

# Robert C. Lewellyn

Consulting Petroleum Geologist

P. O. Box 609  
Kechi, KS 67067-0609  
Office 316-744-2567  
Cell 316-518-0495  
Fax 209-396-2988  
boblewellyn@yahoo.com

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NOV 03 2006  
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API# 15 - 135 - 24525

## GEOLOGICAL REPORT

Larson Operating Company  
No. 3-19 McLeish  
2250' FNL & 1560' FEL Sec. 19-18S-26W  
Ness County, Kansas  
**SE SW NE**

### CONTRACTOR:

Southwind Drilling Co. Rig #1

### SPUDDED:

July 08, 2006

### DRILLING COMPLETED:

July 19, 2006

### SURFACE CASING:

8 5/8" @ 262 KBM/180 sx

### ELECTRIC LOGS:

Log-Tech DIL CDN MEL BHCS

### ELEVATIONS:

2648 KB 2638 GL

### FORMATION TOPS: (Electric Log)

|                           |              |
|---------------------------|--------------|
| Anyhdrite                 | 2009 (+ 639) |
| Base Anhydrite            | 2048 (+ 600) |
| Heebner Shale             | 3952 (-1304) |
| Lansing-Kansas City Group | 3989 (-1341) |
| Muncie Creek Shale        | 4157 (-1509) |
| Stark Shale               | 4252 (-1604) |
| Hushpuckney Shale         | 4290 (-1642) |
| Base Kansas City          | 4363 (-1715) |
| Marmaton                  | 4393 (-1745) |
| Altamont                  | 4402 (-1754) |
| Pawnee                    | 4463 (-1815) |
| Fort Scott                | 4512 (-1864) |
| Cherokee                  | 4535 (-1887) |
| Mississippian             | 4599 (-1951) |
| Log Total Depth           | 4675 (-2027) |

Samples were examined microscopically from 3900 feet to Rotary Total Depth. Samples were examined wet and dry and samples from potentially productive zones were viewed under a fluoroscope and checked for oil cut. Following is a description of zones of

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11100  
SE SW NE

19-18-26W

interest, oil and gas shows, drill stem tests, etc. For a complete lithologic description of all zones refer to the sample log in the back pages of this report.

Lansing-Kansas City Zones:

3989-3994 & 4003-4007 (A Zone)

Limestone, buff to tan, dense to finely crystalline and partly fossiliferous, partly crinoidal, poor to fair intercrystalline and interfossil porosity, with traces of dead oil stain, no show of live oil.

4021-4027 (B Zone)

Limestone, cream to buff, dense to finely crystalline and chalky, some oolitic, trace of poor intercrystalline and interoolitic porosity, no show of oil.

4041-4045 (C Zone)

Limestone, slightly dolomitic, buff to tan, finely crystalline and fossiliferous, poor intercrystalline and interfossil porosity, trace of dead oil stain, no show of live oil.

4055-4074 (D Zone)

Limestone, cream to buff, some tan and brown, dense to finely crystalline, some partly oolitic, scattered very poor interoolitic and intercrystalline porosity, no show of oil.

4076-4087 (E Zone)

Limestone, buff to tan, dense to finely crystalline and chalky, some scattered oolitic, zone is mostly tight, no show of oil.

4089-4092 & 4098-4101 (F Zone)

Limestone, cream to buff, finely crystalline and chalky, trace of very poor intercrystalline porosity, no show of oil, trace of buff, fresh, opaque chert.

4108-4112 & 4115-4124 (G Zone)

Limestone, buff to tan, some brown, dense, some dense-oolitic, some oolitic with poor ooliticastic porosity, no show of oil, much cream chalky limestone in section.

4169-4174 (H Zone)

Limestone, cream to buff to tan, some brown, dense to finely crystalline, chalky, some scattered poor intercrystalline porosity, no show of oil.

