

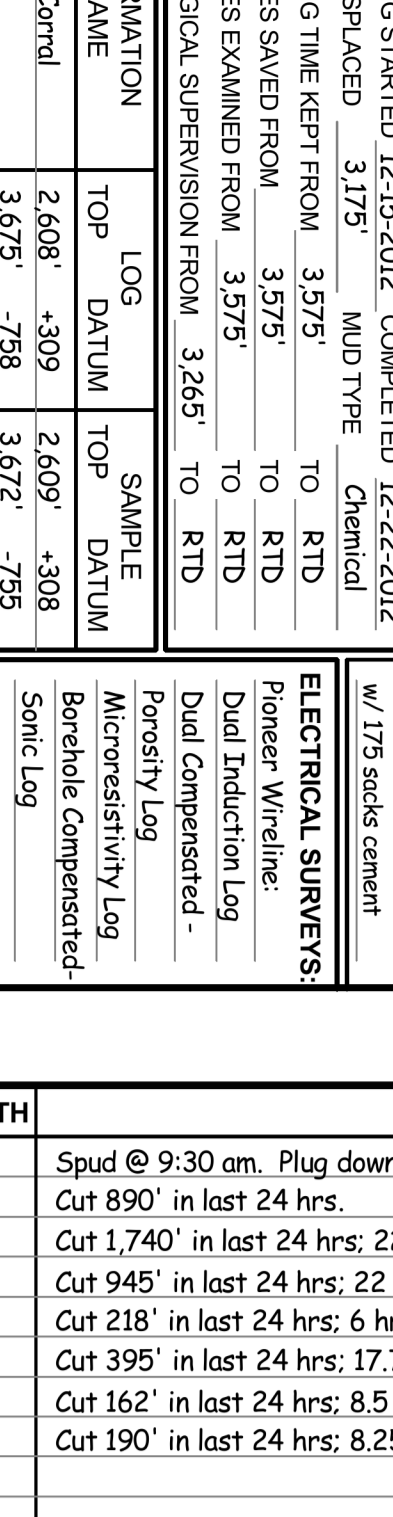
# Robert L. Milford

PETROLEUM GEOLOGIST  
Wichita, Kansas

## GEOLOGISTS REPORT

DRILLING TIME AND SAMPLE LOG

OPERATOR	Murfin Drilling Company, Inc.	ELEVATIONS	
LEASE	Ryan 'B' #1-19	KR	2,917'
LOC. SPOT	10'S & 160' W of NENE SW	CL	2,912'
LOC. FOOTAGE	2,300' FSL & 2,150' FWL	MEASUREMENTS	
SEC.	19 TWSP	RING	31W
COUNTY	Rawlins	STATE	Kansas
API	15-153-20914-00-00	CONTRACTOR	Murfin Drilling Co., Inc.
		DRILLING STARTED	12-22-2012
		MUD DISPLACED	3,175' COMPLETED
		DRILLING TIME FROM	3:57:55 TO 4:52:6
		SAMPLES SAVED FROM	3:57:55 TO RTD
		SAMPLES EXAMINED FROM	3:57:55 TO RTD
		DEOLOGICAL SUPERVISION FROM	3:25:55 TO RTD
FORMATION NAME	TOP	LOG DATUM	TOP
FORMATION NAME	LOG	SAMPLE DATUM	SAMPLE
Stone Corral	2,608'	+309	2,609'
Topoka	3,675'	-758	3,672'
Heebner	3,847'	-930	3,844'
Lansing	3,896'	-979	3,893'
Stark	4,074'	-1157	4,071'
B/KC	4,129'	-1212	4,126'
Pawnee	4,240'	-1323	4,238'
Cherokee	4,318'	-1401	4,316'
Mississippi	4,444'	-1527	4,442'
Total Depth	4,542'	-1625	4,540'



