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Empire Energy E&P LLC
Apel #14-5D
SE-SW-SE (330' FSL & 1650' FEL)
Section 14-19s-12w
Barton County, Kansas

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5 1/2" Production Casing Set

Contractor: Ninescch Drilling Co. (rig #101)
Commenced: November 6, 2014
Completed: November 12, 2014
Elevation: 1840' K.B., 1838' D.F., 1827' G.L.
Casing program: Surface, 8 5/8" @ 659'
Production, 5 1/2" @ 3531'
Sample: Samples saved and examined 2800' to the Rotary Total Depth.
Drilling time: One (1) foot drilling time recorded and kept 2800 ft. to the Rotary Total Depth.
Measurements: All depths measured from the Kelly Bushing.
Drill Stem Tests: There were one (1) Drill Stem Tests ran by Diamond Testing Co.
Electric Log: By Tucker Energy Services; Phased Induction Shallow Focus SP Log; Compensated Neutron PEL Density Micro Log; Borehole Volume Caliper Log and Composite Log.

<u>Formation</u>	<u>Log Depth</u>	<u>Sub-Sea Datum</u>
Anhydrite	659	+1181
Base Anhydrite	677	+1163
Topeka	2651	-811
Heebner	2996	-1156
Toronto	3014	-1174
Douglas	3031	-1191
Douglas Sand	3044	-1204
Brown Lime	3113	-1273
Lansing	3128	-1288
Base Kansas City	3368	-1528
Conglomerate	3376	-1536
Arbuckle	3388	-1548
Rotary Total Depth	3532	-1692
Log Total Depth	3532	-1692

(All tops and zones corrected to Electric Log Measurement)

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

TOPEKA SECTION

2937-2960' Limestone, cream, gray, sub-oomoldic, chalky, trace brown stain, no free oil and no odor.

TORONTO SECTION

3014-3031' Limestone, white, gray, finely crystalline, chalky, poorly developed porosity, gray and black stain and saturation, no free oil and no odor.

DOUGLAS SECTION

Sand; white, light gray, very fine grained, sub-rounded friable; micaceous in part; fair inter-granular porosity, trace light brown stain, trace of free oil and questionable odor in fresh samples.

LANSING SECTION

3128-3138' Limestone, white, gray, cream, finely crystalline, chalky, few fossiliferous, poor visible porosity, trace light brown stain, no free oil and faint odor in fresh samples.

3153-3164' Limestone, gray, white, oolitic, sub-oomoldic, trace light brown and golden brown stain, weak show of free oil and faint odor in fresh samples.

3172-3180' Limestone, gray, oolitic, chalky; plus gray and white chert.

3195-3202' Limestone, gray, white, oolitic, chalky in part, brown stain, trace of free oil and questionable odor in fresh samples.

3215-3230' Limestone, tan, gray, oomoldic, fair to good oomoldic porosity, chalky, no shows.

3230-3250' Limestone, as above.

3270-3280' Limestone, tan, gray, yellow, fossiliferous, oolitic, chalky, no shows.

3282-3291' Limestone, gray, white, sub-oomoldic, chalky, trace light brown stain, weak show of free oil and faint odor in fresh samples.

3298-3310' Limestone, white, sub-oomoldic, chalky, poor light brown and golden brown stain, trace of free oil and faint odor in fresh samples.

3327-3350' Limestone, gray, white, yellow, fossiliferous, chalky increasingly cherty, (dense).

ARBUCKLE SECTION

3388-3400' Dolomite, tan, gray, sucrosic, fair to good pinpoint porosity to finely vuggy porosity, fair brown stain and saturation, show of free oil and fair odor in fresh samples.

3404-3416' Dolomite, tan, white, sucrosic, fair pinpoint porosity, golden brown stain and saturation, show of free oil and fair to good odor in fresh samples.

3420-3432' Dolomite, white, cream, medium crystalline, fair inter-crystalline porosity, brown stain, show of free oil, fair odor in fresh samples.

Drill Stem Test #1 3361-3432

Times: 45-30-60-60

Blow: Fair

Recovery: 20' gas in pipe
170' muddy gassy oil
(15% gas; 40 mud)

Pressures:	ISIP	851	psi
	FSIP	844	psi
	IFP	18-53	psi
	FFP	58-85	psi
	HSH	1700-1650	psi

3332-3350' Dolomite, as above, poorly developed porosity, trace gray and black stain, no show of free oil and questionable odor in fresh sample.

3450-3460' Dolomite, tan, gray, finely crystalline, few medium crystalline, poor visible porosity, plus white and gray chert.

3460-3480' Dolomite, as above, trace iron pyrite and white chalk.

3480-3500' Dolomite, gray, and white, cream, finely crystalline, slightly cherty, few sandy, no shows.

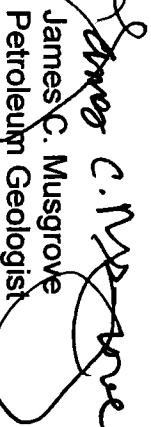
3500-3520' Dolomite, as above.

3520-3532' Dolomite, gray, white, finely crystalline, sandy, poor porosity, no shows.

Rotary Total Depth: 3532
Log Total Depth: 3532

Recommendations:
5 ½ production casing was set and cemented on the Empire Energy E&P LLC, Apel #14-5D.

Respectfully Submitted,


James C. Musgrove
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