Max R. Lovely

GEOLOGIST'S REPORT

DRILLING TIME AND SAMPLE LOG

COMPANY: Ritchie Exploration
LEASE: #1 Selenke-Huelsman
FIELD: Wildcat
LOCATION: SW NW NE
SEC. 22 TWSP. 13 RGE. 31W
COUNTY: Gove STATE: KS
CONTRACTOR: Murfin #14
SPUD: 6-20-2012 COMP: 6-29-2012
RTD: 4740 LTD: 4740
MUD UP: 3395 TYPE MUD: Chem

ELEVATIONS
KB: 2946
DF:
GL: 2936
Measurements Are All From: KB

CASING
SURFACE: 8⅝" @ 226'
PRODUCTION:

ELECTRICAL SURVEYS
DI
COMP N/D

FORMATION TOPS AND STRUCTURAL POSITION

FORMATION	SAMPLE TOP	ELECTRIC LOG TOP	SUB-SEA DATUM	STRUCTURAL POSITION A	B	C
Anhydrite	2434	2432	514	515	510	520
Base Anhydrite	2457	2454	492	492	486	498
Heebner	3970	3968	-1022	-1015	-1009	-1032
Lansing	4012	4010	-1064	-1057	-1053	-1074
Muncie SH	4168	4164	-1218	-1207	-1197	-1226
Stark	4256	4251	-1305	-1296	-1287	-1322
BKC	4334	4330	-1384	-1368	-1352	-1400
Marmaton	4360	4359	-1413	-1394	-1390	-1430
Pawnee	4455	4457	-1511	-1492	-1483	-1528
Ft. Scott	4513	4510	-1564	-1545	-1541	-1588
Johnson	4584	4582	-1636	-1615	-1610	-1663
Base Johnson	4604	4599	-1657	-1634	-1627	-1684
Mississippian	4637	4623	-1677	-1667	-1661	-1734

REFERENCE WELLS FOR STRUCTURE
A Ritchie #1 Weber 15C 1875'FSL,1900 FWL 15-13-31W
B Ritchie #1Weber 21AD Unit 2460'FSL 2265'FEL 21-13-31W
C #1-27 Parsons 2310' FNL,620'FEL 27-13-31W

