

Robert D. Hendrix

Petroleum Geologist

GEOLOGIST'S REPORT DRILLING TIME AND SAMPLE LOG

COMPANY **Murfin Drilling Co. Inc.**

LEASE **Holle Trust #1-22**

FIELD **Wildcat**

LOCATION **1800' fml & 405' fcl**

SEC **22** TWP **4S** RGE **31W**

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

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

SPUD **2/24/2014** COMP **3/1/2014**

RTD **4522** LTD **4524**

MUD UP **3408** TYPE MUD **Chemical**

SAMPLES SAVED FROM **3590 TO TD**

DRILLING TIME KEPT FROM **3624 TO TD**

SAMPLES EXAMINED FROM **3590 TO TD**

GEOLOGICAL SUPERVISION FROM **3632**

GEOLOGIST ON WELL **Robert D. Hendrix**

FORMATION TOPS

ANHYDRITE **2632 (+239)**

TOPEKA **3706 (-835)**

HEEBNER SHALE **3871 (-1000)**

LANSING **3916 (-1045)**

STARK SHALE **4085 (-1214)**

BKC **4136 (-1265)**

PAWNEE **4249 (-1378)**

CHEROKEE SHALE **4333 (-1467)**

MISSISSIPPIAN **4452 (-1581)**

ELEVATIONS

KB **2871**

DF

GL **2860'**

Measurements Are All From **Kelly Bushing**

CASING

CONDUCTOR

SURFACE **8.518" at 265'**

PRODUCTION

none

ELECTRICAL SURVEYS

none

None

None

None

None

None

None

None

None

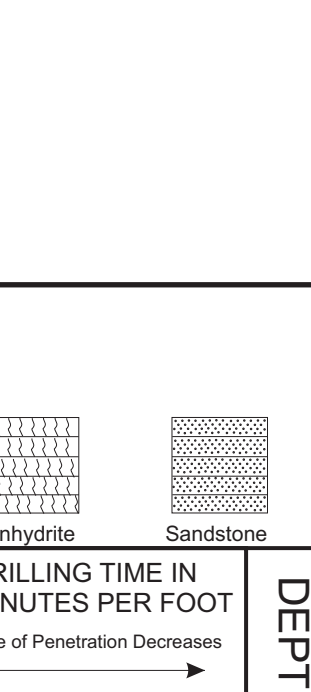
None

None

None

None

None



REMARKS:

