

# Robert D. Hendrix

Petroleum Geologist

## GEOLOGISTS REPORT DRILLING TIME AND SAMPLE LOG

COMPANY **Murfin Drilling Company Inc.**

LEASE **Burk Trust A #4-23**

FIELD **East Fork**

LOCATION **23107mi & 1650fw1**

SEC **23** TWP **1S** RGE **36W**

COUNTY **Rawlins** STATE **Kansas**

CONTRACTOR **Murfin Drilling Co. Inc. Rig #2**

SPUD **5/16/2014** COMP **5/24/2014**

RTD **4:58PM** LTD **4:57PM**

MUD UP **3:40PM** TYPE MUD **Chemical**

SAMPLES SAVED FROM **3560'** TO **TD**

DRILLING TIME KEPT FROM **3:56PM** TO **TD**

SAMPLES EXAMINED FROM **3560'** TO **TD**

GEOLOGICAL SUPERVISION FROM **3560'**

GEOLOGIST ON WELL **Robert D. Hendrix**

PROBES: Induction, Micro, Sonic

PROBES: Energy, Services

ELEVATIONS **KB-3276'**

DF **3265'**

GL **3265'**

Measurements Are All From **Kelly Bushing**

CASING

CONDUCTOR

SURFACE **8:88" @ 225'**

PRODUCTION **5 1/2" @ 4576'**

ELECTRICAL SURVEYS

FORMATION TOPS

ANhydrite

Neva

Foraker

Topeka

Oread

Lansing

Stark Shale

BKC

RTD

AP# 15-153-21013

REMARKS:

