

GEOLOGIST'S REPORT

DRILLING TIME & SAMPLE LOG

15-057-20899.

COMPANY **BEREXCO LLC**
 LEASE **TASSET** NO. **L23X**
 LOCATION **660FNL & 610FWL**
 SEC. **23** TWP. **26S** RANG. **22W**
 COUNTY **FORD** STATE **KANSAS**
 FIELD **WILDCAT**

ELEVATIONS
 KB **2399**
 DF **2396**
 GL **2386**
 MEASUREMENTS ARE ALL FROM **KB**

CASING RECORD
 8.25" ID 509 W / ST.
 6.75" ID 509 W / ST.
 6.75" ID 509 W / ST.

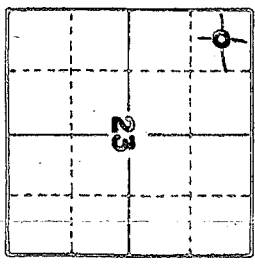
CONTRACTOR **BEREXCO DRILL RIG NO 2**
 COMM. **6-7-2013** COMP. **6-24-2013**
 RTD **5050** LTD **5057**
 No. of DST'S **3** No. of CORES **NONE**

EL. LOG AR. IND. SP. GR. DEN. NEUT. GR. CAL. I.P.E.R. ML. SONIC

SAMPLES SAVED FROM **4000** TO **TD**
 DRILLING TIME KEPT FROM **4000** TO **TD**
 SAMPLES EXAMINED FROM **4000** TO **TD**
 GEOLOGICAL SUPERVISION FROM **4000** TO **TD**
 GEOLOGIST ON WELL **EDWIN H. GRIEVES**

FORMATION TOPS

FORMATION	SAMPLE	LOG	SUBSEA
BASE HEIBNER	4119	4121	-1723
TORONTO	4197	4133	-1734
LANISING FM.	4232	4233	-1834
LANISING 'G'	4347	4350	-1951
MARMATON	4673	4666	-2267
CHEROKEE	4821	4798	-2399
MISSISSIPPI	4898	4908	-2509
TD	5050	5057	



API NO. 15-057-20899

REMARKS **Earth-Tech (1-888-543-8378) had an unmanned gas detection trailer on this well from 4000 to total depth.**

Thank You,
 Edwin H. Grievess
 Geologist

LITHOLOGY SANDSTONE LIMESTONE SHALE CHERT	SLTSTONE DOLOMITE GRANITE WASH ANHY & GYP	CHROMATOGRAPH HOT WIRE BY TOTAL GAS VOLUME
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- C1 = METHANE
- C2 = ETHANE
- C3 = PROPANE
- C4 = ISOBUTANE
- C5 = BUTANE
- C6 = ISOPENTANE
- C7 = PENTANE

DRILL TIME SCALE 5 10 15	SAMPLE DESCRIPTION 4000 Interbedded Limestones (1) Faster Drilg. Lms. trs. wht. to crm - chlk + lt. tan to tan; crypto. to vv. fn. xln. v. to extrly. oolitic (tan w/ trs grx. lps), matrix sub-chlk, sub-sucro to sucro. + trs packstn, du. l. lt.	GAS SCALE 10 100 1000 CHROMATOGR. SHO CRAPS
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v. to extrly oolitic (tan w/ trs
gry. IP's) matrix sub-chlk, sub-sucro
to sucro. + trs packstn, dul. H.
to trs. H. yel-fluor; No Cut;
abn. pr. to fr. micro-pp. por. &
prob. interxln por

② Slower Drlg. Lms. Lt. gry, gryish
tan to tan; crypto. to v.v. fn. xln;
sub-chlk, sub-sucro + packstn;
sli trs. oolitic IP's; dul. H. yel.
fluor; No Cut; No Vis. Por.

③ trs. chert wht, gry. to tan;
opaque

4100

Sh. v. drk. gry. to black-carb
Lms. gryish tan to tan; crypto. to
v.v. fn. xln; sub-sucro + packstn;
dul. H. yel. fluor; No Cut; No Vis. Por.