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4194-4228 (I Zone)

Limestone, buff to gray, finely crystalline with much cream chalky, some partly fossiliferous, zone is mostly tight, no show of oil.

4231-4234 & 4238-4240 (J Zone)

Limestone, cream, some buff, finely crystalline and oolitic, poor intercrystalline and interoolitic porosity, trace poor ooliticastic porosity, no show of oil.

4264-4267 (K Zone)

Limestone, cream to buff, dense to finely crystalline and chalky, scattered poor to fair intercrystalline porosity, no show of oil.

4295-4329 (L Zone)

Limestone, buff to tan, some cream, dense to finely crystalline and chalky, tight, no show of oil, some medium gray chert, fresh, opaque, spicular, some tan to brown oolitic to dense-oolitic limestone.

4331-4363 (M Zone)

Limestone, buff to tan, some brown, dense to finely crystalline and partly fossiliferous, tight, no show of oil.

Pleasanton Zones: 4363-4393

This section consisted of limestone, cream to buff, some tan and gray, dense to finely crystalline with considerable cream chalky limestone, trace of oolitic limestone, the zone was mostly tight and contained no shows of oil.

Marmaton Zones: 4393-4402

Limestone, buff to tan, some gray, dense to finely crystalline with some cream chalky limestone, mostly tight, no show of oil.

Altamont Zones: 4402-4424

Limestone, buff to tan, finely crystalline, partly oolitic, mostly tight, some oolitic with a trace of dead oil stain, no show of live oil stain.

4426-4428

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Limestone, buff, some tan, dense to finely crystalline, poor to fair intercrystalline porosity, fair show of free oil, poor to fair light spotted stain, faint to fair odor, no fluorescence, fair cut, some dense lime with oil stain on fracture faces.

Drill Stem Test No. 1

4405-4438

Open 15 minutes, shut in 30 minutes, open 45 minutes, shut in 90 minutes; blow built to bottom of bucket in 5 ½ minutes on first flow period, no blowback, blow did not return on final flow and had no blowback on shut in. Recovered 375 feet of drilling mud with spots of oil in tool. ISIP 1799# FSIP 427# IFP 28-200# FFP 205-208# IHP 2172# FHP 2128# BHT 123 degrees.

NOTE: The above test was a *missrun*. The drill string was picked up too high in the process of closing the tool for the initial shut in. As a result, the packer was unseated and the pressure recording device recorded part of the hydrostatic pressure as the initial shut in pressure. The packer re-seated for the remainder of the test and the charts resembled a normal test, with a normal first flow period, second flow period and final shut in period, except for the unusually high initial shut in and the amount of drilling mud recovered.

Drill Stem Test No. 2

4408-4438

Open 15 minutes, shut in 30 minutes, open 30 minutes, shut in 60 minutes; blow built to a four inch blow on first flow, no blowback on initial shut in, blow did not return on second flow period, no blowback on final shut in. Recovered 240 feet of drilling mud. ISIP 1816# FSIP 559# IFP 124-133# FFP 138-142# IHP 2173# FHP 2145# BHT 127 degrees.

NOTE: The above test was a *missrun*. The drill string was picked up too high in the process of closing the tool for the initial shut in. As a result, the packer was unseated and the pressure recording device recorded part of the hydrostatic pressure as the initial shut in pressure. The packer re-seated for the remainder of the test and the charts resembled a normal test, with a normal first flow period, second flow period and final shut in period, except for the unusually high initial shut in and the amount of drilling mud recovered.

Pawnee Zones: 4463-4507

The Pawnee Section consisted of tan to brown to mottled dense limestones with cream chalky limestones with scattered buff, opaque chert. The zone was mostly tight and contained no shows of oil.

Fort Scott Zones: 4512-4524

Limestone, buff to tan, some brown, finely crystalline and oolitic, scattered fair inter-oolitic porosity with some poor oolitic porosity, fair show of free oil, poor to fair spotted stain, good odor, trace of fluorescence, fair cut.

