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Geological Report

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CONSERVATION DIVISION
WICHITA, KS

RUSSELL OIL, INC.

**Duggan No.2
NW-NE-SW Section 30-21S-11W
Stafford County, Kansas**

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OPERATOR: Russell Oil, Inc.

WELL: Duggan No. 2
API # 15-185-23,104 0000

LOCATION: NW-NE-SW
2310' from the South Line
1650' from the East Line
Section 30-21S-11W
Stafford County, Kansas

FIELD: Sandhills

CONTRACTOR: Shields Drilling Co., Rig 1

DRILLING COMMENCED: 07-24-2000

DRILLING COMPLETED: 08-03-2000

DRILLING TIME: One (1) foot drilling time was recorded
from 2700' to 3650' RTD.

SAMPLES: Samples were saved and examined from 2700'
to 3650' RTD.

ELEVATIONS: 1786' Ground Level 1991' Kelly Bushing

MEASUREMENTS: All depths are measured from 1791' K.B.

CASING RECORD: 8 5/8" Surface Casing set @ 549' with 325 sxs. 60/40 poz
5 1/2" Production Casing set @ 3648' with 175 sxs. ASC

FORMATION TESTING: Four (5) tests were run by Trilobite Testing LLC, Dan Bangle

MUD: Andy's Mud & Chemical Company (Chemical Mud)

OPEN HOLE LOGS: Reeves Wireline Service (CND-CDL, DIL, Micro,)

PRODUCTION: Oil (Arbuckle)

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FORMATION TOPS:

FORMATION	SAMPLE	LOG	DATUM
ANHYDRITE	537'	539'	+1252'
BASE ANHYDRITE	551'	558'	+1233'
TOPEKA	2753'	2751'	-960'
HEEBNER SHALE	3047'	3045'	-1254'
TORONTO	3067'	3065'	-1274'
DOUGLAS	3079'	3078'	-1287'
BROWN LIME	3178'	3177'	-1386'
LANSING	3201'	3200'	-1409'
BASE KANSAS CITY	3437'	3436'	-1645'
CONGLOMERATE	3471'	3470'	-1679'
SIMPSON SHALE	3495'	3494'	-1703'
SIMPSON SAND	3515'	3512'	-1721'
ARBUCKLE	3542'	3541'	-1750'
LOG TOTAL DEPTH	N/A	3649'	-1858'
ROTARY TOTAL DEPTH	3650'	N/A	-1859'

SAMPLE DESCRIPTIONS AND TEST DATA:

TOPEKA: No shows of oil were noted throughout the Topeka.

TORONTO:
3065-3077 Limestone, tan and gray, finely crystalline, mostly dense, fossiliferous in part, with poor intercrystalline porosity. No shows of oil were noted.

LANSING:
3200-3205 Limestone, cream, finely crystalline, fossiliferous, with poor visible porosity. No shows of oil were noted.

- 3207-3220 Limestone, cream and tan, finely crystalline, as above, with poor visible crystalline porosity, trace of dead staining. No show of free oil, no odor.
- 3224-3235 Limestone, cream and buff, dense to finely crystalline, slightly fossiliferous, with poor visible porosity, trace of dead staining. No show of free oil, no odor.
- 3244-3254 Limestone, buff, tan and cream, finely crystalline, dense, slightly fossiliferous, with trace of heavy, dead appearing staining, poor visible porosity. No show of free oil, no odor.
- 3272-3278 Limestone, tan and brown, dense to finely crystalline, with trace of pinpoint porosity, rare, heavy, tarry oil staining. No show of free oil, no odor.
- 3286-3290 Limestone, white and gray, finely crystalline, oolitic in part, with poor visible porosity, slightly chalky, rare staining. No show of free oil, no odor.
- 3334-3342 Limestone, light gray and tan, finely crystalline, dense, oolitic in part, with poor visible interoolitic porosity, trace of staining, very slight show of heavy, dead oil. No odor.
- 3349-3356 Limestone, light gray, finely crystalline, dense, with poor porosity. No shows of oil were noted.
- 3370-3382 Limestone, white and cream, finely crystalline, dense, oolitic, with poor visible interoolitic porosity and very slight staining. No odor.
- 3394-3402 Limestone, white and cream, finely crystalline, oolitic, slightly chalky, with trace of interoolitic porosity, very slight show of oil, heavy appearing. No odor.
- 3423-3430 Limestone, gray and white, dense, finely crystalline, slightly chalky. No shows of oil were noted.

