

Confidential

15-7-19W

K C C

CONFIDENTIAL

KCC
MAY 30
CONFIDENTIAL

JUN 10 1992

GEOLOGICAL REPORT

FRONTIER OIL COMPANY

NO. 4 BURTON

NE NE NW

Sec. 15-7S-19W

ROOKS COUNTY, KANSAS

DATE COMMENCED: APRIL 9, 1991

DATE OF RTD: APRIL 16, 1991

15-163-23162

GEOLOGIST

RICHARD D. PARKER

RECEIVED
STATE CORPORATION COMMISSION
MAY 31 1991
CONSULTATION DIVISION
Wichita, Kansas

CONFIDENTIAL

Frontier Oil Company
125 N. Market, Ste. 1720
Wichita, Kansas 67202

Re: Frontier Oil Company
No. 4 Burton
NE NE NW Sec. 15-7-19W
Rooks County, Kansas

Dear Sir:

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

Drilling was supervised from 2800' to 3455', rotary total depth. Samples were examined from 2900' to 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 the well have been incorporated into this report.

| Elevation - American Elevations | 1971 DF | -- | 1974 KB |
|---------------------------------|---------|----|---------|
| Anhydrite | 1478 | | + 496 |
| Topeka | 2922 | | - 948 |
| Heebner | 3122 | | -1148 |
| Toronto | 3147 | | -1173 |
| Lansing-Kansas City | 3164 | | -1190 |
| Base of Kansas City | 3385 | | -1411 |
| Marmaton | 3425 | | -1451 |
| RTD | 3455 | | -1481 |
| 4½" Pipe At | 3448 | | -1474 |

ZONES OF INTEREST

TOPEKA (Top 2922) 2922 to 2926

Tan fine crystalline to fossiliferous lime with no show of oil.

2952 to 2958

Tan fine crystalline to sucrosic lime with fair pinpoint porosity, no show of oil.

3078 to 3095

Tan poorly developed oolitic lime with no show of oil.

3103 to 3108

Grey fresh sharp chert, chalky lime with a trace of free oil no odor, trace dark stain.

TORONTO (Top 3147)
3147 to 3152

White medium crystalline lime with a trace of oil stain, trace of free oil and no odor.

LANSING-KANSAS CITY (Top 3164)
3164 to 3170

White oolitic lime with fair inter-oolitic porosity. Traces of free oil spotted dark stain, no odor.

3228 to 3233

White fossiliferous to oolitic lime with fair oolitic porosity, traces of free oil, trace of stain, no odor.

3248 to 3252

Tan fine crystalline lime with traces of free oil, trace of stain, no odor.

3260 to 3266

White fine crystalline lime with traces of free oil, trace of stain, no odor.

3300 to 3302

White fine crystalline to slightly vuggy lime with traces of free oil, trace of stain, no odor.

3334 to 3342

Tan well developed oolitic lime with a fair show of free oil, fair spotted dark stain, no odor.

3359 to 3364

White fine crystalline to fossiliferous lime with traces of free oil, spotted stain, no odor.

DRILL STEM TEST NO. 1 (TRILOBITE)
3300 to 3370

60-30-30-30. Rec. 125' Fluid.
5' SOCGM (10% G, 15% O, 75% M)
60' OCGM (10% G, 15% O, 75% M)
60' OCGM (10% G, 30% O, 60% M)
IF 111-112 FF 144-155 ISIP & FSIP 643

4½", 10½# new casing was set at 3448' with 160 sx ASC cement. Zero Point is 5' AGL and the shoe joint is 16-85' long.

Sincerely.

Richard D. Parker

DRILLING INFORMATION ON THE NO. 4 BURTON

Contractor: Red Tiger Drilling Co.

Drillers: Hejney, Lyle, Leech

Tool Pusher: Kenny Lyle

Date of RTD: April 16, 1991

Spud Date: April 9, 1991

Casing: 4½" @ 3448'/160 sx
Basket @ 1503'

Surface Pipe: 8 5/8" @ 264/160 sx

TOTAL FOOTAGE DRILLED PER DAY
Under Surface At 12:00 PM on March 10, 1991

| | Feet | At | 7:00 AM | On | |
|------|------|----|---------|----|---------|
| 920 | | | | | 4-10-91 |
| 1745 | " | " | " " | " | 4-11-91 |
| 2235 | " | " | " " | " | 4-12-91 |
| 2690 | " | " | " " | " | 4-13-91 |
| 3064 | " | " | " " | " | 4-14-91 |
| 3332 | " | " | " " | " | 4-15-91 |
| 3455 | " | " | " " | " | 4-16-91 |

BIT RECORD

| <u>Bits</u> | <u>Type</u> | |
|-------------|------------------------|--------------|
| No. 1 | Varel - L-126 (New) | 268 to 1575 |
| No. 2 | Varel - V-634 CH (New) | 1575 to 3455 |

MUD RERECORDS

Mud Company: Mud-CO

Mud Type: Starch

Surface: 34 sx gel, 6 sx hulls, 4 sx lime
1925 - 3 sx hulls
2566 - 25 sx gel, 4 sx soda ash, 13 sx hulls
2960 - 25 sx gel, 2 sx soda ash, 15 sx starch, 3 sx hulls
3064 - 29 sx gel, 15 sx starch
3370 - 7 sx gel, 7 sx starch, 1 sk soda ash, 1 sk preservative

