

# Robert L. Milford

PETROLEUM GEOLOGIST  
Wichita, Kansas

WICHITA KANSAS  
GEOLOGISTS' REPORT  
DRILLING TIME AND SAMPLE LOGS

OPERATOR: **Murfin Drilling Company, Inc.**  
LEASE: **NFW Drilling, Inc. #1-24**  
LOC. SPOT: **NW NW NW**

LOC. FOOTAGE: **3301 FNL 3301 FWL**  
SEC: **24** TWP: **25** R. **36W**  
COUNTY: **Rawlins** STATE: **Kansas**

CONTRACTOR: **Murfin Drilling Co., Inc.** REG. NO. **8**  
DRILLING STARTED: **12-27-2013** COMPLETED: **1-2-2014**  
MUD DISCHARGED: **3.385** MUD TYPE: **Gravel**  
DRILL TIME (MIN/F) FROM: **3:57/0** TO: **R/D**  
SAMPLES SAVED FROM: **3:57/0** TO: **R/D**  
SAMPLES EXAMINED FROM: **3:57/0** TO: **R/D**  
GEOLOGICAL SUPERVISION FROM: **3:57/0** TO: **R/D**

MEASUREMENTS  
CASING RECORD  
Surface: **8.5/8" @ 157'**  
Production: **5.1/2" @ 502'**  
w/ 450 sacks cement

ELEVATIONS  
KB: **3,308'**  
GL: **3,303'**

FORMATION  
NAME: **TOP DATUM TOP DATUM**

LOGS  
LOGS: **3183' +125' 3182' +166'**  
Newa: **3685' -177' 3684' -376'**  
Topkang: **4029' -721' 4029' -721'**  
Landing: **4246' -938' 4245' -937'**  
Strick: **4469' -161' 4468' -160'**  
B/KC: **4518' -1210' 4517' -1209'**  
Pawnee: **4652' -1344' 4651' -1343'**  
Cherokee: **4724' -1416' 4723' -1415'**  
Mississippi: **4936' -1628' 4936' -1628'**  
Total Depth: **5,936' -1728' 5,038' -1730'**

SAMPLES  
Porosity Log  
Microresistivity Log  
Borehole Compensated

ELECTRICAL STRIERS  
Fracture Wires  
Die Induction Log  
Die Compressor

DATE	7:00 AM DEPTH	REMARKS
12-27-13	0'	Spud @ 10:00 am. Plug down @ 4:45 pm. Drilled out plug @ 12:45 am on 12/28 w/ PDC bit
12-28-13	990'	Cut 990' in last 24 hrs
12-29-13	3180'	Cut 2,190' in last 24 hrs; 22.25 hrs drlg. Bit trip @ 3552' (non button bit)
12-30-13	3,850'	Cut 670' in last 24 hrs; 16.5 hrs drlg. DST #1 @ 4164'
12-31-13	4,164'	Cut 312' in last 24 hrs; 10 hrs drlg. DST #2 @ 4328'
1-1-14	4,285'	Cut 121' in last 24 hrs; 4.25 hrs drlg. DST #3 @ 4328'
1-2-14	4,365'	Cut 80' in last 24 hrs; 3.25 hrs drlg. DST #4 @ 4372', DST #5 @ 4468'
1-3-14	4,468'	Cut 103' in last 24 hrs; 4.25 hrs drlg.
1-4-14	4,695'	Cut 227' in last 24 hrs; 11.75 hrs drlg. RTD 5038' @ 10:29 pm
1-5-14	5,038'	Cut 343' in last 24 hrs; 14.25 hrs drlg. Ran production casing.