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	SAMPLE DESCRIPTIONS	OIL SHOWS	REMARKS
ANHYDRITE 2434 +512			
2450 BASE ANHYDRITE 2457 +489			
3600	SLTSTN, WHT, GRY		
	LS.CRM, F XTLN, SOFT, GRNY, P XTLN Ø. V FEW FOSS, NS		
	LS, TAN, CRM, M HRD, MICRO FOSS, NS		
	LS, TAN, BRN, GRY, M XTLN, V FOSS, SML FOSS, M→V HRD, P Ø. NS		
	A. A.		
	CHALK		
3700	SH, GRY, DKGRY		
	LS, GRY/WHT, M XTLN, GRNLR TXT, HRD, FOSS, NO APP Ø NS		
	SH, GRN/GRY		
TOPEKA 3752 -806	LS, GRY, WHT, M XTLN, HRD, GRNY, SL FOSS, NO Ø. NS		
	AA.		
	SL SLTY LS, GRY, SOFT, ROTTEN, P→F Ø. NS		
3800	SH, GRN, RED, GRY		
	LS, WHT/BUFF, F XTLN, SOFT, CHLKY, NS		
	LS, GRY, FXTLN, HRD, DNS, TITE, NS		
	LS, TAN, CRM, F→M XTLN, LG XTLS W/N, HRD, PXTLN Ø, NS		
	SH, GRY, BLK, RED		
	LS, CRM, VF XTLN, DNS, HRD, ABUN FOSS, F FOSS Ø, NS		
3900	LS, TAN, FXTLN, LG XTLS W/N, V FOSS, V HRD, NO APP Ø, NS		
	SH, GRY		
	LS, LT GRY, VF XTLN, DNS, V HRD, NS		
	LS, A.A, CHTY, WHT, SCT FOSS W/N		
	LS, TAN/CRM, F XTLN, GRNLR TXT, SL FOSS, V HRD, V SL GRNLR Ø, NS		
			MUD CHECK VIS 45 WT 9.2 CHLOR 2,000 LCM 5 FILT 6.8
HEEBNER 3970 -1024	SH, BLK, DK GRY		
	LS, TAN/CRM, FXTLN, SL CHLKY, SOFT, NS		
	SH, GRY		
TORONTO 3994 -1048	LS, WHT, VF XTLN, LG XTLS W/N, HRD, TITE, NS		7:AM 6-24-2012 DRLG @ 3992'
4000	LS, CRM, M XTLN, SOFT, ROTTEN, G XTLN Ø, ? SCT DD O STNG, NO ODOR, NO FLUOR		
	SH, GRY		
LANSING 4012 -1066	LS, TAN, VFXTLN, V OOL, W CMT'D OOLS, TITE, SCT REXTL'D FRACS, NS		
	LS, CRM, BUFF, FXTLN, SML OOL + FOSS, CRUMBLY, P FOSS Ø, NS		
	CHALK		
'C'	LS, CRM/WHT, FXTLN, V HRD, V FOSS, W CMT'D, TITE, NS		
	LS, WHT, F→VF XTLN, FOSS, S→M HRD, BRTTL, SL FOSS Ø NS		
'D'	CHALK		
	LS, TAN, VF XTLN, HRD, LG XTLS W/N, FOSS, NO APP Ø, NS		
	LS, CRM, VF XTLN, M HRD, V FOSS, REXTL'D FRAC'S, NO Ø, NS		
	SH, DK GRY		
	CHT, PEACH, SHARP, OPAQ, FRESH		
'E'	LS, WHT, CHTY, F→M XTLN, BRTTL, F→G INT XTLN Ø, NS		
4100	SH, GRY, SL SNDY		
'F'	LS, RUST/WHT, M→LG XTLS, BRTTL, F XTLN Ø, NS		
'G'	LS, TAN, GRY, VF XTLN, V HRD, DNS, TITE, V FEW SCT VUGS, NS		
	SH, GRY, DK GRY, BLK		
	SH, GRN, GRY		
	LS, TAN, VF XTLN, V HRD, Pcs RE XTL'D, NO Ø, NS		
	CHALK		
	LS, BUFF, F→M XTLN, SUCR TXT, V HRD, NO FOSS, NS		DST#1 4198-4251 30.45.45.60 IF: 4"→3¼" ISI: NR FF: DEAD FSI: NR REC: 10' OCM 5%O 90' OSM 100%M 120° FP: 72-73, 76-77 SIP: 1049-1043 HP: 2143-2074
MUNCIE SH 4168 -1222	SH, GRY, GRN		
	LS, CRM, F XTLN, DNS, HRD, V FEW FOSS, TITE, NS		
'H'	LS, WHT, VF XTLN, V HRD, V DNS, TITE, NS		
4200	LS, WHT, A.A.		
'I'	LS, CRM, VF XTLN, SL SCT DD OIL STN'D CHLK, SL PP M BRN FO ON BRK	DD OIL STNG SCT PP FO	MUD CHECK VIS 58 WT 9.3 CHLOR 2,500 LCM 3 FILT 6.4
	LS, BUFF, VF XTLN MATRIX, V OOL, SCT M BRN DD O STNG, P→F SHO FO ON BRK, NO ODOR, P INT OOL Ø, CHT CMT	SCT FLUOR	
'J'	" FEW SCT FLUOR O SPTS, INCR O SHO W/ DEPTH, FEW GAS BBLS	GAS BBLS	7:AM 6-25-2012 CIRC @ 4230'
	LS, WHT, LG XTLS W/N, CHALK, SOFT, CRUMBLY, F→G Ø, NS		
DEV 1½° STARK 4256 -1310	SH, BLK		- SHORT TRIP 25 STNDS STRAP 4283.24 BOARD 4283.61 SHORT .37
K	LS, BRN, VF XTLN, V DNS, TITE, FLUOR O STN'D FRAC'S, FLUOR O SPTS ON FRAC, NO ODOR	V LITE OIL	
