

JAMES C. MUSGROVE

Petroleum Geologist, LLC
212 Main Street
P.O. Box 215
Claflin, KS 67525

Office (620) 588-4250

Res. Claflin (620) 587-3444

Mai Oil Operations
Clasen #2
SE-NW-NE (990' FNL & 1650' FEL)
Section 25-19s-13w
Barton County, Kansas

Page 1

5 1/2" Production Casing Set

Contractor: Southwind Drilling Co. (rig #3)
Commenced: September 15, 2016
Completed: September 22, 2016
Elevation: 1838' K.B., 1836' D.F., 1830' G.L.
Casing program: Surface; 8 5/8" @ 682'
Production/Disposal; 5 1/2" @ 3462'
Sample: Samples saved and examined 2900' to the Rotary Total Depth.
Drilling time: One (1) foot drilling time recorded and kept 2900' to the Rotary Total Depth.
Measurements: All depths measured from the Kelly Bushing.
Drill Stem Tests: There were three (3) Drill Stem Tests ran by Trilobite Testing Co.
Electric Log: By Eli Wireline Services, Dual Induction, Compensated Density/Neutron Log and Micro Log

<u>Formation</u>	<u>Log Depth</u>	<u>Sub-Sea Datum</u>
Anhydrite	684	+1154
Base Anhydrite	705	+1133
Heebner	3021	-1183
Toronto	3037	-1183
Douglas	3053	-1199
Brown Lime	3132	-1215
Lansing	3146	-1294
Base Kansas City	3375	-1308
Conglomerate	3386	-1548
Conglomerate Chert	3421	-1583
Arbuckle	3434	-1596
Reagan Sand	3476	-1638
Granite Wash	3550	-1712
Granite	3625	-1787
Rotary Total Depth	3627	-1789
Log Total Depth	3525	-1687

Remarks: After Electric Logs were run, it was decided to drill additional footage.

(All tops and zones corrected to electric log measurements)

SAMPLE ANALYSIS, SHOWS OF OIL, TESTING DATA, ETC.

TOPEKA SECTION

2966-2974' Limestone, tan, oolitic/fossiliferous, chalky, fair porosity, spotty brown stain, no free oil and no odor in fresh samples.

TORONTO SECTION

3037-3050' Limestone, white/cream, dolomitic in part; slightly fossiliferous, trace black stain, no show of free and no odor.

LANSING SECTION

3146-3154' Limestone, gray, white, fossiliferous/oolitic, chalky, fair porosity, brown stain, show of free oil and good odor in fresh samples.

3161-3165' Limestone, tan, finely oolitic, fair porosity, fair stain and saturation, show of free oil and fair odor in fresh samples.

Drill Stem Test #1 **3125-3185**

Times: 45-30-45-60

Blow: Strong

**Recovery: 465' gas in pipe
93' mud, scum of oil**

**Pressures: ISIP 330 psi
FSIP 438 psi
IFP 70-73 psi
FFP 69-74 psi
HSH 1547-1527 psi**

3193-3201' Limestone, gray, medium crystalline, few fossiliferous, chalky in part; black (dead) stain, no show of free oil or odor in fresh samples.

3211-3216' Limestone, tan, oolitic, scattered porosity, brown stain/saturation, show of free oil and faint odor in fresh samples.

Drill Stem Test #2 **3186-3225**

Times: 30-30-45-45

Blow: Weak

**Recovery: 55' gas in pipe
5' mud/show of oil**

**Pressures: ISIP 87 psi
FSIP 86 psi
IFP 21-17 psi
FFP 17-16 psi
HSH 1557-1545 psi**

- 3229-3236' Limestone, tan, oomoldic, fair to good oomoldic porosity, brown spotty stain, one (1) piece, show of free oil and no odor in fresh samples.
- 3236-3250' Limestone, as above, no shows.
- 3283-3290' Limestone, cream, sub-oomoldic, poor to fair porosity, brown stain, show of free oil and no odor in fresh samples.
- 3297-3306' Limestone, cream, white, oolitic, fair porosity, gray and black stain, no show of free oil and no odor in fresh samples.
- 3317-3321' Limestone, white, gray, oomoldic, fair oomoldic porosity, poor brown stain, show of free oil and no odor in fresh samples.
- 3340-3346' Limestone, tan, white, fossiliferous, poor visible porosity, brown stain, trace of free oil and no odor in fresh samples.

Drill Stem Test #3 **3268-3360**

Times: 30-30-45-60

Blow: Strong; gas to surface 30 mins into final flow, TSTM

**Recovery: 20' mud, show of oil
124' muddy gassy watery oil
(20% gas; 50% oil; 10% water; 20% mud)
186' muddy gassy watery oil
(30% gas; 40% oil; 15% water; 15% mud)**

**Pressures: ISIP 684 psi
FSIP 717 psi
IFP 90-103 psi
FFP 118-155 psi
HSH 1636-1593 psi**

Mai Oil Operations
Clasen #2
SE-NW-NE (990' FNL & 1650' FEL)
Section 25-19s-13w
Barton County, Kansas

Page 4

CONGLOMERATE SECTION

- 3386-3400' Shale, red, sandy; plus brick red soft shale and white/yellow chert.
- 3400-3421' Shale, blue green, maroon sub-waxy; plus chert as above.
- 3421-3432' Chert; white/gray, boney, few weathered, black stain, no free oil and faint odor in fresh samples.

ARBUCKLE SECTION

- 3434-3450' Dolomite, cream, white, fine and medium crystalline, few cherty, few sandy, poor visible porosity, trace brown/black stain, no free oil and no odor in fresh samples.
- 3450-3460' Dolomite, as above, no shows, faint odor in fresh samples.
- 3460-3476' Dolomite, as above, dolomite, pink, sandy, slightly cherty, no shows.

REAGAN SAND

- 3476-3490' Sand, clear, glossy quartzite, very fined grained, rounded, fair sorting, fair to good intergranular porosity, no shows.
- 3490-3500' Sand, as above, dolomitic, no shows.
- 3500-3520' Sand, coarse grained, sub-rounded/rounded; trace pyrite, no shows.
- 3520-3530' Sand, as above, green tinted; few brown and beige in color, no shows.
- 3530-3550' Sand, as above, abundant loose unconsolidated quartz grains, no shows.

GRANITE WASH

- 3500-3580' Schist, quartz/biotite, black, dark black weathered in part; plus iron pyrite, no shows, loose unconsolidated quartz grains.
- 3580-3625' Schist, as above, no shows.

GRANITE

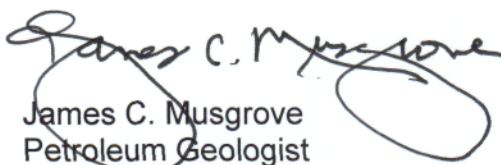
- 3625-3627' Quartz, biotite schist, plus trace, red/pink feldspar; no shows.

Rotary Total Depth 3625
Log Total Depth 3625

Recommendations:

The 5 ½" production/disposal casing was set and cemented at 3462' on the Clasen #2.

Respectfully yours,


James C. Musgrove
Petroleum Geologist

