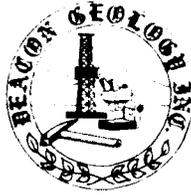


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GEOLOGISTS REPORT

for

Wagner #1-89

API No. 15-103-21154

NW, SW, NE, Sec. 3, T9S, R20E

Leavenworth County, Kansas

July 1989

by

George E. Petersen C.P.G.

DEACON GEOLOGY INC.



*professional geologists*

GEOLOGISTS REPORT

Wagner 1-89

July 17, 1989: Called to wellsite @ 10 am, on location @ 11:15, drilling @ 1070.

July 18, 1989: Released from wellsite upon completion of logging @ 12:20 am.

ELEVATION: 1016 G.L. ( all measurements from G.L.)

FORMATION TOPS	LOG DEPTH	DATUM	THICKNESS
Base KC	718	+298	130'
Marmaton	848	+168	98'
Cherokee	946	+70	494'
"Coal Marker"	1,352	-336	---
"U. McLouth Sd."	1,394	-378	14'
"M. McLouth Sd."	1,407	-391	26'
"L. McLouth Sd."	1,433	-417	7'
Mississippian Lm.	1,440	-424	---
"40' Zn."	1,510	-494	---
"Burlington Keokuk"	1,606	-590	---
LTD	1,640		
RTD	1,642		

Sample returns were examined microscopically from a drilled depth of 1100' to T.D. for the presence of visible hydrocarbons. Formation tops and intervals for this report were picked from sample returns, the drilling time log and the Neutron-Density Porosity Log.

There was no visible evidence of the presence of hydrocarbons in any of the geologic units above the "McLouth Sand" sequence. Other sand units within the Cherokee should continue to be evaluated in any other wells drilled in this area.

CHEROKEE GROUP:

The top of the Cherokee Group was topped at a log depth of 946 feet (+70). There appear to be no intervals above the "McLouth Sands" which have the potential for commercial production of hydrocarbons.

The "McLouth Sands" were reached at a log depth of 1394 feet. The sand has been divided for mapping and correlation purposes into an upper (1394-1407), middle (1407-1433) and

lower (1433-1440) unit.

There was a very slight odor and very slight show of free oil in the upper portion of the sands; however, the odor became much stronger with depth and the oil show became a very good show of medium to dark brown free oil. The application of trichlorethane yielded bright streaming cuts. The lower third of the sand thickness yielded sufficient quantities of oil in the mud line returns to be readily visible. There is also an indication that some quantity of gas may be present. This slight gas effect can be seen on the Neutron-Density Porosity Log between 1410 and 1414. There also seems to be a gas effect present at 1435.

The sand is a clear medium to coarse grained subrounded quartz sand with the upper two thirds being somewhat shaly. The best porosity was noted between 1430 and 1440.

Log calculations were prepared using the following values:

M= 1.8,  $R_w = .2$ .

<u>INTERVAL</u>	<u>Ø</u>	<u>Rt</u>	<u>Sw</u>
1400-10	11	12	96
10-12	12	14	80
12-14	12	18	71
14-16	11	15	86
16-18	11	18	78
18-1420	10	18	83
1420-22	11	13	92
22-24	11	13	92
24-26	11	13	92
26-28	10	14	93
28-30	11	10	100
1430-32	15	40	37
32-34	17	15	57
34-36	20	60	24
36-38	20	15	48
38-40	20	80	22

These calculations differ from those marked on the logs in the field. The values for those calculations were taken off of the CRT screen in the logging truck and were not as precise as those taken from the hard copy.

Based on the good show of oil, the slight gas effect and information and production history from the surrounding wells, it is probable that the lower portion of the sand interval will produce commercial quantities of oil and possibly some gas.

#### MISSISSIPPIAN:

The top of the Mississippian was reached at a log depth of 1440 feet. Sample returns consisted of light gray to light tan soft coarsly crystalline limestone. There was a slight show of free oil and a slight to moderate odor present between 1440 and 1460. Between 1460 and 1480 there was a show of very heavy dark brown free oil in vugs and on fracture faces and there was a moderately strong odor. Log analysis indicates that these zones have 100% water saturation.

The "40' Zone" was reached at a log depth of 1510. There was no odor present and no visible shows of oil in the samples. The Neutron-Density Porosity Log indicates much less porosity than in either the Demaranville well to the west or the Wagner 1-89A to the north.

There was a very slight show of free heavy dark brown oil noted in calcite veining in samples from 1590 to 1600. There was no discernable odor present and no evidence on the logs that this interval is worth further study.

The " Burlington Keokuk" was topped at a log depth of 1660 feet. This is structurally level with the Demaranville COG-101 immediately to the west; however, the porosity found in the COG-101 has not developed in this well. There was a very slight show of oil noted between 1610 and 1630 along with a very slight odor. The medium brown oil was found in vugs in the medium brown succrosic limestone. Based on log calculations of 100% SW values, the very limited show of oil, and the low porosity values, it appears that no commercial production of oil is possible from this zone in this well.

#### CONCLUSIONS AND RECOMMENDATIONS:

This well appears to be capable of producing commercial quantities of oil from the sands in the lower portion of the McLouth. Calculated water saturations between 1430 and 1440 are very favorable and there appears to be good porosity. Before the well is eventually abandoned the interval between 1410 and 1420 should be tested as there was a good oil show there also. Part of the calculated high Sw values and low porosity can be attributed to the shale content of this interval.

The structural position of the key horozons in this well compared to the Demaranville COG-101 and the Wagner 1-89A are listed on the attached Geologists Log.

The drilling time log did not indicate the good porosity breaks expected in the "40' Zone" or in the "Burlington Keokuk" and the Neutron-Density Porosity Logs confirmed that the porosity normally associated with these intervals was not present.

As has been the case on other wells in this field, the drilling fluid was heavily contaminated with oil from the trucks hauling the water. This made sample analysis much more difficult.

Should additional information be required please contact me.

Respectfully submitted,

George E. Petersen c.p.g.

DEACON GEOLOGY INC.

mp/GEP