

Max R. Lowry

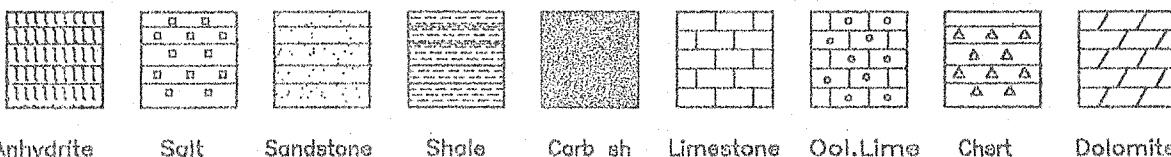
18-135-31W

GEOLOGIST'S REPORT

DRILLING TIME AND SAMPLE LOC

COMPANY	Ritchie Exploration, Inc.			ELEVATIONS	OIL SHOWS
LEASE	#1 May 18A			KB 2935	
FIELD	Antelope Ridge Northwest			DF	
LOCATION	SW 1/4 SENE			GL 2930	
SEC	18	TWP	13	RGE 31W	
COUNTY	Gove			Measurements Are All From KB	
CONTRACTOR	WW Drilling #6			CASING	
SPUD	1-12-2013 COMP 1-20-2013			SURFACE 8 1/2" @ 219'	
RTD	4720	LTD	4725	PRODUCTION 4 Yr	
MUD UP	3447	TYPE MUD	Chem	ELECTRICAL SURVEYS Dual Ind Comp N/D	
FORMATION TOPS AND STRUCTURAL POSITION					
FORMATION	SAMPLE TOP	ELECTRIC LOG TOP	SUB-SEA DATUM	STRUCTURAL POSITION A B C	
Anhydrite	2434	2436	499	509	
Base Anhydrite	2460	2461	474	464	
Stotler	3589	3582	-647	-638	
Heebner	3940	3943	-1008	-999	
Lansing	3986	3987	-1052	-1043	
Muncie Sh	4124	4133	-1198	-1186	
Stark	4214	4218	-1283	-1271	
Altamont	4327	4330	-1395	-1387	
Pawnee	4417	4420	-1485	-1473	
Myrie	4419	4454	-1519	-1507	
Cherokee Sh	4497	4502	-1567	-1554	
Johnson	4539	4546	-1611	-1595	
Morrow Sh	4585	4570	-1635	-1625	
Mississippi	4598	4622	-1687	-1637	
REFERENCE WELLS FOR STRUCTURE					
A Ritchie #1 Phillips-Oilley 1645 FSL 165 FEL 10-13-31W	B	C	D	E	F

LEGEND



Anhydrite Salt Sandstone Shale Carb sh Limestone Ool.Lime Chert Dolomite

DRILLING TIME IN MINUTES PER FOOT

Rate of Penetration Decreases

DEPTH

5" 10" 15" 20" 25"

SAMPLE DESCRIPTIONS

REMARKS

C
ANHYDRITE
2434 +501

C
2450

C
ANHYDRITE
2460 +475

C
3500

C
SH, GRY, LT GRY, RED

C
A.A.

C
LS, TAN, VF XTLN, DNS, FEW
MICRO FOSS, TITE, NS

C
SLT STN, VF SND GRNS, GRY,
GRY/GRN, VFRIABLE, NS

C
SLT STN / SS, GRY, GRY/GRN,
VFRIABLE, SS GRN SL

LGR THAN ABOVE

STOTLER
3589 - 654

3600

LS, GRY / WHT, F \rightarrow M XTLN,
MHRD, ? XTLN \emptyset , NS

LS, TAN, F XTLN, SL HRD, BRITTLE,
NO \emptyset . NS

LS, CRM / TAN / BLK XTLS, F \rightarrow M
XTLN, HRD, V SL XTLN \emptyset , NS

LS, GRY, F XTLN, DNS, M HRD,
TITE, NS

SH, DK GRY

LS, UNT, CRM, V CHLKY, SOFT, A
SL HRD, MS

DOL, TAN, SUCR, M HRD, NS

SS, CLR + CRM GRNS, W SOFT, SCT
MICA, FRIABLE, F \rightarrow P CMT'D, VG \emptyset
NS

SH, GRY

LS, GRY, VF XTLN, DNS, HRD, NO \emptyset
NS

3700

SH, GRY

LS, CRM, F XTLN, SOFT, BRITTLE,
FEW FOSS, VP \emptyset , NS

LS, GRY / WHT, VF XTLN, HRD, SCT
CHLKY (WHT), NS

LS, CRM, BUFE, VF XTLN, SOFT,
CHLKY, NS

LS, GRY, F XTLN, DK GRY XTLN \sim W,
M HRD, V SL FOSS, NO \emptyset , NS

LS, WHT / BUFE, VF XTLN, BRITTLE,
SL FOSS, NO APP \emptyset , NS

3800

SH, GRY

LS, BUFF, TAN, VF XTLN, ALGAL,
SCT M FOSS FRAGS, VW CMT'D,
NO VIS Ø, NS

SLTSTN, GRY

A.A.