DATE	7:00 AM DEPTH	REMARKS
12-15-12	0'	Spud @ 9:30 am. Plug down @ 1:30 pm. Drilled out plug @ 9:30 pm. Dev.: 0.5° @ 217'
12-16-12	890'	Cut 890' in last 24 hrs.
12-17-12	2,630'	Cut 1,740' in last 24 hrs; 22 hrs drlg.
12-18-12	3,575'	Cut 945' in last 24 hrs; 22 hrs drlg. DST #1 @ 3793'
12-19-12	3,793'	Cut 218' in last 24 hrs; 6 hrs drlg.
12-20-12	4,188'	Cut 395' in last 24 hrs; 17.75 hrs drlg. DST #2 @ 4350'
12-21-12	4,350'	Cut 162' in last 24 hrs; 8.5 hrs drlg. RTD 4540' @ 6:45 pm
12-22-12	4,540'	Cut 190' in last 24 hrs; 8.25 hrs drlg. Ran production casing

Remarks

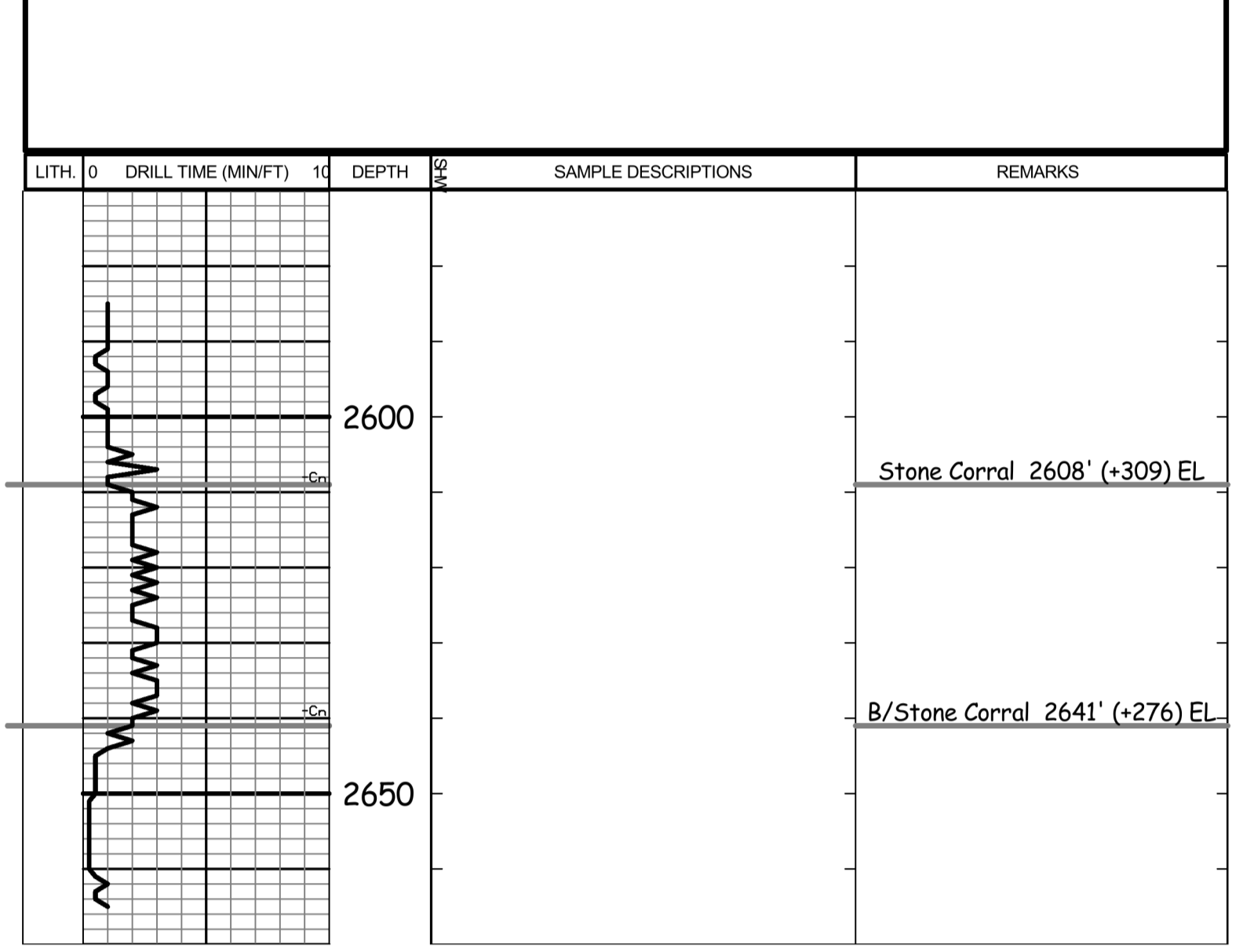
The electric log measurements correlate from 1' higher to 3' lower to the drilling measurements.

