

Thomas J. Funk
Petroleum Geologist

**Geologists Report
Drilling Time and Sample Log**

OPERATOR **Murfin Drilling Co., Inc**

LEASE **Vanava** WELL NO **#4-5**
FIELD **High Hat West** API **15-109-21596**
LOCATION **330' FSL & 500' FEL**
SEC. **5** TWP **13S** RGE **32W**
COUNTY **Logan** STATE **Kansas**

CONTRACTOR **Murfin Dng Co** Rig # **21**
COMM **6/21/2019** COMP **7/2/2019**
RTD **4/7/15** LOG TD **4/7/15**

SAMPLES SAVED FROM **3630** TO **4715'**
DRILLING TIME KEPT FROM **3630** TO **4715'**
SAMPLES EXAMINED FROM **3630** TO **4715'**
GEOLOGICAL SUPERVISION FROM **3600** TO **4715'**
MUD UP **3250** TYPE MUD **Chemical**

FORMATION	LOG	SAMPLE	ELECTRICAL SURVEYS
	TOP DATUM	TOP DATUM	Log-Tech
Anhydrite	2502 (+516)	2505 (+513)	DIL
Baryhydrite	2525 (+493)	2525 (+493)	MEL
Toppekka	3740 (-722)	3743 (-725)	DUQP
Heebner Sh	3964 (-946)	3967 (-949)	BHCS
Lansing	4007 (-989)	4011 (-993)	
Muncie Creek	4150 (-1132)	4154 (-1136)	
Start Sh	4231 (-1213)	4235 (-1217)	
Marmaton	4331 (-1313)	4332 (-1314)	
Pawnee	4430 (-1412)	4433 (-1415)	
Cherokee Sh	4514 (-1496)	4516 (-1498)	
Johnson Zone	4557 (-1539)	4562 (-1544)	
Mississippian	4632 (-1614)	4636 (-1618)	

Date	Daily Progress	NO	Stret	Make	Type	Begin	Out	Feet	Hours
	Spud	1	12	1/4	GRMS	RR		310	2.25
6/22/19	370'								
6/23/19	1940'	2	7 7/8"	HTC	DF506F			3244	47.25
6/24/19	3345'	3	7 7/8"	HTC	GX22s			1161	75.5
6/25/19	3782'								
6/26/19	4070'								
6/27/19	4111'								
6/28/19	4215'								
6/29/19	4338'								
6/30/19	4471'								
7/1/19	4585'								
7/2/19	4652'								
7/3/19	4715' Ring Csg								

ELEVATION
KB 3018'
DF
GL 3007'
Measurements Are All From KB

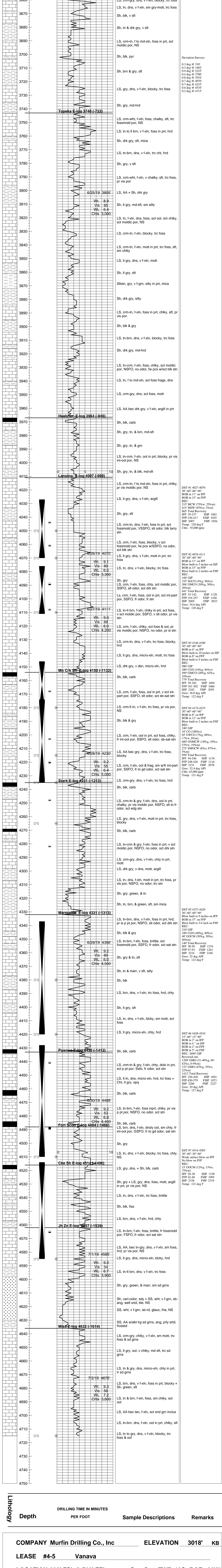
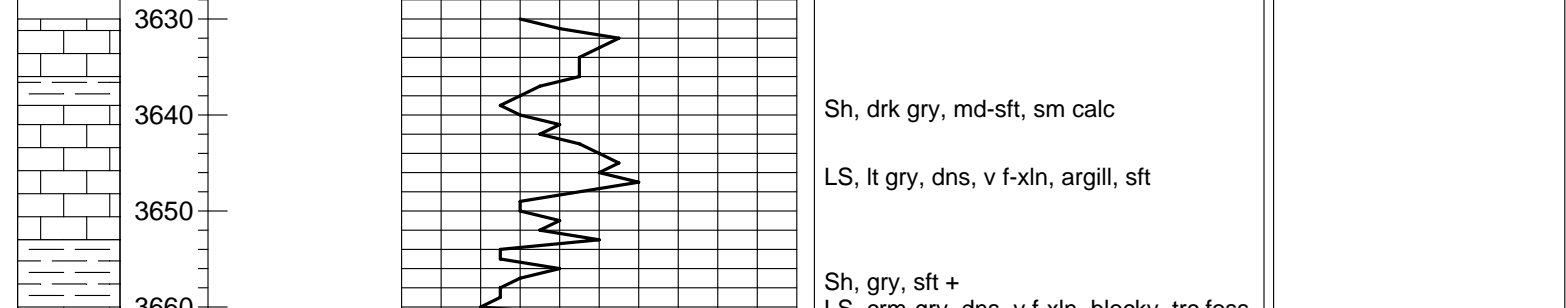
CASING RECORD
SURFACE
8 5/8" at 310'KB w/2008x

PRODUCTION
5 1/2" at 4710'KB w/175sx

ELECTRICAL SURVEYS
Log-Tech
DIL
MEL
DUQP
BHCS

REMARKS AND RECOMMENDATIONS:
Based on sample examination, DST results, and log analysis it was recommended to run casing to further test the #4-5 Vanava.
Thomas Funk
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LEGEND



COMPANY **Murfin Drilling Co., Inc** ELEVATION **3018'** KB
LEASE **#4-5** Vanava
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COUNTY **Logan** STATE **Kansas**