

Jeff Christian

PETROLEUM GEOLOGIST
Wichita, Kansas

GEOLOGICAL REPORT

DRILLING TIME AND SAMPLE LOG

OPERATOR **MURFIN DRILLING COMPANY**
 LEASE **HATCH 'A' #1-1**
 LOCATION **2130' FSL & 330' FEL**

SEC. **1** TWP. **2 S** R. **37 W**
 COUNTY **CHEYENNE** STATE **KANSAS**

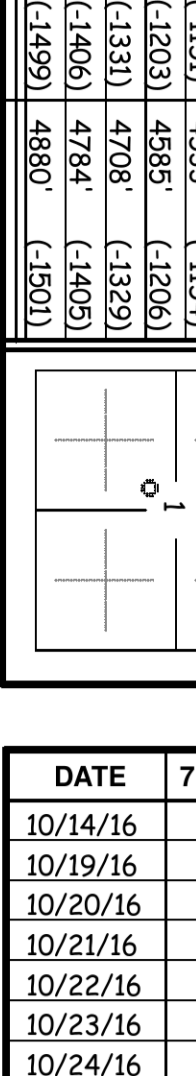
API **15-023-21453-00-00**
 CONTRACTOR **COMPANY TOOLS** RIG NO. **3**
 DRILLING STARTED **10/19/2016** COMPLETED **10/27/2016**
 MUD DISPLACED **3407** MUD TYPE **CHEMICAL**
 DRILLING TIME FROM **3390** TO **RTD**
 SAMPLES EXAMINED FROM **3390'** TO **RTD**
 SAMPLES EXAMINED FROM **3990'** TO **RTD**
 GEOLOGICAL SUPERVISION FROM **3968'** TO **RTD**

MEASUREMENTS FROM KB
 CASING RECORD
 CONDUCTOR **NONE**
 SURFACE **8.5/8" @ 324'**
 W/ **300 SX**
 PRODUCTION **11/27' @ 4874'**
 W/ **435 SX**

ELEVATIONS
 KB **3379'**
 OL **3374'**

FORMATION NAME LOG TOP DATE TIME TOP SAMPLE DATE TIME

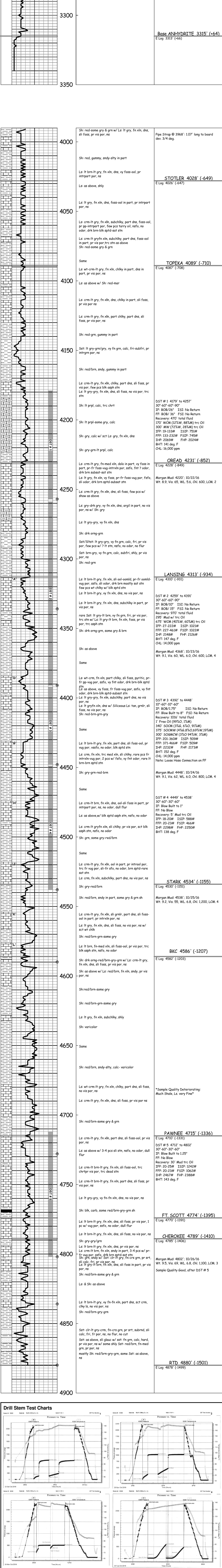
ANHYDRITE	3284'	(+95)	3285'	(+94)
BASE ANHYDRITE	3313'	(+66)	3315'	(+64)
TOPEKA	4087'	(-708)	4097'	(-718)
OREAD	4228'	(-842)	4229'	(-850)
LANSING	4310'	(-931)	4313'	(-934)
STARK	4530'	(-1151)	4533'	(-1154)
BKC	4582'	(-1203)	4585'	(-1206)
PAWNEE	4710'	(-1331)	4708'	(-1329)
CHEROKEE	4785'	(-1406)	4784'	(-1405)
TOTAL DEPTH	4878'	(-1499)	4880'	(-1501)



DATE	7:00 AM DEPTH	REMARKS
10/14/16	MIRT	
10/19/16	0'	SPUD 10:00 am
10/20/16	1015'	DRLG. dev. 1/4 deg. @ 324'
10/21/16	3295'	DRLG.
10/22/16	4140'	DRLG. dev. 3/4 deg. @ 3968'
10/23/16	4330'	DRLG. dev. 1/2 deg. @ 4391'
10/24/16	4448'	TOH for DST # 3
10/25/16	4538'	OB w/ DST # 4
10/26/16	4802'	TOH for DST # 5
10/27/16	4880'	RTD @ 11:30 pm 10/26/16 dev. 3/4 deg. Finish Logging 8:00 am

Remarks
 5 1/2" production casing set to further test the Lansing/Kansas City, Marmaton and Cherokee formations.
 Electric log measurements correlate 3' to 4' high compared to rotary measurements.
 Drilling samples deposited at the Kansas Geological Survey.

Respectfully Submitted,
Jeff Christian
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Drill Stem Test Charts

