

Terry McLeod

Consulting Geologist
 P.O. Box 503
 Wichita, Kansas 67201
 316-265-6431

GEOLOGIST'S REPORT DRILLING TIME AND SAMPLE LOG

OPERATOR Cobalt Energy L.L.C.
 LEASE Williams - Hess WELL NO. 1-15
 FIELD _____
 LOCATION 330' FNL & 1250' EEL
 SEC. 15 TWP. 19S RGE. 29W
 COUNTY Lane STATE Kansas

ELEVATION
 KB 2833'
 DF _____
 GL 2821'
 Measurements Are All
 From KB

CASING RECORD

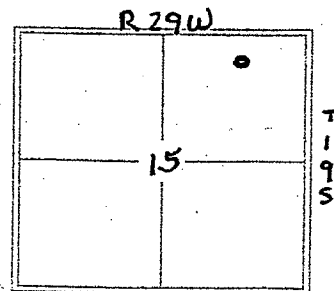
SURFACE 8 5/8" @ 265'
w/195 SX-Com
 PRODUCTION 4 1/2

CONTRACTOR Southwind #70
 COMM. 12-2-2014 COMP. 12-13-2014
 RTD 4700 LOG TD 4702'
 SAMPLES SAVED FROM 3700' TO RTD
 DRILLING TIME KEPT FROM 3700' TO RTD
 SAMPLES EXAMINED FROM 3700' TO RTD
 GEOLOGICAL SUPERVISION FROM 3686' TO RTD
 MUD UP 3500' TYPE MUD CHEMICAL

ELECTRICAL SURVEYS

Pioneer Energy
 Dual Induction
 Density - Neutron
 Microlog

FORMATION	LOG		SAMPLE		STRUCT. COMP.
	TOP	DATUM	TOP	DATUM	
Anhydrite	2172	+661	2174	+659	-1
Base Anhydrite	2198	+635	2199	+634	-3
Heebner	3969	-1136	3969	-1136	-1
Lansing	4010	-1177	4010	-1177	-1
Stark Sh.	4295	-1462	4295	-1462	-5
Base K.C.	4374	-1541	4374	-1541	-2
Marmaton	4426	-1593	4429	-1596	-3
Altamont	4447	-1614	4447	-1614	+2
Pawnee	4486	-1653	4486	-1653	+2
Fort Scott	4534	-1701	4534	-1701	+5
Cherokee Sh.	4558	-1725	4558	-1725	+5
MISSISSIPPI	4628	-1795	4628	-1795	+2



REFERENCE WELL FOR STRUCTURAL COMPARISON Abercrombie drlg Co. No. 1 East
Splitter, 110' E, Nw Nw Nw, 14-19S-29W, 2824 KB

DATE	DEPTH	NO.	SIZE	TYPE	DEPTH CUT	FEET	PIECES
12-02-14	MJRT	A	12 1/2	RR	265	265	13 1/4
12-03-14	265' surf						
12-04-14	1413' drlg	1	7 7/8	Reed	4100	4435'	N/A
12-05-14	2448' drlg						
12-06-14	3094' drlg						
12-07-14	3548' drlg		Sunkeys	265' 1/2			
12-08-14	3910' drlg			446' 1/2			
12-09-14	4245' drlg			4700'			
12-10-14	4445' dst-1						
12-11-14	4475' drlg						
12-12-14	4616' dst-2		Board	4489.98'			
12-13-14	4700' TP, Log		Strap	4487.78			
	Run Pipe				2.20' short		
DESCRIPTION	INTERVAL	DESCRIPTION OF SPEC	LOG SHEETS				
Alstamont	4446-4448 4448-4450	Limestone, tan to brown, fine xln. foss w/ 4-5 pieces w/ fair spotted stain + 5-10 in fair foss. - fair odor	dst-1				
cher. Lime	4596-4603	Limestone, tan - lt. brown xln - oolitic w/ 2-3 pieces w/ show free oil when broken open + faint increasing odor all in poor oolitic q	dst-2				

