

RICHARD G. SMITH

PETROLEUM GEOLOGIST

RESIDENCE
2934 EUCLID

301 BEACON BLDG.
WICHITA 2, KANSAS

OFF. AM 5-9626
RES. WH 3-0703

October 24, 1958

Re: Jackson - Shear
Waterman No. 1
SE SE SE Sec. 15, T. 4 S., R. 33 W.
Rawlins County, Kansas

Jackson - Shear
Box 149
Duncan, Oklahoma

Gentlemen:

The following is my interpretation of the geologic data derived from the samples, drilling time log, drill stem tests, and Welex radiation-guard survey on the No. 1 Waterman.

<u>Formation</u>	<u>Sample Tops</u>	<u>Welex Tops</u>
Anhydrite	2670 (/295)	
Topeka	3701 (-736)	3703 (-738)
Heebner	3845 (-880)	3846 (-881)
Toronto	3874 (-909)	3876 (-911)
Lansing-Kansas City	3886 (-921)	3888 (-923)
Base Kansas City	4118 (-1153)	4121 (-1156)
Marmaton	4130 (-1165)	4131 (-1166)
Cherokee	4294 (-1329)	4292 (-1331)
Mississippian	4450 (-1485)	4454 (-1489)
Arbuckle		
Total Depth	4500 (-1535)	4502 (-1537)

REGIONAL STRUCTURAL CORRELATIONS:

<u>Formation</u>	<u>Jackson - Shear Waterman No. 1 SE SE SE 15-4s-33w</u>	<u>Jackson et al Bowles No. 1 C SW SW 24-4s-34w Oil</u>	<u>Jackson et al Ruda No. 1 C NE SW 14-4s-33w D & A</u>
Topeka	-738	-728	-744
Heebner	-881	-868	-378
Lansing-Kansas City	-923	-916	-919
Marmaton	-1166	-1168	-1167
Cherokee	-1331	-1327	-1326
Mississippian	-1489	-1505	-1491
Arbuckle		-1682	-1622
Total Depth	-1537	-1735	-1681

SHOWS OF OIL AND/OR GAS:

Topeka Zones:

- 3715-3727 Gray to white chalky to finely crystalline limestone with black gilsonite residue. No fluorescence.
- 3738-3744 White chalky to finely crystalline limestone. Soft chalky and scattered vuggy porosity. No shows of oil and/or gas observed.
- 3830-3841 Gray to white chalky and finely crystalline limestone with scattered vuggy porosity. No shows of oil and/or gas observed.

Toronto Zone:

- 3877-3880 White finely crystalline limestone with scattered vuggy porosity. Poor black scattered spotted oil staining and fluorescence. Recommended not drill stem testing this zone.

Lansing-Kansas City Zones:

- 3886-3892 White finely crystalline very slightly vuggy limestone; trace black tarry oil; black spotted oil staining; very scattered fluorescence.
- 3910-3916 Gray white finely crystalline limestone with scattered vuggy porosity; trace free oil; scattered vuggy porosity; trace free oil; scattered spotted to good even oil staining and fluorescence. Recommended drill stem testing these zones.

No. 1 drill stem test, 3888-3920, open 1½ hours, had a medium blow and recovered 350 feet muddy salt water; closed-in 20 minutes; IBHP 1320 p.s.i.; IFP 60 p.s.i.; FFP 180 p.s.i.; FBHP 1110 p.s.i.

- 3956-3960 and 3971-3977 Gray white finely crystalline limestone with scattered vuggy porosity; trace heavy free oil; scattered spotted oil staining and fluorescence. Recommended drill stem testing these zones.

No. 2 drill stem test, 3946-3988, open 1 hour, had a weak steady blow and recovered 135 feet of drilling mud; closed-in 20 minutes; IBHP 1290 p.s.i.; IFP 25 p.s.i.; FFP 80 p.s.i.; FBHP 1170 p.s.i.

4050-4053 Gray white finely crystalline limestone with scattered poor pin hole to slightly vuggy porosity; very scattered spotted oil staining; no fluorescence. Recommended not testing this zone.

Marmaton Zones:

4210-4213 Gray finely crystalline, chalky limestone; poor porosity; no shows of oil and/or gas observed.

4236-4246 White to gray, chalky to finely crystalline limestone; poor intercrystalline porosity; no shows of oil and/or gas observed.

4260-4264 White to gray fine to medium crystalline dense limestone with scattered, poor vuggy porosity; no shows of oil and/or gas observed.

4281-4288 Gray finely crystalline limestone with poor intercrystalline and scattered good vuggy porosity; trace free oil; fair to good, scattered spotted to even oil staining and fluorescence. Recommended drill stem testing this zone.

No. 3 drill stem test, 4272-90, open 1 hour, had a strong blow during test and recovered 580 feet gas in the drill pipe; 320 feet clean 36° gravity oil; closed-in 20 minutes; IBHP 1155 p.s.i.; IFP 80 p.s.i.; FFP 120 p.s.i.; FBHP 1020 p.s.i.

Cherokee Zones:

Samples and Welex indicated this section as consisting of thin, shaley, poorly developed limestones and sands and having no porous zones of any importance.

Mississippian Zones:

Samples indicated this section to consist of chert and cherty dense limestones. No shows of oil and/or gas were indicated by the samples or Welex.

Five and one-half inch production casing has been set and cemented at 4367 (-1402), drillers' rotary bushing measurement. All measurements were taken from the kelly bushing and Welex measurements of tops, zones, and rotary total depth are taken as correct.

Recommendations for completion are:

1. Perforate casing opposite the Marmaton limestone from 4280 feet to 4288 feet. (Welex indicates 9% to 18% porosity; 18% to 45% water saturation).
 - (a) Test zone.
 - (b) Treat zone with initial acid treatment of approximately 500 gallons.
 - (c) Test zone; treat with larger acid treatments if necessary.

The samples and Welex indicate there are no probable oil and/or gas producing zones behind the casing above the recommended Marmaton zone. It is recommended that the hole be plugged as dry and abandoned when the subject Marmaton Zone has been fully tested for commercial oil production and/or is depleted.

Very truly yours,

Richard G. Smith
RICHARD G. SMITH
Petroleum Geologist

RGS/cs