

# Robert L. Milford

PETROLEUM GEOLOGIST  
Wichita, Kansas

## GEOLOGISTS' REPORT

DRILLING TIME AND SAMPLE LOGS

OPERATOR: **Murfin Drilling Company, Inc.**  
LEASE: **Burfi #1-29**  
LOC SPOT: **15 S & 140 W of C N2 SE NE**

LOC FOOTAGE: **1665' FNL 800' FEL**  
SEC: **29** TWP: **1S** RNG: **38W**

COUNTY: **Cheyenne** STATE: **Kansas**

APR: **15-023 21409-00-00**

CONTRACTOR: **Murfin Drilling Co., Inc.** FIG. NO.: **7**  
DRILLING STARTED: **9.5.2014** COMPLETED: **9.16.2014**  
MUD DISCHARGED: **3.2121** MUD TYPE: **General**

DRILLING TIME (MIN): **3.520** TO: **RID**  
SAMPLES SAVED FROM: **3.520** TO: **RID**  
SAMPLES EXAMINED FROM: **3.520** TO: **RID**  
GEOLOGICAL SUPERVISION FROM: **3.512** TO: **RID**

WELLBORN NUMBER: **29**  
CASINO RECORD: **0**  
CONDUIT: **8.5/8" @ 19'**  
Surface: **8.5/8" @ 19'**  
w/ 225 sacks cement  
Production: **5.1/2" @ 4933'**  
w/ 225 sacks cement

FORMATION NAME: **TOP** LOG DATE/TIME: **TOP** DATE/TIME: **TOP**

STONE CONTROL: **3168' +48** **3165' -398**  
Neva: **3165' -999** **3164' -398**  
Topkay: **3968' -752** **3966' -750**  
Oread: **4094' -878** **4092' -876**  
Loring: **4164' -948** **4162' -946**  
B/KC: **4443' -1227** **4441' -1225**  
Pawnee: **4571' -1355** **4568' -1352**  
Cherokee: **4565' -1440** **4563' -1437**

MISSOURI DEPT. OF GEOLOGY: **5.000' -1786** **5.000' -1782**

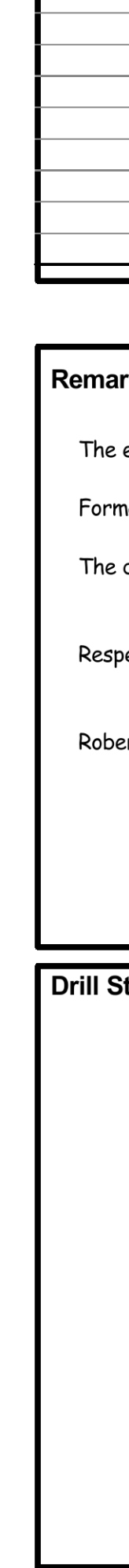
FORMATION NAME: **TOP** LOG DATE/TIME: **TOP** DATE/TIME: **TOP**

STONE CONTROL: **3168' +48** **3165' -398**  
Neva: **3165' -999** **3164' -398**  
Topkay: **3968' -752** **3966' -750**  
Oread: **4094' -878** **4092' -876**  
Loring: **4164' -948** **4162' -946**  
B/KC: **4443' -1227** **4441' -1225**  
Pawnee: **4571' -1355** **4568' -1352**  
Cherokee: **4565' -1440** **4563' -1437**

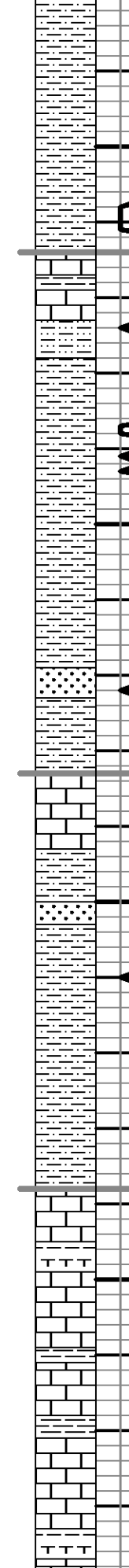
MISSOURI DEPT. OF GEOLOGY: **5.000' -1786** **5.000' -1782**

FORMATION NAME: **TOP** LOG DATE/TIME: **TOP** DATE/TIME: **TOP**

STONE CONTROL: **3168' +48** **3165' -398**  
Neva: **3165' -999** **3164' -398**  
Topkay: **3968' -752** **3966' -750**  
Oread: **4094' -878** **4092' -876**  
Loring: **4164' -948** **4162' -946**  
B/KC: **4443' -1227** **4441' -1225**  
Pawnee: **4571' -1355** **4568' -1352**  
Cherokee: **4565' -1440** **4563' -1437**



