

# Robert L. Milford

PETROLEUM GEOLOGIST  
Wichita, Kansas

## GEOLOGISTS' REPORT

DRILLING TIME AND SAMPLE LOGS

OPERATOR: **Suennair Exp. & Prod. LLC**  
 LEASE: **Kuehni Family Trust #1-23**  
 LOC. SPOT: **6' N & 78' W of S2 SW NW**  
 LOC FOOTAGE: **2,304' FNL 582' FWL**  
 SEC. **23** T19SP **65** R1NG **28W**  
 COUNTY: **Sheridan** STATE: **Kansas**

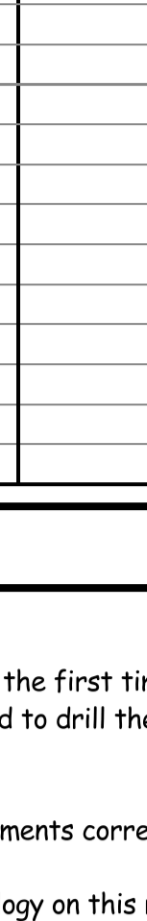
DATE: **15-179-2145-00-00**  
 DRILLING CONTRACTOR: **Marfina Drilling Co., Inc.**  
 DRILLING STARTED: **2/17/2019** COMPLETED: **2/24/2019**  
 MUD DISPLAYED: **3.0/4** MUD TYPE: **Chemical**  
 DRILLING TIME (HEFT FROM): **3.3/20** TO: **RTD**  
 SAMPLES SAVED FROM: **3.3/20** TO: **RTD**  
 SAMPLES EXAMINED FROM: **3.3/20** TO: **RTD**  
 GEOLOGICAL SUPERVISION FROM: **3.3/20** TO: **RTD**

MEASUREMENTS:  
 CASING RECORD  
 CONVEYOR  
 SURFACE: **8.5/81' @ 261'**  
 W/ 750 sacks cement  
 Production 5.1/2' @ 4422'

ELECTRICAL SIRENS:  
 Weatherford Wireline  
 Arroyo Induction Log  
 Neutron Density Log

FORMATION NAME LOGS  
 TOP DATUM TOP SAMPLE DATUM

Stone Corral	2,491'	+261'	2,450'	+262'
Stotler	3,631'	-787'	3,631'	-787'
Topoka	3,631'	-919'	3,631'	-919'
Heebner	3,888'	-116'	3,827'	-115'
Lansing	3,886'	-1144'	3,895'	-1143'
Foraker	3,872'	-1160'	3,871'	-1159'
B/KC	4,079'	-1367'	4,079'	-1367'
Pawnee	4,173'	-1461'	4,171'	-1459'
Mississippi	4,387'	-1675'	4,385'	-1673'
Total Depth	4,427'	-1715'	4,425'	-1713'



DATE	7:00 AM DEPTH	REMARKS
2-17-16	0'	Spud @ 5:30 pm. Plug down @ 10:00 pm. Drilled out plug @ 6:00 am on 2-18 w/ Hybrid bit
2-18-16	290'	Cut 290' in last 24 hrs. Dev.: 1° @ 1519'
2-19-16	2,470'	Cut 2,180' in last 24 hrs; 22.75 hrs drlg. Dev.: 0.5° @ 2520'
2-20-16	3,230'	Cut 760' in last 24 hrs; 22.5 hrs drlg.
2-21-16	3,866'	Cut 636' in last 24 hrs; 22.25 hrs drlg. DST #1 @ 3905'
2-22-16	3,925'	Cut 59' in last 24 hrs; 2.5 hrs drlg. DST #2 @ 3970'
2-23-16	4,022'	Cut 97' in last 24 hrs; 4.5 hrs drlg. DST #3 @ 4036'. Bit trip @ 4084' (changed to PDC)
2-24-16	4,122'	Cut 100' in last 24 hrs; 4.5 hrs drlg. RTD 4425' @ 4:05 pm. Ran electric logs.
2-25-16	4,425'	Cut 303' in last 24 hrs; 8.75 hrs drlg. Ran production casing

**Remarks**  
 Murfin Drilling used, for the first time, a Baker Hughes Hybrid bit, type HP624. This bit combines 2 roller cones and 4 PDC blades. It was used to drill the 7.875" hole from base of surface casing to 3905'. Bit had a hole on its side when it was pulled.  
 The electric log measurements correlate from even to 2' lower to the drilling measurements.  
 Formation tops and lithology on this report have been corrected to the electric log.  
 The drilling samples were deposited at the Kansas Geological Survey office in Wichita.  
 Respectfully submitted,  
 Robert L. Milford

