

Robert L. Milford

PETROLEUM GEOLOGIST

Wichita, Kansas

GEOLOGISTS' REPORT

DRILLING TIME AND SAMPLE LOG

OPERATOR **Murfin Drilling Company, Inc.**
 LEASE **Alexia Unit #1-12**
 LOC. SPOT **10'N & 50'E of C N2 S2 NW**

LOC. FOOTAGE **1,640' FNL 1,370' FWL**
 SEC. **12** TWP. **15S** R. **19W**
 COUNTY **Ellis** STATE **Kansas**
 API **15-051-26505-00-00**

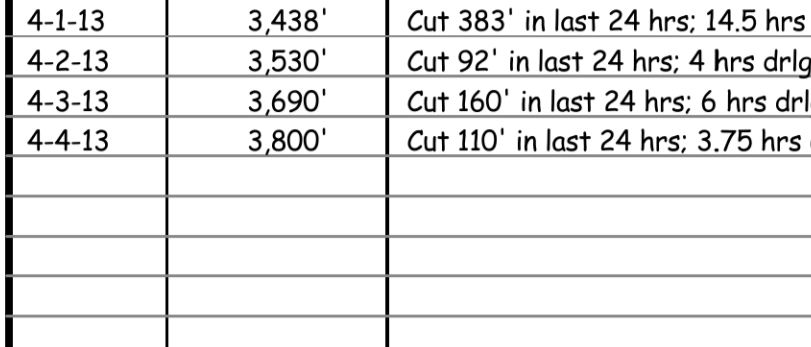
CONTRACTOR **Murfin Drilling Co., Inc.** REG. NO. **16**
 DRILLING STARTED **3-28-2013** COMPLETED **4-4-2013**
 MUD DISPLACED **2,639** MUD TYPE **Chemical**
 DRILLING TIME KEPT FROM **2,965'** TO **RTD**
 SAMPLES SAVED FROM **2,960'** TO **RTD**
 SAMPLES EXAMINED FROM **2,960'** TO **RTD**
 GEOLOGICAL SUPERVISION FROM **2,960'** TO **RTD**

FORMATION NAME	LOG TOP	DATUM	SAMPLE TOP	DATUM
Stone Corral	1,272'	+813	1,273'	+812
Base Stone Corral	1,320'	+765	1,321'	+764
Heebner	3,069'	-984	3,070'	-985
Toronto	3,330'	-1245	3,332'	-1247
Lansing	3,373'	-1288	3,375'	-1290
Stark	3,573'	-1488	3,574'	-1289
Arbuckle	3,617'	-1532	3,618'	-1533
Total Depth	3,799'	-1714	3,800'	-1715

ELEVATIONS
 KG **2,085'**
 CL **2,080'**

NEAREST BENCH MARK
CASING RECORD
 Conductor
 Surface **8.5/81' @ 208'**
 w/ 165 sacks cement
 Production none

ELECTRICAL SURVEYS:
 Pioneer Wireline
 Dual Induction Log
 Dual Compensated -
 Density Log
 Porosity Log
 Microresistivity Log
 Borehole Compensated -
 Sonic Log



DATE	7:00 AM DEPTH	REMARKS
3-28-13	0'	Spud @ 3:00 pm. Plug down @ 8:00 pm. Drilled out plug @ 4:00 am on 3-29-13
3-29-13	440'	Cut 440' in last 24 hrs. Dev.: 0.75° @ 2128'
3-30-13	2,225'	Cut 1,785' in last 24 hrs; 21 hrs drlg.
3-31-13	3,055'	Cut 830' in last 24 hrs; 21.75 hrs drlg. DST #1 @ 3438'
4-1-13	3,438'	Cut 383' in last 24 hrs; 14.5 hrs drlg. DST #2 @ 3460'
4-2-13	3,530'	Cut 92' in last 24 hrs; 4 hrs drlg. DST #3 @ 3600'
4-3-13	3,690'	Cut 160' in last 24 hrs; 6 hrs drlg. DST #4 @ 3710'. RTD 3800' @ 11:53 pm
4-4-13	3,800'	Cut 110' in last 24 hrs; 3.75 hrs drlg. P&A

Remarks

The electric log measurements correlate from 1' to 2' higher to the drilling measurements.