CHALK

CHALK

LS, BUFF, TAN, F → M XTLN, M HRD,
FOSS, P XTLN ØNS

A.A.

SH, LT GRY

LS, WHT, F XTLN, SCT TAN CHY V/H,
HRD, TITE, NS

SH

LS, CRM, F XTLN, HRD, V FOSS,
TITE, NS

SH, BLK, RED

LS, TAN, CRM, VF XTLN, DAS, FOSS,
M HRD, NO APPNS

SH, GRY

HEEBNER
3940 - 1005

SH, BLK

LS, TAN, CRM, F XTLN, SCT FOSS,
W CMT'D FOSS, HRD, NSTORONTO
3964 - 1029

SH, GRY, DRK GRY

LS, TAN, F XTLN CMT'D OOLS, SOFT,
P CMT'D OOLS, G INT OOL Ø,
NSLANSING
3986 - 1051

CHALK

4000

LS, BUFF, F XTLN CMT'D OOLS,
P → W CMT'D OOLS, VARI SIZE,
G → TITE Ø, NS

LS, WHT, VF XTLN, HRD, V/H CMT'D

DST #1 4120 - 4186

30.45.45.60

IF: BOB 14 MIN ISI: 4" BB

FF: BOB 14 MIN FS1: 2" BB

REC: 480' GIP

60' GCOM 15% G, 25% O

180' GCMO 15% G, 40% O

330°C GD 15%G, 85%O
38° API EMULSIFIED T
FP: 74-175, 183-279
SIP: 1282-1250
HP: 2077-2067

CFS 45"

CFS 45"

CFS 45"

CFS 45"

CFS 45"

CFS 45"

CFS 60"

CFS 60"

D-

C

E-

F-

G-

4100

MUNCIE
4/24 - 1189

H-

I-

J-

K-

L-

C

FOSS+DOLS, TITE, NS
LS, WHT, V CHLKY, FOSS, CHLK &
NS
LS, BUFF, VF XTLN, HRD, UV CMTD
FOSS, TITE, NS

SH, LTC RY, BLK MINES WIN

LS, BUFF, VF XTLN, DNS, TITE,
HRD, NS

LS, BUFF, CRM, FXTLN, HRD, FOSS,
NO VIS Ø, NS
D D CHT, CRM, PEACH, LT WHT, OPAQ,
LT SCT FOSS, FRESH

LS, BRN, VF XTLN, VDNS + HRD,
TITE CMT'D FOSS, NO Ø, NS
LS, TAN, VF XTLN, CRYPTO W/G SCT
VUG Ø, NS, NO ODOR

LS, LT TAN, VF XTLN CMT'D OOLSA
FOSS, NO Ø, NS

LS, CRM, FXTLN, DNS, M HRD,
FEW FOSS, NS, NO Ø

△ △ CHT, WHT, ABUN FOSS+DOLS,
WCMT'D, TITE, NS

LS, CRM, FXTLN, DNS, HRD,
TITE, NS

SH, BLK, LTC RY

LS, OFF WHT, FXTLN, S>M
HRD

LS, TAN, BUFF, FXTLN, S>M HRD, SCT SURF
NO VIS Ø, SCT PCS W/ BLK+BRN STNG
SURF STNG, ? FRAC'D

LS, WHT, VF XTLN, HRD, FEW SCT
STRKS OF FLUOR O SPOTS + STNG
FEW FO SPOTS ON BRK, ? GRNOIL
LT BRN OIL SPOTS, VAR SIZE FO

O O CHALK, FLUOR, FLUOR FO ON BRK
NO ENERGY MICRO
FO SPOTS

LS, WHT / CRM, VIOLET + FRAGS,
VG O COATED FOSS& GAS BBS G ODOR
W/N Ø, SML O SPOTS ON BRK,
THIN ZONE
CIRC: AA, DK BRN HUY OIL IN Ø,
LESS FO ON BRK, MORE CRM