Sh. Lt. gry. to lt. green, silty IP's

Lms. Lt. tan to tan; mottled IP's drk
tan to brown; crypto. to v.v. fn. xln;
sub-chlk, sub-sucro to sucro; dul. yel
to trs yel. fluor; No Cut; huy. trs. to abn
pr. to fr. + trs. qd. to excel. micro-pp
& interxln por.

Interbedded Limestones + Shales
① Lms. Lt. gry. to tan; crypto. to v.v. fn. xln
sub-chlk, sub-sucro + packstn;
trs. phantom oolitic; dul. H. yel.
fluor; No Cut; No Vis. Por.

② Sh. med. to v. drk. gry; sli to very
calc. IP's

Sh w/ scattered interbeds Lms
similar to Shs + Lms 4154-4184

4200

Lms. Lt. gry. to tan; crypto. to v.v. fn.
xln; sub-chlk + packstn; trs. w/ dul. yel
fluor; No Cut; No Vis. Por

Lms. abn. wht. to cream-chlk + tan; crypto
to v.v. fn. xln; sub-chlk, sub-sucro to
trs. sucro. + packstn; abn. phantom
oolitic; dul. H. to trs. H. yel. fluor; No
Cut; huy. trs. w/ pr. to fr. micro-pp. por

Lms. gryish. tan to tan; crypto. to v.v. fn.
xln; trs. sub-chlk, sub-sucro and
packstn. w/ trs. sub-litho qd.; dul. yel
fluor. IP's; No Cut; No Vis. Por

Lms. huy. trs. wht. to cream-chlk + H. tan
to tan; crypto. to v.v. fn. xln; sub-chlk
sub-sucro + packstn; abn. phantom
oolitic; dul. yel. fluor. IP's; No Cut
huy. trs. poor micro-pp. porosity;
w/ trs. chert, gry. to tan; opaque. to
sli. trs. trans. sl.

Interbedded Limestones w/ trs. Chert
① Faster Drlg. Lms. trs. to abn. wht. to
cream-chlk + H. tan to tan; crypto. to
v.v. fn. xln; mostly sli. to v. oolitic;
sub-chlk, sub-sucro to trs. sucro.
+ trs. packstn; dul. H. yel. fluor;
No Cut; huy. trs. poor to trs. fine
micro-pp. por

② Shower Drlg. Lms. Lt. gry, gryish.
tan to tan; crypto. to v.v. fn. xln;
trs. sub-chlk, sub-sucro + packstn;
trs. foss; trs. w/ dul. yel. fluor;
No Cut; No Vis. Por

③ trs. to huy. trs. Chert gry. to tan
opaque

Lms. Lt. gry. to tan; crypto. to med.

4300

SHO
CRAPS

TRAP CHECK

WOB 38000
RPM 80
SPM 50
PP 1200

Base Heebner
4119-1710

SELK. SH. 1220

WOB 38000
RPM 80
SPM 54
PP 1000

SHOW 350

Toronto
4137-1738

CFS

WOB 38000
RPM 80
SPM 54
PP 300

Lausing Fa
4232-1833

TRAP CHECK

Lausing "G"
4347-1948

1 in 10 3/4; crypto. to v. v. in
trs. sub-chlk; sub-sucro & packstn
trs. ferr.; trs. w/ dull yel. fluor.;
No cut; No Vis por

② trs. to hv. trs. Chert gray to tan
opaque

Lms. lt. gray to tan; crypto to med
xln; w/ hv. trs med. to coarse
whit. calc. xls & fragm; phantom
oolitic for phantom oolitic shells
trs. ferr. - Re-sized IP's; H. yel. fluor.
No cut; zbn. pr. to excel. vug
p.p.; micro pp & interxln por

Lms. zbn. whit. to cream-chlk & H. gray
to tan; zbn. sub-chlk, sub-sucro
& packstn; dull yel. fluor.; No cut
No Vis por; w/ v. zbn. Chert
whit. gray to tan; opaque to transl.

