

Max R. Lovely

# GEOLOGIST'S REPORT

DRILLING TIME AND SAMPLE LOG

COMPANY **Ritchie Exploration, Inc.**

LEASE **#1 Carpenter 13A**

FIELD **Wildcat**

LOCATION **NE NENE**

SEC **13** TWP **16** RGE **32W**

COUNTY **Scott** STATE **KS**

CONTRACTOR **WW #2**

SPUD **6-21-13** COMP **7-2-13**

RTD **4776** LTD **4780**

MUD UP **3405** TYPE MUD **Chem**

ELEVATIONS

KB **2960**

DF **2955**

GL **2955**

Measurements Are All From **KB**

CASING

SURFACE **8 5/8" @ 226'**

PRODUCTION

ELECTRICAL SURVEYS

Duct **N/D**  
Comp **N/D**

FORMATION TOPS AND STRUCTURAL POSITION

FORMATION	SAMPLE TOP	ELECTRIC LOG TOP	SUB-SEA DATUM	STRUCTURAL POSITION		
				A	B	C
Anhydrite	2967	2964	596	698		
Base Anhydrite	2988	2984	576	589		
Stotler	3551	3551	-591	-588		
Heeber	3932	3934	-974	-970		
Lansing	3978	3974	-1010	-1013		
Muncie SH	4140	4142	-1182	-1183		
B/C	4320	4326	-1366	-1356		
Marmaton	4355	4354	-1396	-1391		
Pawnee	4456	4458	-1498	-1484		
Ft Scott	4502	4509	-1549	-1535		
Cherokee SH	4529	4534	-1574	-1559		
Johnson	4565	4576	-1616	-1599		
Morrow	4612	4624	-1664	-1653		
Mississippi	4626	4632	-1672	-1666		

REFERENCE WELLS FOR STRUCTURE

A **Bercoxa #1 Windi SW/C 13-16-32W**

B

C

REMARKS

## LEGEND

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

DRILLING TIME IN MINUTES PER FOOT  
Rate of Penetration Decreases

5" 10" 15" 20" 25"

DEPTH

LITHOLOGY

SAMPLE DESCRIPTIONS

OIL SHOWS

REMARKS

c ANHYDRITE  
2367 +593

BASE  
ANHYDRITE  
2388 +572

c 2400

3450

LS. TAN, CRM, F XTLN, SOFT,  
V ALGAL + OOL, G FOSS Ø, NS

LS, GRY, F-XM XTLN, SOFT, MED  
XTLS W/N, SL FOSS, F-G Ø, NS

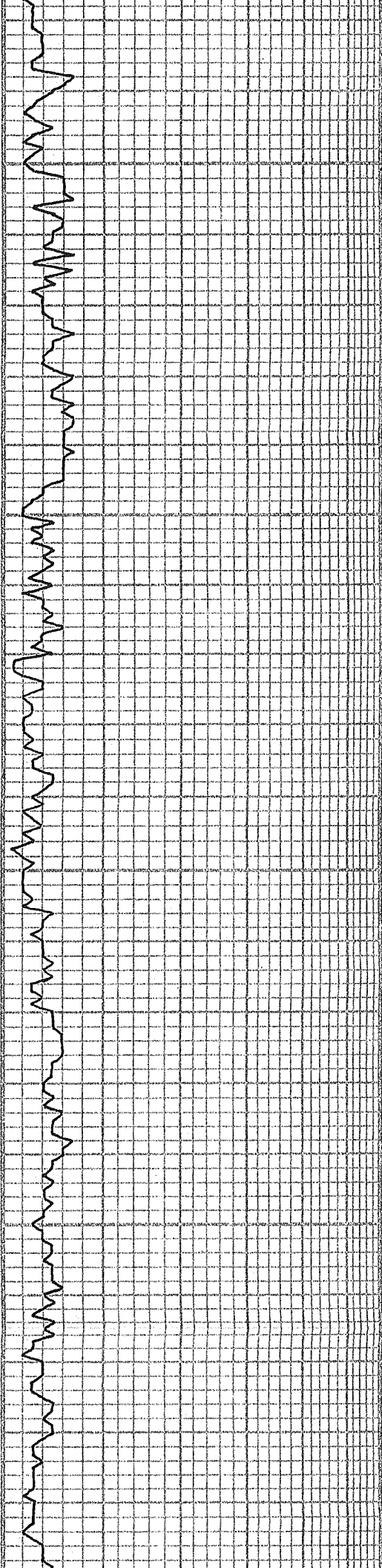
A.A.

