

# Saman Sharifaie

## Petroleum Geologist

### GEOLOGIST'S REPORT

#### DRILLING TIME AND SAMPLE LOG

COMPANY **Martin Drilling Co., Inc.**  
LEASE **Rate - # 2-32**

FIELD **Rate**  
LOCATION **1665' FSL & 970' FEL**  
SEC **32 TWP 2S RGE 41W**  
COUNTY **Cheyenne STATE Kansas**  
CONTRACTOR **Martin Drilling #14**  
SPUD **11/1/13 COMP 11/22/13**  
MUD UP **5450' LTD 5451'**  
TYPE MUD **Chemical**

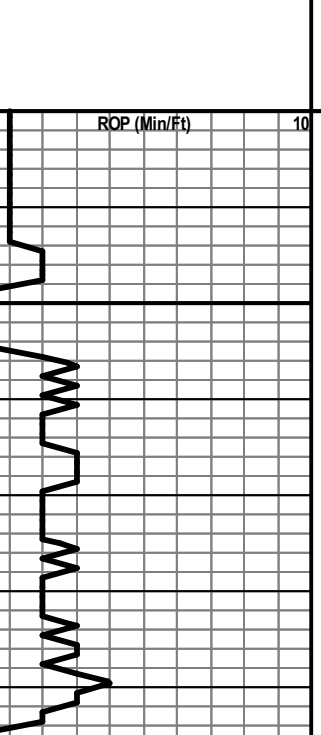
SAMPLES SAVED FROM **4240' TO RTD**  
DRILLING TIME KEPT FROM **4240' TO RTD**  
SAMPLES EXAMINED FROM **4240' TO RTD**  
GEOLOGICAL SUPERVISION FROM **3940'**  
REFERENCE WELL **James OWWO #6-32**

ELEVATIONS  
KB **3682'**  
DF \_\_\_\_\_  
GL **3672'**  
Measurements Are All From Kelly Bushing

CASING  
CONDUCTOR \_\_\_\_\_  
SURFACE **8-5/8" at 349'**  
PRODUCTION **5-1/2" at 544'**

ELECTRICAL SURVEYS  
CND; DIL; MEL; SWIC  
Pioneer Wellfire

Formation	Sample Tops	E-log Tops	Strat Pos.
Anhydrite	3546 (+136)	3557 (+125)	-8
Basal Anhydrite	3594 (+88)	3595 (+87)	-7
Timaska	4341 (+659)	4345 (+663)	-7
Orestid	4460 (+778)	4462 (+780)	-7
Urbid	4531 (+849)	4537 (+853)	-7
Stark	4758 (+1076)	4762 (+1080)	-1
Pawnee	4951 (+1269)	4956 (+1274)	-3
Cherokee	5054 (+1352)	5054 (+1352)	-6
Morrow Sh	5221 (+1512)	5227 (+1518)	-5



REMARKS Due to fair to good shows of oil in multiple pay zones and positive DST results, it is recommended and agreed upon by all parties that production casing be set to further evaluate this well.