Formation tops and lithology on this report have been corrected to the electric log.

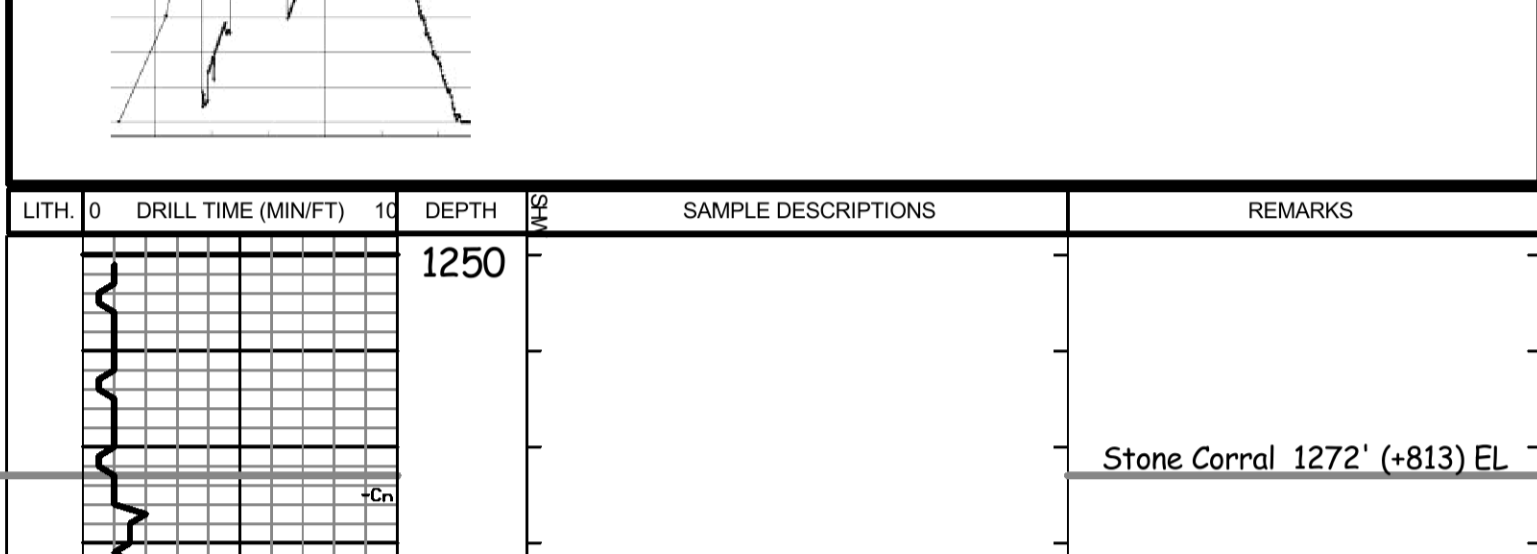
The drilling samples were deposited at the Kansas Geological Survey office in Wichita.

Respectfully submitted,

Robert L. Milford

Drill Stem Test Charts

Drill Stem Test by Trilobite Testing, Inc.



