

# GEOLOGIST'S REPORT

OPERATOR <b>MURFIN DRILLING COMP. INC.</b>		ELEVATIONS	
LEASE <b>MEARS 'B' #1-11</b>		KB <b>3396</b>	
LOCATION <b>1800 FSL 330 FEL</b>		GL <b>3391</b>	
SEC. <b>11</b>	TWSP. <b>2S</b>	RGE. <b>37W</b>	ALL MEASUREMENTS FROM K.B.
COUNTY <b>CHEYENNE</b>	STATE <b>KANSAS</b>		
FIELD <b>WILDCAT</b>	CASING RECORD		
CONTRACTOR <b>MURFIN DRILLING CO. INC. RIG NO. #24</b>			
COMMENCED <b>JULY 19, 2017</b> COMPLETED <b>JULY 23, 2017</b>			
MUD DISPLACED <b>3910</b> MUD TYPE <b>CHEMICAL</b>			
DRILLING TIME REPT FROM <b>3900</b> TO <b>4900</b>			
SAMPLES SAVED FROM <b>4000</b> TO <b>4900</b>			
SAMPLES EXAMINED FROM <b>4000</b> TO <b>4900</b>			
GEOLOGICAL SUPERVISION FROM <b>4000</b> TO <b>4900</b>			
GEOLOGIST ON WELL <b>STEPHEN J MILLER</b>			
<b>ELECTRICAL SURVEYS: DUAL INDUCTION PIOMER LOGGING</b>			
FORMATION NAME		LOG	SAMPLE DATUM
ANHYDRITE	3296	+100	3298 +98
TOPEKA	4102	-706	4102 -706
OREAD	4244	-848	4249 -853
LANSING	4327	-831	4331 -835
STARK SHALE	4542	-1146	4546 -1150
MOUND CITY	4598	-1200	4599 -1202
EXCELLO	4724	-1328	4718 -1322
EXCELLO	4774	-1378	4777 -1381
Total Depth	4900	-1504	4900 -1504

REMARKS  
 API 15-023-21468  
 Drilling Fluids: MORGAN MUD  
 Drill Stem Testing: TRILOBITE TESTERS  
 Gas Trailer: NONE  
 Reserve Pit Chlorides: 700PPM/ 800 BBL