DRILL STEM TESTS									
No.	Interval	ISD/Time	FR/Time	FS/Time	FR/Time	RES-FTH	REMARKS		
1	4441-4460 O.H.	# 449 61.270 30"	# 283-393 60"	# 439 90"	# 2189 2123	372' GIP 124' G.O. 90% O 744' 50cmw			
2	4570-4615 cher.	# 195 32-29 30"	# 30-28 30"	# 192 30"	# 2285 2232	3' MUD			

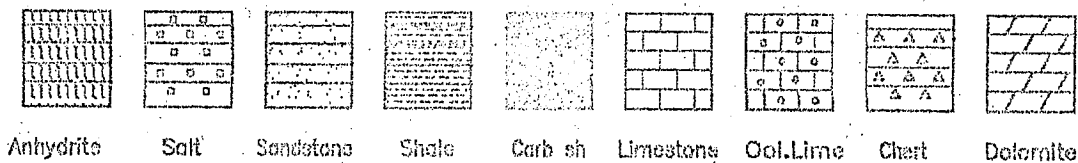
RESULTS AND RECOMMENDATIONS: with a positive test No. 1, 4 1/2" casing will be run to further evaluate.

Respect fully

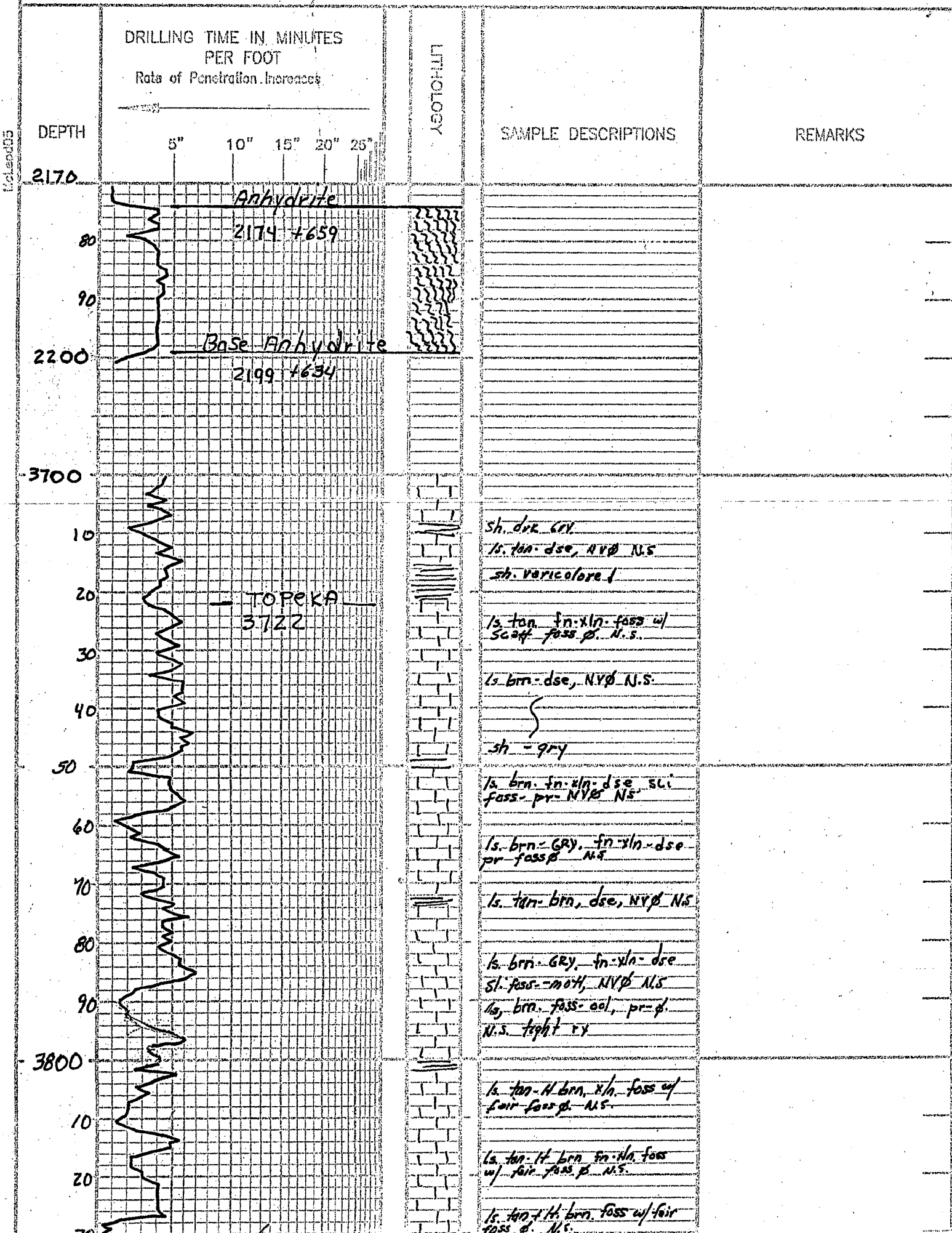
Jay S. McLeod
