

Robert D. Hendrix

Petroleum Geologist

GEOLOGIST'S REPORT DRILLING TIME AND SAMPLE LOG

COMPANY **Murfin Drilling Company Inc**

LEASE **Carolyn B # 1 - 19**

FIELD **Wildcat**

LOCATION **3307 fsl & 405 fwl**

SEC **19** TWP **1S** RGE **36W**

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

CONTRACTOR **Murfin Drilling Co. Inc. Rig #3**

SPUD **7/10/2017** COMP **7/20/2017**

RTD **4820'** LTD **4822'**

MUD UP **3406'** TYPE MUD **Chemical**

SAMPLES SAVED FROM **3590'** TO **TD**

DRILLING TIME KEPT FROM **3590'** TO **TD**

SAMPLES EXAMINED FROM **3590'** TO **TD**

GEOLOGICAL SUPERVISION FROM **3469'**

GEOLOGIST ON WELL **Robert D. Hendrix**

FORMATION TOPS

ELECTRIC LOG

SAMPLE

Antiychrite

Neva

Foraker

Oread

Lansing

Mound City

ELEVATIONS

KB 3326'

DF _____

GL 3321'

Measurements Are All From **Kelly Bushing**

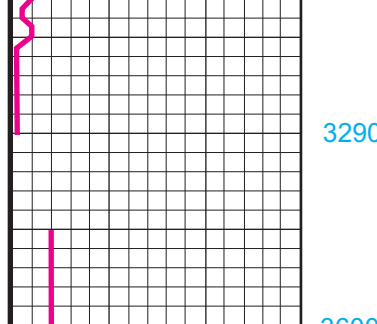
CASING

CONDUIT/RE _____

Surface **33-38'** at **226'**

Production **5 1/2"** @ **4813'**

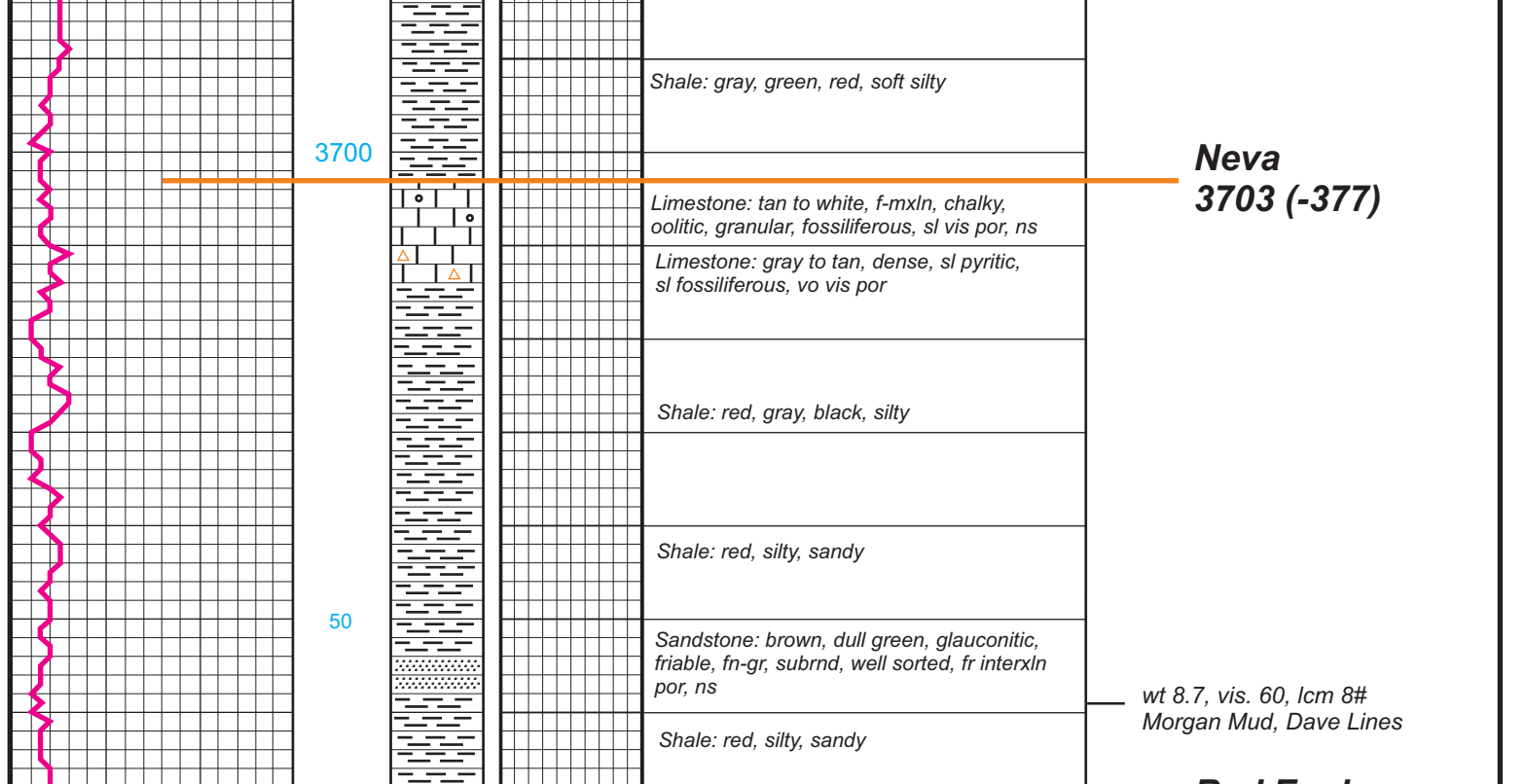
FORMATION TOPS	ELECTRIC LOG	SAMPLE
Antiychrite	3230 (+96)	3228 (+98)
Neva	3704 (-176)	3703 (-177)
Foraker	3820 (-494)	3815 (-489)
Oread	4041 (-715)	4049 (-723)
Lansing	4176 (-850)	4172 (-846)
Mound City	4260 (-934)	4256 (-930)
Oakley	4532 (-1206)	4528 (-1202)
	4739 (-1413)	4737 (-1411)