### LEGEND

	Anhydrite
	Sandstone
	Limestone
	Shale
	Carb Sh
	Cherty LS
	Chert
	Dolomite

DEPTH	LITHOLOGY	SAMPLE DESCRIPTION	REMARKS
3150			<b>Anhydrite 3180 (+96)</b>
3200			<b>Base Anhydrite 3218 (+58)</b>
3230			Geologist on location 3502' at 12:00 pm 5/18/2014
3550		Shale: red, brown, some gray, silty, sl sandy	
3600		Shale: red, sandy	
3650		Shale: red, gray, blocky, silty	
3700		Shale: red, brown, some gray, silty, sl sandy	
3750		Limestone: tan to white, f-mxn, sl chalky, sl oolitic, fossiliferous, no vis por, ns	<b>Neva 3667 (-391)</b>
3800		Shale: red, gray, blocky, silty	
3850		Shale: red, brown, gray, silty, sandy	
3900		Sandstone: white to gray, vf gr, md, well srt, calcareous cmnt, friable, no vis por, ns	<b>Red Eagle 3727 (-451)</b>
3950		Limestone: white to tan, f-mxn, chalky, sl oolitic, fossiliferous, no vis por	
4000		Limestone: lt gray to tan, fxn, fossiliferous, no vis por	
4050		Shale: red, brown, gray, silty	
4100		Limestone: white, f-mxn, sl chalky, fossiliferous, sl interxn por, 80% sample fr dark spotty flaky dead stain, nfo, no odor	<b>Foraker 3776 (-500)</b>
4150		Limestone: white to lt brown, f-mxn, chalky, fossiliferous, no vis por	
4200		Limestone: tan to brown, fxn, dense, no vis por	
4250		Shale: gray, brown, silty	
4300		Dolomite: tan, fxn, sl chalky, granular, pr pp por, ns	8:00am, 5/19/2014 wt 9.1, vis. 62, lcm 12# Morgan Mud, Dave Lines
4350		Shale: red, gray, silty, sandy	
4400		Limestone: tan to white, fxn, chalky, sl oolitic, fossiliferous, no vis por	
4450		Shale: gray, brown, red, silty, blocky in part	
4500		Limestone: tan (red stained), fxn, sl chalky, granular, no vis por, ns	
4550		Shale: red, gray, black	
4600		Limestone: tan to white, f-mxn, sl chalky, v-fossiliferous, no vis por	
4650		Shale: red, gray, green, silty	
4700		Limestone: tan to gray to white, fxn, sl chalky, sl fossiliferous, no vis por, ns	
4750		Shale: red, gray, silty	
4800		Limestone: tan to white, mxn, oolitic in part, v-fossiliferous, no vis por, ns	
4850		Shale: red, gray, silty	
4900		Limestone: tan to white, f-mxn, oolitic, v-fossiliferous, no vis por, ns	
4950		Shale: red, gray, black, silty	
5000		Shale: red, gray, silty	
5050		Limestone: tan to white, f-mxn, oolitic, v-fossiliferous, no vis por, ns	<b>Topeka 3995 (-719)</b>
5100		Limestone: tan to white, f-mxn, oolitic, v-fossiliferous with abundant calcite replacement with several large pieces of calcite float, no vis por	
5150		Limestone: white to tan red stained, f-mxn, sl chalky, v-fossiliferous, no vis por, ns	
5200		Limestone: white, fxn, dense, sl fossiliferous, no vis por, ns	
5250		Shale: red, brown, v-sandy, silty	
5300		Shale: gray, dark gray, red (sandy)	
5350		Limestone: white, f-mxn, oolitic, fossiliferous, no vis por, ns	
5400		Shale: purple, brown, gray, red, silty	
5450		Shale: red, gray, silty	
5500		Dolomite: white to tan, f-mxn, granular, pr vug por, ns	<b>Oread 4106 (-830)</b>
5550		Dolomite W Limestone: tan to white, f-mxn, sl oolitic, fossiliferous, pr interxn por, 3 pieces w dead flaky oil stain, nfo, no odor	8:00am, 5/20/2014 wt 9.0, vis. 69, lcm 7# Morgan Mud, Dave Lines
5600		Limestone: gray, fxn, dense, no vis por	
5650		Shale: dark gray, gray, silty	
5700		Limestone: tan to white, fxn, silty, chalky, soft, no vis por	
5750		Shale: gray, red, silty	
5800		Shale: red, gray to dark gray, green, silty	
5850		Limestone: tan to lt gray, fxn, sl chalky, dense, no vis por, ns	<b>Lansing 4208 (-932)</b>
5900		Shale: gray, red, silty	
5950		Sandstone: gray, v-f gr, md, well srt, hard, calcareous, argillaceous, no vis por, ns	<b>DST #1</b> 4226-4280 30-60-60-90 1st open: blow built to 9 1/2" 1st shut in: wk bb built to 1 1/4" 2nd open: blow built to 11" 2nd shut in: wk kb, died off Rec: 20' slg&mco 2/6/92 25' slg&mco 2/35/63 118' slg&wcm 3/7/21/69 178' slg&wcm 3/5/36/56 hydro: 2210-2087 psi lf: 25-95 psi ff: 105-147 psi sip: 412-400 psi bht: 139°F gravity: 24°api
6000		Shale: red, gray, muddy, silty	
6050		Shale: red, brown, gray, silty, sandy	
6100		Limestone: tan to white, fxn, sl pyritic, fossiliferous, pr interxn por, 10% sample dark spotty to sat stain, slsfo, faint odor	<b>DST #2</b> 4294-4340 30-60-60-90 1st open: blow built to 4 1/2" 2nd open: blow built to 6" no returns Rec: 45' slg&mco 4/5/91 80' slg&ocm 8/35/67 hydro: 2224-2064 psi lf: 27-53 psi ff: 55-68 psi sip: 282-238 psi bht: 137°F gravity: 31.6°api
6150		Limestone: white, fxn, chalky, sl oolitic, fossiliferous, no vis por	
6200		Limestone: white, fxn, chalky, sl oolitic, fossiliferous, no vis por	
6250		Shale: red, gray, silty, sl sandy	
6300		Limestone: tan to gray, fxn, chalky, pr vug por, 3 pieces dark spotty stain, nfo, no odor	8:00am, 5/21/2014 wt 9.3, vis. 62, lcm 10# Morgan Mud, Dave Lines
6350		Shale: gray, dark gray, red	
6400		Limestone: white to tan, f-mxn, sl chalky, oolitic in part, fossiliferous, pr pp to vug por, 10% sample dark sat stain, slsfo, faint odor	<b>DST #3</b> 4380-4430 30-60-60-90 1st open: blow built to 9" 2nd open: blow began at 8 min blow built to 8" no returns Rec: 126' mw-w-trace oil 40/60 235' mcw-w-trace oil 17/63 hydro: 2314-2146 psi lf: 105-123 psi ff: 122-185 psi sip: 302-299 psi bht: 145°F chlorides: 20,000 ppm
6450		Limestone: tan to white to gray, fxn, sl chalky, mostly dense, no vis por, few pieces of show from above	
6500		Shale: gray, red, green, silty	
6550		Limestone: tan to brown, fxn, no vis por, 2 pieces dark spotty stain, nfo, no odor	8:00am, 5/22/2014
6600		Shale: gray, green, red, pyritic	
6650		Limestone: tan to white, f-mxn, oolitic in part, fossiliferous, pr interxn por, ns	
6700		Shale: gray, green, red	
6750		Limestone: tan to gray, fxn, sl chalky, sl fossiliferous, no vis por	
6800		Shale: red, gray, silty	
6850		Limestone: white to tan, f-mxn, sl chalky, oolitic in part, fossiliferous, pr pp to vug por, 5% sample dark spotty to sat stain, slsfo, faint odor	<b>Stark Shale 4426 (-1150)</b>
6900		Shale: gray, black	
6950		Shale: red, gray, brown silty	
7000		Shale: red, sl gray, silty	
7050		Limestone: white to lt gray, fxn, granular in part, fossiliferous, no vis por	
7100		Shale: red, sl gray, silty	
7150		Limestone: tan to gray, fxn, fossiliferous, no vis por	
7200		Shale: red, gray, green, silty	
7250		Limestone: white, f-mxn, sl chalky, fossiliferous, pr interxn por, ns	8:00am, 5/23/2014
7300		Shale: gray, red silty	
7350		Limestone: tan to lt gray, fxn, chalky, sl fossiliferous, soft, no vis por, ns	
7400		Shale: gray, red silty	
7450		Sandstone: clear white, lt, fn-md grn, sub, md, mod sorted, pr intergranular por, ns	
7500		Shale: gray, red brown, yellow, sandy, silty	
7550		Limestone: white to tan, f-mxn, sl cherty, oolitic in part, fossiliferous, no vis por, ns	
7600		Shale: gray, silty	
7650		Limestone: white to gray, fxn, dense, silty, sl fossiliferous, no vis por, ns	<b>RTD 4580 (-1304)</b>
7700			Geologist off location at 2:20pm, 5/24/2014