

JAMES C. MUGGROVE

*Petroleum Geologist*  
2021 Forest

P. O. BOX 1102  
GREAT BEND, KANSAS 67530

OFFICE PHONE 792-7710  
RES. CLARFLIN 537-3444

Hallwood Petroleum, Inc.  
Roesner #16  
160' South C-N/2-N/2-SW  
Section 9-15S-13W  
Russell County, Kansas

5 1/2" PRODUCTION CASING SET

CONTRACTOR: Duke Drilling Company (Rig #1)  
 COMMENCED: 7-9-90  
 COMPLETED: 7-17-90  
 ELEVATIONS: 1868' K.B., 1865' D.F., 1863' G.L.  
 CASING PROGRAMS: Surface: 8 5/8" @ 491'  
 Production: 5 1/2" @ 3402' (log  
 measurements)  
 SAMPLES: Samples saved and examined 2100' to  
 the R.T.D.  
 DRILLING TIME: One (1) foot drilling time recorded  
 2100' to the R.T.D.  
 MEASUREMENTS: All depths measured from the Kelly  
 Bushing.  
 FORMATION TESTING: There were six (6) drill stem tests  
 run by Trilobite Formation Testers.  
 ELECTRIC LOG: By Halliburton Logging Services:  
 Dual Guard-Micro Guard, DSN-Density,  
 Micro Log and Cal.

<u>FORMATION</u>	<u>ELECTRIC LOG DEPTH</u>	<u>SUB-SEA DATUM</u>
Anhydrite	820	+1048
Grand Haven	2381	- 513
—1st Tarkio Sand	2388	- 520
Dover	2406	- 538
—2nd Tarkio Sand	2416	- 548
—Tarkio Lime	2454	- 586
Elmont	2517	- 649
Howard	2661	- 793
Severy	2714	- 846
—Topeka	2730	- 862
Heebner	2962	-1094
—Toronto	2980	-1112
Douglas	2996	-1128
Lansing	3032	-1164
Base Kansas City	3278	-1410
—Gorham Sand	3308	-1440
Arbuckle	3317	-1449
Rotary Total Depth	3400	-1532
Log Total Depth	3403	-1535

(All tops and zones corrected to log measurements)

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SAMPLE ANALYSIS, SHOWS OF OIL, TESTING DATA, ETC.

TARKIO SECTION

"1st" Sand  
2388-2400 Sand; gray to grayish green, fine to medium-grained, sub-angular to sub-rounded, micaceous, friable, spotty stain; show of free oil and faint odor in fresh samples.

"2nd" Sand  
2416-2422 Sand, as above; increasing argillaceous, micaceous, spotty stain, show gas bubbles; weak show of free oil and no odor in fresh samples.

DRILL STEM TEST #1 - 2384-2458

Open: I.F. 30"  
F.F. 30"

Blow: Weak, died 20 minutes.

Recovery: 65' mud, few oil specks in tool.

Pressures: ISIP 256 psi (45")  
FSIP 156 psi (45")  
IFP 39-39 psi  
FFP 39-39 psi  
HSH 1196-1196 psi

TOPEKA SECTION

2750-2754 Limestone; tan, finely crystalline, slightly cherty; no shows.

2764-2770 Limestone; gray to white, finely crystalline, few granular, pin point to vuggy porosity, trace stain; no show of free oil or odor in fresh samples.

2787-2791 Limestone; gray to white, fine to medium crystalline, fair intercrystalline porosity, questionable stain; no show of free oil or odor in fresh samples.

2806-2811 Limestone; gray, fossiliferous, chalky in part; no shows.

2842-2848 Limestone; gray, chalky, dense.

2890-2899 Limestone; cream to white, fossiliferous, chalky, trace black to brown stain; trace free oil and faint odor in fresh samples.

2912-2920 Limestone; gray, fossiliferous, few sub-oocastic, chalky in part, fair brown stain and saturation; show of free oil and no odor in fresh samples.

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DRILL STEM TEST #2 - 2894-2924

Open: I.F. 30"  
F.F. 30"

Blow: Weak, died in 20 minutes.

Recovery: 45' oil spotted mud.

Pressures: ISIP 571 psi (45")  
FSIP 531 psi (45")  
IFP 10-10 psi  
FFP 10-20 psi  
HSH 1496-1496 psi

2924-2950 Limestone; white to gray, sub-oocastic, chalky, trace black to brown stain; no show of free oil or odor in fresh samples.

TORONTO SECTION

2980-2990 Limestone; white to cream, fossiliferous, finely crystalline, fair to good light brown to golden brown stain; trace free oil and fair odor in fresh samples.

DRILL STEM TEST #3 - 2960-3004

Open: I.F. 30"  
F.F. 30"

Blow: Weak, died in 10 minutes.

Recovery: 5' mud

Pressures: ISIP 98 psi (45")  
FSIP 49 psi (45")  
IFP 10-10 psi  
FFP 10-10 psi  
HSH 1566-1560 psi

LANSING SECTION

3032-3037 Limestone; gray to cream, finely crystalline, slightly fossiliferous, chalky, poor visible porosity, trace spotty stain; no show of free oil of odor in fresh samples.