Lansing "G"
4347-1948

TRAP CHECK

4400

Lms. H. gray; crypto. xln; packstn to
trs. sub-lithog. v. dull H. yel. fluor.
No cut; No Vis por
Sh v. drk gray to black-carb.
Lms. similar 4406-4410

BLK SH. 5U

Sh med to drk gray w/ trs black.

Lms. H. gray to tan; crypto. to v. in xln
trs. sub-chlk, sub-sucro & packstn;
trs. phantom oolitic; dull yellow
fluor.; No cut; No Vis porosity

Sh. med to drk gray
Lms. H. gray, crypto xln, v. to extaly
oolitic str. for v. to extaly oolitic
matrix packstn; v. dull yel. fluor.
No cut; zbn. pr. to excel. oolitic
por. No Perm

Lms. lt. gray to tan; crypto to v. v. in
xln; sub-chlk, sub-sucro and
packstn; dull yel. fluor.; No cut
No Vis. porosity

WORKED ON DETECTION
UNIT

Interbedded Limestones w/ trs Chert

① Faster Drilg Lms. hv. trs. whit. to cream
chlk & H. to tan; cavitate to v. xln. zbn
phantom oolitic to oolitic for zbn
phantom oolitic to oolitic
matrix chlk; sub-chlk; sub-sucro
to trs. sucro & trs packstn; dull H.
to H. yel. fluor.; No cut; zbn. pr. to
to qd. oolitic. p.p. to micro pp
por; Quest. Perm

4500

② Slower Drilg. Lms. lt. to tan; crypto
v. v. in xln; sub-chlk; sub-sucro, packstn
& sub-lithog.; dull yel. fluor. IP's
No cut; No Vis por

③ trs. Chert gray to tan; opaque
Sh med to v. drk. gray - slt. calc. IP's
to v. drk. gray to black-carb.

BLK SH. 22U

Lms. trs. whit. to cream-chlk & tan;
grayish IP's; crypto. to v. v. in xln;
sub-chlk; sub-sucro to trs sucro
& packstn; trs. to zbn. oolitic;
dull H. to trs. H. yel. fluor.; No cut
scattered trs. poor micro pp por

RECYCLE 15U

Lms. H. gray, grayish, tan to tan
crypto. to v. v. in xln; sub-chlk;
sub-sucro, packstn & sub-lithog.
w/ dull yel. fluor.; No cut; No Vis por
Sh med to drk. gray - greenish trs
to v. drk. gray to black-carb.
Lms. similar 4566-4577 & Sh med
to v. drk. gray

BLK SH. 34U

Show

Lms. zbn. whit. to cream-chlk & tan; crypto to
v. v. in xln; sub-chlk; sub-sucro to sucro
faint oil odor; trs. sptd. brn oil str
gl. yel. to yel. fluor. w/ zbn. milky cut
to trs. flush cut & sptd. strung cut
hv. trs. pr. to excel. & trs. qd. to excel
p.p.; micro pp por & poss interxln
por IP's

4600

Lms. trs. whit. to cream-chlk & tan; grayish IP's
crypto. to v. v. in xln; sub-chlk; sub-sucro
& packstn; sub-lithog. & dull H. yel. fluor.; No cut
No Vis por

Show

Lms. zbn. whit. to cream-chlk & cream to tan;
crypto. to v. v. in xln; sub-chlk; sub-sucro to
sucro & packstn; fragm. km IP's prob
Kzest material solution and
re-sized. Fair oil odor w/ zbn
sptd. drk tan to brn. oil sh; but
gl. yel. fluor.; flush to excel
strung. cut; zbn. pr. to pathy trs
qd. to excel solution. vug. pp;