SLT STN, G RY, GARB-BLK

LS, CRM, WHT, VF XTLN, DNS,
M HRD, TITE, NS

LS, WHT, CRM, VF XTLN, M HRD,
SL CHLKY, NO VIS Ø, NS

SH, BLK

LS, TAN, VF XTLN, ABUN FLUOR
O STND FRAC'S, TITE, VSML
FRAC'S

LS, BRN, VF XTLN, DNS, VHRD, NO
VIS Ø but SLO GAS BLEED ON BRK
? ODOR
GAS

LS, TAN, WHT, VF XTLN, M XTLN
SOFT, VG O SAY FLUOR STNG, FAH
FO ON BRK

CIRC: LS, BRN, VF XTLN (20 SAY STND)
GODOR

7:AM 1-16-2013
CFS @ 4068'

MUD CHECK
VIS 57 WT 9.1
CHLOR 2,000 LCM 2
FILT 7.2

VIS 57
WT 9.4
LCM 1

7:AM 1-17-2013
GONG IN HOLE FROM
DST #1 @ 4186'

STRAP 4202.56
BOARD 4203.33
SHORT .77'

2
STARK
4214 - 1279

MUD CHECK

EFS 60"

HUSHPUCKNEY
4248 - 1313

VG FLUOR BLEED
A LS, WHT, FXTLN, SCT WHT CHT,
PO, NS
SH, BLK

BLEED
VLTOIL
VIS 51 WT 9.3
CHLOR 6,000 LCM 1
FILT 6.4

BKC
4278 - 1343

TO CHALK, SH STRKS WIN
O TO CHT, WHT, VF OSS
A A

4300

MARMATON
4308 - 1373

LS, TAN/GRY, FXTLN, HRD, Pcs
BRTL, NO APP, NS

DST #2 4211-4233
30.45.45.60
IF: 7" 151:NR
FF: 8" FSI:NR
REC: 210' MW 10' M 90' W
CHLOR 54,000
FP: 42-111, 114-162
SIP: 1198-1140
HP: 2106-2088

C ALTAMONT
4327 - 1392

LS, LT TAN, FXTLN, SL SUCR DOL,
HRD, NO VIS & INS

SH, GRY, SCT SND GRNS

SH, GRY, GRN

SH, GRY, STICKY

LS, WHT, FXTLN, VLC XTLN WIN,
V BRTL, P XTLN NS

LS, TAN, AA.

SH, GRY, GRN, BURG, BLK

LS, LT WHT → TAN, VF XTLN,
VW CMTD FOSS, TITE, NS

LS, WHT, CRM, TAN, VF XTLN,
DNS, HRD, TITE, NS

S
SH FLOOD
S

'B'

SH, BURG, GRY

LS, TAN, CRM, VF XTLN, DNS, NS

LS, WHT, VF XTLN, DNS, HRD,
V FEW SML FOSS, NS

SH, GRY

'C'

LS, LT GRY, VF XTLN, DNS
NS

'C'

4400

SH, GRY, DK GRY

'C'

PAWNEE
4417 - 1482

LS, CRM, VF XTLN, DNS, M HRD
TITE, NS

LS, BRN, VF XTLN, DNS, V FOSS,
BRTL, NS

SH, BLK

SH, GRY

'C'

MYRIC
4449 - 1514

LS, BRN, CRM, VF XTLN, HRD,
V FEW FOSS, NS

LS, WHT, VF XTLN, SOFT → M HRD,
NO APP, NS

7:AM 1-18-2013
DRLG @ 4351

MUD CHECK
VIS 62 WT 9.2
CHLOR 1 CAM 1 CM?

FT. SCOTT
4466 - 1531

SH, BLK

LS, BRN/TAN, VF XTLN, V HRD,
V FOSS, TITE, NS

LS, CRM, VF XTLN, CMT'D OOLS +
FOSS, TITE & NS

A.A.