DRILLERS TIME LOG

NO. 4 BURTON
NE NE NW SEC. 15-7S-19W
ROOKS COUNTY, KANSAS

| DEPTH | MINUTES | REMARKS |
|--------------|-------------------------|---------|
| 2800 to 2810 | 1/2-1/2-1-4-3-3-4-5-3-3 | |
| 2820 | 4-3-4-4-4-4-5-4-4-3 | |
| 2830 | 4-4-4-3-3-3-3-1½-2½-3 | |
| 2840 | 2-1-3-3-2-3-3-3-4-4 | |
| 2850 | 3-4-4-3-2-3-3-2-3-3 | |
| 2860 | 2-2-2-2-2-2-2-1-1-1 | |
| 2870 | 2-2-2-2-3-3-4-3-4-4 | |
| 2880 | 4-3-3-2-1-4-4-3-4-3 | |
| 2890 | 2-2-3-3-2-2-3-1-2-1 | |
| 2900 | 1-2-3-2-2-3-4-3-3-2 | |
| 2900 to 2910 | 3-3-2-2-3-3-2-2-2-2 | |
| 2920 | 2-2-1-2-2-2-2-1½-1½-2 | |
| 2930 | 3-1-4-5-5-5-5-6-5-5 | |
| 2940 | 4-5-5-4-5-5-5-4-5-4 | |
| 2950 | 4-4-4-4-3-3-2-4-4-3 | |
| 2960 | 4-2-1-1-1-1-2-2-3-4 | |
| 2970 | 5-6-4-2-6-4-6-5-5-4 | |
| 2980 | 4-4-4-3-4-3-4-2-4-2 | |
| 2990 | 3-4-5-6-6-5-6-4-3-2 | |
| 3000 | 2-2-2-3-4-5-6-6-6-5 | |
| 3000 to 3010 | 3-3-3½-3½-3-4-4-2-2-2 | |
| 3020 | 3-5-4-5-7-6-3-4-5-4 | |
| 3030 | 4-4-5-4½-4½-3½-3-3-2½-4 | |
| 3040 | 4-4-4-5-3-5-6-5-5-6 | |
| 3050 | 6-7-5-3-5-4-4-3-3-3 | |
| 3060 | 3-3-6-8-7-7-6-7-6-6 | |
| 3070 | 5-6-6-7-9-8-7-7-8-5 | |
| 3080 | 8-8-8-2-6-4-6-2-2-2 | |
| 3090 | 3-3-2-3-3-5-5-5-6-5 | |
| 3100 | 5-6-6-6-5-4-2-4-4-4 | |
| 3100 to 3110 | 5-4-5-3-3-2-3-3-4-4 | |
| 3120 | 4-4-5-4-4-5-6-5-5-5 | |
| 3130 | 5-6-5-3-3-4-6-5-5-6 | |
| 3140 | 6-5-5-4-4-4-4-2-3-3 | |
| 3150 | 3-4-3-3-3-3-3-4-4-4 | |
| 3160 | 4-4-6-6-5-5-6-6-6-5 | |
| 3170 | 5-3-4-4-5-4-5-5-2-5 | |
| 3180 | 4-5-5-5-5-4-5-5-4-5 | |
| 3190 | 4-4-4-5-4-5-5-5-5-4 | |
| 3200 | 5-5-4-5-4-5-5-5-4-2 | |

| | |
|--------------|----------------------|
| 3200 to 3210 | 3-3-3-3-3-3-4-4-3-4 |
| 3220 | 5-5-5-5-6-6-5-4-4-4 |
| 3230 | 4-4-4-4-5-5-5-5-6-3 |
| 3240 | 5-5-6-6-7-6-6-5-5-6 |
| 3250 | 5-4-5-5-6-7-6-5-6-5 |
| 3260 | 5-5-5-6-6-6-6-5-5-5 |
| 3270 | 3-3-3-5-3-5-6-6-6-7 |
| 3280 | 6-4-5-5-7-6-6-6-6-6 |
| 3290 | 7-7-6-6-4-6-7-6-5-4 |
| 3300 | 5-5-5-5-5-7-7-7-7-5 |
| 3300 to 3310 | 4-5-7-7-7-7-8-8-8-9 |
| 3320 | 9-9-8-6-5-5-5-6-5-5 |
| 3330 | 5-6-6-7-6-7-8-7-6-6 |
| 3340 | 6-5-5-6-4-5-3-2-3-3 |
| 3350 | 4-5-6-7-7-7-7-8-7-7 |
| 3360 | 8-8-8-7-4-6-5-6-5-5 |
| 3370 | 5-5-5-6-6-6-5-6-7-6 |
| 3380 | 6-7-7-7-7-7-5-6-6-5 |
| 3390 | 6-8-7-6-7-5-5-5-5-4 |
| 3400 | 5-5-6-6-6-6-6-6-7-6 |
| 3400 to 3410 | 7-5-5-5-4-4-6-6-7-7 |
| 3420 | 6-7-7-8-8-9-10-6-6-6 |
| 3430 | 5-6-6-7-6-9-8-8-7-7 |
| 3440 | 5-6-6-6-8-5-7-8-9-8 |
| 3450 | 6-7-8-6-7-6-7-5-6-7 |
| 3460 | 8-6-7-6-8-x-x-x-x-x |

DST #1 (3300-3370)