DATE	7:00 AM DEPTH	REMARKS
9-5-14	0'	Spud @ 5:30 pm. Plug down @ 11:30 pm. Dev: 0.5' @ 219'
9-6-14	219'	Cut 219' in last 24 hrs. Drilled out plug @ 7:30 am w/ PDC bit
9-7-14	2,530'	Cut 2,311' in last 24 hrs; 22.5 hrs drlg. Bit trip @ 3512' (run button bit)
9-8-14	3,620'	Cut 1,090' in last 24 hrs; 16.75 hrs drlg.
9-9-14	4,020'	Cut 400' in last 24 hrs; 2.2 hrs drlg. DST #1 @ 4120'
9-10-14	4,120'	Cut 100' in last 24 hrs; 6.5 hrs drlg. DST #2 @ 4209'
9-11-14	4,209'	Cut 89' in last 24 hrs; 5.5 hrs drlg. DST #3 @ 4240'
9-12-14	4,267'	Cut 58' in last 24 hrs; 3.75 hrs drlg. DST #4 @ 4345'
9-13-14	4,345'	Cut 78' in last 24 hrs; 5 hrs drlg. DST #5 @ 4448'
9-14-15	4,465'	Cut 120' in last 24 hrs; 7.5 hrs drlg. DST #6 @ 4596'
9-15-14	4,596'	Cut 131' in last 24 hrs; 7.75 hrs drlg. RTD 5000' @ 6:40 am on 9-16-14
9-16-14	5,000'	Cut 404' in last 24 hrs; 19 hrs drlg. Ran production casing.



Remarks

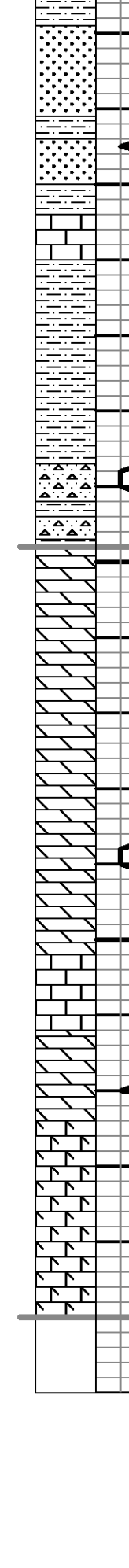
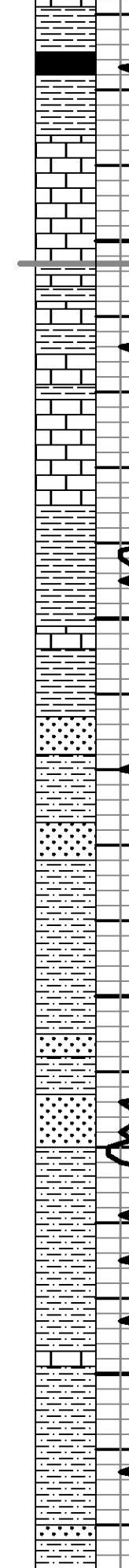
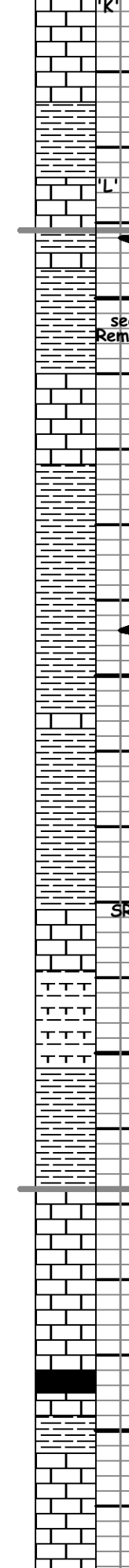
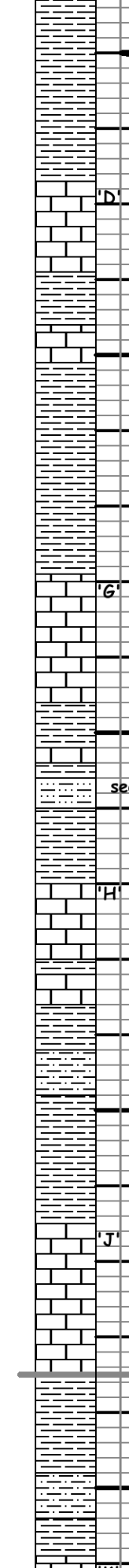
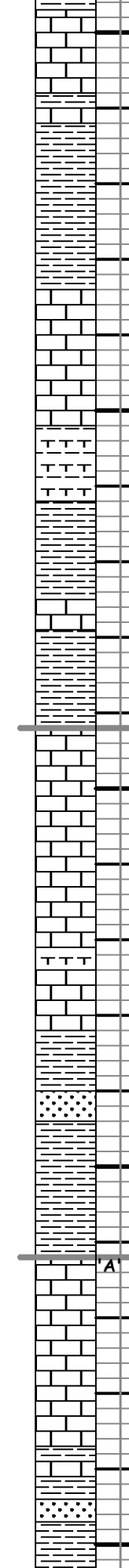
The electric log measurements correlate from 1' to 3' lower to the drilling measurements.

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



Stone Corral 3168' (+48) EL

B/Stone Corral 3203' (+13) EL

Neva 3615' (-399) EL

Red Eagle 3684' (-468) EL

Foraker 3739' (-523) EL

Topeka 3968' (-752) EL

Oread 4094' (-878) EL

Lansing 4164' (-948) EL

Stark 4387' (-1171) EL

B/KC 4443' (-1227) EL

Pawnee 4571' (-1355) EL

Cherokee 4656' (-1440) EL

Miss. 4900' (-1784) EL

R.T.D. 5000' (-1784)

L.T.D. 5000' (-1786)

Straight Hole Survey @ 5000': 1' Dev.