REMARKS:

AP# 15-153-21194

LEGEND



DEPTH	LITHOLOGY	SAMPLE DESCRIPTION	REMARKS
3200			Anhydrite 3228 (+98)
50			Base Anhydrite 3264 (+62)
3290			Geologist on location 3469' at 11:14 pm 7/13/2017 Bit Trip at 3450'
3600		Shale: gray, green, red, soft silty	
50		Shale: red, gray sandy	8:00am, 7/14/2017
3700		Shale: red, silty, sandy	
50		Shale: gray, green, red, soft silty	
3700		Limestone: tan to white, f-mxn, chaly, oolitic, granular, fossiliferous, sl vis por, ns Limestone: gray to tan, dense, sl pyritic, sl fossiliferous, vo vis por	Neva 3703 (-377)
50		Shale: red, gray, black, silty	
50		Shale: red, silty, sandy	
50		Sandstone: brown, dull green, glauconitic, friable, fr-gr, submd, well sorted, fr interxn por, ns Shale: red, silty, sandy	wt 8.7, vis. 60, lcm 8# Morgan Mud, Dave Lines
3800		Limestone: tan, gray, brown, f-xn, chaly, cherty, granular in part, fossiliferous, no vis por	Red Eagle 3771 (-445)
50		Shale: gray, soft, muddy	
50		Shale: gray, silty, sandy	
3800		Limestone: tan to gray, f-mxn, chaly, cherty, oolitic in part, fossiliferous, 3% sample fr interxn to foss por, dark spotty to sat stain, prsfo, no odor	
50		Limestone: gray, f-mxn, v-fossiliferous, 1% no vis por, pr dark sat stain, nfo, no odor	
50		Shale: gray, black, blocky, silty	
50		Limestone: lt. gray, f-xn, fossiliferous, granular, no vis por	
50		Shale: gray, black, blocky	
50		Dolomite: tan, f-xn, granular, sl fossiliferous, pr interxn por	
50		Shale: gray, green, red, silty	
50		Limestone: tan to brown, f-mxn, fossiliferous, fr pp to sl vug por, ns	
50		Shale: gray, green, red, black, silty	8:00am, 7/15/2017
50		Limestone: tan, f-xn, chaly, sl cherty, fossiliferous, no vis por	
50		Shale: red, gray/green, black, silty, sandy	
50		Limestone: white, f-xn, chaly, fossiliferous, no vis por	
50		Shale: red, gray, green, silty	wt 9.0, vis. 69, lcm 7# Morgan Mud, Dave Lines
50		Limestone: tan to white, f-xn, sl chaly, sl cherty, fossiliferous, no vis por	
50		Limestone: white to lt gray, mxn, sl chaly, v-fossiliferous, 10% sample fr pp to vug por, abundant amount of gilsonite in all porosity, nfo, no odor	Stotler 3970 (-644)
50		Shale: gray, green, red, silty	
50		Limestone: tan to white, f-xn, sl chaly, fossiliferous, no vis por	
50		Shale: red, gray, green, black, silty, sandy	
50		Limestone: white, f-xn, chaly, dense, sl fossiliferous, no vis por	
50		Shale: purple, red, gray, blocky, silty	
50		Shale: red, gray, green, biotitic, silty	
50		Limestone: white, f-xn, chaly, dense, sl fossiliferous, no vis por	
50		Shale: purple, red, gray, silty	
50		Limestone: white to tan, f-xn, chaly, oolitic in part, fossiliferous, no vis por	
50		Limestone: white to lt gray, mxn, fossiliferous, abundant calcite replacement, 1% sample sl interxn por, black spotty stain, slsfo on break, no odor	
50		Limestone: white, f-mxn, chaly, fossiliferous, abundant calcite replacement, no vis por	
50		Shale: purple, red, gray, blocky, silty	
50		Shale: red, gray, green, biotitic, silty	
50		Limestone: white, f-xn, chaly, dense, sl fossiliferous, no vis por	