CONGLOMERATE

- 3470-3493 Chert, red, brown, tan, brick red and varied colored, fresh, slightly weathered, with no edge staining, vari-colored shales. No shows of oil were noted.

SIMPSON SAND

- 3512-3521 Sandstone, clear to light brown, fine to medium grained, subrounded, friable in part, with very slight show of oil, no odor.

ARBUCKLE

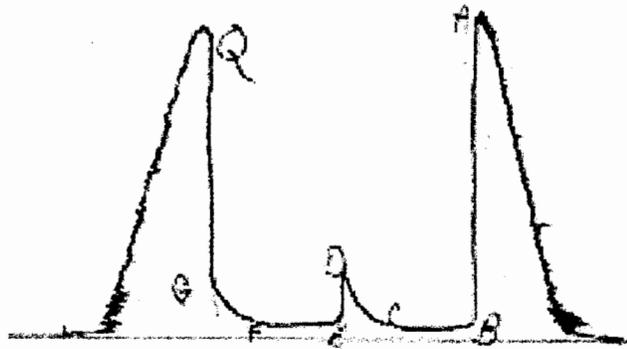
- 3541-3549 Dolomite, tan and light brown, finely crystalline, sucrosic, very soft, with fair intercrystalline porosity, fair show of free oil, light brown staining and saturation, light to fair odor. (Covered by D.S.T. No. 1)

FORMATION TEST NO. 1

Arbuckle

Tested from 3490'-3549'

		I.H.P.	1799#
<i>Weak Blow building to 2" inches</i>	45 min.	I.F.P.	59# -59#
	45 min.	I.S.I.P.	402#
<i>Weak Blow building to 2" inches</i>	45 min.	F.F.P.	82# -82#
	45 min.	F.S.I.P.	296#
		F.H.P.	1705#



RECOVERY: 303' Gas in Pipe
 5' Oil and Gas Cut Mud (10% gas, 60% oil, 30% mud)
 62' Oil and Gas Cut Mud (05% gas, 25% oil, 70% mud)
 67' Total Fluid

TEMPERATURE: 103*

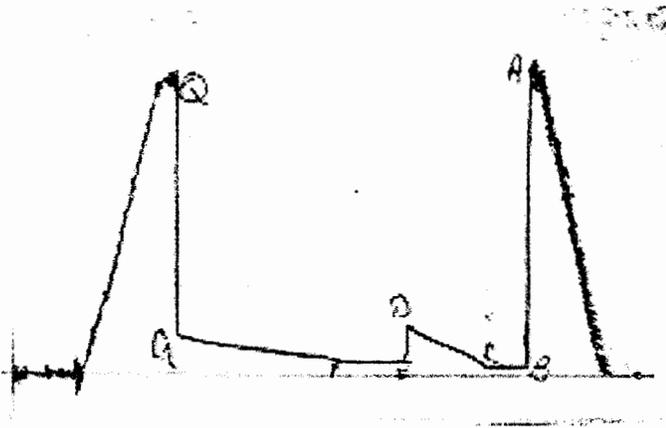
CHLORIDES: n/a ppm (Recovery) 6,000 ppm (System)

3550-3557 Dolomite, tan and light gray, fine to medium crystalline, with good visible intercrystalline porosity, some pinpoint to slightly vugular porosity, good show of free oil, light brown staining and saturation. Good odor. (Covered by D.S.T. No. 2)

FORMATION TEST NO. 2

Arbuckle
 Tested from 3550'-3557'

		I.H.P.	1822#
<i>Blow BOB in 16" Min.</i>	30 min.	I.F.P.	47# -47#
<i>Weak to 1/2" Blowback</i>	60 min.	I.S.I.P.	296#
<i>Blow BOB in 16" Min</i>	45 min.	F.F.P.	82# -94#
<i>Weak to 1/2" Blowback</i>	120 min.	F.S.I.P.	237#
		F.H.P.	1764#



RECOVERY: 620' Gas in Pipe
 72' Clean Oil (100% oil) 32* gravity
 128' Heavy Oil and Gas Cut Mud (20% gas, 60% oil, 20% mud)
 200' Total Fluid