DEPTH	DRILL TIME (MIN/FT)	SONIC LOG	LITHOLOGY	SAMPLE DESCRIPTIONS	REMARKS
3900					
3950					
4000				Shale gray tan sandy	
4050				Limestone tan f-xln sli fos dense	
4100				Shale gray brn sli fis sli sandy	
4110				Limestone gray f-xln fos p. int-fos por fair tarry stain NSFO Shale brn silty sli sandy	<b>TOPEKA LIME</b> <b>4102 -706</b>
4150				Shale red sandy soft Limestone gray f-xln sli fos sli chalky dense Shale green gray sli fis	
4200				Limestone tan f-xln sli fos dense Limestone gray f-xln fos s cat fos-cast por NSFO s cat tarry stain	
4250				Shale red brn sandy soft Limestone crm f-xln fos chalky NSFO s cat tarry stain Limestone crm f-xln sli fos ool gd int-cool por NSFO s cat stain Limestone crm f-xln sli fos chalky	<b>DST #1 4198-4270</b> 30-60-30-60 NO BLOW/ NO BLOW SURFACE BLOW /NO BLOW REC 5' MUD FP 11-14# 14-16# SIP 882-812#
4300				Shale grn sli sandy Shale brn soft silty Sandstone gray f grain friable NSFO s cat dark stain Shale gray brn grn silty sli sandy Limestone gray tan f-xln dense	<b>DST #2 4292-4345</b> 30-60-30-60 NO BLOW/ NO BLOW REC 1' CLEAN OIL 9' OCM 25% oil FP 12-17# 14-19# SIP 48-36#
4350				Limestone tan f-xln sli fos ool gd occ and vug por FSPD fair odor sat brn stain	<b>LANSING LIME</b> <b>4331 -935</b>
4400				Limestone gray f-xln sli fos dense Shale gray grn sli silty Sandstone wht vf. grain friable s cat asphaltic stain Limestone gray f-xln sli fos sli chalky Sandstone wht friable NS Shale brn red gm prple sli sandy	<b>DST #3 4350-4408</b> 30-60-60-90 BOB 2"/BOB 1" REC 130' GIP 400' OIL (27' gms) 500' MCGO (40% OIL) 1060' OCMW (10% OIL 80% W) FP 81-480# 495-856# SIP 1050-1046#
4450				Limestone crm gray f-xln fos sli chalky f fos-cast por SSFO odor on break brn to dk gray stain Limestone crm f-xln sli fos dense Shale red gm gray silty	<b>DST #4 4416-4458</b> 30-60-60-90 SURFACE BLOW 1/4"/ NO BLOW REC 2' MUD 80' CO (39' deg) 80' M.O. (50% OIL) FP 12-14# 13-14# SIP 30-29#
4500				Limestone gray f-xln fos sli chalky pyritic f. fos-cast and int-fos por FSPD (waxy) no odor spotted brn to gray stain Shale dk gray carb Shale gray brn silty sli sandy Limestone gray f-xln fos sli chalky p fos-cast and int-fos por SSFO (flaxy) no odor spotted brn stain Shale gray sli mica sli silty Limestone crm f-xln sli fos chalky Shale gray brn silty soft sandy	<b>DST #5 4461-4544</b> 30-60-60-90 BLOW 4"/BLOW 2" REC 60' GIP 80' CO (70% OIL) 80' M.O. (50% OIL) FP 19-54# 57-80# SIP 1347-1338#
4550				Limestone gray f-xln sli fos sli chalky p fos-cast por NSFO Shale black carb Shale brn gray grn silty sandy Limestone gray cream f-xln sli fos s cat ppt por NSFO rare dark stain Shale dk gray brn carb	<b>STARK SHALE</b> <b>4546 -1150</b>
4600				Limestone crm f-xln fos sli chalky p fos-cast por NS Shale brn gm gray silty soft Limestone crm f-xln fos chalky Shale gray brn sandy silty Limestone lt gray f-xln fos sli chalky dense	<b>MOUND CITY</b> <b>4598 -1202</b>
4650				Shale purple brn gray silty sli sandy Limestone lt gray f-xln fos sli chalky sli oolite p int-fos and ool por VSSFO (flaxy) no odor dk gray stain Shale gray sli sandy Shale dk gray carb Limestone lt gray f-xln dense	<b>DST #6 4617-4760</b> 30-60-60-90 BLOW 11/2"/BLOW 4" REC 130' GIP 30' CO (39' deg) 80' M.O. (50% OIL) 80' OCM (25% oil) FP 16-31# 31-49# SIP 1148-1095#
4700				Limestone gray f-xln sli chalky fos p ppt & int-fos por SSFO (gassy) faint odor s cat brn stain Limestone brn f-xln fos dense Shale gray dk gray carb Limestone crm f-xln sli fos pyritic no vis por NS Limestone tan gray f-xln sli fos dense	
4750				Shale dk gray black carb Limestone tan gray f-xln fos sli chalky dense Shale orange gray grn silty Limestone tan brn f-xln fos s cat ppt por NS Shale gray brn grn sli silty Limestone crm tan f-xln fos sli cherty dense Shale dk gray fis carb Sandstone clear white fr-md grain poorly sorted friable sli silty NS Shale brn orange gm silty	<b>EXCELLO SHALE</b> <b>4777 -1381</b>
4800					<b>CELIA</b> <b>4806 -1410</b>
4850					
4900					<b>TOTAL DEPTH 4900</b>

Operator: MURFIN DRILLING COMP. INC.  
 Lease: MEARS 'B' #1-11  
 Location: 1800 FSL 330 FEL SEC. 11 TWSP. 2S RGE. 37W  
 County: CHEYENNE State: KANSAS