

26-26S-13^W

JOHNS AND MAGATHAN
CONSULTING GEOLOGISTS

WENDELL S. JOHNS
WILLIS JACK MAGATHAN

501 BITTING BUILDING
WICHITA 2, KANSAS

TELEPHONE 3-1540

June 24, 1953

Mr. H. L. Moore
810 Palace Building
Tulsa, Oklahoma

Geologic report: Moore #1 Hoener
NE/NE/NW, 26-26S-13W
Pratt County, Kansas
Elevation: 1940 ground
1942 derrick floor
1944 rotary bushing
Contractor: Reserve Drilling Co.

OWLD

Dear Sir:

The #1 Hoener was spudded May 30, 1953, and was drilled from the surface to the present total depth of 4376 with rotary tools. Samples were saved and a time log was kept from 3000' to total depth.

A Schlumberger Gamma ray-Laterolog-Microlaterolog (Trumpet) survey was run on this hole. The electric log total depth was 4374, two feet less than the drilling measurements. However, most of the formation depths check only one foot shallower than the drilling measurements so there was probably a foot of caving in the hole. The drilling measurements have been used throughout this report.

Several tops have been changed slightly from those originally called in order to conform more closely to the breaks shown on the electric log. None of these changes have amounted to more than two feet however, and none of the tops used in this report vary more than one foot from the electric log.

The following is a list of formation tops and other data of interest. Unless otherwise noted all information is from my sample log which has been corrected for sample lag by use of the time log. All measurements are from the top of the rotary bushing which is two feet above the derrick floor and the rotary bushing elevation has been used to compute all distances from sea level.

<u>Formation Name</u>	<u>Depth Below</u> <u>Surface</u>	<u>Distance From</u> <u>Sea Level</u>	<u>Remarks</u>
8 5/8" surface casing	546		300 sax cement; 2% gel (cement circulated)
Stone Corral Anhydrite	805 - 28	41139 to 41116	Electric log
Top Tarkio Section	2910	-966	No show
Top Topeka	3216	-1272	No show
Heebner Shale	3567 - 73	-1623 to -1629	
Leavenworth limestone	3573 - 77	-1629 to -1633	

<u>Formation Name</u>	<u>Depth Below Surface</u>	<u>Distance From Sea Level</u>	<u>Remarks</u>
Snyderville shale	3577 - 84	-1633 to -1640	
Toronto limestone	3584 - 98	-1640 to -1654	
Base Oread	3598	-1654	
Douglas Section	3598 - 3736	-1654 to -1792	
Sand section	3634 - 74		Water
Top Brown Lansing	3736	-1792	
Top Lansing	3757	-1813	
(1) <u>Porous zone</u>	<u>3791-99</u>		<u>Broken porosity; fair oil</u> <u>show; DST; somewhat prospective</u>
(2) Porous zone	3811 - 20		Water
(3) Porous zone	3853 - 56		Water
(4) Porous zone	3864 - 73		Broken porosity; water
(5) Porous zone	3880 - 89		Broken porosity; water
(6) Porous zone	3894 - 3900		Very questionable porosity; water.
(7) Porous zone	3913 - 16		Probably water
(8) Porous zone	3928 - 31		Water
(9) <u>Porous zone</u>	<u>3949 - 53</u>		<u>Possibly oil; DST</u>
(10) <u>Porous zone</u>	<u>3961 - 68</u>		<u>Water DST</u>
(11) Porous zone	3981 - 84		Water
(12) Porous zone	3995 - 4000		Questionable porosity; water
(13) <u>Porous zone</u>	<u>4035 - 43</u>		<u>Very little, porosity in</u> <u>samples and little if any show</u> <u>Looks very prospective on</u> <u>electric log.</u>
Base Kansas City	4077	-2133	
Marmaton	4077 - 4175	-2133 to -2231	
(1) Porous zone	4129 - 39		No show; water
Mississippi	4175 - 92	-2231 to -2248	Chert with some dead stain
Kinderhook	4192 - 4211	-2248 to -2267	
Viola	4211 - 56	-2267 to -2312	
<u>Chert Zone</u>	<u>4211 - 51</u>		<u>Good show of oil. Looks good</u> <u>on electric log; DST</u>
Simpson	4256 - 4355	-2312 to -2411	Cored 4270 - 4320; fair show oil.
<u>Porous Dolomite</u>	<u>4271 - 74½</u>		<u>Good show oil</u>
<u>Fairly porous sand</u>	<u>4282½ - 85½</u>		<u>Fair show oil</u>
<u>Fairly porous sand</u>	<u>4287½ - 88½</u>		<u>Fair show oil</u>
<u>Fairly porous sand</u>	<u>4290½ - 95</u>		<u>Fair show oil</u>
Slightly porous shaly sand & sandy shale	4299 - 4306		Slight show oil
Top Arbuckle	4355	-2411	
<u>Porous zone</u>	<u>4360 - 76</u>		<u>Good show oil; DST</u>
Total depth	4376	2432	
5½" casing	4358	2414	150 sacks cement

Note: Underlined zones are prospective for oil.