c 3500

LS, CRM, F XTLN, SL HRD,  
SCT FOSS, NS

SH, GRY/GRN, V LMY

7:AM 6-24-13  
DRLG @ 3500'



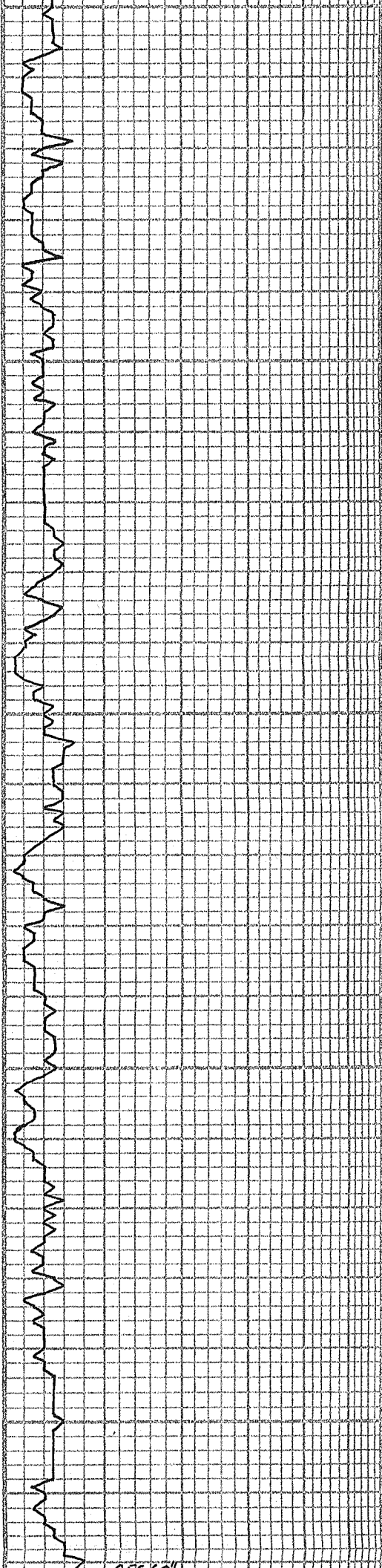
STOTLER  
3551 -591

3600

3700

SH, GRY, BLK
LS, GRY, TAN, F→M XTLN, SL HRD, FEW FOSS, P XTLN Ø, NS
SH, BLK
LS, BUFF, VF XTLN, SL HRD, FEW FOSS, P XTLN Ø, NS
LS, CRM, F XTLN, BRITL, SL DNS, NO APP Ø, NS
LS, GRY, DK GRY, F→M XTLN, BRITL, P→F XTLN Ø, NS
LS, TAN, BRN, CONGL, S→M HRD P→F Ø, NS
CHALK
CHALK
SLT STN, GRY
SH, GRY
LS, GRY, F XTLN, DNS, S→M HRD, P→TITE Ø, NS
LS, WHT, VF XTLN, SL DNS, SOFT, F→G XTLN, PP Ø, NS
LS, GRY, F→M XTLN, SL GRNLK TRT, SOFT, G XTLN Ø, NS
LS, TANY BUFF, F XTLN, SL HRD, SCT FOSS, SML FOSS, P Ø, NS

MUD CHECK  
VIS 56 WT 8.6  
CHLOR 1,500 LCM 2  
FILT 6.4



3800

LS, TAN, MXTLN, SMDY TXF, SOFT,  
GXTLN, NS

LS, BUFF, FXTLN, BRITL, SOFT,  
SCT FOSS + FRAGS, VPI, NS

LS, GRY, TAN, F → SL MED XTLN,  
SOFT, BRITL, FEW SCT FOSS +  
ALGAL, FØ, NS

SH, BLK

SH, GRY

LS, WHT, VFXTLN, DNS, HRD,  
VCLN LS, TITE, NS

DOLD, LMY, LT TAN, VFXTLN,  
SL SUCR, HRD, DNS, NS

A.A.

DOLD, A.A. CRM

A.A.

