

Robert L. Milford

PETROLEUM GEOLOGIST

Wichita, Kansas

GEOLOGISTS' REPORT

DRILLING TIME AND SAMPLE LOG

OPERATOR **Murfin Drilling Company, Inc.**

LEASE **Kopriva #1-14**

LOC SPOT **C E2 NW**

LOC FOOTAGE **1,320' FNL 1,980' FWL**

SEC. **14** TWP. **25** R. **35W**

COUNTY **Rauville** STATE **Kansas**

API **15-153-2191-00-00**

CONTRACTOR **Murfin Drilling Co., Inc.** REG NO. **24**

DRILLING STARTED **6/2/07** COMPLETED **6/18/07**

MUD DISPLACED **3,595** MUD TYPE **Chemical**

DRILLING TIME KEPT FROM **3/51** TO **RTD**

SAMPLES SAVED FROM **3,800'** TO **RTD**

SAMPLES EXAMINED FROM **3,800'** TO **RTD**

GEOLOGICAL SUPERVISION FROM **3,800'** TO **RTD**

CONDUCTOR **8.5/8" @ 253'**

Production **5.1/21" @ 4847'**

Production **4/50 sec/cement**

ELECTRICAL SURVES:

Power Wires: **to RTD**

Diagn Induction Log **to RTD**

Diagn Compensated **to RTD**

MEASUREMENTS FROM **to RTD**

CASINO RECORD

ELEVATIONS

KB **3,201'**

GL **3,196'**

FORMATIONS

NAME TOP DATUM TOP DATE TIME

Stone Corral 3,043' +158' no pick on D.T.

Opreda 4,032' -720' 3,923' -722'

Loring 4,122' -921' 4,034' -833'

Stark 4,338' -1137' 4,124' -923'

Mound City 4,385' -1184' 4,339' -1138'

Fort Scott 4,506' -1305' 4,386' -1185'

Oakley 4,584' -1383' 4,507' -1306'

Mississippian 4,766' -1565' 4,585' -1384'

Total Depth 4,855' -1654'

Parosity Log

Microresistivity Log

Borehole Compensated

Some Log

14

DATE 7:00 AM DEPTH REMARKS

6-9-17 0' Spud @ 1:30 pm. Plug down @ 8:00 pm. Drilled out plug @ 4:00 am on 6-10-17 w/ PDC bit

6-10-17 536' Cut 536' in last 24 hrs.

6-11-17 2,805' Cut 2,269' in last 24 hrs; 21.25 hrs drlg. Bit trip @ 3751' (ran button bit)

6-12-17 3,795' Cut 990' in last 24 hrs; 13.5 hrs drlg. DST #1 @ 4057'

6-13-17 4,057' Cut 262' in last 24 hrs; 11.25 hrs drlg. DST #2 @ 4148'

6-14-17 4,148' Cut 91' in last 24 hrs; 5.75 hrs drlg. DST #3 @ 4200'

6-15-17 4,244' Cut 96' in last 24 hrs; 7.5 hrs drlg. DST #4 @ 4244' DST #5 @ 4292'

6-16-17 4,292' Cut 48' in last 24 hrs; 3.75 hrs drlg. DST #6 @ 4340'

6-17-17 4,340' Cut 48' in last 24 hrs; 4 hrs drlg.

6-18-17 4,658' Cut 318' in last 24 hrs; 21 hrs drlg. RTD 4855' @ 6:13 pm

6-19-17 4,855' Cut 197' in last 24 hrs; 10.75 hrs drlg. Ran production casing.

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.**

DST #1

DST #2

DST #3

DST #4

DST #5

DST #6

LITH. 0 DRILL TIME (MIN/FT) 10 DEPTH 3000 SAMPLE DESCRIPTIONS REMARKS

Stone Corral 3043' (+158) EL

B/Stone Corral 3078' (+123) EL

3750

Call depth 3500' @ 2:39 pm on 6-11-17

IF: blow built to 3.5" ISI: no blow back

FF: blow built to 9.5" FSI: 0.5' blow back

Rec: 140' GIP & 280' TOTAL FLUID:

60' Oil (100% O)

100' GOCM (10% G, 40% O, 50% M)

120' GOCM (10% G, 30% O, 60% M)

Oil Gravity 21° API

IFF: 73-111#/30' ISIP: 1157#/60'

FFP: 15-16#/30' ISIP: 1129#/90'

Note: slid 10' after tool opened. Mud in annulus dropped below 6' & out of sight. Bled off surge.

Lansing 4122' (-921) EL

3800

LS: crm-gr, fos in prt, sub chky-prtly dns, pr por, NS

Sh: red-brn (some soft & gummy), some gry & grn

Samples start 3800' @ 7:05 am on 6-12-17

3850

LS: crm-gr w/ some wh, fos-ool in prt, sub chky-prtly dns, pr por, tr blk tarry-asp sptd stn, NSF0, no odor

Sh: red-brn (some soft & gummy) w/ some gry (some soft & gummy)

Sh: red-brn (some soft & gummy), some gry

LS: crm-gr, some shly (red-brn, mottled), sub chky-prtly dns, pr por, NS

Sh: chky-prtly dns, pr por, NS

Stotler 3845' (-644) EL

LS: crm-gr, fos-ool in prt, sub chky-prtly dns, pr w/ tr fr intrprtial por, vry scat blk thick-tarry sptd-sub sat stn, few pcs w/ VSSFO (thick-hvy oil), no odor

LS: crm-gr, fos-ool in prt, sub chky-prtly dns, pr por, tr blk tarry sptd stn, NSF0, no odor

LS: A.A. w/ tr blk thick-tarry sptd-sub sat stn, 1 pc w/ VSSFO, no odor

Morgan Mud check @ 3870': 76 Vis, 8.6 Wt, 6.8 WL, 800 ppm Chl, 4# LCM

3900

LS: crm-gr, fos in prt, sub chky-prtly dns w/ some chky, pr por, vry scat blk thick-tarry sptd-sub sat stn, NSF0, no odor

Sh: red-brn

Topeka 3921' (-720) EL

LS: crm-lt gry, fos in prt, sub chky-prtly dns w/ some chky, pr por, tr blk tarry-asp sptd stn, NSF0, no odor

Sh: red-brn (some silty), some gry-grn

LS: wh-lt gry, fos-ool in prt, some shly (red-brn, mottled), sub chky-prtly dns w/ some chky, pr por, vry scat blk tarry-asp sptd-sub sat stn, NSF0, no odor

LS: wh-crm, fos in prt, sub chky-prtly dns w/ some chky-vry chky, pr por, tr blk tarry-asp sptd stn, NSF0, no odor

Sh: red-brn (some sdy), some gry & grn

Sd: crm-lt gry, fn-vry fn grain, calc, semi fri, pr vis por, vry scat blk asphalt speckled stn, NSF0, no odor, w/ small amt of Sdy Sh: lt grn

Sh: red-brn (some sdy), some gry & grn

3950

LS: crm-tan, sli fos, sub chky-prtly dns w/ some chky, pr por, tr blk tarry-asp sptd stn, NSF0, no odor

LS: gry-tan, sli shly & Calc Sh: lt gry-lt maroon

A.A. w/ some Calc Sh

Sh: gry w/ some red-brn

DST #1

DST #2

DST #3

DST #4

DST #5

DST #6

DST #7

DST #8

DST #9

DST #10

DST #11

DST #12

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