API #15-023-21548

Saman Sharifaie

Petroleum Geologist

API #15-023-21548

GEOLOGIST'S REPORT

DRILLING TIME AND SAMPLE LOG

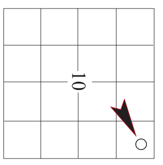
COMPANY Murfin Drilling Co., Inc.
LEASE Helene #1-10
FIELD Wildcat
LOCATION 500' FNL & 660' FEL
SEC 10 TWSP 3S RGE 39W
COUNTY Cheyenne STATE Kansas
CONTRACTOR Murfin Drilling #3
SPUD 03/17/21 COMP 03/27/21
RTD 5200' LTD 5196'
MUD UP 3650' TYPE MUD Chemical
SAMPLES SAVED FROM 3980' TO RTD
DRILLING TIME KEPT FROM 3980' TO RTD
SAMPLES EXAMINED FROM 3980' TO RTD
GEOLOGICAL SUPERVISION FROM 3680'
REFERENCE WELL MDCI - Jessie Martin #1

ELEVATIONS
KB 3404'
DF
GL 3399'
Measurements Are All From Kelly Bushing

CASING
CONDUCTOR
SURFACE 8-5/8" at 305'
PRODUCTION N/A

ELECTRICAL SURVEYS
CND; DIL; MEL; Sonic
Midwest Wireline

Formation	Sample Tops	E-log Tops	Struct Pos.
Anhydrite	3265 (+139)	3263 (+141)	+5
Base Anhydrite	3294 (+110)	3289 (+115)	+5
Topeka	4098 (-694)	4084 (-680)	-5
Oread	4232 (-828)	4220 (-816)	+1
Lansing	4294 (-890)	4294 (-890)	-4
Mound City	4602 (-1198)	4587 (-1183)	+3
Ft Scott	4736 (-1332)	4717 (-1313)	+8
Oakley	4798 (-1394)	4799 (-1395)	+7
Mississippi	5104 (-1700)	5099 (-1695)	



REMARKS Due to poor shows of oil in several potential pay zones and negative DST results, it is recommended and agreed upon by all parties that this well be plugged and abandoned.

Respectfully Submitted,

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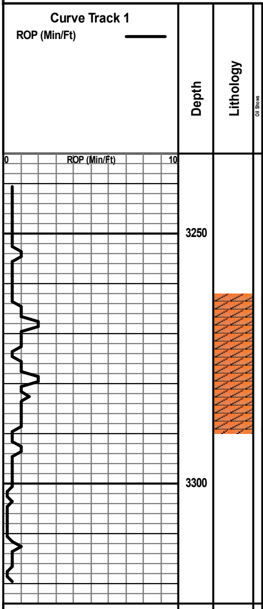
Petroleum Geologist

*Tops have been adjusted to electric logs

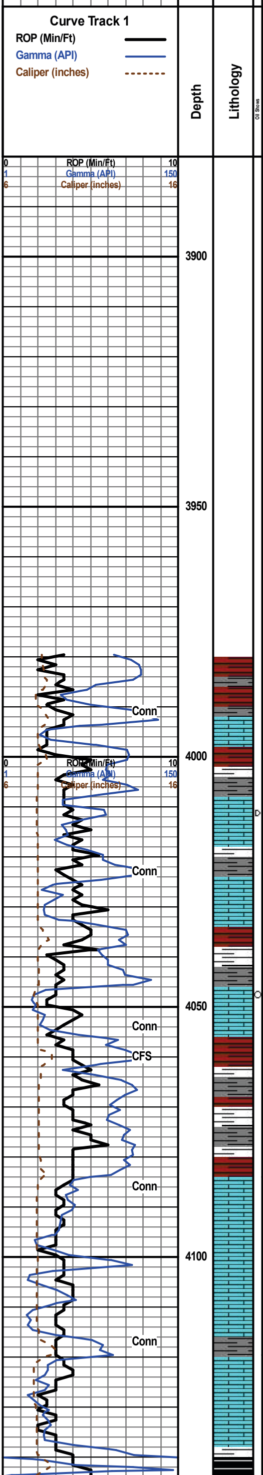
Curve Track 1	Depth	Lithology	Geological Descriptions	Engineering Data



Anhydrite 3263 (+141)

Base 3289 (+115)

