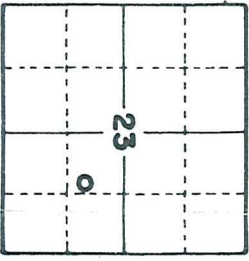


# GEOLOGIST'S REPORT

DRILLING TIME & SAMPLE LOG

COMPANY <u>BEREXCO LLC</u> LEASE <u>BARKER</u> NO. <u>1-23</u> LOCATION <u>1703'FSL &amp; 1453'FEL</u> SEC. <u>23</u> TWP. <u>26S</u> RNG. <u>34W</u> COUNTY <u>FINNEY</u> STATE <u>KANSAS</u> FIELD <u>IVANHOE EXTENSION</u>	ELEVATIONS KB <u>2974</u> DF <u>2972</u> GL <u>2962</u> MEASUREMENTS ARE ALL FROM <u>KB</u>
CONTRACTOR <u>BEREDCO DRLG. RIG NO. 2</u> COMM. <u>5-30-2011</u> COMP. <u>6-17-2011</u> RTD <u>5330</u> LTD <u>5332</u>	SCASING RECORD 8" 1776' w/ 8x. 6" w/ 8x. 4" w/ 8x. 2" w/ 8x.
No. of DST'S <u>5</u> No. of CORES <u>NONE</u> SAMPLES SAVED FROM <u>3700</u> TO <u>TD</u> DRILLING TIME KEPT FROM <u>3700</u> TO <u>TD</u> SAMPLES EXAMINED FROM <u>3700</u> TO <u>TD</u> GEOLOGICAL SUPERVISION FROM <u>3700</u> TO <u>TD</u> GEOLOGIST ON WELL <u>EDWIN H. GRIEVES</u>	EL. LOG <u>AR.IND.SP.GR</u> <u>DEM.NEUT.GR.CALIPER</u> <u>M.L.SONIC</u>

SAMPLE	LOG	SUBSEA
3943	3942	- 978
3953	3952	- 978
3984	3984	- 1010
4572	4566	- 1592
4704	4702	- 1728
4818	4810	- 1836
4964	4956	- 1982
5076	5090	- 2116
5218	5220	- 2246
5330	5332	



REMARKS Earth-Tech had an unmanned gas detection trailer on this well from 3700 feet to total depth.

*Thank you,  
Edwin H. Grievess  
Geologist*

### LITHOLOGY

SANDSTONE LIMESTONE SHALE CHERT	SLTSTONE DOLOMITE GRANITE WASH ANHY & GYP
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### CHROMATOGRAPH

HOT WIRE BY TOTAL GAS VOLUME

- C1 = METHANE
- C2 = ETHANE
- C3 = PROPANE
- C4 = ISOBUTANE
- C5 = BUTANE
- C6 = ISOPENTANE
- C7 = PENTANE

### DRILL TIME & SAMPLE DESCRIPTION

<p><b>Interbedded Limestones</b></p> <p>① Faster Drlg. Lms. hvy. trs. to abn. whit to cr. chlk. + tan; crypto to voln. xlm; subchlk. sub-sucro. to sucro.; trs. phantom oolitic and trs. phantom oolitic to trs. oolitic; trs. poss.; dub lt. to lt. yel. + dul. yel. flow; Nolwt; abn. pr. to fr. + trs. gd. to sli. trs. excel. p.p., micro-p.p. + prob. interxln. por</p>	<p style="text-align: center;">GAS SCALE</p> <p style="text-align: center;">TRAP CHECK</p>
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Excel. p.p., micro-p.p. + prob. interxlu. por  
② Slower Drlg. Lms. tan, grayish tan to  
lt. gray; crypto to v.v. fn. xlu.; sub-chlk; sub-sucro  
+ packstn.; dul. yel. fluor.; No Cut;  
No Vis Por

Lms similar description # 2  
3700 - 3779

Lms similar #1 description 3700 - 3779

Lms. similar #2 description 3700 - 3779  
w/ trs. v. dark gray to black-carb. looking shs

Lms. similar #1 description 3700 - 3779  
w/ increase in chlk + sub-chlk

Lms. hv. trs. wht to crm-chlk + tan to  
grayish tan; crypto. to v.v. fn. xlu.;  
sub-chlk., sub-sucro. to sucro. and trs  
packstn.; phenon oolitic IP's 2-3 for  
oolitic IP's; dul. yel. fluor.; No Cut;  
hv. trs. pr. to cr. micro-pp. and  
prob. interxlu. por