50		Shale: purple, red, gray, silty	
50		Limestone: white to tan, f-xn, chaly, fossiliferous, 5% sample fr interxn por, fr sat stain, nfo, no odor	
50		Limestone: tan to white, f-xn, chaly, fossiliferous, no vis por, spotty dark stain, nfo, no odor	
50		Limestone: white to tan, f-xn, pyritic, dense, fossiliferous, no vis por, ns	
50		Shale: red, silty, black, gray	
50		Sandstone: brown, fr-gr, submd, well sorted, no vis por, gr dark sat stain, slsfo some dead, no odor	
50		Shale: red, gray, silty, sl sandy	
50		Limestone: tan, f-xn, sl chaly, sl pyritic, sl cherty, oolitic in part, fossiliferous, 5% sample fr interxn to foss por, dark sat stain, gdsfo, fr odor	Lansing 4256 (-930)
50		Limestone: tan, micro-xln, sl chaly, no vis por	8:00am, 7/16/2017 wt 9.1, vis. 65, lcm 8# Morgan Mud, Dave Lines
50		Sandstone: brown, friable, vfr-gr, submd, well sorted, pr intergm por, sl dark stain, nfo, no odor	
50		Shale: gray, green, red, blocky, silty	
50		Limestone: white, f-xn, sl chaly, fossiliferous, sl pyritic, sl interxn por, fr sat stain, nfo, no odor	
50		Shale: red, gray, green	
50		Limestone: white, f-xn, sl chaly, fossiliferous, sl pyritic, oolitic in part, 3% sample pr vug por, fr black spotty to sat stain, prsfo, fair odor	
50		Shale: red, gray, green	
50		Limestone: white, f-xn, sl chaly, fossiliferous, sl pyritic, oolitic in part, 3% sample pr vug por, fr black spotty to sat stain, prsfo, fair odor	
50		Shale: red, gray, green	
50		Limestone: white, f-xn, sl chaly, fossiliferous, sl pyritic, oolitic in part, 3% sample pr vug por, fr black spotty to sat stain, prsfo, fair odor	
50		Shale: red, gray, green	
50		Limestone: white, f-xn, sl chaly, fossiliferous, no vis por	
50		Shale: gray, green, red, hard, blocky	
50		Limestone: white to tan, f-xn, chaly, fossiliferous in part, 1% sample pr interxn por, fr spotty to sat stain, slsfo on break, no odor	
50		Limestone: white to tan, f-xn, chaly, fossiliferous, no vis por	
50		Shale: gray, blocky, silty	
50		Limestone: white, f-xn, sl chaly, sl fossiliferous, no vis por, lt spotty sat stain, nfo	
50		Shale: black, gray, silty, blocky	
50		Limestone: white, f-xn, sl chaly, sl fossiliferous, no vis por, ns	
50		Shale: black, gray, silty, blocky	
50		Limestone: white, f-xn, sl chaly, sl fossiliferous, no vis por, ns	
50		Shale: red, gray	
50		Limestone: tan, f-mxn, v-fossiliferous, pr interxn por, ns	
50		Shale: red, gray, soft, silty	
50		Limestone: white, f-mxn, sl chaly, oolitic in part, fossiliferous, 5% sample fr interxn por, lt to dark sat stain, slsfo mo on break, faint odor	
50		Shale: dark gray, black, blocky	
50		Shale: gray, red, green silty, blocky	
50		Limestone: white, f-xn, fossiliferous, mostly dense, no vis por, ns	
50		Shale: red, gray, green	
50		Limestone: tan, f-xn, sl chaly, sl fossiliferous, no vis por	
50		Shale: red, gray, green	
50		Limestone: white to tan, f-xn, chaly, sl fossiliferous, 5 pieces sl interxn por, scattered spotty stain, slsfo, faint odor	
50		Shale: red, gray, silty, fr amt of biotite	
50		Limestone: white to lt gray, f-xn, sl chaly, sl cherty, granular, no vis por	