CHALK

LS, BRN, VEXTLN, DNS, VHRD,  
FOSS, TITE, NS

LS, TAN, WHT, F → MXTLN, HRD,  
SLGRNLR TXF N/PS, NO VIS P, NS

3900

SH, GRY, BLK

LS, BRN, TAN, F → MXTLN, SOFT,  
SL CHLKY, FØ, NS

HEEBNER  
3932 - 972

SH, BLK

SH, GRY, GRY/GRN

LS, VCHLKY, SHLY-GRY, SOFT,  
TRASHY, SCT GILS, NS

A.A.

TORONTO  
3962 - 1002

LS, WHT, VFXTLN, VDNS, VHRD,  
SCT FOSS W/N, TITE, NS  
"SCT WHTCHT - FOSS

LANSING  
3978-1018

4000

4100

MUNCIE  
4140-1180

SH, G. RY, GRN / GRY  
LS, WHT, F XTLN, HRD, V FOSS,  
SL CHLKY N / Pcs, NS

LS, CRM, TAN, V F XTLN, V DNS,  
V HRD, VW CMT'D, ABUN FOSS,  
TITE, NS

SH, VARI COLOR

SH, GRY  
LS, TAN, BUFF, F XTLN, BRITL,  
HRD, ABUN SML OOLS + FOSS,  
VG FOSS Ø, NS

LS, WHT, F XTLN, M HRD, SCT  
MED VUGS, NS

LS, LT GRY / WHT, F XTLN, BRITL,  
ABUN SML → MED VUGS, NS  
LS, TAN, F XTLN, BRITL, S → M HRD  
SCT FOSS, G. EVEN FLUOR STNG,  
MICRO + V SML FLUOR FO ON BRK,  
V LT OIL, SOME MED BRN OIL SPTS -  
NON FLUOR, ? GAS BLS ON BRK

60' CIRC OIL + GAS INCR, PPT SML VUGS

LS, CRM, F XTLN, HRD, SL DNS, FEW  
SCT FOSS, VP XTLN Ø, NS

LS, BRN / CRM, M → CRS XTLN, HRD  
NS

LS, BUFF, F XTLN, BRITL, V DOM,  
G. DOM Ø, NS

SH, DK GRY

LS, TAN, BUFF, F XTLN, HRD, V OOL,  
VARI SIZE OOLS, MOSTLY W CMT'D,  
G. DOM Ø, NS

LS, WHT, F XTLN, HRD, W CMT'D OOLS,  
+ FOSS, SH DOM, NS

LS, WHT, CRM, V F XTLN, HRD, DNS,  
FEW FOSS, V P. NS

LS, WHT, CRM, F → V F XTLN, SOET,  
SCT CHLKY, NS

LS, LT GRY / CRM, V F XTLN, BRITL,  
SL DNS, VP → TITE Ø, NS

SH, BLK  
LS, BRN, V F XTLN, V DNS, V HRD,  
SCT FOSS, TITE, NS

LS, BUFF, F → M XTLN, M HRD, BRITL  
PP XTLN Ø, NS, V GRN LR TXT

LS, BUFF, V F XTLN, DNS, HRD,  
TITE, NS

LS, TAN / BRN, V F XTLN, V HRD,  
V DNS, SCT FOSS, TITE, NS

SHORT TRIP: 27 STNDS +  
TRIP TO COLLARS  
DST #1 4026-4060  
30.45.45.60  
IF: BOB 3 1/2 MIN ISI: NR  
FF: BOB 4 1/2 MIN FSI: NR  
REC: 124' W  
1140' MW 95% W  
120' MW 75% W  
28,000 CHLOR  
FP: 62-376, 389-673  
SIP: 1034-1022  
HP: 1968-1917

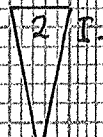
STRAP 4066.52'  
BOARD 4065.72'  
long .80'  
7:AM 6-25-13  
DRG @ 4058'

MUD CHECK  
VIS 50 WT 9.2  
CHLOR 2,200 LCM1  
FILT 8.0

7:AM 6-26-13  
CFS @ 4092

MUD CHECK  
VIS 56 WT 9.2  
CHLOR 3,000 LCM1  
FILT 8.8

DST #2 4178-4210  
30-45-45-60  
IF: 5" ISI: NR  
FF: 5 1/2" FSI: NR  
REC: 124' MW .75% W  
115' MW 65% W  
CHLOR: 4,600  
FP: 17-81, 82-122  
SIP: 1100-1076



CFS 60"

CFS 45"

CFS 60"

CFS 60"

CFS 60"

CHART CHANGE

CFS 45"

CFS 45"