5594-4597
SU INCREASE
LOW MUD VOL. ON RECYCLE

28U
SHOWS
27U

P&C Sub-lithog. ridal Hyekim; No cut
 No Vis for
 Lms 2 bn. whit to crm-chlk & crm to tan,
 crypto. to v. fine, sub-chlk, sub-sucro to
 sub-cr& packstn; fragm. km IP's Prob
 Karst material solution and
 re-lized; fair oil oden w/abn
 sp'd drk tan to brn oil sh; brt
 glen yel-fluor; flush to excel
 strung cuts; 2bn. p. to frathvys
 gd to excel solution, vug. pp,
 micro-pp por w/hvys to frathvys
 interxln por from Resid. to ss
 4625-53 Lms. lt grey-shly IP's to tan
 crypto. to v. fine, sub-chlk & shly
 sub-sucro to packstn; dul. yel-fluor
 No cut; No Vis for

Sh lt. to med. gry; slits to extly
 calc. to drk gry to blk-carb
 looking & Red & Maroon trash
 looking shs
 Lms. lt grey to tan, crypto. to v. fine
 slits, sub-sucro, frathvys, sub-sucro, packstn
 & tan sub-lithog; dul. yel-fluor; No cut
 No Vis for w/hts chert & grey to tan, opaque
 4689-93 Lms. lt grey to tan w/abn. sp'd
 drk tan to brn oil sh w/hts five oil;
 crypto. to v. fine, sub-chlk, sub-sucro
 to sucro & packstn; solution & Resid.
 to glen yel & yel-fluor; flush to excel
 strung cuts; 2bn. p. to frathvys
 micro-pp por w/hvys to frathvys
 interxln por in packs

4693-4703 Lms w/Chert similar
 4673-4689
 4703-4730 Lms. hvys, tan to abn wht to
 crm-chlk & htan to tan, greyish IP's
 w/abn. drk tan to brn. sp'd. oil sh;
 tan live oil; fair oil oden; crypto to
 v. fine, sub-chlk, sub-sucro to
 sucro, & packstn; solution & Resid.
 along frathvys; fragm. km. IP's; dul.
 glen to glen yel-fluor; flush to excel
 strung cuts; 2bn. p. to frathvys
 excel vug. pp, micro-pp por &
 interxln por in sucro, Prob.

4730-4745 Lms. Similar 4703-30
 w/extra abn chlk wht. to crm
 Sh v. drk. gry to blk-carb 313
 Lms. abn wht to crm-chlk & greyish tan
 to tan w/abn. sp'd drk tan to brn. oil
 sh. w/ gd to strong oil oden; crypto
 to v. fine, sub-chlk, sub-sucro to
 sucro, & packstn; tan. sub-lithog.
 abn. phntom colitic IP's; tan live oil;
 dul. glen to brt. glen yel-fluor; w/flush
 to excel strung cuts; 2bn. p. to frathvys
 gd to tan excel of micro-pp & prob.
 interxln por in packs; chert grey to tan
 sh. v. drk gry to black-carb