Lms. tan; crypto. to v.v. fn. xlu.; trs chlk;  
sub-sucro to sucro. trs packstn  
trs. sub-lithog. + dul. yel. fluor. No Cut; No Vis Por  
w/ trs chert grn. opq. c

Sh. v. drk. gray to black-carb  
Lms. lt. gray; crypto xlu packstn to subst. hope  
dul. lt. yel. fluor.; No Cut; No Vis Por  
Sh. lt. gray to lt. green w/ trs. lt. grn. siltstn. dense  
+ tit + hard; No fluor.; No Cut; No Vis Por

Lms. v. abn. wht. to crm-chlk + tan; crypto. to  
v.v. fn. xlu.; sub-chlk., sub-sucro. to sucro.; dul. yel  
to dul. lt. yel. fluor.; No Cut; abn. pr. to gd.  
+ trs. gd. micro-pp and interxlu. Por.

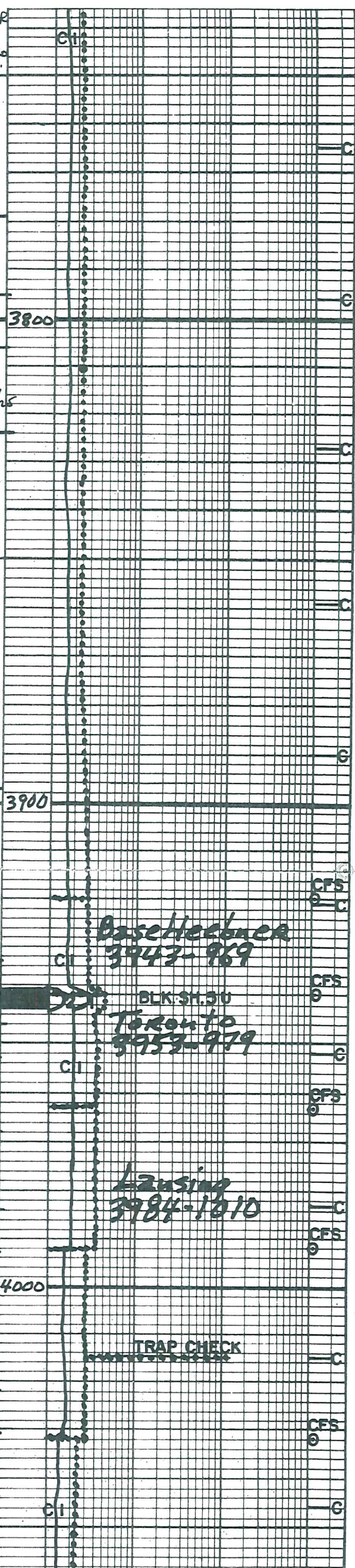
Lms. trs. wht. to crm-chlk + lt. gray to tan; crypto  
to v.v. fn. xlu.; sub-chlk.; sub-sucro.; packstn.  
and trs. sub-lithog.; dul. lt. to lt. yel. fluor.  
No Cut; No Vis Por

Lms. tan; v.v. fn. to v. fn. xlu.; sub-sucro to v. sucro;  
trs. w/ finely disseminated pyr.; bet. x. ol. to  
brt. g. idn. yel. fluor.; No Cut; abn. pr. to gd.  
micro-pp to interxlu por

Lms. trs. wht to crm-chlk and lt. tan  
to tan; crypto. to v.v. fn. xlu.; dul. lt. to  
lt. yel. fluor.; No Cut; No Vis Por.

Lms. hv. trs. wht. to crm-chlk + lt. tan; crypto  
to v.v. fn. xlu.; trs. sub-chlk.; sub-sucro. to v. sucro;  
dul. lt. to brt. lt. yel. fluor.; No Cut; v. abn.  
pr. to gd. to excel. micro-pp + interxlu por

Lms. trs. to v. abn. wht to crm-chlk and  
tan, grayish. IP's; crypto to v.v. fn. xlu.;  
trs. sub-chlk., sub-sucro., packstn. and  
trs. sub-lithog.; dul. yel. to yel. fluor.  
No Cut; v. scattered trs v. poor micro-pp  
por. IP's