	LS, GRY, VF XTLN, M HRD, FLUOR STN STRKS, MICRO FLUOR FO, THIN ZONE, WISP ODOR	RAINBOW 1 FLUOR FO SPOT	
	LS, CRM, GRY, VF TITE MATRIX, M→LG OOLS, W CMT'D OOLS, V HRD, TITE Ø, NS	V LT OIL	
	LS, GRY, VF XTLN, HRD, DNS, TITE, V FEW FOSS, NS		7:AM 6-26-2012 COND FOR DST2 @ 4290'
HUSHPUCKNEY 4296 -1350 4300	SH, BLK, GASSY	GASSY	MUD CHECK VIS 71 WT 9.2 CHLOR 3,300 LCM 4 FILT 7.6
'L' 4301-1355	LS, BRN/WHT, CRS XTLN, M HRD, NO FOSS, BRTTL, G XTLN Ø NS		
	LS, TAN/WHT, FXTLN, DNS, M HRD, TITE, Pcs SCT OOLS, NS		DST#2 4254-4290 30.30.30.30 REC: 5' M W/O SPTS 117°
	LS, GRY, VF XTLN, DNS, M HRD, TITE, NS		FP: 19-20, 20-21 SIP: 29-1563 (PACKER) HP: 2117-2068
BKC 4334 -1388	SLT STN, GRY		
	SH, GRY		
MARMATON 4360 -1414	LS, WHT/GRY, VF XTLN, V DNS, SCT VARI SIZE FOSS NS		
	SH, LT GRY		
	LS, BRN, LT BRN, F XTLN, V HRD, V DNS, SL OPAQ, FOSS, TITE NS		
ALTAMONT 4392 -1446 4400	LS, WHT, F XTLN, M HRD, BRTTL, NO VIS Ø, NS		
	SH, GRY, FISSLE		
	SH, GRY, GRN, BURG		MUD CHECK VIS 57 WT 9.3 CHLOR 3,500 LCM 3 FILT 8.8
	LS, CRM/TAN, F→M XTLN, HRD, SL FOSS Ø, NS		
	SH, GRY/GRN, LS PBBLS W/N		
PAWNEE 4455 -1509	LS, BRN, F→M XTLN, SL GRNLR, TEXT, HRD, TITE, NS		7:AM 6-27-2012 DRLG @ 4455'
	LS, GRY/BRN, F XTLN, DNS, HRD, TITE, NS		
	SH, GRY		
MYRIC 4486-1540	LS, WHT, F XTLN, HRD, DNS, W CMT'D FOSS, TITE, NS		
4500			
	SH, GRY		
FT SCOTT 4513 -1563	LS, BUFF, TAN, GRY, F XTLN, BRTTL, SL DNS, FOSS, FXTLN Ø. NS		
	LS, TAN, VF XTLN, DNS, M HRD, NO VIS Ø. NS		
CHEROKEE SH 4538 -1592	SH, GRY		
	LS, TAN, FXTLN, SOFT, F→G INT XTLN Ø, NS		
	LS, BUFF, FXTLN, SL CHLKY, LT SCT O STNG, NO ODOR, (1 Pc) THIN ZONE		
	LS, GRY, VF XTLN, DNS, HRD, TR (1 Pc) BLK O EDGE STNG, NO ODOR		
	SH, RED, GRY		
	SH, GRY		
JOHNSON 4584 -1638	LS, BUFF, F XTLN, S→M HRD, GRNY, SL CHLKY, F XTLN Ø NS		
4600	LS, WHT, BUFF, F→M XTLN, SOFT, SCT BRN DD O STNG, FILMY STN, FEW MICRO FLUOR OIL SPTS ON BRK	LT ODOR	MUD CHECK VIS 66 WT 9.4 CHLOR 3,000 LCM 4 FILT 7.6
BASE JOHNSON 4604 -1658	SH, VARICOLOR, MUSTARD		7:AM 6-28-2012 DST#3 @ 4607'
	SS, CLR LG ANG GRNS, UNCONSOL RND GRNS, P CMT, VG Ø, SCT NS		
	SS, CLR SML→F GRNS, WHT CMT NS		DST#3 4562-4607 30.30.30.45 IF: WK SURF BLO ISI: NR FF: DEAD, FLUSH, 5"→4½" FSI: NR REC: 185' M FP: 24-26, 28-117 SIP: 680-967 HP: 2335-2220
	SS, CLR SML→F GRNS, GRN CMT, G GRNLR Ø, DK BRN SCT STRKS		
	SH, GRY, GRN, Pcs V SLTY		
MISS 4637 -1691	LS, WHT, F XTLN, S→M HRD, Pcs V FOSS, TITE, NS		
	CHT, ORANGE		
	LS, WHT, VF XTLN, HRD, DNS, V FEW FOSS, TITE, NS		
	LS, GRY, VF XTLN, HRD, DNS, TITE, NS		SH FLOOD
	LS, WHT, F XTLN, BLK MINS W/N, DNS, HRD, TITE, NS		
	LS, A.A.		
	CHT, WHT, BONE, PEACH, OPAQ		
	LS, WHT, VFXTLN, V DNS, V HRD, SL FOSS, TITE, NS		
4700	LS, LT GRY, SCT OOLS, V HRD, DNS, TITE, NS		
	LS, TAN, VF XTLN, VW CMT'D LG OOLS, TITE, NS		
	LS, TAN, VFXTLN, V DNS, V HRD, NO FOSS, NO APP Ø, NS		
	LS, WHT, VF XTLN, DNS, HRD, SCT STYL'S, NS		TD @ 4740' 10 STAND SHORT TRIP @ TD
	LS, CRM, BUFF, FXTLN, SOFT, BRTTL, V FOSS, VP XTLN Ø, NS		

DRILLING TIME Minutes/Foot · Rate of Penetration Decreases · DEPTH · LITHOLOGY · SAMPLE DESCRIPTIONS · OIL SHOWS · REMARKS