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GEOLOGICAL REPORT

FRONTIER OIL COMPANY

NO. 1 BERTRAND *API 15-109-20484*

NW SW NE Sec. 16-11S-35W

LOGAN COUNTY, KANSAS

DATE COMMENCED: July 30, 1990

DATE OF RTD: August 9, 1990

GEOLOGIST

RICHARD D. PARKER

RECEIVED
STATE GEOLOGICAL COMMISSION

SEP 11 1991
CONSERVATION DIVISION
WICHITA, KANSAS

CONFIDENTIAL

16-11-35W

FRONTIER OIL COMPANY
125 N. Market, Ste. 1720
Wichita, Kansas 67202

FRONTIER OIL COMPANY
No. 1 Bertrand
NW SW NE Sec. 16-11S-35W
Logan County, Kansas

Dear Sir:

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

Drilling was supervised from 3400' to 4750', rotary total depth. Samples were examined from 3700' 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 this well have been incorporated into this report.

ELEVATION (American Elevations)	3293DF		- 3296KB	
	Sample Tops		Log Tops	
Anhydrite	2744	+552	2740	+556
Tarkio	3751	-455	3758	-462
Topeka	3884	-588	3894	-598
Heebner	4107	-811	4113	-817
Toronto	4124	-828	4134	-838
Lansing-Kansas City	4144	-848	4148	-852
Base of Kansas City	4466	-1170	4472	-1176
Marmaton	4478	-1182	4500	-1204
Fort Scott	4625	-1329	4640	-1344
Cherokee Shale	4655	-1359	4670	-1374
Johnson	4692	-1396	4706	-1410
RTD	4750	-1454	4749	-1453

Structurally, using sample tops, on top of the Lansing-Kansas City the No. 1 Bertrand ran flat with Mull Drilling Company's No. 2 Bertrand located three locations west. On top of the Johnson the No. 1 Bertrand ran 2' low to the Mull Drilling Company's No. 2 Bertrand.

Structurally, using log tops, the No. 1 Bertrand ran 4' low and the Johnson ran 16' low to Mull Drilling Company's No. 2 Bertrand.

ZONES OF INTEREST

TARKIO (Top 3751)
3751 to 3760

Tan fine crystalline to sucrosic lime with fair pin point porosity. No show of oil

TOPEKA (Top 3384)
3864 to 3872

Light tan sucrosic lime with a fair odor, fair show of free oil, fair spotted light stain.

TORONTO (Top 4124)
4124 to 4128

Light tan fine crystalline to fossiliferous lime with no odor, trace of free oil, trace of stain.

LANSING-KANSAS CITY (Top 4144)
4144 to 4150

Light tan fine crystalline to fossiliferous, oolitic lime with slight oolitic porosity no show of oil, no odor.

4184 to 4190

White to light tan fine crystalline to chalky and some fresh chert. Traces of free oil in fine crystalline lime when samples were broken. Trace of oil stain.

DRILL STEM TEST NO. 1 (Trilobite Testing)
4168 to 4194

60-45-30-45. First open weak increasing to good 12" in bucket. Second op weak increasing to fair 4" in bucket. Rec. 340' SW. Chlorides 42,000. IF 19-127, FF 147-187, ISIP 1206, FSIP 1216.

4202 to 4210

Light tan fine crystalline to cherty lime with no show of oil.

4236 to 4242

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

4262 to 4268

White to light tan fossiliferous to slightly vuggy lime with a trace of free oil, trace of stain, no odor.

4316 to 4324

White to light tan fine crystalline to fossiliferous lime with good oil saturation in fine crystalline lime, no free oil, traces of free oil in the fossiliferous lime, some fossiliferous porosity, faint odor, traces of stain.

DRILL STEM TEST NO. 2 (Trilobite Testing)
4302 to 4332

30-45-30-45. 1st open weak blow for 25 min. 2nd open No blow. Flushed tool, no Help. Rec 10 M. IF 19-19 FF 19-19, ISIP 986, FSIP 887.

4342 to 4352	Light grey to tan fine crystalline to cherty lime with no show of oil, no odor.
4366 to 4372	Light tan fine crystalline to chalky lime with no show of oil.
4392 to 4398	White chalky lime with no show of oil.
4402 to 4450	Tan chalky to brown fine crystalline to dense lime with no show of oil.
<u>MARMATON (Top 4478)</u> 4478 to 4486	White fossiliferous lime and fresh chert with a trace of free oil, no odor, no stain.
<u>FORT SCOTT (Top 4615)</u> 4615 to 4640	White to tan chalky to oolitic lime with no show of oil, no odor, no stain.
<u>CHEROKEE SHALE (Top 4655)</u> 4655 to 4692	Dark grey and green shale, black carbonaceous shale laced with tan fine crystalline to dense limes.
<u>JOHNSON (Top 4692)</u> 4704 to 4710	Light tan to light grey fine crystalline lime with light porosity trace of free oil, trace of stain, no odor, (Included in DST #3)
4716 to 4720	Tan fine crystalline to dense and some slightly vuggy lime, with traces of black free oil, trace of stain, no odor.
<u>DRILL STEM TEST NO. 3</u> (Trilobite Testing) 4698 to 4726	30-45-60-45. 1st open weak blow. 2nd open weak blow. Rec. 100' CO, 10' MCO (65% O, 35% M) IF 9-9, FF 19-29, ISIP 187, FSIP 127.
4730 to 4750	Tan fine crystalline to dense, fossiliferous lime with no show of oil.