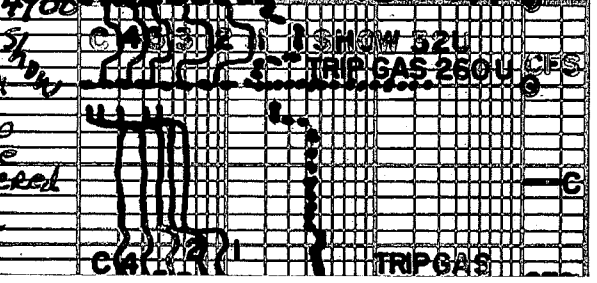
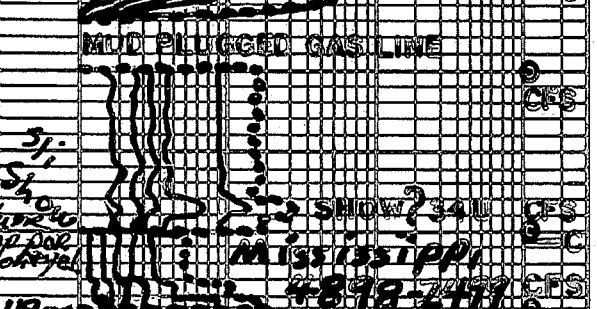
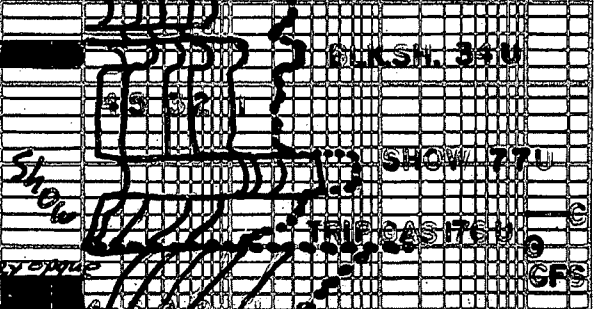
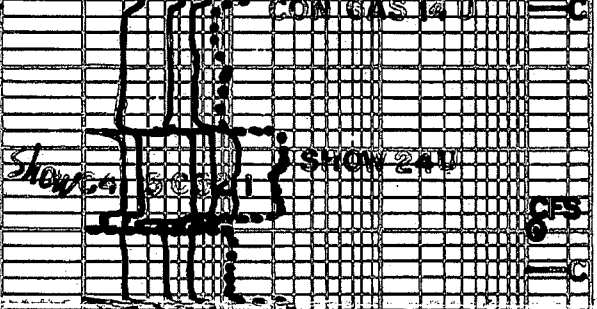
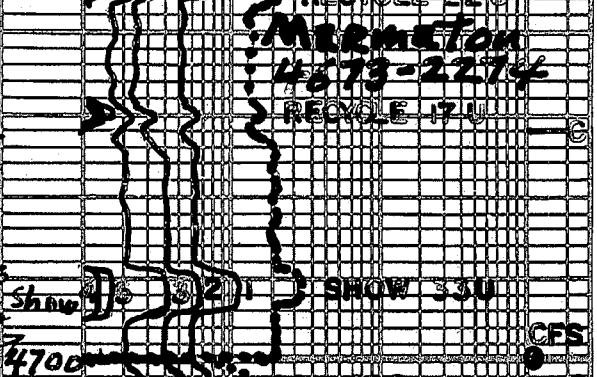
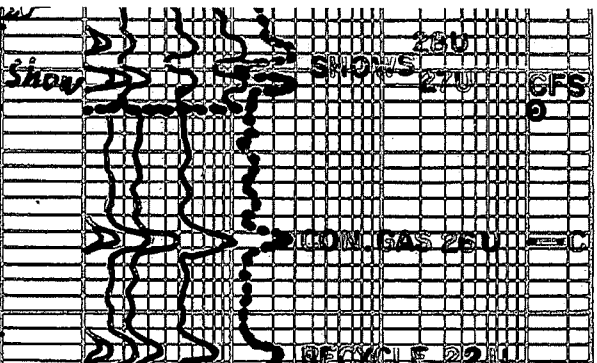
Limestones with Shales
 Lms. tan to abn. wht to crm-chlk & tan
 greyish. IP's; crypto. to v. fine, sub-chlk
 sub-sucro & packstn; tan. phntom wht
 to tan colitic; dul. ht. tan yel-fluor; No cut
 No Vis for; w/hts to hvys tan w/abn. sp'd
 even drk tan to brn. oil sh; crypto
 to v. fine, sub-chlk, sub-sucro to
 sucro & packstn; tan. sub-lithog

Flush to gd strung cut w/p. to tan p.p.,
 micro-pp & poss interxln por
 Sh med. to v. drk. gry.-calc. IP's to
 black-carb looking
 Sh. med. to v. drk. gry.-calc. to v. drk. gry
 to black-carb