Petroleum Geologist

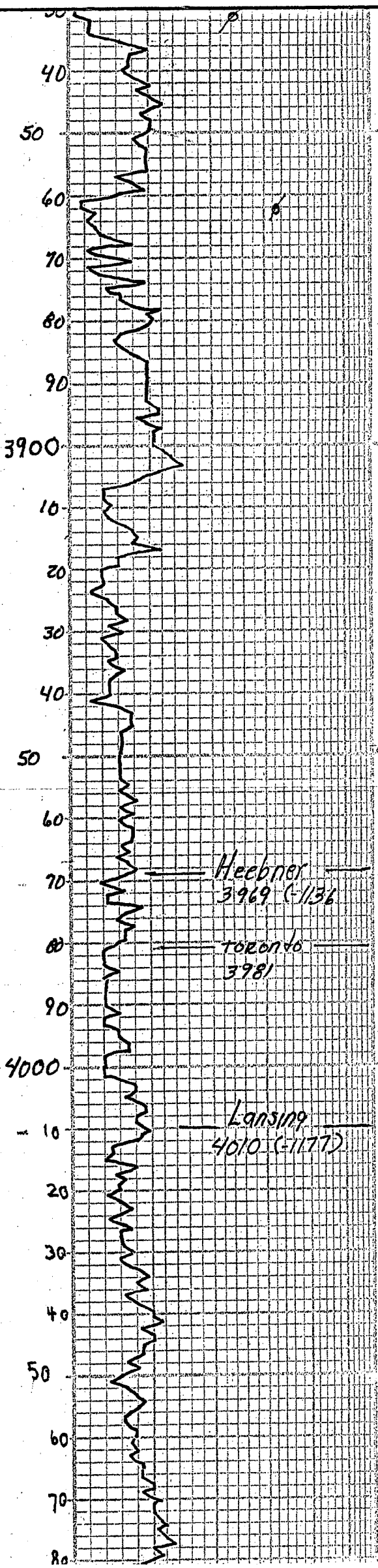
12-13-14

LEGEND



SCALE " = 100'





sh. gry

ls. tan. dse, NVP, NS.

ls. tan. fn. xln. foss w/ pr. fr. foss p. N.S.

ls. tan. + some ool. ls. w/ pr. fr. ool. p. N.S.

ls. tan. fn. xln. dse, NVP N.S.

sh. drk GRy - mar

ls. tan. brn. GRy. fn. xln. dse, sl. foss. NVP N.S.

sh. drk GRy

ls. tan. ool. - foss w/ fr. ool. - foss p. N.S.

ls. H. tan. - Crm, fn. xln. - foss w/ fr. foss p. N.S.

ls. H. tan. Crm, GRy, fn. xln. foss w/ fair. foss p. N.S.