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



LITH	DRILL TIME (MIN/FT)	DEPTH	SAMPLE DESCRIPTIONS	REMARKS
		2600		Stone Corral 2608' (+309) EL
		2650		B/Stone Corral 2641' (+276) EL
		3550		Mud displaced from 3175' to 3206'
		3600		Morgan Mud check @ 3588': 60 Vis, 8.7 Wt, 5.2 WL, 1,400 ppm Chl, 5# LCM
		3650		drill time not marked on geolograph after chart change
		3700		Topeka 3675' (-758) EL
		3750		DST #1 3768'-3793' Lecompton IF: BOB in 13" ISI: 1.75" blow back FF: BOB in 15" FSI: 6" blow back Rec: 465' TOTAL FLUID: 37' 6O (20% G, 80% O) 186' 6O (45% G, 55% O) 124' 6O/CWO (20%G, 45%O, 20%W, 15%M) 60' 6O/WCM (5%G, 20%O, 25%W, 50%M) 60' 6O/MCW (5%G, 20%O, 60%W, 20%M) Oil Gravity 29° API Chl ppm: 50,000 DST: 1,400 Mud IFF: 22-115#/30" ISTD: 1167#/60" FFP: 126-206#/60" FSDP: 1120#/90"
		3800		Ran 25 stand short trip prior to DST #1 Pipe Strap @ 3793': Strap short 0.11" Straight Hole Survey @ 3793': 0.25° Dev.
		3850		After DST #1, samples carried an increase of vol shales to TD.
		3900		Morgan Mud check @ 3867': 52 Vis, 9.2 Wt, 5.6 WL, 2,800 ppm Chl, 4# LCM
		3950		Toronto 3880' (-963) EL
		4000		Lansing 3896' (-979) EL
		4050		Start of area Blizzard Warning: snow to 6" w/ winds 25-40 mph common and gust over 55 mph. Low temperature 4° (not wind chill)
		4100		Stark 4074' (-1157) EL
		4150		B/KC 4129' (-1212) EL
		4200		
		4250		Morgan Mud check @ 4221': 55 Vis, 9.2 Wt, 6.0 WL, 2,400 ppm Chl, 4# LCM
		4300		Pawnee 4240' (-1323) EL
		4350		DST #2 4254'-4350' Lwr Paw-Verdigris IF: blow built to 8" ISI: no blow back FF: no blow FSI: no blow back Rec: 206' TOTAL FLUID 86' 6O (5% G, 95% O) 62' 6O/CO (5% G, 60% O, 35% M) 58' 6O/CM (5% G, 40% O, 55% M) IFF: 20-70#/30" ISTD: 299#/60" FFP: 81-93#/30" FSDP: 284#/60"
		4400		Cherokee 4318' (-1401) EL
		4450		Ran 15 stand short trip prior to DST #2 Morgan Mud check @ 4350': 58 Vis, 9.3 Wt, 6.0 WL, 2,400 ppm Chl, 4# LCM
		4500		Miss. 4444' (-1527) EL
		4550		Ran 8 stand short trip @ TD, prior to running electric logs
				R.T.D. 4540' (-1623) L.T.D. 4542' (-1625) Straight Hole Survey @ 4540': 1° Dev.