

Computer Generated

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K C G

DEC 20 1993

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GEOLOGICAL REPORT

Grady Bolding Corporation
Schultz #9
C-N/2-S/2-NE; Section 16-15s-13w
Russell County, Kansas
Page No. 1

API #15-167-23067

K C G

DEC 20 1993

5 1/2" PRODUCTION CASING SET

CONTRACTOR: Shields Drilling Company

COMMENCED: 09-07-93

COMPLETED: 09-16-93

ELEVATIONS: 1884' K.B.; 1882' D.F.; 1879' G.L.

CASING PROGRAM: Surface - 8 5/8" at 532'
Production - 5 1/2" at 3347'

SAMPLES: Samples saved and examined 2200' to the Rotary Total Depth.

DRILLING TIME: One (1) foot drilling time recorded and kept 2200' to the Rotary Total Depth.

MEASUREMENTS: All depths measured from the Kelly Bushing.

ELECTRIC LOG: By Wire Tech; Radiation Guard Log and Compensated Density Neutron Log.

FORMATION TESTING: There were four (4) drill stem tests ran by Swift Formation Testers.

<u>FORMATION</u>	<u>ELECTRIC LOG DEPTH</u>	<u>SUB-SEA DATUM</u>
Anhydrite	833	+ 1051
Grand Haven	2392	- 508
1st Tarkio Sand	2403	- 519
Dover	2417	- 533
2nd Tarkio Sand	2426	- 542
Tarkio Lime	2462	- 578
3rd Tarkio Sand	2489	- 605
Elmont	2535	- 651
Howard	2703	- 819
Severy	2725	- 841
Topeka	2752	- 868
Heebner	2971	- 1087
Toronto	2987	- 1103
Douglas	3006	- 1122
Lansing	3046	- 1162
Base Kansas City	3300	- 1416
Conglomerate	3308	- 1424
Conglomerate Sand	3316	- 1432
Arbuckle	3345	- 1461
Rotary Total Depth	3352	- 1468
Log Total Depth	3351	- 1467

(All tops and zones corrected to Electric Log Measurements.)

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

TARKIO SECTION

1st Sand 2403 - 2409'	Sand; gray; very fine grained; micaceous; shaley; poorly developed; no shows.
2nd Sand 2426 - 2436'	Sand; very fine grained; shaley; poor porosity; no shows.
3rd Sand 2489 - 2516'	Sand; very fine grained; silty; dirty; no shows.

TOPEKA SECTION

2907 - 2910'	Limestone; gray; fossiliferous; chalky in part; scattered porosity; spotty stain; show of free oil and faint odor in fresh samples.
2913 - 2917'	Limestone; gray to cream; fossiliferous; chalky; brown to golden brown stain; trace of free oil and faint odor in fresh samples.
2921 - 2930'	Limestone; as above; chalky.

TORONTO SECTION

2987 - 2997'	Dolomite; white to gray; medium crystalline; scattered intercrystalline porosity; fair stain and saturation; fair show of free oil and good odor in fresh samples.
2998 - 3005'	Limestone; gray to white; slightly dolomitic; no shows.

DRILL STEM TEST - #1 2960 - 3014'

Times: 30-45-45-60

Blow: Weak to good

Recovery: 180' gas in pipe
65' gassy mud; good show of oil

Pressures:	ISIP	187	psi
	FSIP	268	psi
	IFP	48-57	psi
	FFP	57-65	psi
	HSH	1652-1639	psi

LANSING SECTION

3046 - 3050'	Limestone; tan to brown; finely crystalline; cherty in part; no shows.
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3063 - 3070' Limestone; gray to tan; fossiliferous; glauconitic; chalky; poor visible porosity; fair stain and saturation; fair show of free oil (gassy) and strong odor in fresh samples.

3077 - 3088' Limestone; tan to gray; oocastic; good oocastic porosity; fair stain and saturation; fair show of free oil (gassy) and strong odor in fresh samples.

DRILL STEM TEST - #2 3048 - 3096'

Times: 30-45-45-60

Blow: Weak

Recovery: 10' mud

Pressures:	ISIP	73	psi
	FSIP	57	psi
	IFP	32-40	psi
	FFP	40-48	psi
	HSH	1743-1727	psi

3114 - 3120' Limestone; gray to dark gray; fossiliferous; poorly developed porosity; no shows.

3122 - 3130' Limestone; white to gray; slightly fossiliferous; chalky; trace poor spotty stain; no show of free oil or odor in fresh samples; trace gray chert.

3136 - 3140' Limestone; tan to gray; oocastic; fair oocastic porosity; plus abundant white chalk; no shows.

3143 - 3154' Limestone; white to gray; oocastic; fair oocastic porosity; plus white chalk; no shows.

3195 - 3205' Limestone; white; oocastic; scattered porosity; trace brown stain; trace of free oil and faint odor in fresh samples.

3213 - 3223' Limestone; gray to cream; oolitic; poor visible porosity; poor stain; no show of free oil or odor in fresh samples.

3231 - 3241' Limestone; cream; finely oolitic - oocastic; good porosity; no shows.

3265 - 3270' Limestone; white; oocastic; good oocastic porosity; no shows.

CONGLOMERATE SECTION

3318 - 3322' Sand; very fine to medium grained; sub-angular to sub-rounded; good sorting; friable; fair intergranular porosity; fair golden brown to brown stain; show of free oil and good odor in fresh samples.

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DRILL STEM TEST - #3 3297 - 3327'

Times: 45-45-45-45

Blow: Good

Recovery: 120' oil cut watery mud
120' heavy oil cut mud
60' very heavy oil cut mud
360' slightly mud cut gassy oil
120' water

Pressures:	ISIP	829	psi
	FSIP	787	psi
	IFP	57-211	psi
	FFP	228-333	psi
	HSH	1801-1797	psi

3323 - 3345'

Varied colored shale; predominately blood red to orange; plus white boney chert; no shows.

ARBUCKLE SECTION

3345 - 3352'

Dolomite; cream to white; medium crystalline; scattered porosity; golden brown to dark brown spotty stain; show of free oil and faint odor in fresh samples.

DRILL STEM TEST - #4 3346 - 3352'

Mis-Run; plugged tool

ROTARY TOTAL DEPTH 3352' (-1468)

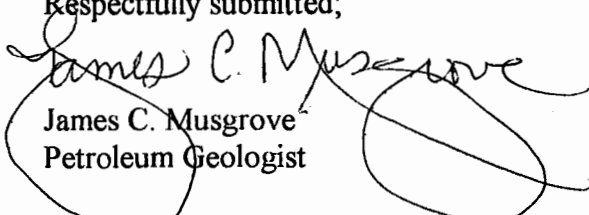
LOG TOTAL DEPTH 3351' (-1467)

RECOMMENDATIONS:

On the basis of the favorable structural position and the positive results of Drill Stem Test #3, it was recommended by all parties involved to set and cement 5 1/2" production casing be at 3347' (4 feet off bottom) and the Schultz #9 be completed in the Arbuckle Dolomite by "open hole" completion methods; before abandonment, the following zones need to be tested:

- | | | |
|----------------------|--------------|-----------|
| 1) Conglomerate Sand | 3318 - 3322' | perforate |
| 2) Lansing | 3077 - 3087' | perforate |
| 3) Toronto | 2991 - 2996' | perforate |
| 4) Topeka | 2907 - 2910' | perforate |

Respectfully submitted;


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