Basal Heebner  
3943-969

BLK SH. DU

Toronto  
3959-979

Lensing  
3984-1010

TRAP CHECK

Lms. trs. to abn. wht. to crm. - chlk + tan; crypto. to v.v. fn. xln; extly. oolitic for sl. to fely oolitic; matrix sub-sucro. to extly. sucro. + trs. packstr.; dul. lt. yel. to lt. yel. fluor.; mottled IP's; No cut; extr. abn. qd. to excel. oolitic por. w/ poss. pr. to fB micro-pp + interxln por.; Quest Perm IP's

CFS  
C

Lms. trs. wht. to crm. - chlk + grayish. tan to tan; crypto. to v.v. fn. xln; sub-chlk sub-sucro. + packstr.; dul. lt. to lt. yel. fluor.; No cut; No Vis Por.

4100

Lms. hvy. trs. wht. to crm. - chlk + tan, grayish. IP's; crypto. to v.v. fn. xln; oolitic for oolitic; matrix sub-chlk, sub-sucro to trs. sucro. + packstr.; dul. lt. to lt. yel. fluor.; No cut; abn. pr. to qd. oolitic por. w/ poss. micro-pp + interxln. IP's; Quest Perm

Lms. lt. gray. to tan; crypto. to v.v. fn. xln. sub-chlk, sub-sucro + packstr.; sl. trs. sub-litho pr.; dul. lt. yel. to trs. lt. yel. fluor. No cut; No Vis Por.

Lms. tan; v.v. fn.; sub-sucro. to extly. sucro.; abn. phan tom oolitic; dul. gdn. yel. fluor. No cut; v. abn. pr.; trs. qd. to excel. micro-pp to interxln por.; becoming oolitic in bottom of zone w/ qd. to excel. oolitic por.

Lms. tan; crypto. to v.v. fn. xln.; trs. sub-chlk, sub-sucro. + packstr.; dul. yel. fluor. No cut; No Vis Por.

TRAP CHECK  
WOB 58000  
RPM 75-80  
SPM 60  
PP 1000

Lms. abn. crm. to tan - chlk + tan; crypto. to v.v. fn. xln.; sub-chlk, sub-sucro to v. sucro. and trs. packstr.; hvy. trs. sl. to v. oolitic; dul. lt. to lt. yel. fluor. No cut; hvy. trs. pr. to qd. oolitic por. and abn. poor. to fair + trs. qd. to excel. micro-pp and prob. interxln por. w/ trs. chert + gray to tan; opdue

4200

Lms. lt. gray. to tan, mottled IP's; crypto. to v.v. fn. xln.; sl. to fely oolitic and/or sl. to fely oolitic; matrix trs. chlk.; trs. sub-chlk, sub-sucro + packstr.; dul. yel. fluor.; No cut; abn. pr. to trs. + trs. qd. oolitic por.; V. Quest Perm.

CI

Lms. lt. gray, grayish. tans to tans; crypto to sl. trs. v.v. v. fn. xln.; trs. sub-chlk, sl. trs. sub-sucro., packstr. + sub-lithographic; dul. yel. fluor.; No cut; No Vis Por. Becoming Chlky in Bottom

4300

Lms. v. to extly. chlk - wht, crm. + lt. gray and lt. gray. to tan; extly. oolitic and/or extly. oolitic; matrix chlk.; sub-chlk, sub-sucro + packstr.; dul. lt. to lt. yel. fluor., mottled IP's; No cut; abn. pr. fr. qd. to excel. oolitic por.; Very Quest. Perm.



Lms similar 4676-4681 w/ trs. dk. gray  
Crypto. xln., sub-lithog. dul. yel. fluor.  
No cut; No vis. por.

- Interbedded Limestones and Shales
- ① Lms. lt. to med. + trs. dk. gray, fely to extly. Shly; crypto. to v.v. fn. xln.; sub-chlk. for shly, trs. sub-sucro. and pachstn. y. dul. yel. fluor. lps; No cut No vis. por.
  - ② Lms. grayish tan to tan; crypto. to v.v. fn. xln.; sub-chlk, sub-sucro. and pachstn.; dul. yel. fluor.; No cut No vis. por.
  - ③ Sh med to v. dk. gray - sli. to extly. calc to v. dk. gray.