Respectfully Submitted,  
Saman Sharifaie  
Petroleum Geologist

API #15-023-21372

\*Tops have been adjusted to electric logs

Depth	Geological Descriptions	Engineering Data
3550	Anhydrite 3557 (+125)	
3600	Base Anhydrite 3595 (+87)	
4200	DAILY PENETRATION @ 7:00 AM 11/11/13 - Spudded at 3:30 PM 11/12/13 - WOC at 350' 11/13/13 - Drilling at 1740' 11/14/13 - Drilling at 3135' 11/15/13 - Drilling at 4190' 11/16/13 - Testing at 4560' 11/17/13 - Testing at 4620' 11/18/13 - Testing at 4760' 11/19/13 - Drilling at 4840' 11/20/13 - Testing at 5085' 11/21/13 - Testing at 5318' 11/22/13 - Logging at 5450'	Pipe Strap @ 4214': 1.07 Short to Board Deviation Survey: 1/2" <b>Morgan Mud @ 4214'</b> Wt: 8.6 Vis: 6.0 Wt: 7.0 Chl: 800 LCM: 5#
4250	Sh, brn/orm/gry, sily to sndy, arg IP Ls, crm/lt gry, f xln, foss, fr intOol por, pr intbn por, Tr thk blk stn, glis, sily IP, Tr calc, Tr fluor, no odr, NSFO Sh, gry/gn, sily IP Sh, brn/rd/gry, sily IP, Tr pyr Ls, aa, n/s Sh, rd/gn/gn, sily IP, Tr pyr Ls, crm/tan, f xln, foss, v pr vis por, calc, dnse to sub-chky, rr blk dd O stn, sli glis, no odr, no fluor, NSLO Sh, rd/gry, mdy to sily IP, mica IP Sh, brn/orm, sily, mdd Sh, aa, mdy	
4350	Topeka 4345 (-663) Ls, tan/crm, f xln, Oolc IP, Tr fr micr vug por, dnse, calc IP, Tr dol, rr db blk stn, sli glis, NSLO Ls, crm/lt gry, sing, vf xln, NVP, Tr calc, dnse, hd, blkly, sli glauc, frac IP, n/s Sh, varic/purp, sily IP Ls, crm, f xln, foss, Tr micr vug por, pr intgrn por, sli calc, dnse, sbang, n/s Sh, rd, sily to sndy	
4400	Deer Creek 4388 (-706) Ls, crm/lt gry, f to m xln, NVP, Tr calc, dnse, blkly, chky, n/s Ls, aa, Tr glis Sh, rd, sily to sli mdy Sh, rd/gn/gn, sily IP	
4450	LeCompton 4418 (-736) Ls, crm, sing, f xln, sli foss, v pr vis por, dnse, Tr calc, hd to chky IP, n/s Ls, aa, lt gry/gn IP, Tr glis Sh, rd, sily	
4500	Oread 4462 (-780) Ls, crm, f xln, foss, pr por, calc, dnse, sub-chky IP, Tr pyr, n/s Ls, aa, lt grytan IP, incr chky, NVP, blkly Ls, crm/tan, sing, f xln, foss, scat fr micr Ool por, blkly w/ NVP IP, sli chky, n/s Sh, rd, sily, mdd Sh, rd/gn/gn, sily, sli glauc	<b>DST #1</b> (LKC 'A') 4485'-4560' 30-60-30-60 IF: Weak surf blw, built to 1/2" FF: No blow Rec: 5' M w/ oil spots (100%) IHF: 15 - 17 FFP: 18 - 19 ISIP: 609 FSP: 439 IHP: 2215 FHP: 2165 BHT: 135°
4550	Lansing 4537 (-855) Ls, crm/wh/brn, f xln, foss, fr-gd intpart & foss por, Tr vugs, pyr, scat dk brn/blk stn, pred dd spks, pt to mod sat, rr pcs w/ hvy sat, lrid OCM, stw bid FO, Tr G Bubbis, v int odr, FSFO Ls, crm/tan, sing, f xln, NVP, dnse, blkly, chky, Tr pyr, n/s Sh, rd/gry, sily, carb IP, Tr pyr Slst, clr, f gr, srt, mdd to sub-rndd, fr-gd intgrn por, occ sat w/ dd O fls, no odr, NSLO Sh, aa, mdy IP Ls, crm, f xln, foss, fr intpart & foss por, Tr