

**WELL GEOLOGIST'S REPORT**  
**DRILLING TIME & SAMPLE LOG**

COMPANY Berexco LLC  
 LEASE Stone NO. 3-19  
 LOCATION 1000' FNL + 2497' FWL  
 SEC. 19 TWP. 26S RNG. 33W  
 COUNTY Finney STATE Kansas  
 FIELD Ivanhoe Extension

ELEVATIONS  
 KB 2938  
 DF 2936  
 GL 2926

MEASUREMENTS ARE ALL FROM KB

CASING RECORD  
8 7/8" of 1750' of     SX.  
 of     w/     SX.  
 of     w/     SX.  
 of     w/     SX.

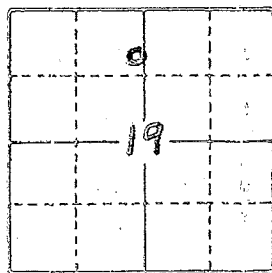
EL. LOG AC. RES. SP. GR  
 Den. Neut. GR. Caliper  
 M. Sonic. XRM.

CONTRACTOR Beredco Drlg. Rig #1  
 COMM. 9-10-2014 COMP. 9-26-2014  
 RTD 5351 LTD 5357  
 No. of DST'S Four No. of CORES None

SAMPLES SAVED FROM 3800 TO TD  
 DRILLING TIME KEPT FROM 3800 TO TD  
 SAMPLES EXAMINED FROM 3800 TO TD  
 GEOLOGICAL SUPERVISION FROM 3800 TO TD  
 GEOLOGIST ON WELL Edwin H. Grievus

**FORMATION TOPS**

FORMATION	SAMPLE	LOG	SUBSEA
Base Heebner	3919	3925	- 987
Toronto	3934	3940	- 1002
Lansing Fm	3965	3970	- 1032
Kansas City "A"	4383	4391	- 1453
Kansas City "B"	4424	4430	- 1492
BKC	4510	4525	- 1587
Marmaton	4532	4545	- 1607
Pawnee	4616	4624	- 1686
Et Scott	4649	4666	- 1728
Cherokee	4667	4681	- 1743
Morrow Fm	4927	4930	- 1992
Chester	5060	5073	- 2135
St. Genevieve	5110	Not Present	—
St. Louis	5139	5136	- 2198
TD	5351	5357	—



API# 15-055-22344

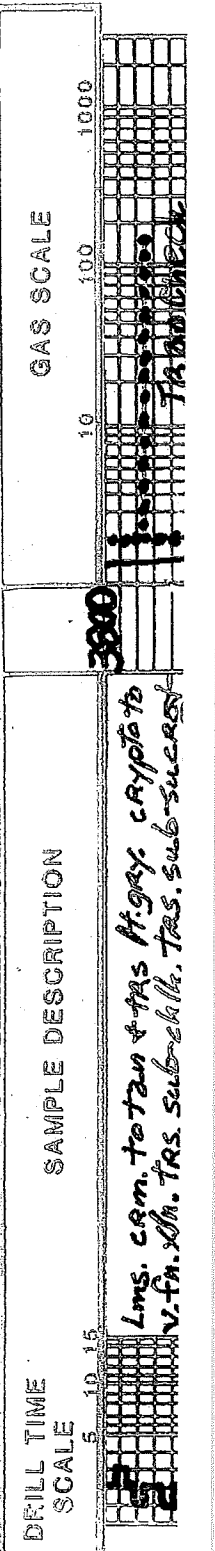
REMARKS Earth-Tech (1-888-543-8378) had an unmanned gas detection trailer on this well from 3800 to total depth.