Drill Stem Test No. 3

4465-4522

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Open 15 minutes, shut in 30 minutes, open 45 minutes, shut in 90 minutes; first flow quarter inch blow building to bottom of bucket in seven minutes, no blowback; second flow blow off bottom of bucket in one minute, no blowback on shut in. Recovered 868 feet of gas in drill pipe, 55 feet of gassy oil cut mud & 62 feet of gassy mud cut oil. ISIP 380# FSIP 470# IFP 25-36# FFP 42-55# IHP 2324# FHP 2136# BHT 125 degrees.

4528-4535

Limestone, tan to brown, some mottled, dense, trace of finely crystalline, zone is mostly tight with no shows of oil.

Cherokee Zones:

4568-4588 (Johnson)

Limestone, buff to tan, fine to medium crystalline, partly oolitic, partly fossiliferous, fair to good intercrystalline, interfossil and interoolitic porosity, fair show of free oil, faint odor, no fluorescence, poor cut, free oil is dark and partly dead, but traces of live free oil are present in the section.

Mississippian Zones:

4599-4605

Dolomite, buff to tan, sucrosic, poor to fair intergranular-intercrystalline porosity, good show of free oil, fair odor, good spotted stain, some saturated stain, fair fluorescence, good cut.

Drill Stem Test No. 4 4569-4605

Open 15 minutes, shut in 30 minutes, open 30 minutes, shut in 60 minutes; weak blow on first flow, died in six minutes; no blowback, blow did not return on second flow. Recovered 15 feet of oil cut mud. ISIP 601# FSIP 378# IFP 16-19# FFP 21-28# IHP 2278# FHP 2312# BHT 122 degrees.

4605-4618

Dolomite, buff to tan, sucrosic, fair intergranular-intercrystalline porosity, trace of scattered vugular porosity, good show of free oil, good spotted stain, some saturated stain, good odor, poor to fair fluorescence, good cut, with light influx of chert, white, tripolitic in part with scattered poor "edge" porosity, trace dark asphaltic stain, no live oil stain in chert, good show of oil in dolomite.

Drill Stem Test No. 5 4604-4614

Open 15 minutes, shut in 30 minutes, open 30 minutes, shut in 60 minutes; first flow weak surface blow, died in five minutes, no blowback, blow did not return on second

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flow. Recovered five feet of drilling mud. ISIP 451# FSIP 263# IFP 15-19# FFP 19-22# IHP 2326# FHP 2211# BHT 122 degrees.

4618-4634

Dolomite, buff to tan, sucrosic, fair to good intergranular-intercrystalline porosity, scattered fair vugular porosity, good show of free oil, good odor, good spotted to saturated stain, fair fluorescence, good cut.

4634-4658

Dolomite, buff, some tan, finely crystalline with some scattered medium crystalline, scattered poor to fair intercrystalline porosity, trace of very light spotted stain, very slight show of free oil, faint odor, no fluorescence, poor cut.

4658-4675

Dolomite, buff, some tan, fine to medium crystalline, some scattered coarse crystalline, slightly fossiliferous, fair to good intercrystalline and vugular porosity, no show of oil.

4675 Rotary Total Depth

#### Conclusions and Recommendations:

Although the Mississippian was tight in the top section, an interval from 4618-4622 appears to be porous and has good resistivity. The section just below 4618 should be perforated and tested for production.

The Fort Scott section from 4512-4518 should be considered for perforation and testing prior to abandonment.

The two tests on the Altamont producing zone were both misruns. An interval from 4427-4429 had fair to good oil shows and should be considered for perforation and testing prior to abandonment of this well.

Although the Johnson Zone carried some shows of oil it merits no further consideration because it was open in the Mississippian Drill Stem Test, DST No. 4, and gave up nothing.

Respectfully submitted,

Robert C. Lewellyn  
Petroleum Geologist

RCL:me

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