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

Re: Frontier Oil Company
Button "A" No. 3
NW NW NE 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 3460', rotary total depth. Samples were examined from 1600' to 3460', 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	1917 GL -- 1922 KB	
Anhydrite	854 to 874	(+1068)
Herington	1759	(+163)
Ft. Riley	1911	(+11)
Council Grove	2094	(-172)
Cottonwood	2197	(-275)
Red Eagle	2311	(-389)
Brownville	2479	(-557)
Tarkio	2598	(-676)
Topeka	2870	(-948)
Heebner	3119	(-1197)
Toronto	3131	(-1209)
Brown Lime	3197	(-1275)
Lansing-KC	3213	(-1291)
Base-KC	3418	(-1496)
Quartz	3440	(-1518)
RTD	3460	(-1538)

Structurally, on top of the Lansing-Kansas City, the Frontier Oil Company Button "A" No. 3 ran 3' low to the Frontier Oil Company Eberly No. 4 located 660' to the north.

On top of the Quartz the Button "A" No. 3 ran 1' high to the Eberly No. 4.

A N-G Resistivity and Compensated Density log was run from 2915' to 1600'.

Button A #3 23-19-15W

23-19-15W

ZONES OF INTEREST

HERINGTON (Top 1759)

WINFIELD (Top 1808)

DRILL STEM TEST NO. 4 (Straddle Test)
1723 to 1820

TEST: 60-30-60-30. Strong blow in 3". SI 30". Strong blow throughout. Recovered 165' of watery mud.
PRESSURES: 66-104, 114-124, 276-257 Bhps.

COUNCIL GROVE (Top 2094)

DRILL STEM TEST NO. 3 (Straddle Test)
2097 to 2144

TEST: 60-30-60-30. Strong blow in 5". SI 30". Strong blow. SI 30". Recovered 150' watery mud.
PRESSURES: 57-57, 114-104, 1155-219 Bhps.

COTTONWOOD (Top 2197)

DRILL STEM TEST NO. 1
2182 to 2230

TEST: 60-30-60-30. Gas to surface in 20 minutes.
25" = 137,000 CFGPD
35" = 195,000 CFGPD
45" = 195,000 CFGPD
55" = 242,000 CFGPD
60" = 242,000 CFGPD
Second Opening
15" = 385,000 CFGPD
30" = 301,000 CFGPD
45" = 301,000 CFGPD
60" = 301,000 CFGPD
Recovered 385' of gassy water. (Chl. 91,000
PRESSURES: 95-104, 114-133, 718-699 Bhps.

RED EAGLE (Top 2311)

DRILL STEM TEST NO. 2
2295 to 2350

TEST: 60-30-60-30. Strong blow in 55". SI 30". Strong blow throughout. Recovered 245' muddy water with few oil specks.
PRESSURES: 47-104, 114-152, 680-660 Bhps.

BROWNVILLE LIME (Top 2479)

TARKIO LIME (Top 2598)

ELMONT LIME (Top 2656)

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TOPEKA (Top 2870)

2870 to 2880	Tan crystalline to silty lime.
2905 to 2915	Tan sucrosic limes.
3064 to 3075	Tan well developed oolicastic limes.
3090 to 3100	Scattered gray cherts, tan silty limes and scattered well developed oolicastic limes.

HEEBNER SHALE (Top 3119)

TORONTO (Top 3131)

3131 to 3140	Tan to white crystalline limes and scattered tan to white fossiliferous limes.

BROWN LIME (Top 3197)

LANSING-KANSAS CITY (Top 3213)

3213 to 3220	Tan to pale tan fresh cherts and scattered cherty limes with traces of free oil and plastic oil.

DRILL STEM TEST NO. 5

3204 to 3232	TEST: 30-30-15-30. Weak blow for 10". Flushed tool - no help. SI 30". No blow. Recovered 3' of mud. PRESSURES: 38-28, 19-19, 38-19 Bhps.
3230 to 3240	White to tan crystalline fossiliferous limes and scattered tan fresh cherts.
3242 to 3250	Brown fossiliferous limes and few scattered white fossiliferous slightly vuggy limes with scattered traces of free oil and a good odor.
3260 to 3267	Tan to white silty slightly crystalline to slightly cherty limes with scattered fair show of free oil and a good odor.

DRILL STEM TEST NO. 6

3220 to 3271	TEST: 60-30-60-30. Strong blow in 2" throughout. SI 30". Gas to surface upon opening - too small to measure. Recovered 35' gassy oil cut mud, (20% oil, 13% gas, 67% mud) 60' frothy muddy oil, (97% oil, 3% mud) 1089' frothy oil. PRESSURES: 104-305, 372-467, 951-932 Bhps.

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DRILL STEM TEST NO. 7
3252 to 3271

TEST: 60-30-60-30. Strong blow in 2". Gas to surface in 55", too small to measure. SI 30". Strong blow with gas throughout. Recovered 1310' clean gassy oil. PRESSURES: 104-257, 286-419, 951-932 Bhps.

3278 to 3281

Poor to well developed oolicastic limes with one piece of cherty oolitic lime with small show of free oil and a very faint odor.