*Edwin H. Grievus*  
 Thank You  
 Ed Grievus  
 Geologist

C1 = METHANE  
 C2 = ETHANE  
 C3 = PROPANE  
 C4 = BUTANE  
 C5 = PENTANE

CHROMATOGRAPH  
 HOT WIRE BY  
 TOTAL GAS VOLUME

LITHOLOGY  
 SANDSTONE  
 LIMESTONE  
 SHALE  
 SALT  
 GYP  
 SUSTONE  
 DOLOMITE  
 GRANITE WASH  
 SAND & GYP





MISSISSIPPI

Lms. lt. gray, grayish-tan to tan, crypto. to v.f. in xln.; sub-chlk, sub-succo. & packstr.; dul. lt. yel. fluor.; No Cut; No Vis. for  
Lms. hv. y. tes. wht. to cream-chlk & tan, grayish, lt. crypto. to v.f. in xln.; v. to extly calc. & st. in por. to tely. calc. in matrix; sub-succo. & packstr. in yel. to gray. v. to extly calc. & st. in por. to tely. calc. in matrix; sub-succo. & packstr. in f.a. & st. tes. gd. mic. in por. to interch. in por. Lms. similar to 4044-4055 w/ much less calc. & st. & more calc. & st.

Lms. tes. to abn. wht. to cream-chlk & tan, grayish. lps. crypto. to v.f. in xln. sub-chlk & ab-succo. & packstr. in ul. H. to H. yel. fluor.; No Cut; No Vis. for

Lms. abn. wht. to cream-chlk & tan; crypto. to v.f. in xln.; sub-chlk, sub-succo. to succo.; dul. yel. fluor.; No Cut; abn. pr. r. q. to excel. mic. & st. in por. to interch. & porosity

Lms. H. to med. gray. to tan; crypto. to v.f. in xln.; sub-chlk, sub-succo. & packstr.; dul. yel. fluor. lps. No Cut; No Vis. for

Lms. abn. wht. to cream-chlk & tan; crypto. to v.f. in xln.; v. to extly calc. & st. in por. to tely. calc. in matrix; sub-succo. to packstr.; dul. yel. to yel. fluor.; No Cut; abn. pr. r. q. to excel. calc. & st. in por. to interch. & porosity  
Very Quest. Perm.

Lms. H. gray. to grayish-tan; crypto. to v.f. in xln.; f. tes. sub-chlk, sub-succo. and packstr. in v. dul. yel. fluor. lps.; No Cut; No Vis. for.

Lms. similar 4182-4205

Lms. H. gray. to tan; crypto. to v.f. in xln. sub-chlk, sub-succo. & packstr. dul. yel. to dul. lt. yel. fluor.; No Cut; No Vis. for.; sl. tes. chert; H. gray. opque

Lms. hv. y. tes. to abn. wht. to cream-chlk and grayish-tan to tan; crypto. to v.f. in xln.; sl. to extly calc. & st. in por. to interch. & porosity

4100

W.D. 32000  
APM 65  
SPM 60  
70 1300

TRAP CHECK

4200

TRAP CHECK

4300



Lms. buff. trs. to abn. wh. ht. to cream alk and greyish. Tan to tan. crypto. to v. fr. xln. sli. to extaly oolitic. 2nd of sli. to extaly oolitic; matrix sub-succo + packstn; dul. H. yel. to dul. yel. fluor; No cut; abn. fr. to excel. oolitic por; Very Gwest. Perm.

Lms. similar 4266-4310

Sh. v. drk. gray. to black-carb. Lms. H. to med. gray. crypto. to v. fr. xln. sli. to v. shly. sub-chalky to v. tr. xln. No fluor; No cut; No vis. to R. Lms. tan w/ trs. spt. to even brn. oil stn crypto. to w/ fr. xln. v. to extaly micro oolitic por; oolitic matrix sub-succo to extaly succo + trs. packstn; strong sulfur odor; dul. yg. to dul. glden yel. fluor flush to exc. strong gray; abn. fr. to gats trs. excel. oolitic; No vis. to R. Lms. H. gray. to tanish gray; crypto. to w/ fr. xln. sub-succo to packstn; No cut; No vis. to R. Sh. v. drk. gray to black-carb. 4444-40 Lms. similar 4399-4421

4430-4437 Lms. tan w/ spt. to even drk. tan oil stn. H. to med. gray. tan. v. to extaly oolitic; No vis. to R. matrix sub-succo to succo + packstn; yel. to glden. yel. fluor. w/ flush. to gds staining cuts; fr. oil adng. abn. fr. to be th. w/ trs. g. to excel. oolitic por; micro por; inter. l. por.