Remarks

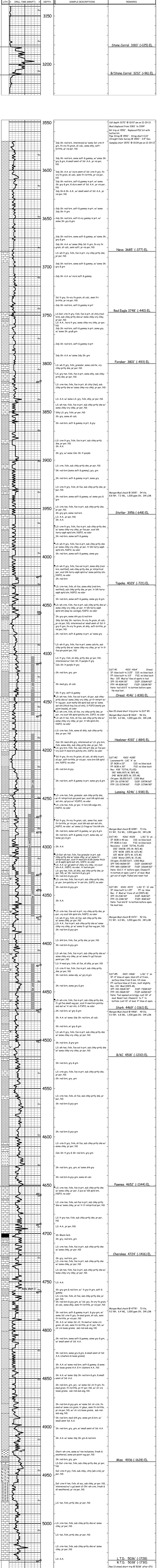
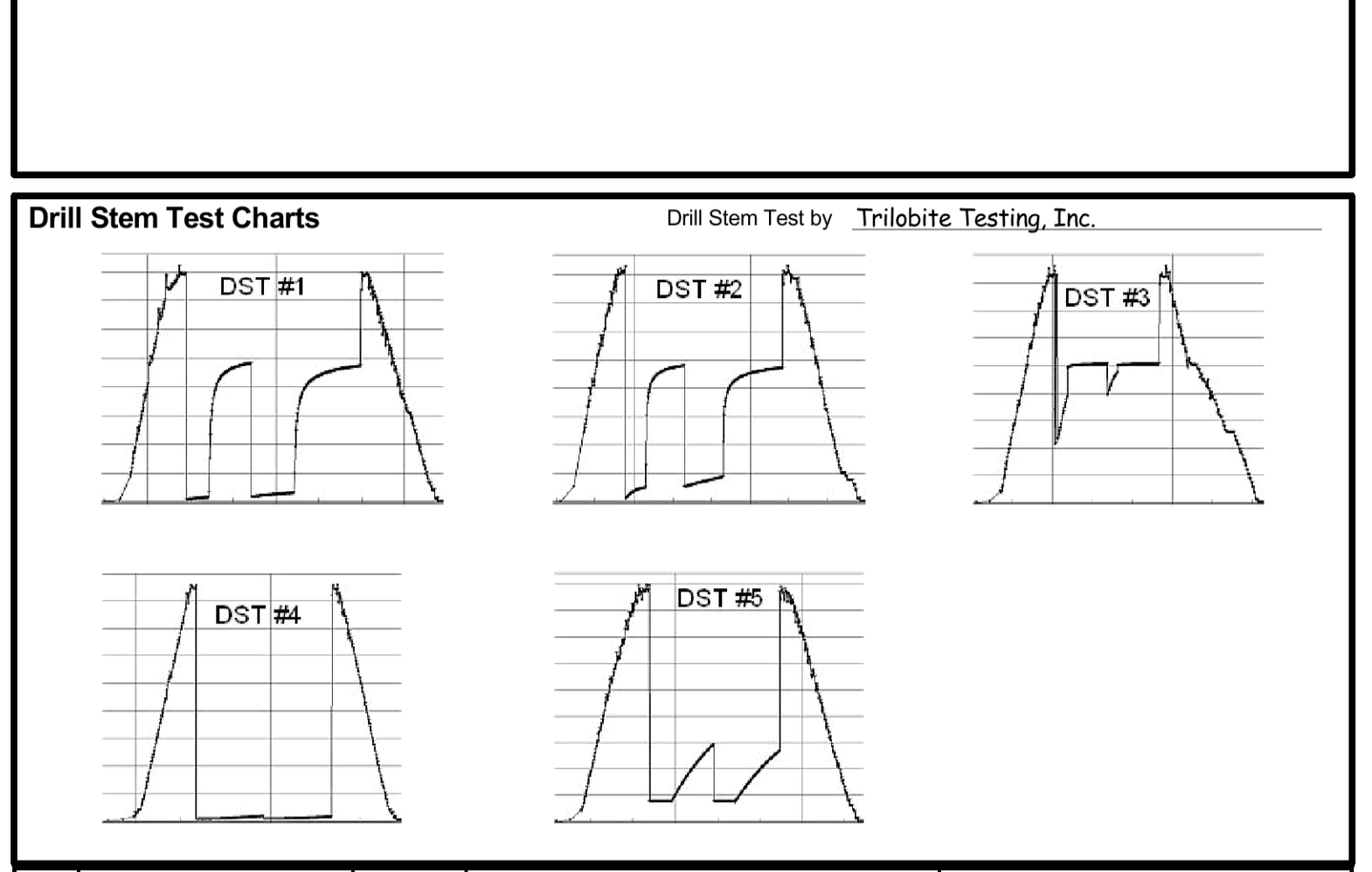
The electric log measurements correlate from even to 1' lower to the drilling measurements.

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



L.T.D. 5038' (-1728)  
R.T.D. 5038' (-1730)  
Ran 13 stand short trip @ 5038' after CFS  
Straight Hole Survey @ 5038': 0.5' Dev.