LEGEND

	Anhydrite		Sandstone		Limestone		Shale		Carb Sh		Cherty LS		Chert		Dolomite
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DEPTH	LITHOLOGY	SAMPLE DESCRIPTION	REMARKS
2600			Anhydrite 2632 (+239)
2650			Base Anhydrite 2663 (+208)
2680			
3600		Shale: gray, black	
		Limestone: tan to brown, fxl, sl chalky, pyritic, fossiliferous, no vis por	wt 8.7, vis. 68, lcm 7# Morgan Mud, Cade Lines
		Shale: gray, silty	
		Limestone: tan to gray, f-mxn, sl chalky, oolitic in part, fossiliferous, no vis por	Geologist on location 6:40 pm 2/24/2014
50		Shale: gray, red, black	
		Limestone: tan, fxl, chalky, sl fossiliferous, no vis por	
		Shale: gray, green, red	
		Limestone: tan, f-mxn, v-chalky, fossiliferous, no vis por	
		Shale: gray, green, red	
3700		Siltstone: gray to brown, fxl, silty, chalky, granular, no vis por	
		Shale: red, brown, gray, green, silty	
		Limestone: gray to brown, fxl, chalky, dense, no vis por	Topeka 3706 (-835)
		Limestone: gray to tan, fxl, silty, chalky, granular, no vis por	
		Limestone: lt gray to tan, fxl, chalky, granular, sl fossiliferous, no vis por	
		Limestone: white to tan, f-mxn, chalky, granular, fossiliferous, pr interxn por, ns	
		Shale: red, soft, silty	
50		Limestone: tan, fxl, chalky, fossiliferous, calcite fracture fill, no vis por	
		Shale: gray, red	
		Limestone: tan, fxl, chalky, fossiliferous, no vis por	
		Limestone: gray, f-mxn, chalky, fossiliferous, no vis por	
3800		Limestone: tan to brown, fxl, chalky, dense, no vis por	
		Shale: red, silty	
		Limestone: tan, fxl, chalky, granular, fossiliferous, no vis por	
50		Limestone: tan, fxl, chalky, granular, oolitic, fossiliferous, no vis por	
		Limestone: tan, fxl, chalky, granular, no vis por	
		Shale: black carbonaceous, red, gray, pyritic	Heebner 3871 (-1000)
		Limestone: gray to white, f-mxn, chalky, fossiliferous, no vis por	
		Shale: gray, red, green, brown, silty	
CFS			
3900		Limestone: white to tan, f-mxn, oolitic in part, fossiliferous, fr interxn por, 10% sample lt brown spotty to sat stain, silst, no odor	Toronto 3904 (-1033) 8:00am, 2/25/2014
		Limestone: tan, fxl, chalky, dense, fossiliferous, no vis por, ns	
		Sandstone: brown, fn-vfn grn, md, well sorted, hard, v-calcareous, pr intergm por, dark sat stain, silst, no break, no odor	
		Shale: red, gray, black	
50		Limestone: white to tan, m-lxn, sl chalky, oolitic, v-fossiliferous, pr interxn por, 10% sample black spotty to sat stain, silst, faint odor	wt 9.1, vis. 58, lcm 8# Morgan Mud, Cade Lines Strap 0.29" short to board
		Shale: red, gray	
		Limestone: white, fxl, cherty, dense, no vis por, 5 pieces black edge stain, nfo, no odor	
		Limestone: white to lt gray, fxl, dense, no vis por	
		Limestone: brown to tan, m-lxn, fossiliferous, sl interxn por, 2% sample spotty to sat dark stain, nfo, no odor	
		Shale: red, gray	
		Limestone: tan, f-mxn, sl chalky, oolitic in part, fossiliferous, 10% sample fr pp to vug por, lt to dark sat stain, prsf, fr odor	8:00am, 2/26/2014
		Shale: red, gray, green	
		Limestone: tan to white, f-mxn, sl chalky, oolitic in part, fossiliferous, 10% sample fr interxn por, black spotty to sat stain, silst, fr odor	
		Limestone: tan to white, fxl, cherty, sl pyritic, sl fossiliferous, no vis por, lt sat stain, silst, no odor	
		Shale: gray, black, red	
		Shale: red, gray, muddy	
		Shale: gray, black	
		Limestone: tan to white, f-mxn, v-chalky, oolitic, fossiliferous, no vis por, ns	
50		Limestone: tan, fxl, oolitic in part, chalky, dense, fossiliferous, no vis por	
		Shale: gray, green, red, black	
		Limestone: tan, fxl, dense, sl fossiliferous, no vis por	
		Shale: gray, silty	
		Limestone: tan to lt gray, fxl, sl chalky, mostly dense, sl oolitic in part, 1% sample sl vug por, lt spotty stain, v-silst, faint odor	
		Shale: gray, red	
4100		Limestone: white, f-mxn, oolitic, sl fossiliferous, pr interxn por, 1% sample dark spotty tarry stain, nfo, no odor	
		Limestone: white, fxl, sl oolitic, mostly dense, no vis por, ns	
		Limestone: white to tan, fxl, dense, sl cherty, no vis por, ns	
		Shale: gray, red	
		Limestone: tan to brown, f-mxn, dense, pellicoidal, fossiliferous, no vis por, ns	
		Shale: gray, brown, hard, silty	BKC 4136 (-1265)
		Limestone: tan, f-mxn, chalky, fossiliferous, no vis por, ns	
		Shale: gray, red, brown, hard, silty	
50		Limestone: tan, f-mxn, chalky, oolitic, no vis por, ns	
		Shale: gray, red, black	
		Shale: gray, yellow, black	
		Shale: tan, red, yellow, black	
		Limestone: tan, fxl, sl chalky, fossiliferous, no vis por, ns	
		Shale: gray, green, red, brown, silty	
		Limestone: lt gray to tan, fxl, sl chalky, dense, no vis por	
		Shale: red, brown, gray, silty	
		Shale: red, gray, purple, brown, silty	
		Shale: red, brown, gray, silty	
50		Limestone: tan to white, f-mxn, chalky, oolitic, fossiliferous, no vis por	Pawnee 4249 (-1378) 8:00am, 2/28/2014
		Limestone: gray to white, fxl, fossiliferous, no vis por, ns	
		Shale: red, gray, black	
		Shale: gray, green, red, brown, silty	
		Limestone: tan to brown, fxl, oolitic, fossiliferous, no vis por, ns	
		Limestone: gray to brown, fxl, sl fossiliferous, no vis por	
4300		Shale: gray brown, hard, blocky, chalky, soft	
		Shale: black carbonaceous	
		Shale: black, dark gray, brown, red	
		Limestone: brown, fxl, sl chalky, dense, sl fossiliferous, no vis por, ns	
		Limestone: tan to white, fxl, sl chalky, granular, fossiliferous, no vis por, ns	
		Shale: black carbonaceous	
		Shale: gray, brown, black	
		Limestone: brown to tan, fxl, mostly dense, fossiliferous, no vis por, ns	
		Limestone: brown to tan, fxl, mostly dense, lt brown calcite, no vis por, ns	
		Limestone: tan to white, fxl, sl chalky, dense, no vis por	wt 9.1, vis. 56, lcm 10# Morgan Mud, Cade Lines
		Shale: red, gray, green	
50		Limestone: tan, fxl, sl chalky, dense, no vis por	
		Shale: red, gray, yellow, brown, silty	
		Sandstone: red/brown to gray, md to coarse gr, sub ang, poorly sorted, friable, no vis por	
		Sandstone: clear, vt, pebble sized individual grains, md, mod sorted, hard, no vis por	
		Shale: red, gray, brown, silty	
		Shale: red, brown, gray, yellow, v-sandy	
		Sandstone: white to red, fn-md gr, sub md, mod sorted, no vis por	
		Shale: red, gray, yellow, silty	
		Shale: red, gray, yellow, sandy	
50		Sandstone (chert): yellow, vt, very-coarse to pebble, sub-ang, poorly sorted, no vis por	Mississippian 4452 (-1581)
		Chert: white, opaque, mostly weathered, no vis por, ns	
		Chert: white, lt to opaque, mostly fresh, no vis por, ns	
		Chert: white to yellow, majority vt, mostly fresh, no vis por, ns	
		Limestone: white, fxl, soft, chalky, no vis por	
		Shale: black, gray, red, yellow	
		Dolomite: white, f-mxn, chalky, cherty, soft, sl interxn por, ns	
4500			
50			RTD 4522 (-1651) 8:00am, 3/1/2014
			Geologist off location at 10:30pm, 3/1/2014