MUSGROVE PETROLEUM CORPORATION, INC.
801 Union Center
Wichita, Kansas

July 19, 1957

Musgrove Petroleum Corporation, Inc.
801 Union Center
Wichita, Kansas

Re: Geological Report
Musgrove's Nelson No. 1
C NW NW Section 16-17S-37W
Wichita County, Kansas

Commenced: July 3, 1957
Completed: July 13, 1957
Set 8 5/8" Surface @ 542'

Gentlemen:

Ten-foot samples were saved on the subject test from beneath surface casing to approximately 4650 feet, and five-foot samples were saved from approximately 4650 to 5155 feet. Ten-foot drilling time was kept from beneath surface pipe to 1500 feet; five-foot drilling time was kept from 1500 feet to 3500 feet; and one-foot drilling time was kept from 3500 feet to the total depth.

Drilling was observed by the undersigned from 2000 feet to the total depth, and samples were examined from 1300 feet to the total depth. A Baroid portable gas detector was in operation from 2000 feet to the total depth.

One drill stem test was taken, this being in the Marmaton formation, and upon completion of the drilling a Schlumberger Laterolog survey was run.

Listed below are sample and electric log formation tops, along with a simple description of the interesting zones of porosity.

ELEVATIONS: Kelly Bushing 3362
Derrick Floor 3359
Ground Level 3351

Formation	Sample	Schlumberger
Anhydrite	2525 (+ 837)	
Ft. Riley	2917 (+ 445)	
Wabaunsee	3814 (- 452)	3825 (- 463)
Topeka	3906 (- 544)	3916 (- 554)
Heebner	4089 (- 727)	4097 (- 735)
Lansing/Kansas City	4097 (- 735)	4097 (- 735)
Marmaton	4463 (-1101)	4465 (-1103)
Cherokee	4660 (-1298)	4661 (-1299)
Morrow	4849 (-1487)	4831 (-1469)
St. Genevieve	4922 (-1560)	4930 (-1568)
St. Louis	4964 (-1602)	
Spergen-Warsaw	5091 (-1729)	
Total Depth	(Rotary) 5155 (-1793)	(Schlumberger) 5157 (-1568)

All zones described below, except those above the Wabaunsee, are corrected to electric log measurements:

FT. RILEY - 3525 (+ 837)

This section consisted of buff to cream, finely crystalline to sucrosic dolomite with interbedded red silty to sandy shales and red fine grained silty dolomitic sandstones. No shows were noted throughout the Ft. Riley or any of the lower Permian section.

WABAUNSEE - 3625 (-263)

Mostly grey to cream, fine to medium crystalline, generally dense limestones becoming dolomitic in the lower part and interbedded thin gray to dark grey shales. Thin zones of porosity were noted throughout the section, however, no shows of oil or gas were encountered.

3797 - 3814 Dolomite, buff to tan, finely crystalline to sucrosic, fair to good porosity with no shows.

TOPEKA - 3816 (-454)

Consisted mostly of cream to tan, finely crystalline cherty limestone. Several well developed zones of porosity were encountered, however, no shows were noted. The lower section consisted of grey-buff, finely crystalline limestone, dolomitic in part and generally dense. No shows were noted throughout this lower section.

LANSING - 4087 (-725)

4311 - 4324 Limestone, tan, oolitic with well developed oolicastic porosity. No shows of oil or gas. Other zones of porosity were encountered in the Lansing section, however, this zone was the best developed. Overall the Lansing section was chalky to finely crystalline limestone. No shows were noted throughout the entire Lansing section.

KANSAS - 4465 (-1103)

Generally consisted of dark, finely to sub-crystalline, dense, [illegible] shaley limestone and interbedded shales. Thin zones of porosity [illegible] noted throughout the section.

4304 - 4308; 4513 - 4515 Limestone, grey to buff, finely crystalline, slightly oolitic in part, with abundant smoky to milky opaque chert. Scattered vugular porosity with traces of light spotty staining. No free oil was noted in the samples.

DRILL STEM TEST No. 1 - 4504 - 4545 Open 1 hour and shut in 20 minutes. Weak blow, dead in 26 minutes. Recovered 115 feet OCM. IHP, 1120#; IFP, 0#; FFP, 120#; ISIP, 2340#.

MORROW - 4831 (-1469)

4860 - 4877 Buff to white, fine grained, slightly calcareous, glauconitic sandstone with thin interbedded shale. No shows were noted. This zone was calculated by the Schlumberger Engineer to have an average porosity of 20% and an average of 80% water saturation.

4918 - 4932 Thin streaks of sandstone, as above, with interbedded shales. However, this section was more limy than upper sand and very little porosity has developed. No shows were encountered in the lower sand section.

MISSISSIPPIAN, ST. GENEVIEVE - 4930 (-1568)

Buff to white, finely crystalline to somewhat chalky, arenaceous, oolitic limestone.

4951 - 4957 Buff to white, fine to coarse sandy, finely crystalline, oolitic limestone. This zone was calculated by the Schlumberger Engineer to have an average porosity of 20% and an average of 85% water saturation.

ST. LOUIS - 4964 (-1602)

Buff to light grey, finely crystalline to sub-crystalline, oolitic, dense limestone. The upper part of the section was generally finely oolitic and became coarsely oolitic in the lower section. No zones of porosity and no shows were encountered throughout this section.