4200

LS. WHT/CRM, BRTL, M HRD, LG XTLN + OOL, G SCT OIL COAT'D OOL + VUGS, PCS & FO ON BRK, ENERGY, A FEW GAS BBLs 1/2 OIL

HP: 2061-1905

DK OIL NO FLUOR NO ODOR 20" FDN CUP (8 PCS)

20" A.A. 45" TAN HRD, F XTLN, V CHT, WHT CHT, DNS, VW CMT'D, TITE SH, BLK, GRN, GRN LS, BUFF, VF XTLN w/ ABUN OOLS, ABUN OOLs, VARI SIZE OOLS + OOLS, HRD, NS

DST #3 4276-4372 30.45.45.60

IF: 8 1/2" 151:NR FF: 3 3/4" F51:NR REC: 103' WCM - 40% W 63' MCW - 72% W 187' MCW - 86% W

41,000 CHLOR FP: 18-99, 101-172 SIP: 1134-1125 HP: 2100-2004

LS. CRM, TAN, VF XTLN, V DNS, V HRD, CHTY, SCT FOSS w/N, TITE, NS

STARK 4244-1284

SH, BLK LS. TAN, VF XTLN, HRD, V FOSS, TITE, NS

CHALK LS. TAN, VF XTLN, ABUN VARI SIZE OOLS + FOSS FRAGS, P CMT'D, CHLKY, SOFT, BRTL, P XTLN Ø, NS

CHT, WHT MILKY, OPAQ, FRESH, FEW SCT FOSS w/N, NS

LS. TAN, P XTLN, SOFT → M HRD, FOSS, P Ø, NS

LS. DK BRN, F XTLN, HRD, DNS, FEW FOSS, TITE, NS

7:AM 6-27-13 CFS @ 4280'

HUSHPICKNEY 4287-1327

SH, BLK LS. TAN, F → CRS XTLN, V BRTL OIL STND Ø STRKS, SCT PCS w/HVY DP OIL COAT'D VUGS, LG VUGS, SOME BK BRN OIL SPTS ON BRK, FAIR

NO ODOR OIL SPTS N/CUP

4300

SCT PP Ø STRKS LS. TAN, WHT, F XTLN w/ CRS XTLs w/N, M HRD, P XTLN Ø, NS

LS. CRM, V CHLKY, SOFT, NS

BKC 4320-1360

LS. WHT/CRM, VF XTLN, V DNS, V HRD, TITE, NS

PLEASANTON 4326-1366

LS. BRN, VF XTLN, V HRD, V DNS, TITE, NS

LS. TAN, F XTLN, HRD, DNS, V FEW FOSS, NO Ø, NS

LS. TAN, F XTLN, SOFT, SL DNS, FAIR PP XTLN Ø, NS

MUD CHECK VIS 67 WT 9.2 CHLOR 3,300 LCM 2 FILY 9.6

MARMATON 4355-1395

SH, GRN LS. WHT, SCT CLR XTLs, F XTLN, SL GRN LR TXT, M HRD, G BRN STAG STRKS, G PP OIL FILL Ø, NO SAT, G PP OIL SPTS ON BRK, NO BLEED, NO FLUOR

LT → MED BRN FO ? ODOR

4370' DRLG SMPLE: G FO N/TRAY

SH, GRN SH, VARI COLOR

ALTAMONT 4382-1422

LS. GRN, TAN, F XTLN, V HRD, TAN w/ SCT M → CRS XTLs w/N, V P Ø, NS

DST #4 4398-4445 30.30.30.30 IF: surf blo, died 20 min FF: dead, flush, dead REC: 3' m w/SKIM of OIL FP: 12-18, 15-17 SIP: 96-46 HP: 2201-2066

