

**Thomas J. Funk**  
**Petroleum Geologist**

**Geologists Report**  
**Drilling Time and Sample Log**

**OPERATOR** Murfin Drilling Co., Inc

**LEASE** Kuhn  
**FIELD** High Hat  
**LOCATION** 1810' FSL & 1780' FWL  
**SEC.** 4  
**COUNTY** Logan

**WELL NO #2-4**  
**API** 15-109-21-358  
**RGE.** 32W  
**STATE** Kansas

**ELEVATION**  
**KB** 3035'  
**DF**  
**GL** 3024'  
**Measurements Are All From KB**

**CASING RECORD**  
**SURFACE**  
**8 5/8" at 220' KB w/1705x**

**CONTRACTOR** Murfin Dring Co Reg #4  
**COMM** 11/12/2014  
**RTD** 4/23/15  
**LOG TD** 4/23/15

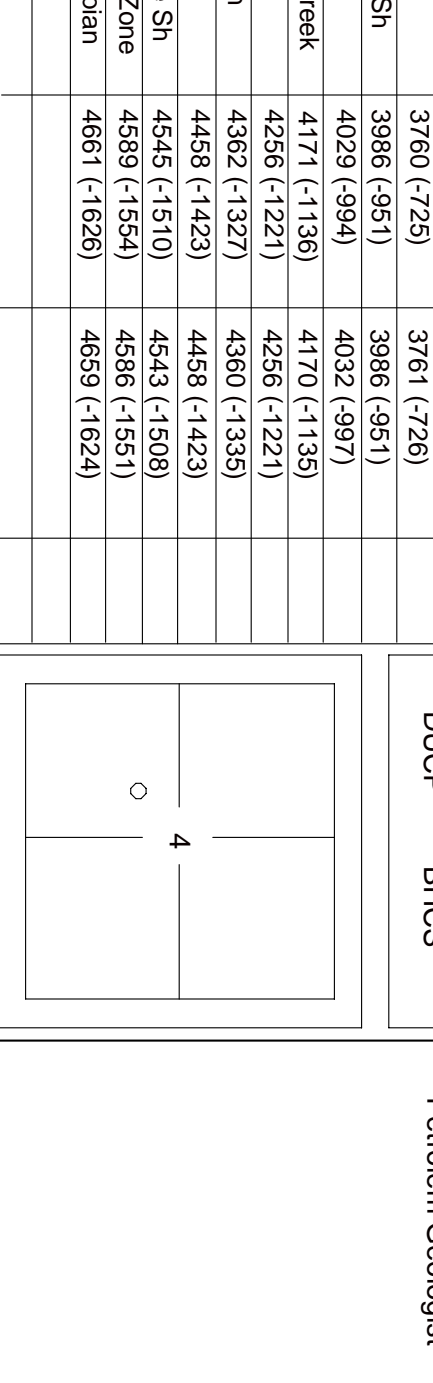
**DRILLING TIME KEPT FROM** 3700' TO 4735'  
**SAMPLES EXAMINED FROM** 3700' TO 4735'  
**GEOLOGICAL SUPERVISION FROM** 3850' TO 4735'  
**MUD UP** 3300' TYPE MUD Chemical

**PRODUCTION**  
**N/A**

**ELECTRICAL SURVEYS**  
**Pioneer Energy Serv**  
**DIL**  
**MEL**  
**DUQP**  
**BHCS**

**FORMATION**  
**LOG**  
**SAMPLE**  
**TOP DATUM**  
**TOP DATUM**

Anhydrite 2520 (+515) 2520 (+515)  
 B/Anhydrite 2543 (+492) 2542 (+493)  
 Topeka Sh 3760 (-725) 3761 (-726)  
 Heebner Sh 3986 (-951) 3986 (-951)  
 Lansing 4029 (-994) 4032 (-997)  
 Muncie Creek 4171 (-1136) 4170 (-1135)  
 Start Sh 4256 (-1221) 4256 (-1221)  
 Marmaton 4362 (-1327) 4360 (-1335)  
 Pawnee 4458 (-1423) 4458 (-1423)  
 Cherokee Sh 4543 (-1510) 4543 (-1508)  
 Johnson Zone 4589 (-1554) 4586 (-1551)  
 Mississippian 4661 (-1626) 4659 (-1624)