Curve Track 1	Depth	Lithology	Geological Descriptions	Engineering Data



Pipe Strap @ 3895': 0.46' Short to Board
Deviation Survey: ½°

Morgan Mud @ 3895'
Wt: 8.6
Vis: 69
Wl: 6.4
Chl: 600
LCM: 3#

DAILY PENETRATION
@ 7:00 AM
03/17/21 - Spudded at 11:30 AM
03/18/21 - Drilling at 740'
03/19/21 - Drilling at 2405'
03/20/21 - Drilling at 3895'
03/21/21 - Drilling at 4185'
03/22/21 - Drilling at 4340'
03/23/21 - Testing at 4440'
03/24/21 - Testing at 4570'
03/25/21 - Drilling at 4770'
03/26/21 - Drilling at 5125'

Sh., brn/gry/orng, pred slty & pt dns, mdy/grny IP

Ls., tan/crm/brn, mott, fn xln, foss, pr intpart por, pt dns, brit, calc, sbang, n/s

Sh., dk orng/brn/gry, pred slty & pt dns, brit to sli argil, Tr grny/mdy

Ls., crm/tan/varic, mott, fn xln, pr pp intpart & xln por, dns to sub-chky, hd to brit, calc IP, Tr pyrc, shly, rr dd blk spkld stn, lt pt sat, gils to flky, no odr, NSLO

Sh., gry/lt gn, slty, calc

Ls., crm/tan/varic, mott IP, micr-fn xln, foss, Tr Oolc, no-pr vis por, dns to sub-chky, calc cmt, shly IP, n/s

Sh., brn/orng/gry/lt gn/purp, pred slty

Ls., crm/tan, vf-fn xln, foss, pr pp intOolc por, dns to chky, fri to brit, calc cmt, Tr pyrc, scat blk stn, pred dd, sptd to ptchy, try to asphc, rr (2 spts) slw bld pp FO, no odr, VSSFO

Sh., brn, slty, pt dns, brit

Sh., brn/gry/dk orng/lt gn/varic, slty

Sh., brn/dk orng/gry/lt gn, pred slty & calc, intbdd crm Ls

Topeka 4084 (-680)

Ls., crm/wht/brn/lt gry, mott IP, micr-fn xln, Tr foss, Tr pr pp intpart & xln por, pred NVP, dns to sub-chky, calc cmt, sbang to sli blky, Tr pyrc, shly, n/s

Ls., crm/tan, micr-med xln, Tr foss, no-pr vis por, dns to brit, v calc, pred rexlzd & suc, abund Chk, n/s

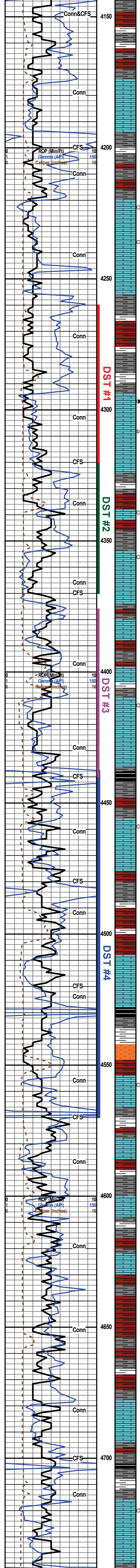
Ls., crm/lt gry, sing, micr-fn xln, Tr pr pp intfoss & xln por, pt dns to chky, fri, calc IP, n/s

Deer Creek 4120 (-716)

Ls., tan/lt brn/lt gry, sing, micr-vf xln, rr foss, NVP, dns to sub-chky, hd to brit, calc IP, blky to sbang, n/s

Ls., a.a, Tr pr intxln por

Sh., blk carb



Sh., brn/gry/dk orng/lt gn, pred slty & calc, gmy IP

Sh., brn/orng/gry, slty to mdy

LeCompton 4175 (-771)

Ls., crm/tan, sing, micr-fn xln, rr foss, Tr pr intxln por, pred NVP, dns to chky, hd to fri, Tr pyrc, blky to sbang, shly IP, n/s

Ls., crm/tan/lt gry, micr-vf xln, rr foss, NVP, dns to chky, hd to brit, Tr calc, ang to blky, n/s

Sh., gry/brn/lt gn/orng, pt dns, Tr pyrc

Sh., gry/brn/lt gn/orng, slty to sndy IP

Oread 4220 (-816)

Ls., crm, vf-fn xln, foss, pr pp intpart & Oolc por, pt dns to sub-chky, fri, calc IP, scat blk sptd stn, lt sat, pred dd/gils, try to asphc IP, rr pp FO bld (pred on brk), irid IP, Tr dl min fluor, no cut, no odr, VSSFO