TEMPERATURE: 105*

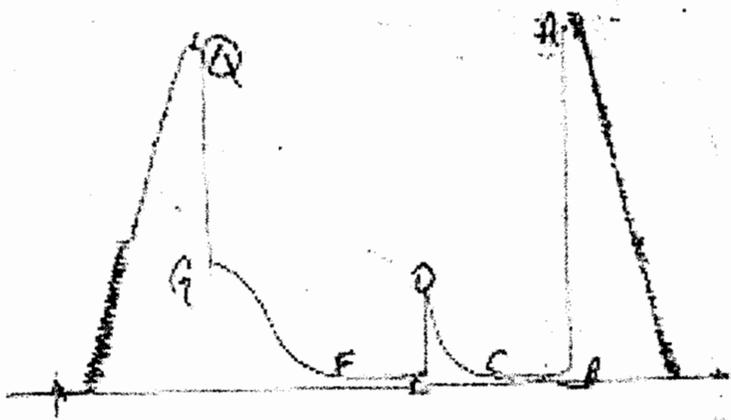
CHLORIDES: n/a ppm (Recovery) 4,000 ppm (System)

3562-3566 Dolomite, gray to light gray, finely crystalline, dense in part, with some fine to medium crystalline, slightly rhombic, with fair visible pinpoint porosity, slightly oolitic and oomoldic in part, with dark staining, some dead appearing, with fair to good odor, slight show of free oil. (Covered by D.S.T. No. 3)

FORMATION TEST NO. 3

Arbuckle
Tested from 3559'-3566'

		I.H.P.	1834#
Weak Blow building to 2" inches	45 min.	I.F.P.	35# -47#
	45 min.	I.S.I.P.	485#
Weak Blow building to 4" inches	45 min.	F.F.P.	59# -71#
	90 min.	F.S.I.P.	651#
		F.H.P.	1740#



RECOVERY: 360' Gas in Pipe
10' Clean Oil (100% oil) 32* gravity
62' Mud Cut Gassy Oil (25% gas, 55% oil, 20% mud)
72' Total Fluid

TEMPERATURE: 109*

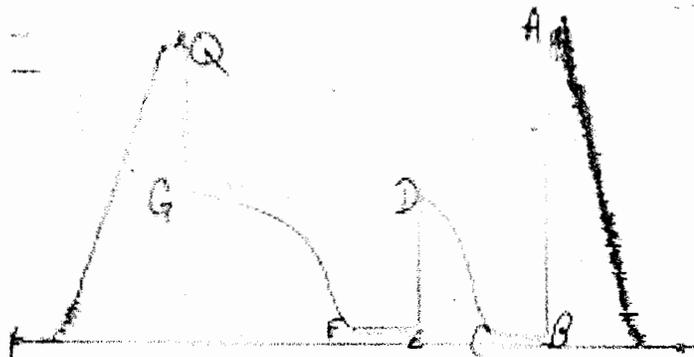
CHLORIDES: n/a ppm (Recovery) 11,500 ppm (System)

3572-3585 Dolomite, tan and gray, fine to medium crystalline, rhombic, with fair to good visible intercrystalline porosity, some pinpoint and slightly vugular. Show of free oil, good odor. (Covered by D.S.T. No. 4)

FORMATION TEST NO. 4

Arbuckle
 Tested from 3571'-3585'

		I.H.P.	1799#
<i>Weak Blow building to 5" inches</i>	45 min.	I.F.P.	59# -59#
<i>Weak Blow back, steady surface</i>	45 min.	I.S.I.P.	402#
<i>Weak Blow building to 2" inches</i>	45 min.	F.F.P.	82# -82#
<i>Weak Blow back, steady surface</i>	45 min.	F.S.I.P.	296#
		F.H.P.	1705#



RECOVERY: 484' Gas in Pipe
 134' Clean Oil (100% oil) 28* gravity
 62' Mud and Gas Cut Oil (30% gas, 60% oil, 10% mud)
 196' Total Fluid