ls. brn. fn. xln. - sl. foss - NVP N.S.

ls. tan. + drk GRy shale

sh. blk Carb.

ls. tan. brn. - dse, NVP, NS

sh. gry's

ls. H. tan. fn. xln. foss - ool w/ fair. foss + ool. p. shly N.S.

ls. H. tan. + Crm. fn. xln. foss - ool. w/ pr. p. N.S. fr. Δ

sh. gry.

ls. Crm. ool. w/ fair. ool. p. N.S. w/ op. Δ, N.S.

ls. Crm. + H. tan. fn. xln. - sl. foss, N.S. Scott Δ.

ls. tan. brn. - fn. xln. - dse, NVP N.S.

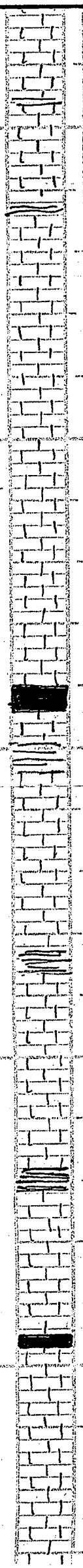
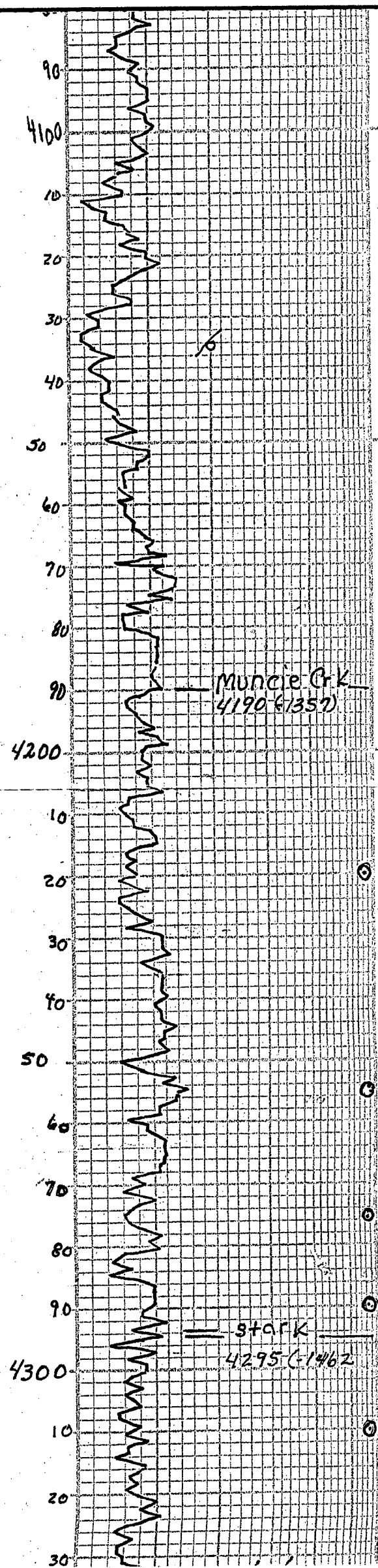
sh. drk GRy

sh. ly gry's

ls. tan. GRy. fn. xln. - sl. foss - matt. NVP N.S.

sh. gry

ls. tan. brn. - dse, NVP, NS



ls. tan-gry. fn-xln. foss. N.S.
 sh. foss. - 1. scott. p.

ls. tan-GRY. fn-xln-dse
 N.V.P. N.S.

ls. tan-GRY. fn-xln-foss-
 scott. p. N.S.

ls. crm. fn-xln-foss, w/ fr
 foss. p. N.S.

ls. crm-GRY. fn-xln-foss
 scott. p. N.S.

ls. tan-H brn, ool. w/ good
 ool. p. N.S.

ls. H tan, some ool. fr. fm
 above + dse. b. w/ N.V.P.
 N.S.