Ls., brn/crm, sing, micr-vf xln, rr foss, no-pr vis por, dns/hd to fri, Tr sub-chky, rr blk sptd stn, gils to asphc, no odr, NSFO

Ls., lt brn/crm/tan, sing, micr xln, NVP, dns to chky, hd to brit, Tr pyrc, blky to sbang, n/s

Sh., brn/dk orng, slty & Sh., gry/blk carb

Sh., brn, slty, calc

Sh., gry/lt gn, carb IP, Tr mica, Tr gmy

Lansing 4294 (-890)

Ls., crm, fn xln, foss, pr-fr intpart & Oolc por, pt dns to sub-chky, fri to brit, fr amt dk brn/blk stn, sptd to ptchy, lt-hvy sat, pred try to flky, gils IP, abund FO bld, rr G Bubls, irid OCW, yl fluor, fr cut, gsy odr, FSFO

Ls., crm/brn, mott IP, micr-fn xln, foss IP, Tr pr intpart & xln por, pred NVP, dns to fri, blky to sub-rndd, Tr dd blk stn, sptd to spkld, Tr ptchy, lt pt sat, gils, no odr, NSLO

Ls., tan/brn/crm, sing, vf xln, NVP, dns, hd to sli brit, sbang to blky, Tr sub-chky, n/s

Sh., gry/lt gn/brn, slty IP, pt dns

Ls., lt brn/crm, vf-fn xln, pr intfoss & xln por, pt dns, brit, calc, scat dk brn/blk sptd stn, lt-mod pt sat, try to asphc IP, scat pp FO, irid IP, fnt odr, SSFO

Sh., brn/dk orng, pt dns, slty & Sh., gry, fiss IP

Ls., crm/wht/brn, fn xln, foss, pr-fr pp intpart & micr Oolc por, pt dns to sub-chky, fri to brit, pyrc IP, scat blk/dk brn sptd stn, sub-sat sat, try to asphc IP, slw bld pp FO, irid IP, rr G Bubls, fnt odr, SSFO

Ls., crm/tan, fn xln, Tr foss, no-pr vis por, dns to sub-chky, hd to fri, calc IP, sli blky, n/s

Sh., gry/orng/brn/lt gn/varic, pred pt dns, Tr gmy

Ls., a.a, incr dns & calc, Tr pyrc, Tr Cht, n/s

Sh., brn/orng/gry, slty, pt dns

Ls., crm/tan, mott IP, micr-vf xln, Tr foss, no-pr vis por, dns, calc, shly, n/s

Sh., gry/lt gn, fiss IP

Ls., crm/tan, fn xln, foss IP, pr-fr intpart & xln por, pt dns to chky, calc, fri, chty IP, Tr blk asphc stn, ptchy, no odr, NSFO

Ls., a.a, gry IP, abund Chk, shly, n/s

Ls., brn/gry/crm, sing, vf xln, NVP, dns, blky to sbang, calc IP, incr Sh abund, n/s

Sh., dk gry/blk carb

Sh., brn/lt gry, slty, calc

Ls., crm/wht, sing, micr-fn xln, Tr foss, Tr pr intxln por, pred NVP, dns to sub-chky, blky to sbang, rr blk ptchy stn, try to gils, no odr, NSFO

Ls., crm/tan, sing, micr-vf xln, foss/Oolc IP, Tr pr intxln & frac por, pred NVP, dns to chky, calc cmt, blky to sbang, Tr pyrc, n/s

Sh., lt gry/brn, slty, calc

Sh., dk orng/brn/gry/lt gn, pred slty to gmy

Sh., brn, slty, calc

Ls., crm/brn/lt gry, fn xln, foss IP, pr-fr intxln & pp intpart por, pt dns to sub-chky, fri IP, calc IP, n/s

Ls., tan/crm/brn, sing, micr-fn xln, NVP, dns to sub-chky, calc IP, sbang to blky, n/s

Stark 4529 (-1125)

Sh., gry/blk carb

Sh., brn/lt gn, slty, calc, fri to argil

Ls., crm/tan, fn xln, Tr pr intfoss por, pred NVP, dns to sub-chky, hd to brit, calc IP, rr med brn/blk stn, sptd to spkld, lt pt sat, Tr slw bld irid pp FO, v fnt odr, VSSFO

Sh., brn/gry/lt gn, pt dns, brit, Tr pyrc

Ls., crm/tan/lt gry, fn xln, Tr pr pp intpart & foss por, pred NVP, dns to sub-chky, brit, calc cmt, sbang to sli blky, n/s