Interbedded Limestones and Shales similar 4712-4794 w/ trs interbeds Shales black carb. looking

Lms. tan to dk. tan to lt. gray; crypto to v.v. fn. xln.; trs sub-chlk, trs sub-sucro, pachstn + sub-lithographic; 3 to 5% w/ yel. to gl. yel. fluor. w/ greenish casts lps w/ flush cuts that leaves good ring cuts trs. pr to fr micro-por. along fractures, sutures + bedding planes

4894-4964 Interbedded Lmets + Shales

- ① Lms. lt. to med. gray - v. to extly. Shly; crypto. to v.v. fn. xln; sub-chlk for shly, trs. sub-sucro., pachstn + trs sub-lithog. No fluor; No cut; No vis. por.
- ② Lms. grayish tan to tan; crypto to v.v. fn. xln.; sub-chlk, sub-sucro., pachstn. and sub-lithographic; phantom oolitic lps; dul. yel. fluor.; No cut; No vis. por.
- ③ Sh med. to v. dk. gray - calc
- ④ Sh. dk. gray to black-carb

4964-83 Sh. med to dk. gray, greenish lps to trs. lt. green, mottled w/ med. to dk. gray lps; silty, lps gradng to trs. lt. green to lt. gray. Siltstns dense tite + hard; No fluor; No cut; No vis. por

4983-86 Lms. lt. gray, lt. tan to tan; crypto to v.v. fn. xln; scatterings of lms trs + foss. frags; trs. sli. oolitic; trs w/ trs glauc + prch. lps; dul. yel. to yel. fluor. No cut; No vis. por

4986-88 Lm. silt. tan w/ sp. to even brown oil stn.; v. fn. to coarse gr., composed lms + foss. frags; matrix sub-sucro to succro + trs. pachstn.; gl. yel. fluor. w/ flush cuts to great stemng cuts; abn pr to abs. hvy trs. g. to trs. excel. sp. micr. por + inter. por; abn individual gas and small gas traps

4988-98 Lms. similar 4983-86 w/ poss. trs. lt. green siltstn., dense, tit. hard, extly. calc; No fluor; No cut; No vis. por

498-5015 Sh med gray + olive green w/ lms similar 4986-4988 prob from above 5015-5030 Siltstn. lt. green to brown glauc + pachstn. dense, tit. hard; w/ abn havy trs to v. abn v. fn. to fn. lms. gas + foss. frags; hvy trs becoming 100% lms gas + foss. frags; No fluor; No cut; No vis. por

Cherokee CFS 4704-1730

C3 201

321

4800

Atoka 4818-1846

SLI GAS & SAMPLE SHOW 4818 TO 4892

4900

SHOW ?? 22U  
SHOW ?? 27U

Morrow Fr 4964-1990

SHOW 32U  
TRIP GAS 600 FU

5000

CHROMATOGRAM PLUGGED OFF WITH NAPL OIL GASSES  
CN GAS 17U



7/8 inch Bit Info:  
 #1 New Hughs GX-23 Buster Bit  
 in 1781 out

Dev. Surv:  
 1. 871 3/4° 4. 4601 1°  
 2. 1781 1/2° 5. 4892 3/4°  
 3. 3048 1° 6. 5330 3/4° TD

Cir. Points:  
 1. 3920 19. 4870 25. 5160  
 2. 3940 14. 4892 26. 5180  
 3. 3963 15. 4950 27. 5200  
 4. 3992 16. 4970 28. 5230  
 5. 4032 17. 4990 29. 5250  
 6. 4070 18. 4995 30. 5283  
 7. 4601 19. 5020 31. 5330 TD  
 8. 4610 20. 5040  
 9. 4616 21. 5060  
 10. 4670 22. 5063  
 11. 4710 23. 5075  
 12. 4840 24. 5090

Daily Prog Progress:

1. 3448 At 7:00 AM 6-5-11  
 2. 3700 At 5:56 PM 6-5-11  
 3. 3975 At 7:00 AM 6-6-11  
 4. 4391 At 7:00 AM 6-7-11  
 5. 4601 At 7:00 AM 6-8-11  
 6. 4710 At 7:00 AM 6-9-11  
 7. 4892 At 7:00 AM 6-10-11  
 8. 4950 At 7:00 AM 6-11-11  
 9. 4995 At 7:00 AM 6-12-11  
 10. 5020 At 7:00 AM 6-13-11  
 11. 5063 At 7:00 AM 6-14-11  
 12. 5180 At 7:00 AM 6-15-11  
 13. 5330 At 5:04 AM 6-16-11  
 14. 5330 At 7:00 AM 6-17-11