DRILL STEM TEST NO. 8
3271 to 3281

TEST: 60-30-60-30. Strong blow in 39". SI 30". Strong blow throughout. SI 30". Recovered 500' of water. PRESSURES: 38-124, 162-248, 1126-1126 Bhps.

3306 to 3316

Few pieces of white sucrosic lime with a good show of free oil and a very faint odor.

3332 to 3340

Few scattered white oolitic to oolicastic limes with a small show of free oil and a faint odor.

DRILL STEM TEST NO. 9
3324 to 3345

TEST: 60-30-60-30. Strong blow in 3". SI 30". Strong blow. SI 30". Recovered 900' Gas in pipe, 200' oil cut mud, (50% oil, 50% mud) 60' mud cut gassy oil, (10% gas, 70% oil, 20% mud) 120' frothy oil, 20% gas, 70% oil, 10% mud). PRESSURES: 57-66, 85-95, 143-171 Bhps.

3346 to 3352

Tan weathered fossiliferous limes with a small show of free oil.

3354 to 3360

Same as above with scattered cherty slightly vuggy limes and with a small show of free oil.

DRILL STEM TEST NO. 10
3345 to 3364

TEST: 60-30-60-30. Strong blow in 6". SI 30". Strong blow. SI 30". Recovered 64' slightly oil cut watery mud. PRESSURES: 19-28, 38-38, 181-181 Bhps.

DRILL STEM TEST NO. 11
3306 to 3364

TEST: 60-30-60-30. Weak blow to good blow decreasing to fair blow. SI 30". Weak to fair blow, flushed at 45", fair blow remainder of opening. Recovered 300' slight oil and gas cut mud.
PRESSURES: 76-104, 143-200, 190-229 Bhps.

3366 to 3376

Tan to white crystalline limes with scattered white slightly fossiliferous limes with scattered small show of free oil.

DRILL STEM TEST NO. 12
3364 to 3382

TEST: 30-30-30-30. Very weak blow, flushed tool - died in 25". SI 30". No blow. Recovered 10' of mud.
PRESSURES: 19-19, 19-19, 28-28 Bhps.

BASE-KANSAS CITY (Top 3418)
3418 to 3428

Tan and brown cherty crystalline limes, red shales and soft gray shales.

QUARTZ (Top 3440)
3440 to 3460

Clear fractured quartz with muscovite and biotite micas.

DRILL STEM TEST NO. 13
3415 to 3460

TEST: 60-30-60-30. Gas to surface in 12".
20" = 5,220 CFGPD
30" = 6,330 CFGPD
40" = 6,550 CFGPD
50" = 6,550 CFGPD
60" = 6,550 CFGPD
Second Opening
10" = 8,950 CFGPD
20" = 8,950 CFGPD
30" = 11,020 CFGPD
40" = 11,020 CFGPD
50" = 8,950 CFGPD
60" = 8,950 CFGPD
Recovered 80' slightly gassy mud with few oil specks in tool.
PRESSURES: 47-47, 57-57, 757-777 Bhps.

ROTARY TOTAL DEPTH @ 3460'

Button A #3 D3-19-15W

New 4½" 10.5# casing was set at 3459', 19' into the Quartz and 1' off bottom with 200 sx of common cement plus 10% salt. The shoe joint is 35.77' in length. Zero point is 5' AGL.

Sincerely,

Steven D. Angle

Steven D. Angle

DRILLING INFORMATION ON THE BUTTON "A" NO. 3 23-19-15W

Drilling Contractor: Red Tiger Drilling Co.

Drillers: W. C. Ogle
W. C. Ogle, Jr.
D. Lillard

Tool Pusher: W. C. Ogle

Spud Date: September 4, 1984

Date of RTD: September 15, 1984

Surface Pipe: 8-5/8" @ 859.99' w 275 sx 60/40 Poz, 2% Gel, 3% CC.

Casing: 4½" @ 3459' w/200 sx common plus 10% salt. SJ = 35.77'

TOTAL FOOTAGE DRILLED PER DAY

Under surface at 4:00 P.M. on 9-5-84

1815	Feet	At	7:00 A.M.	On	9-06-84
2350	"	"	"	"	9-07-84
2600	"	"	"	"	9-08-84
2915	"	"	"	"	9-09-84
2945	"	"	"	"	9-10-84
3232	"	"	"	"	9-11-84
3271	"	"	"	"	9-12-84
3345	"	"	"	"	9-13-84
3364	"	"	"	"	9-14-84
3420	"	"	"	"	9-15-84
3460	Feet	At	1:29 P.M.	On	9-15-84

MUD RECORD

Surface - 15 sx gel, 2 sx lime, 3 sx hulls.
2230 - 25 sx starch, 45 sx salt mud, 5 sx aquagel, 1 sx preservative, 4 sx hulls.
2400 - 10 sx salt mud, 6 sx starch.
2905 - 8 sx starch, 30 sx salt gel.
3229 - 16 sx starch, 30 sx salt mud, 17 sx salt gel, 3 sx Bentonite, 1 sx Aldacide.
3271 - 10 sx starch.
3281 - 6 sx starch, 10 sx salt mud.
3382 - 4 sx starch, 10 sx salt mud.