Mound City 4587 (-1183)

Sh., brn/gry/dk orng/lt gn, slty IP, pt dns

Sh., gry/lt gn, fiss

Lenapah 4600 (-1196)

Ls., tan/lt gry/crm, fn-med xln, Tr pr intfoss & xln por, pt dns to sub-chky, calc IP, rexlzd, suc text, shly IP, scat op orng Cht, n/s

Sh., brn/gry/lt gn, pt dns, brit

Marmaton 4623 (-1219)

Ls., crm/gry/tan, mott, vf-fn xln, pr intxln por, pt dns, calc IP, 20-30% w/ suc txt, Tr chky, sub-rndd to blky, brit to fri, shly, scat Cht, n/s

Sh., gry/brn/orng/lt gn, slty IP, pt dns, Tr mdy

Sh., brn/dk orng, slty to gmy

Sh., dk orng/brn, gmy to slty

Sh., brn/gry/lt gn, slty, brit to sli argil

Ls., brn/crm/lt gry, fn-med xln, Tr foss, pr intxln por, pt dns, suc, fri to sli argil, sub-rndd, n/s

Ls., brn/crm, fn xln, no-pr vis por, dns to sub-chky, hd to fri, sli suc txt, n/s

Sh., gry/brn/orng/lt gn, pred slty, fiss IP, pyrc IP

Sh., gry/lt gn, slty to sli sndy IP, calc

Ft Scott 4717 (-1313)

Ls., crm/brn, mott IP, vf-fn xln, Tr pr intfoss & xln por, pt dns to chky, calc IP, Tr pyrc, shly, Tr dk brn/blk ptchy stn, try to gils, rr irid pp, no odr, VSSFO

Ls., crm/brn/tan/lt gry, micr-fn xln, Tr pr intxln por, pred NVP, dns to sub-chky, rexlzd/suc IP, Tr pyrc, n/s

Morgan Mud @ 4200'
Wt: 8.9
Vis: 55
Wl: 6.8
Chl: 600
LCM: 2#

DST #1
(LKC A)
4260'-4320'

30-60-Pulled tool
IF: Blow built to ¼"
FF: No blow
Rec: 120' M (100%M)

IFP: 78 - 77
FFP: 80 - 79
ISIP: 1013
FSIP: N/A
IHP: 2095
FHP: 2068
BHT: 128º

DST #2
(LKC B-D)
4320'-4370'

30-60-Pulled tool
IF: Blow built to ½"
FF: No blow
Rec: 5' M (100%M)

IFP: 21 - 22
FFP: 26 - 24
ISIP: 637
FSIP: N/A
IHP: 2143
FHP: 2089
BHT: 126º

Morgan Mud @ 4369'
Wt: 9.0
Vis: 64
Wl: 6.0
Chl: 600
LCM: 3#

Morgan Mud @ 4440'
Wt: 9.2
Vis: 62
Wl: 6.0
Chl: 600
LCM: 3#

Deviation Survey @ 4440': ½º

DST #3
(LKC G)
4376'-4440'

30-60-Pulled tool
IF: Blow built to ¾"
FF: No blow
Rec: 5' M (100%M)

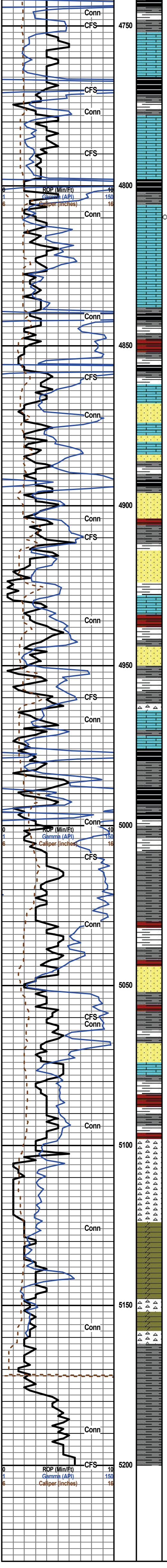
IFP: 23 - 23
FFP: 28 - 26
ISIP: 1337
FSIP: N/A
IHP: 2163
FHP: 2038
BHT: 127º

DST #4
(LKC H-K)
4438'-4570'

30-60-30-60
IF: Blow built to ¾"
FF: Surface blow
Rec: 5' M (100%M)

