

BERNARD W. LOUNSBURY
CONSULTING GEOLOGIST
WICHITA PLAZA
WICHITA, KANSAS 67202

October 28, 1970

Murfin Drilling Co.
617 Union Center
Wichita, Kansas

Re: Murfin Drilling Co.
#2 Ohlson
0 SW SE
Section 3-1S-34W
Rawlins County, Kansas

Gentlemen:

The following is a sample analysis report of the above captioned well. Samples were examined from 3300' to 4325', total depth. The well was under geological supervision from 3210' to total depth.

COMMENCED: 10-13-70
ROTARY RELEASED: 10-24-70
CONTRACTOR: Murfin Drilling Co.-Rig #8
CASING RECORD: 8 5/8" @ 306' w/200 sx.
5 1/2" @ 4319' w/225 sx.
ELEVATIONS: 3143' K.B.
3140' D.F.
3138' G.L.

<u>FORMATION</u>	<u>DEPTH</u>	<u>SEA LEVEL DATUM</u>
Anhydrite	2982'	+161'
Base Anhydrite	3020'	+123'
Neva	3510'	-367'
Wabaunsee	3628'	-485'
Topeka	3847'	-704'
Deer Creek	3878'	-735'
Oread	3930'	-787'
Douglas Sand	3999'	-856'
Lansing-Kansas City	4035'	-892'
Base Kansas City	4305'	-1162'
Log Total Depth	4320'	-1177'
Driller Total Depth	4325'	-1182'

All measurements from rotary bushing elevation.

DRILL STEM TESTS

- #1 3997'-4054' 30-30-90-30. Recovered 660' muddy saltwater with a trace of black oil. IF 38#, FF 361#, ICIP 1138#, FCIP 1062#.
- #2 4056'-4098' 30-30-30-30. Recovered 5' free oil and 60' slightly oil cut mud. IF 38#, FF 57#, ICIP 1043#, FCIP 986#.
- #3 4102'-58' 30-30-90-30. Recovered 855' gas, 165' clean oil, 180' muddy oil and 120' heavily oil cut mud.
- #4 4158'-4206' 30-30-90-30. Recovered 660' gas, 420' clean oil, 240' heavily mud cut oil, 180' heavily oil cut mud. IF 57#, FF 361#, ICIP 1232#, FCIP 1195#.
- #5 4206'-50' 30-30-60-30. Recovered 840' gas, 360' clean oil, 120' muddy oil, 480' heavily oil and gas cut mud and 180' oil cut waltwater. IF 95#, FF 475#, ICIP 503#, FCIP 503#.

CORING RECORD

None.

ELECTRICAL SURVEY

A Great Guns R.A. Guard and Caliper Log was run from 3500' to 4320', electric log total depth.

WABAUNSEE

- 3628'-30' Gray, finely crystalline, fossiliferous limestone with spotted dark dead stain in poor fossil and pinpoint porosity. No odor. Trace dead free oil. 8½% porosity. 48% water saturation.

TOPEKA

- 3847'-55' Cream, finely crystalline, fossiliferous limestone. Trace of gilsonite stain. Poor fossil porosity. No free oil. No odor. The electric log gives this interval 4% porosity.

DEER CREEK

3878'-82'

Cream, finely crystalline to sucrose dolomitic-limestone. Rare trace fair to poor porosity. No odor. No free oil. 7% porosity. 90-100% water saturation.

ORCAD

3930'-36'

Cream, finely crystalline to sucrose dolomitic-limestone with rare spotted asphaltic stain in poor porosity. No odor. No free oil. 8% porosity. 100% water saturation.

DOUGLAS SAND

3999'-4011'

Gray, fine grained, dirty sandstone with spotted asphaltic stain. Tarry free oil. No odor. 18% porosity. 90% water saturation. This sand was included in DST #1, recovered 660' muddy saltwater with a trace of black oil.

POROUS ZONES IN THE LANSING-KANSAS CITY

The Lansing-Kansas City was topped at 4035' (-892'). This is flat with the producer one location south and 3' higher than the producer one location west.

4039'-42'

Cream, finely crystalline to dense, fossiliferous limestone with fair to dark oil stain in poor fossil porosity. Free oil. No odor. 14% porosity. 90% water saturation. This interval was included in DST #1, recovered 660' muddy saltwater with a trace of black oil.

4076'-78'

Cream, finely crystalline, fossiliferous limestone. Dead oil stain. Fair fossil and vug porosity. Free oil. No odor. 13% porosity. 80% water saturation.

4087'-90'

Cream, finely crystalline, fossiliferous limestone with good saturation. Fair fossil and vug porosity. Free oil. No odor. 7% porosity. 57% water saturation. This interval was tested by DST #2, recovered 5' free oil and 60' slightly oil cut mud. It is my recommendation that the interval 4078'-79' be perforated for further testing of this zone.

- 4110'-14' Cream, finely crystalline, fossiliferous limestone with fair saturation in fair fossil porosity. No odor. Free oil. 7 $\frac{1}{2}$ % porosity. 44% water saturation. This zone was included in DST #3, recovered 855' gas, 165' clean oil, 180' muddy oil and 120' heavily oil cut mud. This zone should be perforated for further testing.
- 4137'-40' Cream, finely crystalline, fossiliferous limestone. Good saturation. Fair fossiliferous and vug porosity. No odor. Free oil. 11% porosity. 35% water saturation. This interval was also included in DST #3, recovered 855' gas, 165' clean oil, 180' muddy oil and 120' heavily oil cut mud. It is my recommendation that this zone be perforated for further testing.
- 4189'-92' Gray, finely fossiliferous limestone with even saturation in good pinpoint and vug porosity. Free oil. Faint odor. 10% porosity. 30% water saturation. This zone was tested by DST #4, recovered 660' gas, 420' clean oil, 240' heavily mud cut oil and 180' heavily oil cut mud. This interval should be perforated for further testing.
- 4226'-34' Cream, finely crystalline, fossiliferous limestone with good saturation in good fossil porosity. Free oil. No odor. 15-18% porosity. 22-32% water saturation. This zone was tested by DST #5, recovered 840' gas, 360' clean oil, 120' muddy oil, 480' heavily oil and gas cut mud and 180' oil cut saltwater. It is my recommendation that the upper portion of this zone be perforated for further testing.
- 4271'-75' Gray, finely crystalline to chalky limestone. No shows. 11% porosity. 75% water saturation.

REMARKS

It is my recommendation that the following intervals be perforated for further testing.

<u>Interval</u>	<u>Formation</u>
4227'-32'	Lansing-Kansas City
4189'-90'	"
4138'-39'	"
4111'-13'	"
4088'-89'	"

Sincerely,

Bernard W. Lounsbury
m.d.

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BWL:ml