LITH.	DRILL TIME (MIN/FT)	DEPTH	SAMPLE DESCRIPTIONS	REMARKS
		1250		Stone Corral 1272' (+813) EL
		1300		B/Stone Corral 1320' (+765) EL
		1350		

		2950	LS: crm-brn, fxl, fos in prt, some sli shly, sub chky-prtly dns, pr por, NS Sh: lt-med gry, tr grn LS: A.A.	Mud displaced from 2639' to 2675' Call depth 2665' @ 7:24 pm on 3-30-13 Samples start 2960' @ 4:10 am on 3-31-13
		3000	LS: crm-tan, fxl, fos in prt, sub chky-prtly dns w/ some chky-vry chky, pr por, NS Sh: gry	Mud Co/Service Mud check @ 2979': 67 Vis 8.8 Wt, 7.2 WL, Chl 1,700 ppm, 1# LCM
		3050	LS: crm-brn, fxl, fos in prt, some blk mineralization, sub chky-prtly dns, pr por, NS LS: A.A., some sli shly, pr por, NS Sh: lt-med gry	
		3100	LS: tan-brn, fxl, fos in prt, sub chky-prtly dns, pr por, NS Sh: gry, some silty & sli calc	
		3150	LS: crm-brn, fxl, fos in prt, sub chky-prtly dns w/ some chky-vry chky, pr por, NS LS: A.A., some w/ blk mineralization, pr por, NS LS: A.A.	
		3200	LS: crm-tan, fxl, ool-fos in prt, vry chky-sub chky, some pin point-vry small ooc por, NS LS: crm-brn, fxl, fos in prt, sub chky-prtly dns, pr por, NS Sh: gry LS: crm-brn, fxl, fos in prt, sub chky-prtly dns w/ some chky-vry chky, pr por, NS LS: A.A., pr vis por, NS	
		3250	LS: wh-brn, fxl, fos-ool in prt, sli chty, vry chky-prtly dns, pr por, NS LS: wh-tan w/ some brn, fxl, fos in prt, sli chty (wh-brn), vry chky-prtly dns, pr por, NS Sh: blk carb & drk gry Sh: gry	
		3300	LS: wh-tan, fxl, sli fos, sub chky-prtly dns w/ some chky, pr por, NS LS: A.A. w/ incrs chky-vry chky, pr por, NS LS: crm-tan, fxl, sli fos, sli chty (tan), sub chky-prtly dns w/ some chky-vry chky, pr por, NS Sh: gry LS: crm-brn, fxl, sli fos, some blk mineralization, sub chky-prtly dns, pr por, NS Sh: blk carb LS: A.A.	
		3350	LS: wh-tan, fxl, fos in prt, sli chty (tan), sub chky-prtly dns w/ some chky-vry chky, pr por, NS LS: crm-brn, fxl, fos in prt, chky-prtly dns w/ some vry chky, pr fos por, tr brn-blk sptd-patchy stn, NSFO, no odor LS: A.A., w/ tr stn, NSFO, no odor	
		3400	Sh: blk carb Sh: gry	Heebner 3330' (-1245) EL
		3450	LS: wh-crm, fxl, fos in prt, sli chty (gry), sub chky-prtly dns w/ some chky, pr w/ tr fr fos por, vry scat lt brn-blk sub sat stn, some live stn, NSFO, no odor Sh: red-brn, gry, grn	Toronto 3350' (-1265) EL
		3500	LS: wh-tan, fxl, ool in prt, sub chky-prtly dns w/ some chky-vry chky, pr por, NS LS: wh-tan, fxl, ool in prt, sli chty, sub chky-prtly dns w/ some chky-vry chky, pr w/ tr fr-gd fos por, tr lt brn sptd-sub sat stn, some live stn, NSFO, no odor Sh: gry	Lansing 3373' (-1288) EL
