

# GEOLOGISTS' REPORT

OPERATOR **MURFIN DRILLING CO INC.**

LEASE **#2-4 WWWW**

LOCATION **1735' FSL 660' FEL**

SEC. **4** TWPSP **13S** RGE **32W**

COUNTY **LOGAN** STATE **KANSAS**

FIELD **High Hat**

CONTRACTOR **MURFIN DRILLING CO** FIG NO **20**

COMMENCED **APRIL 3, 2013** COMPLETED **APRIL 15, 2013**

MUD DISPLACED **3220'** MUD TYPE **CHEMICAL**

DRILLING TIME KEPT FROM **3970'** TO **4790'**

SAMPLES SAVED FROM **3970'** TO **4790'**

SAMPLES EXAMINED FROM **3970'** TO **4790'**

GEOLOGIST ON WELL **STEPHEN J MILLER**

GEOLOGICAL SUPERVISION FROM **3975'** TO **4780'**

FORMATION **LOG** SAMPLER **DUAL INDUCTION**

NAME **TOP DATUM TOP DATUM**

ANHYDRITE **2534 +517 2534 +517**

TOPEKA **3772 -721 3772 +495**

HEEBNER **3995 -944 3996 -945**

LANSING **4040 -989 4039 -986**

STARK SHALE **4273 -1122 4269 -1118**

B/ KANSAS CITY **4532 -1281 4530 -1279**

CHEROKEE **4555 -1504 4555 -1504**

MISSISSIPPIAN **4693 -1632 4680 -1629**

TOTAL DEPTH **4793 -1732 4790 -1729**

ELEVATIONS  
KB **3051'**

GL **3040'**

ALL MEASUREMENTS FROM KEA

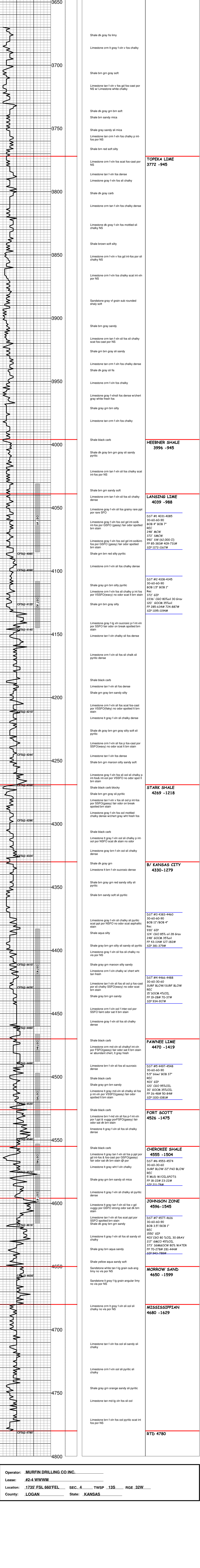
CASING RECORD  
Conductor \_\_\_\_\_  
Surface **85'8" @ 12'**  
Production **512' @ 178'**

PIIONEER  
DUAL INDUCTION  
COMP NEUDENS  
SONIC  
MICROLOG

REMARKS

API **15-109-21167**  
Drilling Fluids: **MORGAN MUD**  
Drill Stem Testing: **TRILOBITE**  
Gas Trailer: **NONE**  
Reserve Pit Chlorides: **1600 ppm**

DEPTH	DRILL TIME (MIN/FT)	REMARKS
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County: **LOGAN** State: **KANSAS**