ls. tan. fn-xln-dse, N.V.P.
 N.S.

ls. tan-GRY, dse, N.V.P. N.S.

ls. tan-GRY, fn-xln-dse
 N.V.P. N.S.

sh. gry - blk carb.

ls. brn-dse, N.V.P. N.S.
 sh. gry's

ls. tan-gry, fn-xln-dse
 sh. foss. N.V.P. N.S.

ls. H tan, fn-xln. sl. foss w/
 pr. foss. p. N.S.

ls. H tan, fn-xln. sl. foss
 scott. p. N.S.

sh. med gry

ls. tan-brn, xln-dse, N.V.P. N.S.
 sh. l.

ls. H tan - brn, xln-dse
 N.V.P. N.S.

ls. crm-H tan, fn-xln, v. sl.
 foss. fr. p. N.S. No odor.

ls. tan-brn, fn-xln-dse
 sl. foss, pr. p. N.V.P. N.S.

ls. tan-brn, fn-xln - sl. foss
 pr. p. N.S.

ls. tan-brn, fn-xln, sl. foss
 scott. p. N.S.

ls. H tan, fn-xln. sl. foss
 scott. p. N.S. No odor

sh. blk carb.

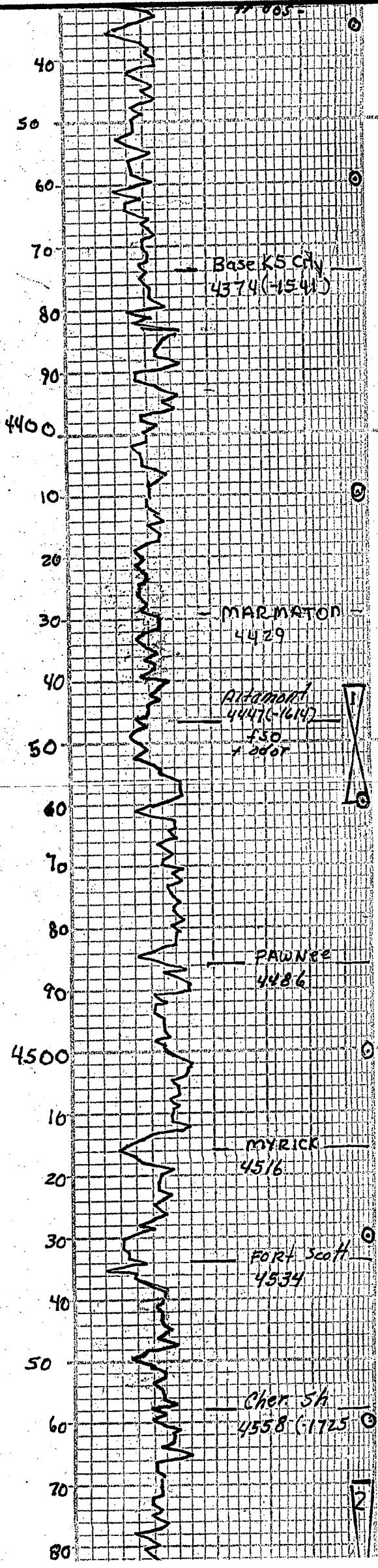
ls. brn, fn-xln. sl. foss
 pr. N.V.P. N.S. + sh-gry

ls. H brn. fn-xln. sl. foss
 scott. foss. p. N.S. No odor

ls. tan-H brn, foss-ool
 w/ poor ool. foss. p. N.S.
 No odor.

ls. tan, GRY, fn-xln, foss. w/
 pp. foss. p. N.S. No odor

ls. tan, fn-xln, foss. w/ 3-4
 ac's w/ dead oil stain on



thin edges, NFB, v. faint odor
shly - blk - gry

ls. tan - brn - fn - xln, foss
scat poor fr - foss of N.S.
No odor

ls. tan - fn - xln, foss w/ fr
pp - foss of N.S. No odor

ls. lt. brn - GRy, dse, NFB
N.S.