3048-3052 Limestone; white, oolitic, scattered porosity, chalky in part, brown stain; trace free oil and faint odor in fresh samples.

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3058-3066 Limestone; beige to brown, oocastic, good oocastic porosity, fair to good dark brown to light brown stain; good show of free oil and strong odor in fresh samples.

DRILL STEM TEST #4 - 3052-3066

Open: I.F. 30"  
F.F. 60"

Blow: Weak to fair.

Recovery: 180' gas in pipe.  
60' clean gassy oil  
120' mud cut gassy oil  
(40% gas, 30% oil, 20% mud,  
10% water)

Pressures: ISIP 729 psi (60")  
FSIP 640 psi (120")  
IFP 10-30 psi  
FFP 40-59 psi  
HSH 1586-1580 psi

3066-3084 Limestone, as immediately above; good stain and saturation; good show of free oil and strong odor in fresh samples.

3090-3100 Limestone; cream to white, finely crystalline, chalky in part; no shows.

3111-3116 Limestone; gray to white, finely crystalline, few chalky, fossiliferous in part, scattered intercrystalline porosity, trace golden brown stain; no show of free oil and faint odor in fresh samples.

3126-3139 Limestone; tan to cream, oocastic, good oocastic porosity, trace poor stain; no show of free oil or odor in fresh samples.

3188-3196 Limestone; tan, finely crystalline, cherty, scattered sparry calcite cement; no shows.

3204-3212 Limestone; white, oolitic, chalky in part, spotty brown stain and saturation; trace free oil and no odor in fresh samples.

3222-3231 Limestone; cream to white, oocastic, chalky, trace spotty brown stain; show of free oil and questionable odor in fresh samples.

3258-3264 Limestone; gray, fossiliferous, poor visible porosity; no shows.

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GORHAM SECTION

3308-3315 Sand; very fine to medium to coarse-grained quartzitic, poorly sorted, friable, abundant loose unconsolidated quartz grains, spotty stain; show of free oil and fair odor in fresh samples.

ARBUCKLE SECTION

3317-3323 Dolomite; cream to white, fine to medium crystalline, sucrosic in part, spotty brown stain and saturation; show of free oil and fair odor in fresh samples.

DRILL STEM TEST #5 - 3270-3323

Open: I.F. 30"  
F.F. 45"

Blow: Strong.

Recovery: 60' gas in pipe.  
300' muddy frothy oil  
(60% oil, 30% mud, 10% gas)  
180' muddy gassy oil, trace water  
(50% oil, 22% mud, 18% gas, 10% water)  
600' slightly mud cut gassy, oily water  
(30% oil, 25% water, 5% mud, 40% gas)  
500' oil cut water  
(20% oil, 76% water, 4% gas)  
600' water, trace of oil

Pressures: ISIP 907 psi (45")  
FSIP 907 psi (45")  
IFP 147-669 psi  
FFP 689-867 psi  
HSH 1716-1716 psi

3334-3339 Dolomite; gray, coarse, crystalline, fair intercrystalline to vuggy porosity, trace spotty stain; show of free oil and weak odor in fresh samples.

DRILL STEM TEST #6 - 3327-3339

Open: I.F. 30"  
F.F. 60"

Blow: Weak to fair.

Recovery: 2' clean oil  
180' very slightly oil specked water.

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(Drill Stem Test #6 - Continued)

Pressures: ISIP 442 psi (60")  
FSIP 383 psi (120")  
IFP 10-30 psi  
FFP 50-70 psi  
HSH 1693-1693 psi

3350-3376 Dolomite; gray to white, medium to coarse crystalline, fair to good inter-crystalline to vuggy-type porosity, brown to golden brown stain; show of free oil and strong odor in fresh samples.

3376-3380 Dolomite, as above; trace pyrite, decreasing stain and odor.

3380-3403 Dolomite, as above; no shows.

ROTARY TOTAL DEPTH: 3400 (-1532)

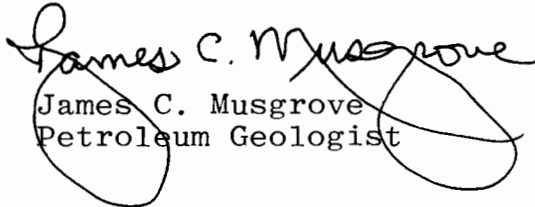
LOG TOTAL DEPTH: 3403 (-1535)

RECOMMENDATIONS:

On the basis of the favorable structural position and the positive results of the drill stem tests, it was recommended that 5 1/2" production casing be set and cemented at 3402 feet (one foot off bottom) and the following zones be tested in the Roesner #16:

1) Arbuckle	3334-3337	5) Lansing	3058-3068
2) Arbuckle	3320-3323	6) Topeka	2912-2916
3) Gorham Sand	3310-3314	7) Tarkio Sand	2388-2392
4) Lansing	3222-3230		

Respectfully submitted,

  
James C. Musgrove  
Petroleum Geologist

JCM:ac