wt, carb.

SH, g, wt, acc fs/f

3000

cr

cr

LS, g, ggn, vt gnn, dns mst,
grades to crm. wt mgn wst.
acc ps/f. NSO

SH, g, br

cr

LS, crm-tan-gb, m-c gn fs/f
ps/t, NSO

sd, g, rbr, w/bk carb.

3050

Dread

E Log 3050

LS, crm-tan, fgn ps/t, grad. to
crn f-mgn wst/g m-c gn wst;
wt/c, smby. dbr. wt. acc inter-
beds g fr rbr SH

SH, rbr & g

LS & CT, AA, acc ool/c. Wk sty show

1

oil oil

SH, rbr & g, w/bk carb.

3100

Heelmen

E Log 3103

LS, tan, fgn wst. NSO
wlt, wt, tan
SH, rbr & br

LS, wt. tan, fgn wst, dns, tight
NSO.

SH, AA.

3150

Lansing

E Log 3152

LS, wt. tan, friable ool/c ggt, odor,
sf wlt/g; pr sply brn w/gt
str fl. cut; all by mgn w/st
ps/t, cr glauc, sl. chky, w/reworked
sh frags

LS, tan wt-mn mst dns. w.

3200

CFS

E Log 3162

D'

cr

DST No. 1

3068-3115 ft; 30.60-45.90
Hyd: 1502/1424
IFP: 34/87 15IP: 1027
FFP: 78/106 FSIP: 1627
IF: Fair blow, built to 8 1/2"
SI: Dead
FF: Wk blow, built to 3"

PSI: Dead
Rec. 200' fluid:
25' Free Oil (grav 26)
175' VSO CMW:
3% O, 87% W, 10% M
Chi: 36000 ppm

Mud Wt: 8.7
Visc: 55 WL: 8.0

Pipe strap 2.5-3 ft.
short to board
Survey: 10

DST No. 2

3140-3200 ft; 30.60-45.90
Hyd: 1540/1527
IFP: 25/93 15IP: 1147
FFP: 86/141 FSIP: 1128
IF: Fair, BOB in 14 min
SI: Blowback, built to 1 1/2"
FF: Fair, BOB in 16 min
PSI: Blowback, built to 1 1/4"
Rec. 316' fluid, 240 GIP
140' free oil
170' HOCM

(30% oil, 70% mud)

Mud Wt: 9.1

Arbutle

3450

E109 3450

Cx

3500

R TD 3509
L TD 3507

red clay, cor. prp. un. g. y. w.

LS, AA w/ maroon w/g NSO

SWSTS, A
DOL, wt. dns, tight, fgm NSO

DOL, AA w/ pr-f lts & vry ph. NSO

DOL, AA, tr. glauc, w/ g & pink NSO

DOL, AA, wt. tan NSO

DOL, AA w/ vpr vry ph NSO

"Arbutle top" (2) 3457A.