4437-4510

Interbedded Limestones and Shales

① Lms. H. to med. gray, tanish lpi crypto to v. v. fr. xln. trs. sub-chalky sub-succo packstn. to trs. sub-lithog. r. dul. H. yel. fluor. lpi; No cut; No vis. por.

② Shs. med. to v. drk. gray-carb. to v. drk. gray to black-carb.

Lms. H. to med. + trs. drk. gray - sli. to extaly. Shly; sub-chalky to shly to packstn; No fluor; No cut; No vis. por

Sh. med. to v. drk. gray. - carb

4532 - 4570 Lms. H. gray to tanish gray; crypto. to v. v. fr. xln. sub-succo. and packstn; dul. H. to H. yel. fluor. No cut; No vis. por

4570 - 4577 Lms. tan to grayish tan w/ fr. xln. spt. to even brn. to drk. brn oil stn. crypto. to v. fr. xln. extaly por + succo; H. mostly coral highly poral lpi; matrix sub-succo to packstn; No vis. to R. No cut; No vis. por. calico por; No vis. to R. No cut; No vis. por. to ext. glden. yel. fluor; w/ trs. to ad. sh. no cuts; abn. on. to ext.

4300

4400

4500

Kansas City 21  
4383-4445

Blush 184  
Shaw 384

Kayle 164  
Kansas City 194  
4424-4486

Sh. 374

Sh. 374  
Rock 124  
Tap 124

Chromite  
No vis. to R

Marion 154  
4532-4594

Bl. 154  
4571-4576

674  
715







K K Lms. lt. gray, crypto xlm, j  
pachyt to fcs. sub-lithog.  
dwl. H. yel. fluor. 1 P; No Cut  
No Vis Por

Sits to v. v. f. q. Qtz sdst off w/ht  
gray to green (5092-95) w/hts brn  
d. from oil stain. sl. to v. gl. calc. por  
5100

Chl. p. r. i. e. i. a. n. g. i. p. r. 2. t. o. y. a. s. o. r. i. s. t. h. a. s.  
d. i. n. g. l. a. n. y. e. l. f. i. l. p. r. w/flush to good  
staining cuts; sl. to entry calc. 1 P;  
No Vis Por.

510-5139 Samples composed:

- 88% Sh med to dk ch gray
- 10% Sh brk red w/tesq, micaceous tan
- 2% Veinies up hole Lmsts and  
tes. Lms. H. gray; crypto. to v. v. xlm, v. to  
extly mixed; co. i. t. i. c. f. o. r. Q. t. z. s. d. s. t. - a. n. g.  
w. v. f. n. g. i. m. a. t. i. x. s. u. b. x. l. m. t. - s. u. b. s. t. a. n. c. e.  
dwl. H. yel. fluor. No Cut; No Vis Por

5139 - 5227 Lms. tes to hvy tes  
wht to gray chlk & tan gray sh. 1 P;  
crypto. to v. v. f. n. xlm; faly to extly  
oolitic (sm, med lg) matrix chlk  
sub-chlk, sub-succo & pachyt  
dwl. H. yel. fluor. No Cut; No Vis Por