Lms. w/shs. similar 4770-4810
 w/lms. becoming lt. grey IP's;
 w/frs. show similar 4788-4810
 4840-4857 Primarily Lms. tan,
 greyish. IP's; crypto. to v. fine, sub-chlk
 sub-sucro & packstn; tan. phntom wht
 to tan colitic; dul. ht. tan yel-fluor; No cut
 No Vis for; w/hts to hvys tan w/abn. sp'd
 even drk tan to brn. oil sh; crypto
 to v. fine, sub-chlk, sub-sucro to
 sucro & packstn; tan. sub-lithog

Lms. & Shs similar 4840-4857
 w/No Oil oden & only slits to tan
 oil show, poss from uphole
 Conglomerate Lms, Shs & chert
 Lms. grey, tan to brn; crypto to tan, sub-chlk
 sub-sucro & packstn; tan. phntom wht
 to tan colitic; dul. ht. tan yel-fluor; No cut
 No Vis for; w/hts to hvys tan w/abn. sp'd
 even drk tan to brn. oil sh; crypto
 to v. fine, sub-chlk, sub-sucro to
 sucro & packstn; tan. sub-lithog

Lms. Dolo. Lms to tan Dolo.; tan, greyish IP's
 crypto to v. fine, sub-chlk, sub-sucro to
 sucro & packstn; tan. phntom wht
 to tan colitic; dul. ht. tan yel-fluor; No cut
 No Vis for; w/hts to hvys tan w/abn. sp'd
 even drk tan to brn. oil sh; crypto
 to v. fine, sub-chlk, sub-sucro to
 sucro & packstn; tan. sub-lithog



See Below

See Below

See Below

See Below

See Below

Kelly Show

DST#2 Cherokee-Miss. 4784-4910

TO Weak Blow 1" FO No Blow
 Rec 30ft 100% Mud BHT 115°F
 IHP 2282#
 IFP 45-90# in 30 min
 ISIP 951# in 60 min
 FFP 55-71# in 60 min
 FSIP 805# in 120 min
 FHP 2274#

DST#3 Miss. Dolo 4908-4938

TO Strong Blow BOB 3 min
 FO Strong Blow BOB 3 min
 Rec 2800' fluid 270MW 802 Wt% 269 mud
 2530 Wt% 100 Wt%

BHT 125° Rw. 19 @ 92° F
 Chl 27000 ppm Pit Chl 8500 ppm
 IHP 2355#
 IFP 158-773# in 30 min
 ISIP 1521# in 60 min
 FFP 807-1310# in 60 min
 FSIP 1526# in 120 min
 FHP 2322#

Mud Info:

Date	6-16	6-16	6-17	6-18	6-19	6-20	6-21	6-22	5-23
	6:50A	1:30P	6:50A	1:15A	1:10A	9:30A	11:40A	12:15	10:30A
Depth	3650	3720	4210	4649	4770	4848	4910	4938	5050
Wt	9.8	8.65	9.25	9.4	9.25	9.2	9.4	9.2	9.2
Vis	29	57	55	68	65	53	52	50	58
PV	2	16	15	18	18	14	16	16	16
YP	2	19	15	20	18	16	17	16	19
GS	2/3	1 1/2	1 1/4	2 1/4	1 1/2	1 1/4	1 1/2	1 1/2	1 1/2
WL	N/C	12.0	10.8	10.8	11.6	13.6	11.6	10.4	10.4
Clay	—	1/32	1/32	1/32	1/32	1/32	1/32	1/32	1/32
pH	7.0	11.5	11.0	9.2	9.0	9.0	9.0	10.0	10.5
Chl	56000	9500	8300	5700	5800	7600	8500	5800	7400
Ca	AVY	20	20	30	60	220	60	20	20
LCM	0	0	2	3	2	4	2	2	2

OPERATOR BEREXCO LLC LOCATION 660FNL & 610FWL
 LEASE TASSET NO. L-23X SEC. 23 TWP. 26S RANG. 22W
 ELEVATION 2399 RTD 5050 COUNTY FORD STATE KANSAS