Due to low structural position and negative drill stem test results, the Frontier Oil Company No. 1 Bertrand was plugged, an abandoned a dry hole.

Sincerely,

Richard D. Parker

4608: 1sk lignite, 2sx soda ash, 1sk caustic, ½sk drispac
4726: 35sx gel, 2sx lignite, 2sx caustic, 3sx soda ash,
1sk drispac
4750: 21sx gel, 1sk causti, 1sk lignite

DRILLERS TIME LOG

Frontier Oil Company
No. 1 Bertrand

NW SW NE
Sec. 16-11S-35W
Logan County

Elev: 3291 GR
3296 KB

DEPTH	MINUTES	REMARKS
	1 Foot Drilling Time	
3400 to 3410	2-3-3-2-3-3-3-2-2-2	
3420	2-3-3-4-3-4-3-3-4-4	
3430	2-3-2-3-3-3-4-4-4-2	
3440	3-3-3-5-3-4-4-3-4-4	
3450	3-3-3-3-3-3-3-3-3-3	
3460	3-2-4-3-4-4-4-4-3-2	
3470	2-3-4-3-5-3-4-5-3-4	
3480	4-3-4-4-4-4-4-4-5-5	
3490	5-4-4-4-4-3-4-4-2-2	
3500	2-1-1- $\frac{1}{2}$ - $\frac{1}{2}$ -1-1-1-1-1	
3500 to 3510	2-2-3-3-3-3-2-3-3-4	
3520	2-4-2-2-1-2-3-2-3-4	
3530	3-2-2-1-1-1-2-2-3-3	
3540	2-3-2-3-4-2-3-3-3-4	
3550	3-4-3-2-4-2-4-3-3-2	
3560	2-2-2-2-3-3-2-3-3-3	
3570	3-3-2-3-3-3-3-2-2-3	
3580	4-4-3-3-2-2-2-2-3-2	
3590	2-2-2-2-3-3-3-3-2-4	
3600	4-3-4-4-4-3-3-5-5-3	
3600 to 3610	4-3-4-4-4-3-3-3-3-3	
3620	3-3-3-3-3-3-3-2-3-2	
3630	2-3-2-3-2-2-2-2-2-3	
3640	2-3-2-4-4-4-2-3-3-3	
3650	3-3-3-4-3-2-2-3-3-2	
3660	2-3-1-2-3-1-1-2-3-3	
3670	2-2-2-2-2-2-1-3-1-2	
3680	2-2-3-2-2-2-3-1-1-2	
3690	2-3-2-3-2-4-3-3-4-3	
3700	2-3-3-3-3-3-3-3-3-3	
3700 to 3710	3-2-3-4-4-1-3-2-3-3	
3720	2-2-2-1-4-3-2-2-3-3	
3730	2-3-3-3-3-4-3-2-3-3	
3740	2-3-2-4-4-5-4-4-4-4	
3750	5-3-4-4-4-2-3-3-4-3	
3760	3-5-2-2-2-2-2-3-4-3	
3770	3-4-5-4-2-3-3-3-5-5	
3780	3-4-4-6-8-3-3-4-4-5	
3790	4-4-4-3-4-4-4-4-3-4	
3800	3-4-2-2-2-5-4-4-4-3	