IFP: 26 - 29
FFP: 34 - 37
ISIP: 1302
FSIP: 1202
IHP: 2224
FHP: 2193
BHT: 132º

Morgan Mud @ 4570'
Wt: 9.3
Vis: 62
Wl: 6.4
Chl: 600
LCM: 2#



Sh., gry/blk carb, pyrc

Ls., crm/tan, sing, micr-vf xln, Tr foss, Tr pr pp intpart & xln por, dns to sub-chky, calc IP, hd to brit, sbang to blky, Tr pyrc, n/s

Excello 4766 (-1362)

Morgan Mud @ 4782'
Wt: 9.2
Vis: 53
Wl: 6.4
Chl: 600
LCM: 3#

Sh., blk carb, pyrc

Breezy Hill 4778 (-1374)

Ls., crm/tan, micr-fn xln, foss IP, Tr pr intpart por, pred NVP, dns to brit, calc, blky to sbang, pyrc IP, Tr Cht, n/s

Ls., crm/brn/tan, vf xln, Tr foss, no-pr vis por, dns to fri, calc IP, Tr Cht, n/s

Oakley 4799 (-1395)

Sh., gry/blk carb

Celia 4806 (-1402)

Ls., tan/crm/brn, vf-fn xln, foss IP, Tr pr intpart & xln por, pred NVP, dns to sub-chky, calc IP, hd to sli brit, ang to blky, rr (3-4 pcs) med brn/blk stn, spkld to sptd, lt pt sat, gils IP, no odr, NSFO

Ls., a.a, calc, chky IP, scat Cht, n/s

Ls., crm/tan/brn, vf-fn xln, Tr foss, no-pr vis por, dns to sub-chky, calc cmt, Tr Cht, n/s

Ls., a.a, Tr pyrc, rr glauc pcs, shly IP

Sh., gry/brn/lt gn/varic, slty IP, pt dns, Tr blk carb

Ls., tan/crm, micr-vf xln, NVP, dns, blky, n/s

Sst., crm/clr/varic, fn-crs gr, mod srtd, pr intgran por, pt dns, consl, brit, calc, shly, n/s

Ls. & Sd., a.a

Sh., gry/lt gn/varic, fiss IP, sndy IP

Sst., crm/tan, fn gr, srtd, pr intgran por, pt dns, brit, sub-rndd to sli blky, pyrc, n/s

Sh., gry/brn/lt gn/varic, slty to grny

Sst., crm/clr/varic, fn-crs gr, pr srtd, no-pr por, pt dns, consl, scat qtz, shly, n/s

Ls., crm/wht/tan, vf-fn xln, Tr foss, no-pr vis por, dns to sub-chky, calc IP, scat Cht, n/s

Sh., brn/lt gn/gry/varic, slty IP, scat cong Sd a.a

Sh., purp/brn/lt gn/varic, Tr crm Ls, scat Sd & Cht

Ls., brn, vf xln, Tr foss, NVP, dns, calc IP, blky, scat cong/shly Sd, n/s

Sh., gry/varic/blk carb, slty to sndy IP

Sh., varic, sndy & calc IP

Sh., gry/lt gn/varic, fiss IP, slty IP, Tr glauc

Sh., dk gry, carb, sli slty

Sh., varic, slty, scat Sd

Sst., wht, vf-med gr, mod srtd, pr intgran por, pt dns, hd to brit, glauc, pyrc IP, n/s

Sh., gry/purp/lt gn/orng/varic, sndy IP

Sst. & Sh., a.a, Tr crm Ls

Sh., gry/lt gn/brn/orng, slty IP, pt dns, brit

Sh., varic, slty & calc IP

Mississippi 5099 (-1695)

Cht., orng/wht/yl/clr, sli wthd, Tr pr intxln & frac por, pred NVP, op to transl, pyrc IP, n/s

Cht., a.a, incr frs, trip IP, calc IP, n/s

Dol., lt gry, fn xln, pr intxln por, pt dns, brit, suc txt, sub-rndd to sli blky, n/s

Morgan Mud @ 5152'
Wt: 9.2
Vis: 53
Wl: 6.4
Chl: 600
LCM: 2#

Dol., a.a, pred crm/tan, scat Chk, incr Sh abund, n/s

Dol. & Cht., a.a

Sh., gry/brn/orng/purp/lt gn, slty to sndy IP

Sh., gry/brn/varic, pt dns, brit

Sh., varic, pt dns, pyrc IP, sli hd to brit

RTD 5200 (-1796)

Deviation Survey @ 5200': ½º