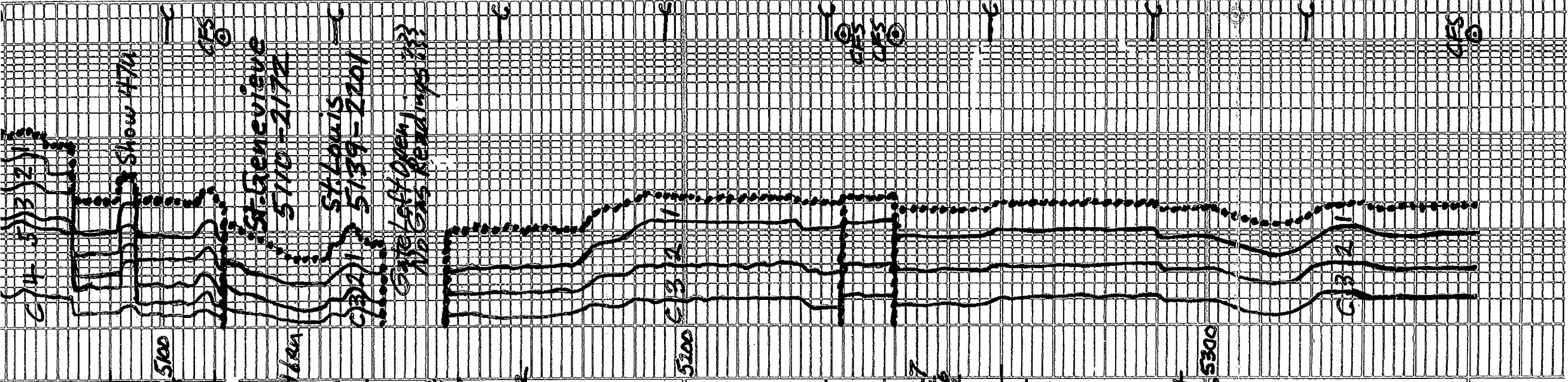
Lms. hvy tes, w/ht to gray chlk. & tan  
extly oolitic (sm, med lg) matrix chlk  
sub-chlk & sub-succo; dwl. yel. fluor;  
No Cut; No Vis Por; abn. med to lg loos  
oolites

5238 - 5260 Lms. similar 5139-5227  
w/hvy. tes. Lms. tan; crypto. xlm; pachyt to  
sub-lithog. A. idw. yel. fluor. No Cut  
No Vis Por

5260-65 Dolo. H. gray; v. v. f. n. xlm; v. succo  
yel. fluor. No Cut; No Vis Por

5265 - 5351 Lms. tan, grayish. 1 P;  
crypto. to v. v. f. n. xlm; sub-chlk,  
tes sub-succo, pachyt & abn.  
sub-lithog. i. hvy. tes. oolitic (sm  
med & lg). tes sl. to v. dolomite  
increasing w/ depth; dwl. yel.  
fluor. No Cut; No Vis Por w/tes chert  
off w/ht, gray to tan, trans to opque

5300



TD 5351

7 7/8 inch B. i. Info:  
#1 New Smith FHI 18 YUPS  
in 1750 out 4457  
#7 New Smith FHI 18 YUPS

CB 12

TD 5351

455  
10

7 7/8 inch Bit Info:  
 #1 New Smith FHI 18 YVPS  
 in 1750 out 4457  
 #2 New Smith FHI 18 YVPS  
 in 4457 out 5351 TD  
 Dev. Surveys:  
 1. 1132 3/4 4. 4272 1°  
 2. 1760 1° 5. 4457 3/4° TD  
 3. 2292 1° 6. 5351 3/4° TD  
 Cir Points  
 1. 4017 8. 5000

2. 4452 9. 5030  
 3. 4557 10. 5112  
 4. 4578 11. 5230  
 5. 4630 12. 5240  
 6. 4900 13. 5351 TD  
 7. 4950

Daily Drilg. Progress:  
 1. 3712 7:00 AM 9-16-2014  
 2. 3800 10:51 AM 9-16-2014  
 3. 4229 7:00 AM 9-17-2014  
 4. 4452 7:00 AM 9-18-2014  
 5. 4532 7:00 AM 9-19-2014  
 6. 4578 7:00 AM 9-20-2014  
 7. 4690 7:00 AM 9-21-2014  
 8. 4725 7:00 AM 9-22-2014  
 9. 4965 7:00 AM 9-23-2014  
 10. 5000 7:00 AM 9-24-2014  
 11. 5230 7:00 AM 9-25-2014  
 12. 5357 7:00 AM 9-26-2014

DST #1 Kansas City "B" 4416-4452  
 IO Strong blow BOB 90 Sec OTS During SI  
 FO Strong Blow BOB 60 Sec Flowing Gas