fr sh - GRy - Mar

ls. brn - GRy, dse, NFB
N.S.

sh, GRy's

ls. tan - GRy, fn - xln + foss
to dse w/ NFB. Scat poor
foss of N.S. No odor

shly

ls. brn - fn - xln - dse, sl. foss
NFB N.S. tr Δ

shly - varicolored

ls. tan - brn - fn - xln -
dse, NFB N.S.

ls. tan - brn - dse NFB
scat chert xln N.S.

ls. tan - brn - fn - xln - foss w/
4-5 pc's w/ fair spl'd sh
LSFO in fair foss of fair
odor

shly

ls. tan - fn - xln, tight, NFB
N.S.

ls. tan - brn - fn - xln -
dse, NFB N.S.

sh. drk GRy - blk carb

ls. tan - fn - xln, tight ex
wh - tan - op Δ, N.S.

ls. tan - brn - fn - xln, tight
rx - tan - op Δ - N.S.

ls. brn - fn - xln - dse sl.
foss - tight rx, pr NFB
N.S.

sh. drk GRy - blk carb

ls. lt. tan - fn - xln - sl. foss
scat poor of N.S. tr Δ

sh. black - carb

ls. tan - brn - fn - xln - foss
w/ scat foss of - r - foss
Δ, N.S.

ls. tan - brn - fn - xln - foss
w/ scat poor foss of N.S.
fr - foss Δ

shale blk carb

ls. brn - fn - xln - sl. foss, NS

ls. tan - GRy, fn - xln, sl. ool. w/
pr ool of N.S.

sh. gry's

DST No. 1 4441' - 4460'

BOB 3 1/2 min - Surf - 75" BB

BOB 10 min (2nd op) Surf - 3" BB

30" 60" 60" 90"

Rec: 372' GIP

124' G.O. 33°

248' gacmw 10% oil

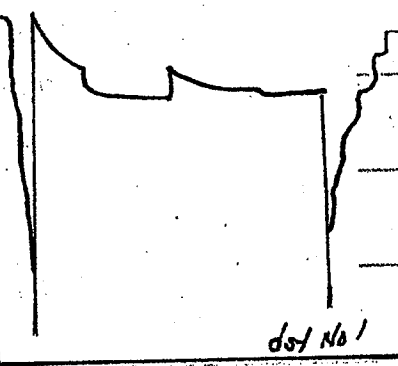
186' mcw 80% wtr

310' mcw 95% wtr

SIP: 449# - 439#

FP: 61" - 270# 4283 - 439

HP: 2189# - 2123#



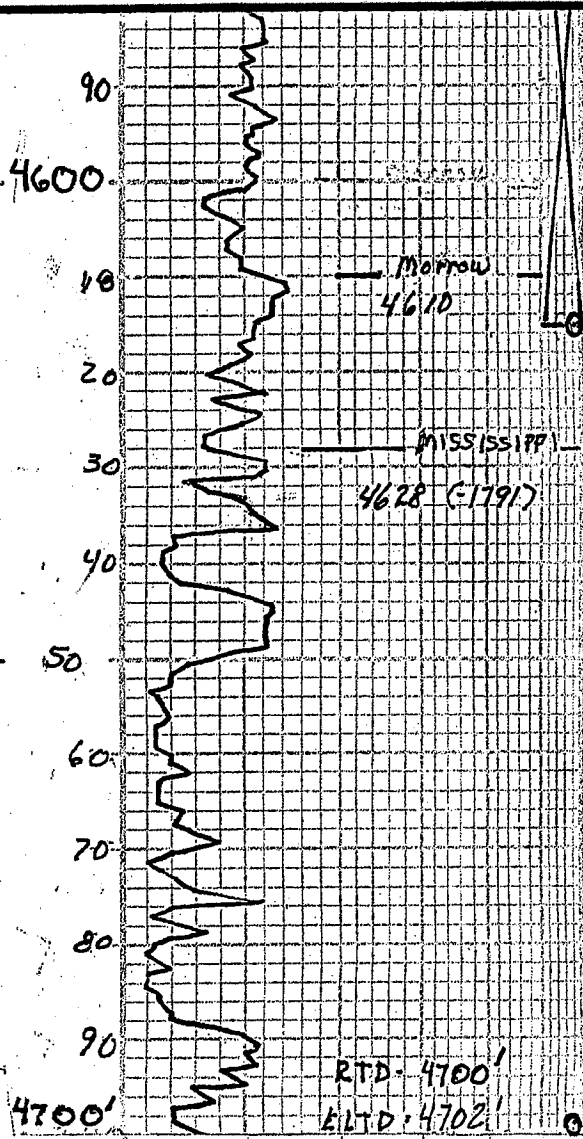
DST No. 2 4570' - 4615'

