

# Jeff Christian

PETROLEUM GEOLOGIST

Wichita, Kansas

**GEOLOGISTS' REPORT**  
 THE LOGS AND SAMPLE LOGS

**OPERATOR** MUREN DRILLING COMPANY  
**LENS** PATTTI 'G' # 1.4  
**LOCATION** 660 FSL & 2200' FEL

**SEC.** 4 **TWP.** 1 S **RNG.** 37 W  
**COUNTY** CHEYENNE **STATE** KANSAS  
**FIELD** NA  
**APR** 15-02-21362  
**CONTRACTOR** COMPANY TOOLS  
**DRILLING STARTED** 05/19/2013 **COMPLETION** 05/20/2013  
**MUD DISPLACED** 2922' **MUD TYPE** CHEMICAL  
**DRILLING TIME KEPT FROM** 3490' **TO** R/D  
**SAMPLES SAVED FROM** 3490' **TO** R/D  
**SAMPLES EXAMINED FROM** 3490' **TO** R/D  
**DEOLOGICAL SUPERVISION FROM** 3900' **TO** R/D

**FORMATION** TOP LOGS SAMPLE  
**NAME** DATUM TOP DATUM BHS  
**ANHYDRITE** 3110' (-37) 3107' (-24)  
**FORAKER** 3674' (-527) 3674' (-527)  
**TOPEKA** 3893' (-746) 3897' (-780)  
**OREAD** 4027' (-880) 4029' (-882)  
**LANSING** 4108' (-961) 4111' (-964)  
**STARK** 4321' (-1173) 4328' (-1181)  
**BKC** 4380' (-1233) 4383' (-1236)  
**PAWNEE** 4498' (-1351) 4502' (-1355)  
**CHEROKEE** 4585' (-1438) 4588' (-1441)  
 4669' (-1522) 4670' (-1523)

**ELEVATIONS**  
**KB** 3147'  
**GL** 3137'

**MEASUREMENTS FROM K.B.**  
**CONDUCTOR** NONE  
**CASING RECORD**  
**Surface** 8.5/ft @ 224'  
**W/ 190 SX**  
**Production** 5.1/2' @ 4664'

DATE	7:00 AM DEPTH	REMARKS
5/19/13	MIRT	SPUD 6:00 pm
5/10/13	227'	WOC dev 1/2 deg.
5/11/13	1850'	DRLG.
5/12/13	3085'	DRLG.
5/13/13	3660'	DRLG.
5/14/13	3800'	DRLG dev. 1 deg. @ 3690'
5/15/13	4040'	TIH after DST # 2
5/16/13	4180'	TOH for DST # 4
5/17/13	4240'	OB w/ DST # 5 dev. 2 deg.
5/18/13	4330'	TIH after DST # 6
5/19/13	4522'	TOH with DST # 7 RTD 4670' @ 7:15 pm dev. 2 1/4 deg.
5/20/13	4670'	Finish logging 5:00 am

**Remarks**  
 5 1/2" production casing set to further test the Lansing / Kansas City and Pawnee formations.  
 Electric log measurements correlate about 3' high compared to rotary measurements.  
 Samples deposited at the Kansas Geological Survey.  
 Respectfully Submitted,  
*Jeff Christian*  
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