Rec 1750' Total Fluid Pipe Full of Gas  
 1570' Gassy Oil 50% @ 5000 ppm  
 180' Salt water chl 65000 ppm  
 pH 7 Rw .360 @ 90° pitch 3700 ppm  
 Oil 9220 39 Max Temp 123°F  
 IHP 2141# in 30 min  
 VFP 56-337# in 60 min  
 VSIP 1261# in 60 min  
 FFP 370-621# in 60 min  
 PSIP 1249# in 120 min  
 FHP 2141#

Final Flow #	in	in	in	in	Sec/D
15	1/4	30	30	9.2	
30	1/4	32	32	9.5	
45	1/4	36	36	10.1	
60	1/4	36	36	10.1	

DST #2 Marmaton 4568-4578  
 IO weak sur blow built to 4 1/2 inches  
 FO fr. blow BOB 49 min  
 Rec 20ft Gtdent Mud 1526 108 Oil 758 Mud  
 40 5ft Gas in Pipe Max Temp 117°F  
 IHP 2173# in 30 min  
 IFFP 10-18# in 60 min  
 VSIP 350# in 60 min  
 FFP 22-24# in 60 min  
 FSIP 603# in 120 min  
 FHP 2164#

DST #3 Pawnee 4608-4630  
 IO weak blow built to 2 1/2 inches



1117

IFP 4-112# in 30 min  
 ISIP 350# in 60 min  
 FFP 22-24# in 60 min  
 FSIP 603# in 120 min  
 FHP 2164#

DST #3 Pawnee H608-4630  
 IO weak blow built to 2 1/4 inches  
 FO weak blow built to 2 1/4 inches  
 190ft Total Fluid  
 10ft Mud w/oil specks < 120ft  
 180ft Muddy Wtr 65% wtr 35% Mud  
 Chl 42000 ppm pH 7.7 Res 490 @ 800  
 P-T Chl 3800 ppm Max Temp 119°F  
 IHP 2194#

IFP 10-64# in 30 min  
 ISIP 1262# in 60 min  
 FFP 60-118# in 60 min  
 FSIP 1259# in 120 min  
 FHP 2193#

DST #4 MR Row Sd. 4977-5000  
 IO BA Blow 3039 min SI has blow back  
 FO BA Blow 3033 3 1/2 min SI has blow back  
 1800 ft GIP  
 Total Fluid 4400 ft  
 260 ft Gas Oil 50% Gas 50% Oil  
 180 ft Gas Oil Muddy Oil 25% @ 55% Mud  
 Oil Grau 28

IHP 2406#  
 IFP 18-75# in 30 min  
 ISIP 1196# in 60 min  
 FFP 90-164# in 60 min  
 FSIP 1194# in 120 min  
 FHP 2370#

Mud Info:

Date	9-15	9-16	9-17	9-18	9-19	9-20	9-21	9-22
	635A	615A	1245P	1245P	1230A	1230A	1200P	800A
Depth	3217	3714	4359	4452	4557	4578	4680	4736
Wt.	9.25	8.9	9.15	9.2	9.4	9.4	9.3	9.2
Vis	28	42	43	48	44	50	52	41
PV	1	13	13	15	12	20	20	15
YP	2	14	14	16	12	14	10	10
GS	1/2	13/37	13/40	14/47	15/44	15/44	17/42	17/38
WL	N/C	8.8	8.8	8.8	8.8	8.8	8.8	8.5
Cake	-	1/32	1/32	1/32	1/32	1/32	1/32	1/32
pH	7.2	11.2	11.2	11.2	11.2	11.2	10.5	8.2
Chl	15500	2000	3700	2400	4000	3800	4000	4400
Ca	HVY	20	20	20	60	60	60	80
LCM	1	2	3	2	2	2	2	2

Date	9-13	9-14	9-15
	615A	605A	7:15A
Depth	5000	5031	5130
Wt.	9.2	9.1	9.15
Vis	53	50	49
DV	17	16	11L