50		Shale: red, gray, green	
50		Limestone: white, f-xn, sl chaly, v-fossiliferous, no vis por, ns	
50		Shale: red, gray, green	
50		Limestone: tan to gray, mxn, sl chaly, oolitic, fossiliferous, granular, no vis por	
50		Shale: gray, green, soft, silty	
50		Limestone: white to tan, mxn, chaly, oolitic in part, fossiliferous, 6 pieces sl oolitic por, scattered spotty stain, slsfo on break, no odor	
50		Limestone: white to tan, f-mxn, oolitic in part, fossiliferous, sl cherty, no vis por	
50		Shale: black, gray, green	
50		Shale: black, dark to lt gray, green, red, silty, blocky	
50		Limestone: lt gray, f-mxn, fossiliferous, sl cherty, no vis por	
50		Limestone: gray to brown, f-mxn, sl cherty, fossiliferous, oolitic, no vis por, ns	
50		Shale: lt to dark gray, sl red	
50		Limestone: tan to brown, f-xn, sl chaly, mostly dense, oolitic in part, no vis por, ns	
50		Shale: black, lt to dark gray, sl amt of red, silty, blocky	
50		Limestone: tan, f-xn, sl chaly, dense, fossiliferous, no vis por	
50		Shale: gray, red, silty	
50		Limestone: tan, f-xn, sl chaly, v-fossiliferous, no vis por	
50		Shale: red, gray, silty	
50		Limestone: tan to white, f-xn, fossiliferous, dense, with an abundant amount of calcite replacement, no vis por	
50		Shale: red, gray, silty	
50		Limestone: white to gray, f-xn, sl fossiliferous, mostly dense, no vis por	
50		Shale: dark gray, brick red, dark green, blocky	
50		Limestone: tan to brown, v-f-xn, dense, fossiliferous, no vis por	
50		Shale: dark gray, brick red, dark green, blocky	
50		Sandstone: gray green, fr amt of biotite, md-gr, sub md to md, mod sorted, pr intergranular por, ns	
50		Shale: dark gray, green, red, fossil remnants	
50		Limestone: white to tan, f-xn, chaly, oolitic in part, fossiliferous, 5 pieces sl interxn por, scattered spotty stain, slsfo on break, no odor	
50		Limestone: white to tan, f-mxn, oolitic in part, fossiliferous, sl cherty, no vis por	
50		Shale: black, gray, green	
50		Shale: black, dark to lt gray, green, red, silty, blocky	
50		Limestone: gray to brown, f-mxn, sl cherty, fossiliferous, oolitic, no vis por, ns	
50		Shale: lt to dark gray, sl red	
50		Limestone: tan to brown, f-xn, sl chaly, mostly dense, oolitic in part, no vis por, ns	
50		Shale: black, lt to dark gray, sl amt of red, silty, blocky	
50		Limestone: tan, f-xn, sl chaly, dense, fossiliferous, no vis por	
50		Shale: gray, red, silty	
50		Limestone: tan, f-xn, sl chaly, v-fossiliferous, no vis por	
50		Shale: red, gray, silty	
50		Limestone: tan to white, f-xn, fossiliferous, dense, with an abundant amount of calcite replacement, no vis por	
50		Shale: red, gray, silty	
50		Limestone: white to gray, f-xn, sl fossiliferous, mostly dense, no vis por	
50		Shale: dark gray, brick red, dark green, blocky	
50		Limestone: tan to brown, v-f-xn, dense, fossiliferous, no vis por	
50		Shale: dark gray, brick red, dark green, blocky	
50		Sandstone: gray green, fr amt of biotite, md-gr, sub md to md, mod sorted, pr intergranular por, ns	
50		Shale: dark gray, green, red, fossil remnants	