DST #1 Marmaton 4585-4601  
 IO No Blow Flushed Tool still No Blow  
 FO No Blow  
 Rec. 10 foot 100% Mud  
 BHT 117°F  
 IHP 2366# FFP 26-28# in 30 min  
 IFP 23-29# in 15 min FSIP 1247# in 60 min  
 ISIP 1252# in 30 min FHP 2443#

DST #2 Atoka 4821-4892  
 IO Weak surface Blow built to 2 inch in 30 min  
 FO No Blow  
 Rec 20 ft 100% Mud BHT 119°F  
 IHP 2333# FFP 33-38# in 30 min  
 IFP 22-30# in 30 min FSIP 1363# in 120 min  
 ISIP 1342# in 60 min FHP 2316#

DST #3 Upper Morrow 4985-4995  
 Packer Failure

DST #4 Upper Morrow 4958-4995  
 IO BOB in 1 min GTS During ISIP  
 FO BOB ASAO Flowing Gas TSTM  
 Rec 2521 clean oil 40% - 60% O  
 94 OCEM 3026:5030:202M  
 Total 2615 ft Max BHT 128°F  
 IHP 2588# FFP 614-652# in 60 min  
 IFP 302-593# in 30 min FSIP 1419# in 120 min  
 ISIP 1510# in 60 min FHP 2307#

DST #1 Marmaton 4585-4601

FD BOB ASAO Flowing Gas TSTM

Rec 2521 clean oil 40%G - 60%O  
 94 OCSM 3026; 50%O; 20%M  
 Total 2615 ft Max BHT 128°F  
 IHP 2588# FFP 617-652# in 60 min  
 IFP 302-593# in 30 min FSIP 1419# in 120 min  
 VSIP 1510# in 60 min FHP 2307#  
 DST #5 Lower Morrow 5051-5063  
 TO BOB in 20 min; FO BOB in 3 min  
 Rec 360 ft fluid; Max BHT 127°F  
 270' GCO 50%G; 50%O  
 90' a-G WUCM 20%G; 10%O; 20%W; 50%M  
 IHP 2477# FFP 79-142# in 60 min  
 IFP 31-63# in 30 min FSIP 1285# in 120 min  
 VSIP 1284# in 60 min FHP 2413#

Date	6-4	6-5	6-6	6-7	6-8	6-9	6-10	6-11
	9:00A	11:00A	11:00A	10:30A	11:35A	11:00A	9:30A	10:30A
Depth	3017	3566	4015	4481	4601	4759	4892	4990
WT.	9.6	9.8	9.3	9.25	9.3	9.1	9.3	9.5
Vis	30	31	44	47	50	46	74	49
PV	-	-	11	15	15	14	21	16
YP	-	-	14	16	15	15	25	16
GS	-	-	13/32	14/42	14/42	14/44	21/57	15/48
WL	N/C	N/C	9.6	10.4	9.6	10.0	8.8	9.2
Cake	HVP	HVP	1/32	1/32	1/32	1/32	1/32	1/32
pH	7.0	7.0	11.0	9.5	9.5	10.0	10.5	10.5
Chl	38000	28000	3200	3300	3100	2200	1900	3600
Ca	HVP	HVP	60	80	20	20	20	20
LCM	2	1	3	4	3	4	4	4

Date	6-12	6-13	6-14	6-15	6-16		
	10:00A	10:00A	10:50A	9:45A	6:50A		
Depth	4995	5040	5063	5199	5330		
WT.	9.1	8.95	9.05	9.05	9.1		
Vis	49	51	57	59	52		
PV	14	16	16	17	15		
YP	15	16	16	17	16		
GS	15/44	16/47	17/47	16/47	15/44		
WL	10.0	8.4	9.6	8.8	8.8		
Cake	1/32	1/32	1/32	1/32	1/32		
pH	10.5	11.0	10.5	11.0	11.0		
Chl	4300	4400	4400	4500	4100		
Ca	20	20	20	20	20		
LCM	3	3	2	3	4		

OPERATOR BEREXCO LLC LOCATION 1703FSL & 1453FEL  
 LEASE BARKER NO. 1-23 SEC. 23 TWP. 26S RANG. 34W  
 ELEVATION 2974KB RTD 5330 COUNTY FINNEY STATE KANSAS