

Site Computer inventoried

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GEOLOGISTS REPORT

for

COG 88-102

Demaranville Lease

API No. 15-103-21097

C SW, SE, NW, Sec. 3, T9S, R20E

Leavenworth County, Kansas

March 1989

by

George E. Petersen C.P.G.

DEACON GEOLOGY INC.



*professional geologists*

GEOLOGISTS REPORT

COG 88-102

March 7, 1989: Called to well @ 6pm, on location @ 7:30pm, drilling @ 1115'.

March 8, 1988: Released from location @ 12:20am upon completion of logging. Delivered copies of logs to Dow Geological Services.

ELEVATION: 1020.3 G.L. (All measurements from G.L.)

FORMATION TOPS	LOG DEPTH	DATUM	THICKNESS	COG88-101	L.NOLL 1-87
Base KC	725	+295	139'	+293 <sup>1</sup>	+285
Marmaton	865	+156	92'	+160 <sup>62</sup>	+154
Cherokee	956	+64	498'	+69 <sup>11</sup>	+58
"Coal Marker"	1,372	-352	-	-338 <sup>7</sup>	-351
"U. McLouth Sd."	1,414	-394	6'	-375 <sup>3</sup>	-389
"M. McLouth Sd."	1,420	-400	16'	-390 <sup>82</sup>	-379
"L. McLouth Sd."	1,436	-416	14'	-409 <sup>7</sup>	-417
Mississippian Lm.	1,454	-434	-	-431 <sup>26</sup>	-442
RTD	1,487				
LTD	1,485				

Sample returns were examined microscopically from a drilled depth of 1100' to TD for the presence of visible hydrocarbons. Formation tops and intervals for this report were picked from sample returns, drilling time log and the Neurton-Density Porosity Log.

There was no evidence of the presence of oil in any of the geologic units above the "McLouth Sands"; however, there are indications on the logs that there are several sands in the Cherokee Group which may contain some quantities of gas.

CHEROKEE GROUP:

The top of the Cherokee Group was logged at a depth of 956 (+64). There appears to be some development of the upper "Squirrel" sand in this well. Log responses show what may be a very slight gas effect at 962 feet and with porosities of approximately 12% and Rt's averaging 15 ohms, the water saturation calculates out at 67%. This interval was above the mud up point and there is undoubtedly some invasion of the formation by drilling fluids. The caliper log indicates a good wall cake build up which is evidence

of good permeability. As no water samples are available from this interval in the immediate area, an  $R_w$  of .2 was utilized in the calculations. This "Squirrel" sand interval should be carefully evaluated before eventual abandonment of the well.

A clean thick sand was noted between 1166 and 1178. As in the "Squirrel" section, this sand had a thick wall cake build up over the interval and between 1176 and 1178 the  $S_w$  values were calculated at 57%. This interval should also be carefully tested for the presence of gas before eventual abandonment of the well.

A thin un-named sand was found between 1400 and 1404. This sand had a cross-over effect on the Density Porosity Log and log calculations yielded a 57% water saturation value. This interval should be tested before abandonment of the well.

The "McLouth" sands were divided into an upper (1414-20), middle (1420-36), and lower (1436-1450) unit for mapping and correlation purposes. Due to the lack of significant separation by thick shales, the sand will be discussed as one unit in this report.

The sands are medium to coarse grained, subrounded to rounded clear quartz with some shale included between sand grains. There was a show of oil on the pit during the drilling below 1410 indicating there may be some oil present in the sand from 1400-1404. The samples representing the interval from 1420 to 1450 contained a good to very good show of medium to dark brown free oil and a strong petroleum odor. There

were also gas bubbles observed on some of the samples. The application of trichlorethane yielded bright yellow streaming cuts.

Log calculations were prepared on location by Mr. Drylies of Log Tech Inc. using the following values:  $M=1.8$ ,  $R_w=.2$ .

<u>Interval</u>	<u><math>\phi</math></u>	<u>Rt</u>	<u>Sw</u>
1420-22	17	15	53
22-24	21	25	36
24-26	20	25	37
26-28	18	20	43
28-30	19	20	42
30-32	23	30	31
32-34	22	30	32
34-36	19	20	42
36-38	19	20	42
38-40	18	20	43

Based on the strong show of oil and the good gas effect shown on the logs between 1421 and 1427, a decision must be made before completion as to whether to produce primarily the gas or the oil. It is probable that both will be produced to some extent but careful selection of the interval to be perforated can reduce the amount of one or the other of the products. This well should prove to be a very good well for oil and gas.

**MISSISSIPPIAN:**

The top of the Mississippian was reached at a log depth of 1454' (-434). Sample returns from the upper portion contained a tan, soft argillaceous grainy limestone. The samples from 1460 to TD were a light tan to light brown to white, very coarsely crystalline to fragmental limestone along with abundant white tripolitic chert. There was a strong petroleum odor and a show of heavy dark brown to black free oil in the samples.

There was some vuggular posority; however, the most oil show appeared to be in fracture faces and in pinpoint porosity.

Due to the heavy nature of the oil and the failure to successfully produce from this interval in the immediate area it is recommended that no production be considered on this portion of the Mississippian.

CONCLUSIONS AND RECOMMENDATIONS:

This well has the potential to be the best oil and or gas well of the twenty plus wells which are locatled within one mile of its location. The structural position of all key horizons in this well has been compared to the surrounding wells on the Geologists Log which was enclosed with this report. There is some doubt as to the actual tops in many of the older wells due to questions of the elevation on the spot where the wells were drilled. It is strongly suggested that a detailed survey of all wells be accomplished at some point early in the developmental portion of this drilling program.

Care should be taken to minimize formation damage during completion of this well and all future wells should have the cementing plug displaced with either KCL water or formation water.

Should additional information be required, please contact me.

Respectfully submitted,

George E. Petersen C.P.G.

DEACON GEOLOGY INC.