CHEROKEE

4500
4497 - 1562

SH, BLK, ABUN CARB

LS, TAN, VF XTLN, DNS, TITE, HRD,
LS, CRM/TAN, FXTLN, G VARISIZE
PP → LG OIL FILL VUG, FEW SET
GAS-BLBS, ENERGY, FEW ER
ON BRK

1 PC
BLK O
COAT
VUG &
FOTOR

20 STAND SHORT TRIP
DST #3 4518 - 4564
30.45.45.60
IF: BOB 19 1/2 MIN ISI: 1 1/2
FF: BOB 17 MIN FSI: 3''
REC: 90' GIP
330' GMD
20% G, 55% O, 25% H
OIL TOO THICK FOR GRAVITY
FP: 60-128, 135-181
SIP: 1125 - 1025
HP: 2279 - 2258

GFS 60'

3

JOHNSON
C 4539 - 1604

SH, BLK

LS, BUFF, TAN, VF XTLN, DNS,
V HRD, PCS w/ FINE FOSS w/ N,
PCS w/ REXTLN FRAC'S, TITE
NS

LT BRN
OIL
VTOODR

BASE
JOHNSON
4557 - 1622
MORROW SH
4565 - 1630

SH, GRY

LS, BRN, VARISIZE XTLN, HRD, GOIL
FILL PP, SLO OIL BLEED, SL GAS &
OIL ON BRK

FOAM
CUP
WCR
ODOR

LS, TAN, USOFT, VG OIL FILL VUG &

GFS 60'

4

3

MORROW SD
4590 - 1655
MISS
4600
4598 - 1663

SH, VARI COLOR

SS, CLR, SUBANG + SUBRND GRNS,
PSORT, MGRNS, GRYCMT, HRD,
PPNS
LS, GRY, VF XTLN, UDNS & HRD,
FEW SET FOSS, NO Ø, NS

7:AM 1-19-2013 V1554
DST #3 @ 4564 WT 9.3

MUD CHECK

VIS 46 WT 9.3
CHLOR 5,000 LCM 2
FILT 6.4

GFS 60'

4

SH, GRY
LS, TAN, BRN, VF XTLN, V HRD, N/P SF
SOFT, PP, STRKS w/ N, G PPTLN
O FILLO
SS, WHT, GSORT, FGRNS, DD OIL STNG
SS, GRN, BRN, CLR GRN, WSORT NS
LS, GRY, WHT, VF XTLN, DNS,
HRD, TITE, NS

← LS, TAN, FXTLN "PUMICE"
TEXTURE & G OIL FILLO,
SAT'D, TR'GAS ON BRK, SOFT
DD O STN
← SD GRNS, LG, CLR, SUBRND
UNCONSOL SL GRN STNG
IN SURF PITTNG

GFS 60"

4

C

LS, WHT, TAN, VF XTLN, HRD,
SL BRTL, NO APP, NS

7:AM 1-20-2013
CFS @ 4620,

LS, CRM, TAN, FXTLN, SET PCS w/
M XTLN w/ N, M HRD, BRTL,
P XTLN Ø, NS

C

LS, CRM, F → M XTLN, SOFT, GRNL
TXT, SL CHLKY, F → G Ø, NS

MUD CHECK
VIS 56 WT 9.6
CHLOR 8,000 LCM 2
FILT 6.4

LS, TAN, CRM, F → M XTLN, V FOSS
S → M HRD, Ø, NS

C

LS, WHT, FXTLN, HRD, SL F
GRNL TXT, NO APP, NS

DST #4 4554 - 4599
30.45.45.60
IF: 5" ISI: No BB
FF: 4" FSI: No BB
REC: 90' M
120' MW · 30' M, 70% W
FP: 55-113, 114-144
SIP: 1167-1122
HP: 2277-2257

LS, TAN, BUFF, VF XTLN, V HRD,
DNS, TITE, NS

LS, GRY, VF XTLN, V FOSS,
V HRD, DNS, TITE, NS

DOLO, TAN, FXTLN, HRD,
DNS, TITE, NS

4700

GRSMST COND/HR 10 STM
SHORT TRIP

TD

5" 10" 15" 20" 25"

DRILLING TIME Minutes/Foot

DEPTH

LITHOLOGY

SAMPLE DESCRIPTIONS

OIL SHOWS

REMARKS

Rate of Penetration Decreases

CONTRACTOR _____

LOCATION _____

LEASE _____ IP _____

SEC. _____ TWP. _____ RNG. _____

ELEVATION _____ RTD _____

COUNTY _____ STATE _____

SL SLICK, BRNL, NO AFD
 DOLO, TAN, SL LMY, FOSS FRAGS
 ? PINS
 LS, TAN/BRN, FXTLN, VFOSS,
 SL DOLO, HRD, NS
 DOLO, BRN, TAN, VFTXLN, FOSS,
 HRD, VG VUG + XTLN PINS

DOLO, A.A. INCR LS w/ABUN
 FOSS + FRAGS, NS