4400

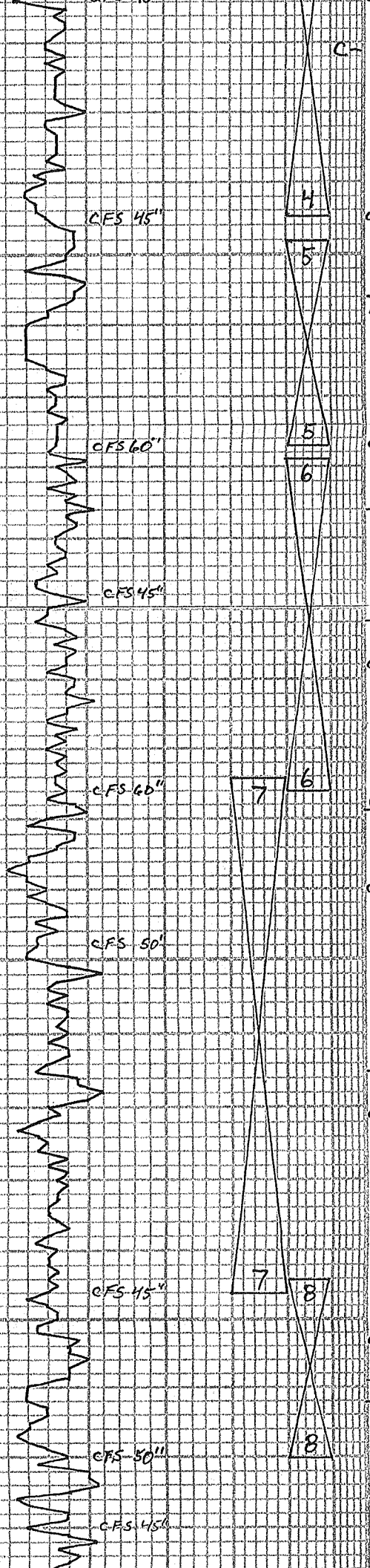
LS. LT GRN SH TAN, F XTLN, V HRD, TITE, NS

LS. DK BRN, F XTLN, HRD, V FOSS, NO VIS Ø, NS

LS. WHT SH GRN, VF XTLN, HRD, ABUN W CMT'D FOSS, TITE, NS

7:AM 6-28-13 DRLG @ 4402'

MUD CHECK



SH, GRY  
 LS, BRN, V FXTLN, HRD, NO VIS Ø, FLUOR STNG, FAIR FO ON BRK, LT TAN OIL  
 LS, BRN, V FXTLN, HRD, DNS, TITE, FEW SCT FOSS W/N, NS  
 LS, WHT, FXTLN, S O FT, LT SCT, MICRO DIL SPTS ON BRK, LT SCT STNG  
 CHALK, SHLY  
 SH, BLK, GRN/GRY, GRY, GRN RED  
 LS, WHT, F → M XTLN, S O FT, VG OIL SAT PPXTLN Ø, V SL SLO BLEED, G SAT STNG, FO N/TRAY, SCT DULL FLUOR FO, VG FO ON BRK  
 LS, TAN, V FXTLN, V DNS + HRD, TITE, NS  
 A A A A  
 CHT, WHT, SMOKE-OPAQ, FRESH  
 SH, BLK  
 LS, WHT, FXTLN, HRD, G SCT XTLN Ø, VG BLEED, DK BRN OIL W/GAS  
 LS, BRN/BUFF, FXTLN, M HRD, G EVEN FLUOR STNG W/VG OIL ON BRK, FLAT OIL SPTS, VLT BRN OIL CHALK, EVEN FLUOR  
 SH, BLK  
 LS, TAN, V FXTLN, V HRD, V DNS, TITE, NS  
 LS, AA, V CHTY  
 LS, BRN/TAN, HRD, F → M XTLN, SCT FOSS, F SCT XTLN Ø, NS  
 SH, BLK, GRY, RED, GRN  
 LS, TAN/WHT, F → CRS XTLN, LG RND'D PEBBLS W/N, CONGL, MOSTLY HRD, NO VIS Ø, NS  
 LS, WHT, CHLKY, S → HRD, FXTLN, DK BRN STNG STRKS, F FO ON BRK, 1 PC OIL FILL FRAC Ø, MOSTLY PPXTLN Ø  
 LS, BRN, V FXTLN, V DNS + HRD, TITE, V FEW FOSS, NS  
 LS, BRN, V DNS, V FXTLN, V HRD, TITE, NS  
 LS, CRM, FXTLN, V SOFT, TR SCT FLUOR STNG, G FO ON BRK, G VUGY + LG XTLN Ø, VARI SIZE FO, G G + O BLEED ON BRK, FEW W/NAT BLEED  
 LS, CRM, FXTLN, M HRD, NO APPR, NS  
 A.A.  
 LS, CHLKY, GRY/TAN, F → M XTLN, TRAY HVY W/FO, VG EDGE STNG, DK OIL FILL, PP + SML VUG Ø, SCT FLUOR STNG + FO, ABUN SLO BLEED OIL ROCKS, V GASSY  
 SH, BLK  
 SS, QTZ, WHT CMT, CLR GRNS, F SORT, SCT HARDNESS, MOSTLY SOFT VG Ø, NS  
 LS, TAN, BRN, FXTLN, V HRD, SL DNS TITE, NS  
 SS, F GRNS, LT GRN CMT, HRD, FO, W SORT  
 LS, DK + LT BRN, V FXTLN, HRD, V FEW SCT FOSS, TITE, NS  
 LS, WHT TAN, FXTLN, V HRD, DNS