DEPTH	MINUTES	REMARKS
3800 to 3810	2-7-4-2-4-4-4-5-4-2	
3820	3-3-2-4-2-3-2-2-4-4	
3830	5-4-6-4-3-2-2-1-3-3	
3840	3-3-3-3-4-3-3-2-3-1	
3850	½-½-1-1-1-1-½-½-1-1	
3860	1-2-6-2-2-2-2-2-3-2	
3870	1-2-2-4-4-3-3-2-2-3	
3880	2-2-3-3-4-2-2-2-2-2	
3890	1-2-1-1-2-2-2-2-3-3	
3900	3-2-4-2-2-2-1-3-4-4	
3900 to 3910	3-4-2-2-4-2-2-2-2-2	
3920	1-1-2-1-2-2-3-2-3-3	
3930	2-2-2-2-2-2-2-2-2-1	
3940	2-1-2-2-2-2-2-2-3-2	
3950	2-3-3-3-2-3-3-2-3-3	
3960	2-3-2-3-1-1-2-1-2-2	
3970	1-2-2-2-2-1-2-1-2-1	
3980	1-1-1-2-2-2-3-2-1-2	
3990	2-3-1-2-2-2-2-2-2-2	
4000	2-2-1-1-2-2-2-2-2-2	
4000 to 4010	3-3-3-5-5-5-3-2-4-3	
4020	2-2-2-2-2-1-2-2-2-2	
4030	2-1-2-2-2-3-3-4-4-3	
4040	4-4-4-4-3-4-2-4-5-7	
4050	4-4-4-3-4-3-2-3-3-2	
4060	2-3-5-3-4-3-2-4-3-4	
4070	4-4-3-2-2-4-4-4-5-3	
4080	2-2-1-2-2-2-2-2-2-3	
4090	4-5-4-5-4-4-4-4-4-3	
4100	1-4-4-3-3-2-2-2-2-2	
4100 to 4110	2-2-2-1-2-1-3-1-2-2	
4120	3-5-4-2-2-2-2-4-5-5	
4130	2-4-6-4-4-4-6-5-6-5	
4140	5-5-4-4-4-2-4-3-6-3	
4150	4-6-5-5-4-4-3-2-2-2	
4160	3-2-2-2-2-3-2-3-3-3	DST #1 (4168-4194)
4170	1-3-1-3-2-3-2-3-2-3	
4180	6-6-4-6-6-7-7-9-8-8	
4190	8-7-6-7-2-3-3-3-3-2	
4200	2-2-2-3-2-2-3-4-2-4	
4200 to 4210	3-4-2-2-2-2-2-2-2-2	
4220	3-4-4-5-6-5-5-3-4-3	
4230	4-4-4-1-2-3-4-8-5-3	
4240	5-4-6-5-5-5-3-3-3-4	
4250	2-3-3-3-5-2-5-2-1-2	
4260	2-2-3-4-3-5-3-3-3-3	
4270	6-5-3-3-3-3-3-3-3-3	
4280	4-4-4-4-4-6-4-5-5-2	
4290	2-3-4-3-3-4-4-4-3-3	
4300	3-4-5-6-5-5-3-4-3-4	

DEPTH	MINUTES	REMARKS
4300 to 4310	6-3-2-5-4-3-4-3-5-6	DST #2 (4302-4332)
4320	6-6-5-7-6-7-5-3-4-3	
4330	5-4-4-3-4-5-4-4-2-2	
4340	3-3-3-6-6-7-7-7-7-4	
4350	6-5-7-5-5-5-5-5-5-5	
4360	5-8-5-4-5-4-3-4-3-3	
4370	4-6-7-4-4-5-3-3-4-4	
4380	3-3-4-4-3-4-3-4-4-4	
4390	5-5-4-5-3-3-4-5-2-5	
4400	5-5-4-5-4-5-4-5-4-3	
4400 to 4410	3-3-4-4-5-5-5-5-5-5	
4420	5-6-3-4-4-3-3-2-4-5	
4430	7-6-4-6-6-6-5-7-7-6	
4440	9-7-4-3-5-3-3-5-4-4	
4450	6-5-4-3-6-5-6-4-4-4	
4460	3-2-2-4-3-2-2-2-2-2	
4470	2-2-4-3-4-2-3-4-3-3	
4480	4-3-4-5-6-5-5-3-4-3	
4490	3-3-3-3-5-5-3-4-3-2	
4500	3-2-4-2-4-4-3-4-3-4	
4500 to 4510	4-5-6-6-6-5-6-5-4-4	DST #3 (4698-4726)
4520	3-4-5-5-6-5-4-4-4-4	
4530	4-5-5-5-4-3-5-4-4-5	
4540	6-5-6-4-5-5-5-5-5-5	
4550	4-4-2-4-3-4-4-4-6-4	
4560	4-4-4-5-4-4-4-4-5-6	
4570	6-6-7-5-5-7-5-5-6-6	
4580	5-6-7-6-7-6-2-3-6-6	
4590	8-6-6-6-5-5-3-3-5-5	
4600	7-6-5-6-5-6-5-5-7-4	
4600 to 4610	6-3-5-5-5-5-5-5-5-6	
4620	4-5-7-5-5-6-5-4-7-8	
4630	6-4-3-3-4-4-4-5-4-4	
4640	5-5-6-7-4-3-4-5-5-6	
4650	6-7-5-8-5-7-6-5-4-6	
4660	6-7-5-7-7-6-5-5-5-6	
4670	9-8-9-4-5-8-5-4-6-5	
4680	6-8-4-5-5-7-5-7-4-4	
4690	9-6-5-6-5-5-4-4-4-4	
4700	4-3-4-4-4-4-4-4-5-3	
4700 to 4710	4-4-4-4-1-1-3-3-1-3	RTD 4750'
4720	4-3-6-6-7-6-3-5-4-2	
4730	3-3-3-3-3-3-6-5-7-7	
4740	5-6-6-8-7-7-7-5-6-6	
4750	4-5-6-6-6-6-5-5-5-5	