

Frontier Oil Company
1720 Kansas State Bank Building
Wichita, Kansas 67202

Re: Frontier Oil Company
Oetken No. 1
SW NE SE 23-19S-15W
Barton County, Kansas

Dear Sir:

The following is a Geological Report with a Time Log attached on the above captioned well.

Drilling was supervised from 1600' to 3600', rotary total depth. Samples were examined from 1600' to 3600', rotary total depth.

All formation tops, zones of porosity and staining, are based on rotary bushing measurements. Any corrections in measurements during the drilling of this well have been incorporated into this report.

Elevation	1913 GL -- 1918 KB	
Anhydrite	853 to 875	(+1065)
Herington	1772	(+146)
Council Grove	2112	(-194)
Cottonwood	2223	(-305)
Red Eagle	2339	(-421)
Brownville	2499	(-581)
Tarkio	2622	(-704)
Elmont	2681	(-763)
Topeka	2897	(-979)
Heebner	3152	(-1234)
Toronto	3166	(-1248)
Brown Lime	3233	(-1315)
Lansing-KC	3243	(-1325)
Base-Kansas City	3460	(-1542)
Conglomerate	3520	(-1602)
Sand	3550	(-1632)
Arbuckle	3562	(-1644)
RTD	3600	(-1682)

Structurally, on top of the Lansing-Kansas City the Frontier Oil Company Oetken No. 1 ran 5' low to the Frontier Oil Company Button "A" No. 1 located approximately 3600' to the Northwest.

On top of the Arbuckle, the Oetken No. 1 ran flat with the Button "A" No. 1.

ZONES OF INTEREST

HERINGTON (Top 1772)

1781 to 1790

Tan sucrosic lime with scattered pinpoint porosity.

1823 to 1834

White and tan fine crystalline limes, scattered tan fossiliferous limes and a few scattered tan to gray limes with scattered pinpoint porosity.

COUNCIL GROVE (Top 2112)

2135 to 2141

White crystalline limes with fair pinpoint porosity and tan fossiliferous limes with pinpoint porosity.

COTTONWOOD (Top 2223)

2229 to 2240

Tan sucrosic limes, few scattered pinpoint porosity.

RED EAGLE (Top 2339)

2339 to 2346

White crystalline limes with fair to good pinpoint porosity.

2367 to 2374

White chalk, white to tan crystalline limes and tan fossiliferous limes.

2386 to 2403

Tan crystalline limes, scattered fair shows with pinpoint porosity.

2407 to 2413

Tan fine crystalline silty limes.

BROWNVILLE LIME (Top 2499)

TARKIO LIME (Top 2622)

2622 to 2626

Tan crystalline to white chalky limes and tan to brown slightly fossiliferous silty cherty limes.

2655 to 2668

Gray to clear sand clusters with scattered muscovite mica with fair to good pinpoint to intercrystalline porosity.

ELMONT LIME (Top 2681)

2681 to 2686

Tan chalky lime with a trace of light fluorescence.

DRILL STEM TEST NO. 2
2635 to 2706

TEST: 60-30-30-30. Weak blow for 45".
SI 30". Very weak blow for 13", flushed
tool - no help. Recovered 80' slightly
gas cut mud.
PRESSURES: 20-41, 52-62, 740-668 Bhps.

TOPEKA (Top 2897)
2897 to 2904

Tan silty and white crystalline limes.

2922 to 2930

Tan silty to crystalline to slightly sandy
lime.

3055 to 3064

Tan crystalline limes, tan cherty limes
and scattered white cherts.

3078 to 3088

Tan crystalline silty slightly
fossiliferous limes.

3094 to 3102

Fairly well developed oolitic limes.

HEEBNER SHALE (Top 3152)

TORONTO (Top 3166)
3166 to 3172

Tan crystalline limes.

BROWN LIME (Top 3233)

LANSING-KANSAS CITY (Top 3243)
3243 to 3252

White to light tan crystalline to very
slightly chalky, slightly vuggy and
scattered fossiliferous with good shows of
free oil and slightly syrupy oil and no
odor.