Recommendations for casing and centralizers:

I recommend that 5½" casing be set at 4358 with 150 sacks cement and that centralizers be placed as follows: 1 on bottom joint; 1 at 4204; 1 at 3975; and 1 at 3765.

DRILL STEM TESTS: The following drill stem tests were run on the #1 Hoener:

- (1) Lansing zone #1 3786 - 3802; open 1 hour
Good blow which decreased to fair blow after 30 min.
Recovered 480' gas, 60' slight oil and gas cut mud
no water
Initial flowing pressure - 140#
Final flowing pressure - 300#
Bottom hole pressure - 1335# (20 min.)
- (2) Lansing zones #9 and #10 3943 - 71; open 1 hour
Good blow which started to decrease in 20 min. and
decreased to very slight trace by end of test .
Recovered 340' gas, 80' slightly oil and gas cut mud;
possible trace water at bottom.
Initial flowing pressure - 16#
Final flowing pressure - 32#
Bottom hole pressure - 125# (20 min.)
- (3) Viola Chert 4212 - 4255; open 1 hour
Good blow throughout
Recovered 4200' gas and 60' gas cut mud
Initial flowing pressure - 0
Final flowing pressure - 0
Bottom hole pressure - 140# (20 min.)
- (4) Arbuckle 4358 - 4376 (total depth); open 1 hour
Very good blow throughout
Recovered 1050' gas and 270' oil and oily mud, no
sign of water.
Initial flowing pressure - 25#
Final flowing pressure 97#
Bottom hole pressure 1438# (20 min.)

CORE RECORD: The following diamond cores were taken on the #1 Hoener:

- (1) 4270 - 4320 - Simpson - Recovered 50'
4270 - 71 - Dolomite gray-brown, finely crystalline, tight; sandy spots.
No show.
4271 - 74 $\frac{1}{2}$ Dolomite, as above, good vugular porosity; some of vugular
areas filled with sand, brown, medium angular, a few light
green shale inclusions; good odor and good show oil in vugs
4274 $\frac{1}{2}$ - 76 Dolomite, brown-gray, finely crystalline, very tight, no show,
not sandy, inclusions, light gray lithographic limestone.
4276 - 81 - Dolomite, brown, finely crystalline, sandy, large rounded
sand grains, streaks and inclusions, gray dense limestone
occasional thin streaks black shale.
4281 - 82 - Shale, very dark green to black; pyrite inclusions, a few
scattered sand grains.
4282 - 82 $\frac{1}{4}$ Shale, light blue-green, a few pyrite inclusions, a few
scattered sand grains.
4282 $\frac{1}{4}$ - 82 $\frac{3}{4}$ - Sand, medium, angular, glassy, light brown, gray,
much light green shale between grains, much pyrite,
slight odor, trace black stain.
4282 $\frac{3}{4}$ - 84 $\frac{3}{4}$ - Sand, as above, less shale; good odor, good stain,
bleeding oil.

(core record cont'd.)

- 4284 3/4 - 85 1/4 - sand as from 4282 1/4 - 82 3/4
4285 1/4 - 87 1/2 - shale, gray, a few scattered sand grains
4287 1/2 - 88 1/4 - shale, as above, very sandy, some odor, bleeding some oil.
4288 1/4 - 90 1/2 - shale, gray, slightly sandy
4290 1/2 - 95 - sand, fine, angular, gray-brown to brown, very shaly and silty, cross bedded; tiny inclusions of green shale; fair odor, some stain, bleeding, some oil.
4295 - 99 - shale, greenish-gray to brownish-gray, fairly sandy, no odor or show.
4299 - 4303 1/2 - shale, gray, muddy, very sandy; coarse rounded sand grains; streaks brown-gray shale with few scattered sand grains; some odor, a few streaks bleeding oil.
4303 1/2 - 06; shale green with intercalated sand streaks, sand very poorly sorted, black, slight odor. Bleeding a little oil; some pyrite.
4306 - 4310 - shale green, some pyrite, little if any sand
4310 - 13 1/2 - Shale, gray-green, sandy, inclusions of fine white sand, some pyrite, no odor or oil show
4313 1/2 - 20 - shale, dark gray-green to black, streaks sandy shale; streaks with many partly pyritized fossils - mostly gastropods.