1 PC/SHS NO ODR  
 NO ODR 3 SHOW CHIPS  
 NO ODR DK BRN OIL FO-CUP  
 2 PCS G ODR RAINBOW O SPTS W/ CUP  
 1 PC FLUOR OIL SPTS LT ODR  
 VIS 66 WT 9.1  
 CHLOR 3,100 LCM 2  
 FILT 9.2  
 DST #5 4448-4477  
 30.45.45.60  
 IF: 2" ISI: NR  
 FF: dead, flush FSI: NR  
 REC: 30' GOWCM (5%G, 8%O, 15%W)  
 60' OG WCM (4%G, 3%O, 32%W)  
 44,000 CHLOR  
 FP: 12-34, 37-60  
 SIP: 1051-1008  
 HP: 2248-2006  
 7:AM 6-29-13  
 DST #5 @ 4477'  
 MUD CHECK  
 VIS 47 WT 9.3  
 CHLOR 3,100 LCM 2  
 FILT 9.6  
 DST #6 4479-4526  
 30.30.30.30  
 REC: 5' M W/OIL SPKS N/TOOL  
 FP: 15-16, 16-17  
 SIP: 31-25  
 HP: 2209-2093  
 FEW FO N/TRAY LT ODR  
 7:AM 6-30-13, CFS @ 4548'  
 MUD CHECK  
 VIS 58 WT 9.0  
 CHLOR 3,100 LCM 2  
 FILT 8.0  
 HVY FO IN CUP VGASSY G BLEED  
 SH FLOOD  
 7:AM 7-1-13  
 DST #8 @ 4620'  
 MUD CHECK  
 VIS 48 WT 9.4  
 CHLOR 2,500 LCM 2  
 FILT 8.8

LS, TAN, MXTLN, SOFT, BRTL, P PPXTLN Ø, NS
LS, WHT, M → CRS XTLN, SOFT, F → G XTLN Ø, NS
LS, TAN, BRN, VFXTLN, HRD, TITE, NS
LS, TAN, WHT, FXTLN, HRD, TITE NS
CHT, OPAQ, FRESH
LS, CRM, TAN, BUFF, VFXTLN, DMS, HRD, TITE, NS
LS, TAN, CRM, F → MXTLN, HRD, TITE W/SCT PPXTLN Ø, NS
LS, WHT/CRM, MXTLN, BRTL, SCT CHLKY LS, S → M HRD, WP Ø, NS
AA.
A.A, MCR CHLKY LS
LS, BRN/TAN, MXTLN, VHRD, CRS TXT, 7Ø, NS
LS, WHT/TAN, F → MXTLN, BRTL, HRD, VP → TITE Ø, NS
LS, TAN, VFGRNR, SOFT, NO APP Ø NS
LS, VDK BRN/BLK, VFXTLN, VDMS, HRD, TITE, NS

DST#7 4524-4596  
30.45.45.60  
IF: 3/4" 151:NR  
FF: DEAD FSI:NR  
REC: 30' GOWCM  
(2%G, 3%O, 4%W)  
FP: 15-24, 26-35  
SIP: 1033-995  
HP: 2277-2122

DST#8 4594-4620  
30.45.45.60  
IF: 7" 151:NR  
FF: 7" FSI: vwk surf blo  
@ 40 min  
REC: 40' WCM 40 SPKS  
27%W, 73% M  
63' MCW - 62%W, 38%W  
187' MCW - 88%W, 12%W  
86' WEAK GIP  
36,000 CHLOR  
FP: 13-88, 91-149  
SIP: 1127-1066  
HP: 2306-2141

10 STD SHORTTRIP  
COND ≈ 1 1/2 HRS  
OUT FOR LOGS

4700

TD  
DEV 2 3/4"

CFS 4511

5" 10" 15" 20" 25"

LITH

OIL



DRILLING TIME Minutes/Foot

DEPTH

LITHOLOGY

SAMPLE DESCRIPTIONS

SOUNDS

REMARKS

Rate of Penetration Decreases