DRILL STEM TEST NO. 1
3240 to 3252

TEST: 30-30-30-30. Very weak blow. SI 30".
Very weak blow, flushed tool - no help.
SI 30". Recovered 10' mud with few oil
specks.
PRESSURES: 22-22, 22-22, 60-60.

3284 to 3288

Slightly vuggy, slightly fractured tan
crystalline to slightly cherty limes with
a small show of free oil and no odor.

3298 to 3303

Tan cherty fossiliferous limes with fair
pinpoint porosity and small to fair show
of free oil and no odor.

DRILL STEM TEST NO. 3

3281 to 3303

TEST: 30-30-15-30. Weak blow for 5",
flushed tool @ 15" - no help. SI 30".
No blow, flushed tool - no help. Recovered
5' of mud.
PRESSURES: 20-20, 20-20, 20-20 Bhps.

3368 to 3374

One piece of gray crystalline lime with
scattered pinpoint porosity and a small
show of black free oil and a very faint
odor.

DRILL STEM TEST NO. 4

3354 to 3375

TEST: 60-30-60-30. Fair blow throughout.
SI 30". Weak blow throughout. SI 30".
Recovered 15' frothy watery mud.
PRESSURES: 41-41, 41-41, 809-508 Bhps.

3381 to 3386

Tan fossiliferous cherty limes with a trace
of free oil and scattered tan slightly
vuggy chert with a fair show of free oil
and a fair odor.

3387 to 3392

Scattered tan cherty, sandy limes with a
small show of free oil and a fair to good
odor.

3394 to 3399

Few scattered white poorly developed
oolitic lime with a small show of black
free oil and a few pieces of tan cherty
slightly vuggy lime with a small show of
free oil and a faint odor.

DRILL STEM TEST NO. 5

3375 to 3402

TEST: 60-30-30-30. Weak blow throughout.
SI 30". Weak blow for 3", flushed tool -
no help. Recovered 10' of mud.
PRESSURES: 40-40, 40-40, 130-100 Bhps.

3407 to 3412

Few scattered crystalline limes with a
trace of free oil.

3417 to 3424

Few scattered cherty limes with black tar
oil.

3434 to 3440

White crystalline slightly vuggy lime
with a small show of slightly syrupy.

3444 to 3450

One piece slightly fossiliferous lime with
a small show of free oil.

DRILL STEM TEST NO. 6

3400 to 3460

TEST: 60-30-60-30. Fair blow. SI 30".
Fair blow. Recovered 140' slightly gassy
slightly oil spotted muddy water.
PRESSURES: 50-89, 95-110, 1000-955 Bhps.

BASE-KANSAS CITY (Top 3460)

3460 to 3467

One piece poorly developed oolitic white
lime with a small show of black free oil.

3508 to 3512

A few scattered green to clear sand clusters
with a small show of black dead oil.

CONGLOMERATE (Top 3520)

3520 to 3526

Soft red shales, scattered large slightly
rounded sand grains.

3530 to 3540

Red shales, tan and yellow oolitic cherts,
scattered large round frosted sand grains.

3540 to 3546

Red and gray soft shales, multi-colored
cherts, scattered clear to frosted quartz.

SAND (Top 3550)

3550 to 3555

Brown to clear, rounded quartz sand clusters
with a small show of free oil and a good
odor.

DRILL STEM TEST NO. 7

3446 to 3555

TEST: 60-30-60-30. Strong blow in 5".
SI 30". Gas to surface - TSTM.
Recovered 330' gassy watery mud.
PRESSURES: 101-142, 203-223, 304-668 Bhps.

ARBUCKLE (Top 3562)

3562 to 3565

Tan fine crystalline to dense dolomite,
no show of free oil and a fair odor.

DRILL STEM TEST NO. 8

3444 to 3565

TEST: 60-30-60-30. Gas to surface in 5".
Gauged 129,000 decreasing to 10,000 in 15",
decreasing to TSTM. SI 30". Gas to surface
TSTM, Flushed tool - no help.
Recovered 1440' fluid. 480' gas cut mud,
600' foamy gas cut mud, 360' gassy sulfur
water.
PRESSURES: 240-535, 560-690, 910-930 Bhps.