STRUCTURAL POSITION:

On the top of the Brown Lansing the #1 Hoener was 13' lower than the Amerada #1 Bruns in the SE/SE/NE, 26-26-13W, a test approximately 1/2 mile to the southeast. This test lies between the #1 Hoener and the Carmi pool. It was abandoned as a dry hole but there is some question as to whether it might not have produced from the Simpson and it now appears to have some possibility in the Arbuckle.

On the Simpson the #1 Hoener was 2' higher than the #1 Bruns and on the Arbuckle it was 3' higher. This means the Hoener thinned a total of 16' as compared to the #1 Bruns between the top of the Brown Lansing and the top of the Arbuckle. This structural position indicates the presence of a definite high in this area.

On the Arbuckle the #1 Hoener is 20' higher than the Rine #1 Hoener in the SW/SW/NW, 35-26-13W, a Viola producer in the East Chance pool. It is 33' higher than the highest wells in the Chance pool and approximately 10' lower than the lowest Arbuckle producers in the Carmi pool.

POSSIBLE PRODUCING HORIZONS:

Lansing - Kansas City: Lansing zone #1 (3791-3799) has definite possibilities for small production. The porosity in this section is poor but it should give up some oil if treated with acid.

Zone #9 (3949-53) has some possibilities for production. It is probably the section which gave up the oil present in the second drill stem test. The electrical resistivity is too low for comfort but it may be within the oil range so it should be tested.

Zone #13 (4035-43) showed very little porosity or oil show in the samples but looks very good in the electric log. The performance of this zone is questionable but I believe it should be tested.

All other Lansing-Kansas City zones appear almost certain to make water if enough porosity is present to make any fluid at all.

Mississippi: This section is not very prospective in the #1 Hoener. It might fracture into a gas well but I do not believe it is worth testing at this time.

Viola: The shows of oil found in the Viola chert section from 4211-51 were unusually good and this section looks very attractive on the electric log. I suggest this be perforated and fractured in spite of the disappointing results of the drill stem test.

Simpson: The dolomite section from 4271-74 $\frac{1}{2}$ and the sand sections from 4282-95 should definitely be tested. They are not certain to produce but cannot be passed up.

The shaly sand and sandy shale section from 4299-4306 looks very poor in the core but appears to have some possibility on the electric log. However, this section might produce water so I would suggest that it be perforated only if all of the other possible sections fail to produce either oil or water.

Arbuckle: This formation should make a well so of course should be tested first.

SUGGESTED PROGRAM FOR COMPLETION:

(1) Test Arbuckle:

- (a) Drill out plug and clean hole out to total depth. Do not make any more hole
- (b) Acidize section from 4358-76 with 500 gallons.
 - (1) if a commercial well is obtained put on pump
 - (2) if some oil and not water is obtained reacidize with 1000 to 1500 gallons
 - (3) if no fluid is obtained drill deeper until oil or water is found

(2) Test Simpson:

- (a) If the Arbuckle fails to produce plug back into the casing and perforate the sand section from 4282-95
 - (1) If any oil is found - even a small amount - this section should be fractured
- (b) If no oil is obtained from the sand section plug back to about 4280 and perforate 4270-75. Acidize this section unless a large amount of water is obtained.

(3) Test Viola:

If both the Arbuckle and Simpson fail to produce the hole should be plugged back to approximately 4254 and the section from 4220-35 should be perforated. This section is the most prospective and should produce if this formation has any bottom hole pressure. The zone should be fractured.

(4) Test Lansing-Kansas City:

In case the Arbuckle, Simpson and Viola formations all fail to produce the Lansing-Kansas City should be tested as follows:

- (a) Plug back to above 4070 and perforate 4035-43. Acidize this section with 1000 gallons unless water is obtained.
- (b) If (a) is a failure plug back to 3958 and perforate 3949-53. Acidize with 500 gallons unless water is obtained.

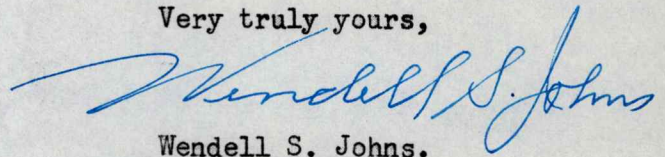
(6) Geologic report: Moore #1 Hoener.

(c) If (b) is a failure plug back to about 3805 and perforate 3791-99. Acidize with 500 gallons unless water is obtained.

(5) If operations 1,2,3,4 are all failures plug the well and abandon.

Operations 3 and 4 may be rather long shots. For various reasons you may not wish to follow the completion through to that extent. However, all of these zones do have possibilities for production and I believe testing them should be given careful consideration before the well is abandoned.

Very truly yours,



Wendell S. Johns.

WSJ:bjm