SPERGEN-WARSAW - 5091 (-1729)

Grey to tan, sub-crystalline to lithographic, dense, slightly oolitic, and partly dolomitic limestone with abundant translucent to opaque, dove grey, lacy chert. No porosity and no shows were encountered throughout this section.

STRUCTURAL COMPARISON WITH NEARBY WELLS

Formation	Musgrove's Nelson #1 C NW NW 16-17-37W	Musgrove's Langley #1 C NW NW 12-17-38W	Rooney-Sloy.-Thomas' Lindberg #1 C SW SW 13-17-37W	Jones' Freeland #1 NE/SW 25-17-37W
Lansing	- 735	- 734	- 730	- 690
Morrow	-1469	-1496	-1490	-1465
Mississippi	-1568	-1625	-1608	-1616
Spergen-Warsaw	-1729	-1807	- - -	-1775

On the top of the Mississippi the Nelson No. 1 was 57 feet high to the Langley No. 1 and 38 feet high to the Lindberg No. 1. This, however, is an erosional surface and does not necessarily reflect the true structure on the Mississippi formation. Correlation at best is difficult, and the top of the St. Louis is questionable, due to the gradational change between the lower portion of the St. Genevieve and the upper portion of the St. Louis. However, on the Spergen-Warsaw the Nelson No. 1 was 78 feet high to the Langley No. 1 and 46 feet high to the Freeland No. 1.

No shows were encountered throughout the entire geological section drilled, except in the Hunton formation. This show was very poor in the samples and gave very little indication on the portable gas detector unit. This was tested and the results of the test are included within this report.

Due to the lack of porosity in the Mississippi and the absence of shows in the Morrow and upper Pennsylvanian and lower Permian sections, and due to the seemingly inadequate showing of commercial possibilities of the Hunton formation, it was recommended the Nelson No. 1 be abandoned at 5155 feet.

At that time, due to the favorable structural position of the Mississippi formation, Panhandle Eastern Pipe Line Company assumed operation of the test and are drilling it to test older formations.

Very truly yours,

Fredrick W Stump

Fredrick W. Stump
Geologist

FWS:dh

Musgrove Petroleum Corporation, Inc. Re: Musgrove's Nelson No. 1
C NW NW Section 16-17S-37W
Wichita County, Kansas

Depth From	To	5' Drilling Time	Remarks
2400 to	2450	4-4-6-4-3-4-5-6-4-4	
	2500	4-3-3-4-4-3-3-3-4-5	
2500 to	2550	3-3-3-4-3-6-14-11-16-10	
	2600	5-6-4-3-4-3-6-6-6-6	
2600 to	2650	5-7-7-6-6-7-15-10-5-10	
	2700	8-4-5-7-11-7-15-13-12-7	
2700 to	2750	5-10-15-15-15-15-12-10-10-15	
	2800	13-9-14-14-15-16-13-12-16-17	New bit @ 2800'
2800 to	2850	8-9-7-6-10-9-9-9-11-9	
	2900	9-15-9-9-6-6-8-8-10-10	
2900 to	2950	10-11-5-5-7-7-12-9-5-7	
	3000	6-6-6-17-6-11-11-6-5-8	
3000 to	3050	18-15-10-11-10-14-15-16-17-12	
	3100	10-17-12-14-9-9-4-4-3-10	
3100 to	3150	15-19-22-20-14-5-18-7-6-10	New bit @ 3130'
	3200	9-5-6-12-5-5-3-3-5-5	
3200 to	3250	5-5-10-15-12-9-10-20-20-15	
	3300	7-10-15-20-19-19-20-10-20-10	
3300 to	3350	24-22-21-17-22-24-21-12-10-17	
	3400	10-21-19-22- -31-24-25-19-25	New bit @ 3370'
3400 to	3450	22-18-18-10-6-13-19-21-21-21	
	3500	27-14-13-18-10-10-13-21-25-30	End of 5' drilling time

1' Drilling Time

3500 to	3510	5-5-4-3-5-5-7-9-8-6	
	3520	7-6-6-6-6-7-8-9-8-7	
	3530	7-9-9-7-9-7-13-9-12-12	
	3540	12-12-10-11-6-10-6-5-6-5	New bit @ 3536'
	3550	6-4-3-2-3-4-4-3-3-2	
	3560	3-2-3-2-3-4-4-4-5-5	
	3570	4-3-2-2-3-3-3-4-4-3	
	3580	3-4-3-3-3-4-4-4-2-3	
	3590	5-5-5-5-4-4-3-4-4-4	
	3600	4-3-5-3-4-3-4-4-4-3	
3600 to	3610	2-2-3-3-2-2-3-2-4-3	
	3620	4-4-4-4-5-6-5-5-6-5	
	3630	5-6-4-5-7-5-5-4-7-10	
	3640	4-5-5-7-4-6-4-5-4-5	
	3650	4-6-5-6-6-4-4-5-5-5	
	3660	5-5-2-4-5-6-6-5-4-4	
	3670	4-6-5-5-4-4-4-5-6-4	
	3680	5-7-6-5-6-10-10-10-13-6	
	3690	11-4-5-6-7-4-5-8-10-2	New bit @ 3681'
	3700	3-3-4-4-3-4-4-3-3-4	