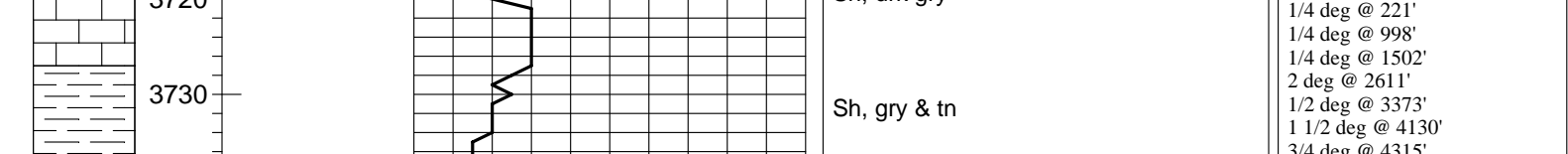


Date	Drilling Progress	NO	Stret	Make	Type	Req'd	Depth	Out	Feet	Hours
11/17/14	Spud	1	12	1/4" HTC	GTC-1	223			223	3
11/21/14										
11/23/14		2	7 7/8"	HTC	DF506	3253			3030	42
11/24/14		3	7 7/8"	HTC	GX20c	4750			1497	98
11/25/14										
11/26/14										
11/27/14										
11/28/14										
11/29/14										
11/30/14										
1/11/15										
1/11/15										

**Remarks And Recommendations:**  
 Based on sample examination, DST results, and log analysis the #2-4 Kuhn was plugged and abandoned.

**Thomas Funk**  
**Petroleum Geologist**

**LEGEND**



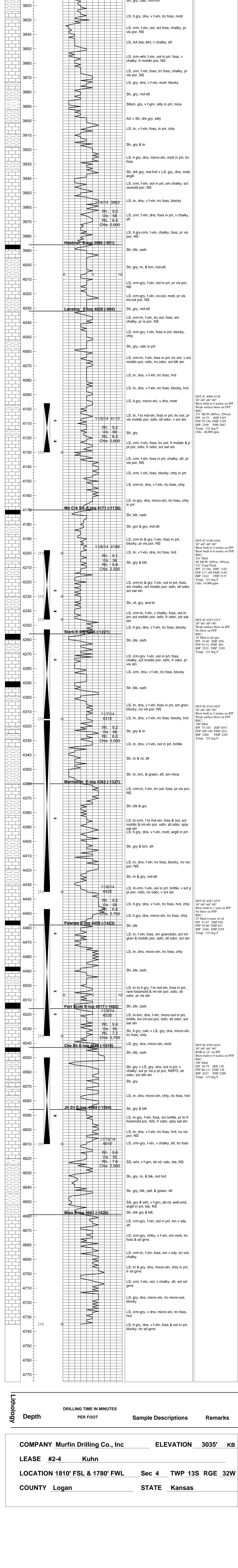
**Lithology**

**DRILLING TIME IN MINUTES PER FOOT**

**Depth**

**Sample Descriptions**

**Remarks**



**Lithology**

**DRILLING TIME IN MINUTES PER FOOT**

**Depth**

**Sample Descriptions**

**Remarks**

**COMPANY** Murfin Drilling Co., Inc **ELEVATION** 3035' **KB**  
**LEASE** #2-4 **Kuhn**  
**LOCATION** 1810' FSL & 1780' FWL **Sec 4** **TWP 13S** **RGE 32W**  
**COUNTY** Logan **STATE** Kansas