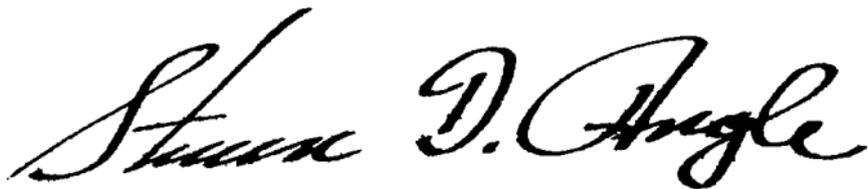
- 3575 to 3580 Fine crystalline to sandy fine crystalline dolomite, scattered round clear to frosted sand grains with a faint odor.
- 3580 to 3585 Scattered fine sandy dolomite with fair show of free light oil and scattered fine sandy dolomite with muscovite mica.
- 3585 to 3590 White to tan sandy dolomite and scattered large loose frosted sand grains with a few sand clusters and a faint odor.
- 3590 to 3595 Tan, very sandy dolomite, to fine crystalline dolomite.
- 3595 to 3600 Large crystalline to slightly fractured dolomite with a small show of free oil and tan fine sandy to very sandy with no show of free oil and a faint odor.

ROTARY TOTAL DEPTH @ 3600'

Logs were run from 3600' to 1600'.

4½" Casing was set at 3598', 2' off bottom, 36' into the Arbuckle with 290 sx common cement plus 10% salt. The shoe joint is 42.06' in length and zero point is 5 AGL.

Sincerely,

A handwritten signature in black ink, reading "Steven D. Angle". The signature is written in a cursive style with a large, sweeping initial "S".

Steven D. Angle

DRILLING INFORMATION ON THE OETKEN NO. 1

Drilling Contractor: Red Tiger Drilling Co.
Rig No. 4

Drillers: W. C. Ogle
W. Ogle, Jr.
A. Bates

Tool Pusher: W. C. Ogle

Spud Date: October 27, 1984

Date of RTD: November 9, 1984

Surface Pipe: 8-5/8" Set @ 859' w/400 sx
60/40 Pozmix, 2% Gel, 3% CC.

Casing: New 4½", 9.5# Set @ 3598'
w/290 sx Common Plus 10% Salt.
SJ = 42.06' In Length

TOTAL FOOTAGE DRILLED PER DAY

Under surface at 8:00 P.M on 10-28-84

1450	Feet	At	7:00 A.M.	On	10-29-84
2115	"	"	"	"	10-30-84
2560	"	"	"	"	10-31-84
2870	"	"	"	"	11-01-84
3116	"	"	"	"	11-02-84
3257	"	"	"	"	11-03-84
3303	"	"	"	"	11-04-84
3375	"	"	"	"	11-05-84
3450	"	"	"	"	11-06-84
3526	"	"	"	"	11-07-84
3558	"	"	"	"	11-08-84
3590	"	"	"	"	11-09-84
3600	Feet	At	7:55 A.M.	On	11-10-84

MUD RECORD

Surface - 27 sx Aquagel, 10 sx hulls, 3 sx lime.
1910 - 20 sx starch, 30 sx zeogel, 5 sx aquagel, 2 sx hulls, 1 sx aldacide,
15 sx salt gel.
2405 - 12 sx starch, 15 sx zeogel.
2755 - 6 sx starch, 2 sx zeogel, 3 sx hulls.
3010 - 21 sx starch, 35 sx zeogel, 4 sx hulls.
3252 - 6 sx starch, 25 sx zeogel.
3303 - 9 sx starch, 10 sx salt mud, 1 sx aldacide.
3375 - 9 sx starch, 12 sx salt gel, 10 sx zeogel, 1
3490 - 9 sx starch, 16 sx zeogel.
3565 - 5 sx starch, 21 sx zeogel.
3600 - 15 sx zeogel.

JUN 06 1986
KANSAS GEOLOGICAL SURVEY
WICHITA BRANCH

FEB 27 1985