wk blow died in 12"

30" 30" 30" 30"

Rec: 3' mud

SIP: 195# - 192#



Ls. tan-brn, gry. fr-xln =
dsh, NVP, NS.

Ls. tan-H-brn, xln, =ool
w/ 2-3 pcs w/ SFO when
broken = and faint odor in
pr-tr-ool p.

Ls. tan-gry fr-xln
Sh. vary colored.

Sh. varicolored

Ls. tan, fr-xln, tight pr-NVP
ohert-w/ op-fresh NS

Ls. dol, tan-H-brn, xln-si.
SFC, fr-xln-si-foss p. NS.
scart Δ, fr SFC p.

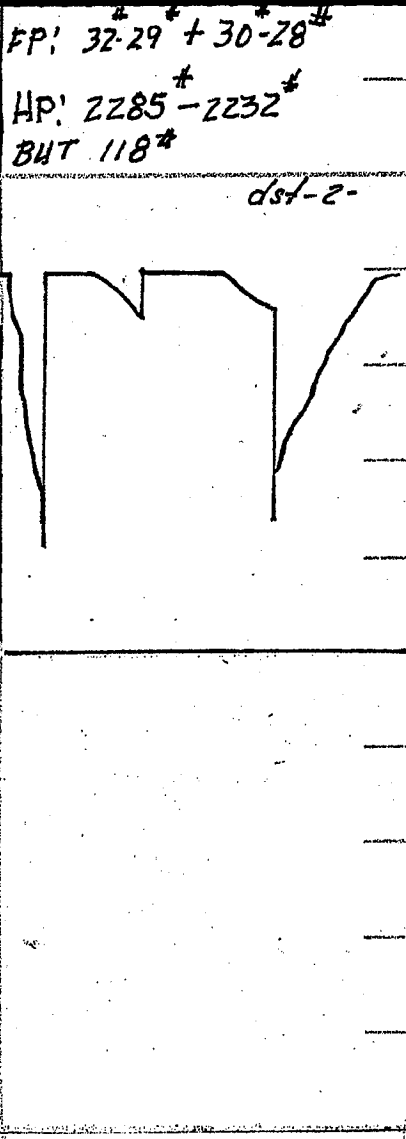
dol. tan-H-brn, xln, tight
FX. N.S.

dol. tan-H-brn, fr-xln
w/ fair-xln p. tr Δ, NS

dol. tan-H-brn, fr-xln-si, foss
fair xln-foss p. tr Δ.
N.S.

dol. brn, fr-xln-foss + od
w/ good ool-xln p. N.S.

dol, tan-H-brn, foss w/
gd foss. v. v. p. N.S.



LITHOLOGY

DEPTH	DRILLING TIME Minutes/Foot	SAMPLE DESCRIPTIONS	REMARKS
	5" 10" 15" 20" 25"		
	Rate of Penetration Increase		

COMPANY Cobalt Energy, LLC

LEASE Williams-Hess 1-15

LOCATION 330' ENL § 1250' PBL SEC 15 TWP 19S RNG 29W

COUNTY Lane STATE Kansas

ELEVATION: 2833' K.B.