API #15-023-21455

Saman Sharifaie

Petroleum Geologist

GEOLOGIST'S REPORT

DRILLING TIME AND SAMPLE LOG

WELL NAME:	Mc Elwain 13-22
LOCATION:	SW-NW-NW-SW
COUNTY:	Gove
STATE:	Kansas
OPERATOR:	Ritchie Exploration, Inc.
CONTRACTOR:	Discovery Drilling
SPUD:	10/24/16
COMP:	10/29/16
TOTAL DEPTH:	RTD = 4395' LTD = 4394'
ELEVATION:	GL = 2777' KB = 2787'
CASING:	Surface 8 5/8" @ 215' Production 4 1/2" @ 4394'
MUD:	Chemical
ELECTRICAL SURVEY:	Nomac
DRILLING TIME & SAMPLE LOG:	Geo-Tech
GEOLOGICAL SUPERVISION FROM:	3700'
GEOLOGICAL SUPERVISION TO:	RTD
SAMPLES SAVED FROM:	3700' to RTD
SAMPLES SAVED TO:	4394'
SAMPLE TYPE:	Washed & Dried
SAMPLE INTERVAL:	10'
DEPTH UNITS:	Feet
DRILLING TIME UNITS:	Minutes
DRILLING TIME RECORDED:	Every Minute
GAS DETECTOR:	Nomac
GAS UNITS:	Units
MUD PROPERTIES:	Mike Ramsey
DRILLING CONTRACTOR:	Discovery Drilling Rig #4
TOOLPUSHER:	Jason Alderson
DRILLER:	Various

Gl - 2777'	Ritchie Exploration, Inc.
Kb - 2787'	Mc Elwain 13-22
Pbtd - 4394'	SW-NW-NW-SW
Td - 4395'	Gove County, Kansas
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REMARKS: Due to her shows of oil and the positive DST results of the Dreyer and LKC "D" zones, it is recommended and agreed upon by all parties that production casing be set to further evaluate these zones.

Respectfully Submitted,

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Tops have been adjusted to electric logs.

Curve Track 1
ROP (min/ft)

Curve Track 2
Gas Units
Total C1(Units)
C2(Units)
C3(Units)
C4(Units)
C5(Units)

Formation Tops: Topeka 3597 (-810); Heebner 3812 (-1025); Toronto 3832 (-1045); Lansing-Kansas City 3857 (-1070); Muncie Creek 4051 (-1264); Stark 4084 (-1297); Marmaton 4091 (-1304); Pleasanton 4111 (-1324); Fort Scott 4158 (-1371); Cherokee Sh 4184 (-1397); Mississippian 4241 (-1454); Kinderhook 4280 (-1493); Viola 4291 (-1504); Simpson Sh 4346 (-1559); Arbuckle 4394 (-1607)

Depth Scale: 100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1100, 1200, 1300, 1400, 1500, 1600, 1700, 1800, 1900, 2000, 2100, 2200, 2300, 2400, 2500, 2600, 2700, 2800, 2900, 3000, 3100, 3200, 3300, 3400, 3500, 3600, 3700, 3800, 3900, 4000, 4100, 4200, 4300, 4400, 4500

Lithology

Geological Descriptions

Engineering Data

Anhydrite 3278 (+491)

Base Anhydrite 3316 (+49)

DAILY PENETRATION
10/24/16 - 0 ft
10/25/16 - Spudded at 2:45 PM
10/26/16 - Drilling at 375'
10/27/16 - Drilling at 2400'
10/28/16 - Drilling at 3500' DSM'
11/01/16 - Drilling at 4140'
11/02/16 - Drilling at 4214'
11/03/16 - Drilling at 4350'
11/04/16 - Drilling at 4402'
11/05/16 - Drilling at 4395'
11/06/16 - Drilling at 4395'
11/07/16 - Drilling at 4395'
11/08/16 - CFS at 4700'

Sh, grey/green, gray, soft, to tr grey. Trace barite f.c.

Sh, grey/green, tr sh, v. crinoidal fossils, recryst. ss.p.ss, dns, slty, tr gyp, v.sl. oil.

Ls, crinoidal, fos, frosts, Dol, pr.xtline & ms.p.xtline, dns, sh ip ls, tr frosted ss.p.ss, v.sl. oil, fair dull yellow fluor, slow pale yellow cut, fair yellow ring, no fluor, no odor, MS2.

Ls, v.p.xtl, pr.xtline, cr.p.ss, sucrosy, MS2, 0 dns, grey/pink, v.sl. oil, no fluor, no odor.

Ls, v.p.xtline, dns, MS0, dns, sdy, dns, tr ch, v.sl. oil, no fluor, no odor, spots, v.sl. oil, no fluor, MS2.

Ls, grey/pink, dns, slty, dns, pr P

Ls, crinoidal, dns, slty, tr ch, fossils, MS0, dns, slty, tr ch.

Ls, dk.orange/brown, slty, tr gyp, dns, MS0

Ls, crinoidal, v.fr.xtline, frosts, pr.xtline, dns, slty, dns, sdy, dns, tr ch, v.sl. oil, no fluor, no odor, v.p.xtl, pr.xtline, pr.p.ss, dns, slty, tr ch, v.sl. oil, MS0

Ls, v.p.xtline, dns, MS0

Sh, dk.orng, gray

Topeka 4597 (-1810)

Ls, v.p.xtline, dns, Dolo, tr ch, v.sl. oil, no fluor, no odor, v.p.xtline, dns, slty, tr ch, v.sl. oil, no fluor, no odor, v.p.xtline, dns, slty, tr ch, v.sl. oil, no fluor, no odor, MS0

Deer Creek 4658 (-1871)

Ls, v.p.xtline, dns, slty, tr ch, v.sl. oil, no fluor, no odor, v.p.xtline, dns, slty, tr ch, v.sl. oil, no fluor, no odor, v.p.xtline, dns, slty, tr ch, v.sl. oil, no fluor, no odor, MS0

Ls, dns, slty, tr ch, v.sl. oil, no fluor, no odor, MS0

Ls, v.p.xtline, dns, slty, tr ch, v.sl. oil, no fluor, no odor, MS0

Ls, v.p.xtline, dns, slty, tr ch, v.sl. oil, no fluor, no odor, MS0

Ls, v.p.xtline, dns, slty, tr ch, v.sl. oil, no fluor, no odor, MS0

LeCompton 4749 (-1962)

Ls, v.p.xtline, dns, slty, tr ch, v.sl. oil, no fluor, no odor, v.p.xtline, dns, slty, tr ch, v.sl. oil, no fluor, no odor, v.p.xtline, dns, slty, tr ch, v.sl. oil, no fluor, no odor, MS0

Ls, v.p.xtline, dns, slty, tr ch, v.sl. oil, no fluor, no odor, MS0

Ls, v.p.xtline, dns, slty, tr ch, v.sl. oil, no fluor, no odor, MS0

Ls, v.p.xtline, dns, slty, tr ch, v.sl. oil, no fluor, no odor, MS0

Lansing 4287 (-2500)

Ls, v.p.xtline, dns, slty, tr ch, v.sl. oil, no fluor, no odor, v.p.xtline, dns, slty, tr ch, v.sl. oil, no fluor, no odor, v.p.xtline, dns, slty, tr ch, v.sl. oil, no fluor, no odor, MS0

Ls