		3550	LS: crm-tan, fxl, ool in prt, tr cht (wh), sub chky-prtly dns w/ some chky-vry chky, fr-gd ooc por, NS LS: crm-tan, fxl, sli ool-fos, sub chky-prtly dns w/ some chky, pr por, NS LS: A.A. w/ tr cht (wh-gry) & incrs chky-vry chky, pr por, NS Sh: med-drk gry	DST #1 3331'-3438' Tor-LKC 'D' zns IF: blow built to 2.25" ISI: no blow back FF: BOB in 25" FSI: no blow back Rec: 423' TOTAL FLUID: 45' Mud w/ oil spots (100% M) 126' WM (30% W, 70% M) 252' MW (90% W, 10% M) Chl ppm: 70,000 DST: 2,400 Mud IFP: 76-143#/30" ISIP: 550#/60" FFP: 190-253#/60" FSIP: 471#/90"
		3600	LS: wh-crm, fxl, ool in prt, vry chky-prtly dns, pr w/ tr fr-gd introl & moldic-vug por, scat lt brn sptd-sub sat w/ tr sat stn, S-FSFO, some w/ fnt odor on brk Sh: mostly gry, some red-brn & grn	DST #2 3436'-3460' LKC 'E'-'F' zns IF: blow built to 1.125" FF: no blow Rec: 5' Mud w/ oil spots (100% M) IFP: 9-11#/30" ISIP: 596#/60" FFP: 12-13#/30" FSIP: 565#/60" Pipe Strap @ 3460': Strap short 0.01'
		3650	LS: crm-tan, fxl, ool in prt, tr cht (wh), sub chky-prtly dns w/ some chky-vry chky, fr-gd ooc por, NS LS: crm-tan, fxl, sli ool-fos, sub chky-prtly dns w/ some chky, pr por, NS LS: A.A. w/ tr cht (wh-gry) & incrs chky-vry chky, pr por, NS Sh: med-drk gry	Mud Co/Service Mud check @ 3471': 56 Vis 9.1 Wt, 7.6 WL, Chl 2,500 ppm, 1# LCM
		3700	LS: crm-tan, fxl, tr ool, sli chty (crm-org, fresh), sub chky-prtly dns, pr por, NS Chty LS: crm, fxl, chty (crm-org, fresh-sli weath), sub chky-prtly dns w/ some chky, pr por, tr brn-blk sptd-sub sat dead stn, NSFO, no odor Sd: crm-gry, fn-med grain, sli calc, semi fri-brtl, pr vis por, scat brn-blk sub sat stn, NSFO, no floor, some w/ sli-fr cut, no odor, w/ Sh: red-brn Sd: A.A., incrs blk tarry-asph stn, NSFO, no odor, w/ some Chit: crm-org (may be cavings) Sh: red-brn (some soft & gummy), w/ gry & grn Dol: crm-lt gry, fn-crs xln, rhomb, tr pyr, prt dns, fr-gd intrxln & tr vug por, gd amnt lt-drk brn sptd-sub sat w/ some sat stn, SSFO (mostly pin point-small beads, some thick-hvy beads), no odor Dol: crm-lt gry, fn-crs xln, sli pyr, some sdy-sd studded (med-crs grains, submd), prtly dns, fr-gd intrxln-vug por, scat brn-blk mstly sptd w/ some sub sat stn, VSSFO (mostly pin point-small beads & some thick-hvy beads), no odor Dol: A.A., w/ stn, NSFO, no odor, intermixed w/ Sdy Dol-Dol. Sd: tan, fn-med xln, fn-med grain sd, some fr-gd por, NS	Arbuckle 3696' (-1611) EL trace amnt of Dol. in 3700' 60" circ. sml
		3750	Dol: crm-tan, fn-med w/ some crs xln, sdy in prt (fn-crs grain), prtly dns, pr-fr w/ some gd intrxln por, scat brn-blk sptd-sub sat stn, NSFO, no odor Dol: crm, fn-med w/ some crs xln, prtly dns, pr-fr w/ some gd intrxln por, scat brn-blk sptd-sub sat stn, NSFO, no odor Dol: crm-tan, fn-crs xln, some sdy (med-crs grains), prtly dns, fr-gd intrxln por, vry scat brn-blk mstly sptd stn, NSFO, no odor Dol: A.A.	Mud Co/Service Mud check @ 3800': 58 Vis 9.2 Wt, 8.0 WL, Chl 3,000 ppm, 2# LCM
		3800		R.T.D. 3800' (-1715) L.T.D. 3799' (-1714) Straight Hole Survey @ 3800': 0.875" Dev.