TEMPERATURE: 105*

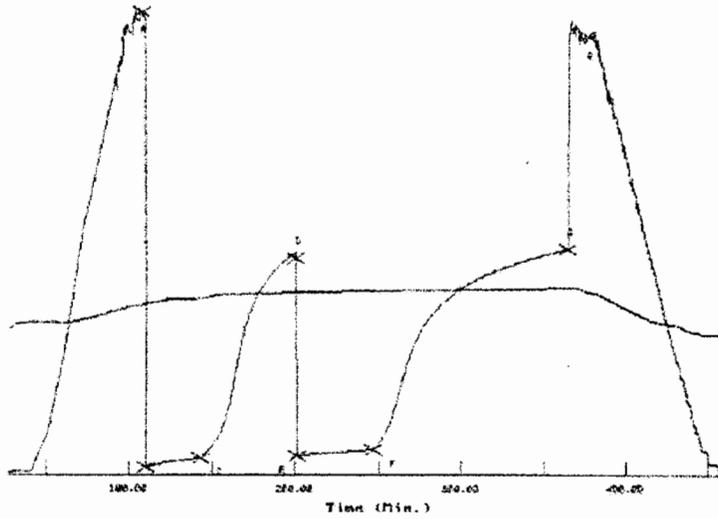
CHLORIDES: n/a ppm (Recovery) 11,500 ppm (System)

3592-3597 Dolomite, tan and gray, fine to coarse crystalline, rhombic in part, with good visible intercrystalline porosity, very good show of free oil, fair odor. (Covered by D.S.T. No. 5)

FORMATION TEST NO. 5

Arbuckle
Tested from 3590'-3597'

<i>Weak Blow - died in 27" min.</i>	30 min.	I.H.P.	1757#
	45 min.	I.F.P.	18# -25#
<i>No Blow</i>	30 min.	I.S.I.P.	825#
	45 min.	F.F.P.	26# -33#
		F.S.I.P.	697#
		F.H.P.	1769#



RECOVERY: 20' Mud Cut Water (50% water, 50% mud)

TEMPERATURE: 103*

CHLORIDES: 23,000 ppm (Recovery) 9,000 ppm (System)

DRILLING RECORD:

<u>Date</u>	<u>Daily Drilling Record</u>
7-24-00	Spud well. Set 8 5/8" surface casing at 319' with 250 sacks.
7-25-00 7:00 AM	Drilling @ 539'. Set 8 5/8" @ 549' w/ 325 sacks. Plug down 12:15 P.M.
7-26-00 7:00 AM	Drilling depth at 895'.
7-27-00 7:00 AM	Drilling depth at 1840'
7-28-00 7:00 AM	Drilling depth at 2445' Geologist on location @ 2720'
7-29-00 7:00 AM	Drilling depth at 2985'
7-30-00 7:00 AM	Drilling depth at 3357'
7-31-00 7:00 AM	Drilling depth at 3549', DST # 1 & DST # 2
8-01-00 7:00 AM	Drilling depth at 3566', DST # 3
8-02-00 7:00 AM	Drilling depth at 3697, DST # 4 & DST # 5
8-03-00 7:00 AM	Drilling depth at 3650, Ran open hole logs. Set 5 1/2" production casing.

STRUCTURAL COMPARISION:

	Russell Oil No. 2 Duggan NW NE SW Sec. 30-21S-11W	Petoleum Energy No.1 Duggan SW NE SW Sec. 30-21S-11W	Jandie Oil No. 1 Duggan E/2 SE SE Sec. 30-21S-11W
ANHYDRITE	+1252'	+1252'	+1256'
BASE ANHYDRITE	+1233'	n/a'	+1236'
TOPEKA	- 960'	n/a'	- 953'
HEEBNER SHALE	-1254'	-1252'	-1250'
BROWN LIME	-1386	-1384	-1380'
LANSING	-1409'	-1407	-1402'
BASE KANSAS CITY	-1645'	n/a'	-1640'
CONGLOMERATE	-1679'	-1674	-1674'
SIMPSON SHALE	-1703'	-1711'	-1683'
ARBUCKLE	-1750'	-1734	-1730'

SUMMARY:

The No. 2 Duggan was under geological supervision from 2720' to 3650' RTD. In reviewing the open hole logs and the positive results of D.S.T. No. 2 & 3 in the Arbuckle, it was recommended that 5 1/2" production casing be run and the well completed through perforations.

Recommended Perforations:

Arbuckle	3575-3580
	3560-3563
	3547-3550

Respectfully submitted,



Todd E. Morgenstern