vugs, pyr, OCHY IP, scat dk brn/blk stn, pred dd O, pt to mod sat, lrid OCM, Tr FO bid, fnt odr, SSFO Ls, crm, sing, f xln, Tr foss, v pr intpart por, pred NVP, dnse, calc, blkly, n/s Ls, crm, f xln, foss, fr micr Oolc por, scat brn spkld stn, it sat, sub-sat IP, fri, glauc IP, no odr, no fluor, NSFO Sh, rd/gry, sily, mica IP Sh, blk carb Sh, gry, mica to fis Sh, gry/brn, mica Ls, crm/tan, vf xln, v pr intbn por, dnse, blkly, hd to sub-chky, Tr glau, n/s Ls, aa, sli calc Ls, crm/tan, vf xln, NVP, dnse, blkly, ang, n/s Sh, blk carb Sh, gry/rd	<b>Morgan Mud @ 4560'</b> Wt: 9.0 Vis: 6.4 Wt: 6.4 Chl: 800 LCM: 3# <b>DST #2</b> (LKC 'D') 4545'-4620' 30-60-30-60 IF: Weak surf blw, built to 1/2" FF: No blow Rec: 5' OCM (10%O, 90%M) IHF: 16 - 18 FFP: 19 - 21 ISIP: 359 FSP: 208 IHP: 2266 FHP: 2197 BHT: 132°
4600	Stark 4762 (-1080) Slst, clr, f to m gr, mod srt, fr intgrn por, sub-rndd, fri, sli calc, n/s Ls, crm, f xln, foss, fr-gd intOol por, xln lnd w/ dk brn stn, lrid, Tr FO bid, it sat, hd, dnse, scat Chk, intbdr pyr, v int odr, brn yd floor, gd cut, SSFO Ls, crm/tan, sing, vf f xln, NVP, dnse, calc, sub-chky IP, n/s Sh, blk carb Sh, gry/rd, sily Ls, crm/tan/lt gry, vf to med xln, foss, pr intfoss & xln por, dnse, sli fri, Tr sli, calc, sub-chky to chky IP, glauc, n/s Sh, brn/gry/orm, sily, scat embdd micr pyr, mica IP Ls, crm/vari, mott IP, f xln, sli gran, foss IP pr-fr intpart por, fri, sli sily, pred Sh, Tr calc, n/s Sh, brn/orm/gn, sily to mdy IP, glauc IP	<b>Morgan Mud @ 4760'</b> Wt: 9.2 Vis: 7.6 Wt: 6.4 Chl: 1,000 LCM: 5# <b>DST #3</b> (LKC 'J') 4708'-4760' 30-60-60-90 IF: BOB in 21 mins BB: 1" blow FF: BOB in 27 mins BB: 1/2" blow Rec: 370' Total Fluid, 270' GIP, 190' GO (10%G, 90%O), 90' GOOCM (20%G, 30%O, 50%M), 90' GOOCM (25%G, 25%O, 50%M) IHF: 27 - 89 FFP: 18 - 168 ISIP: 431 FSP: 415 IHP: 2366 FHP: 2165 BHT: 135° Gravity: 35 API
4800	Marmaton 4872 (-1190) Sh, vari/blk carb, fess IP, sily Slst, clr, f to m gr, srt, fr intgrn por, sub-rndd, fri, sli calc, n/s Ls, crm, f xln, foss, v pr vis por, calc, dnse, blkly to sbang, sub-chky IP, n/s Ls, aa, lt gry IP, vf xln IP, Tr m xln, Oolc, chky Ls, crm/brn/gry, f xln, Tr Ool, NVP, calc, sli dol, dnse, n/s Sh, brn/orm/gry/gn, Tr pyr	<b>Morgan Mud @ 4840'</b> Wt: 9.0 Vis: 5.7 Wt: 5.2 Chl: 1,000 LCM: 5# <b>DST #4</b> (LKC 'K-L') 4781'-4840' 30-60-60-90 IF: Built to 2.5" FF: No blow BB: Built to 2" BB: No blow Rec: 105' Total Fluid, 15' MCO (85%O, 15%M), 90' OCM (25%O, 75%M) IHF: 17 - 36 FFP: 42 - 69 ISIP: 1327 FSP: 1308 IHP: 2360 FHP: 2312 BHT: 141°
4950	Pawnee 4956 (-1274) Ls, crm/lt gry, f xln, foss, pr int-Oolc por, dnse, sli fri, calc, sub-chky IP, Tr pyr, glauc IP, n/s Ls, gry/lt gry, f xln, NVP, dnse, sli dol, blkly, n/s Sh, blk carb Sh, dk gry, carb IP Ls, tan/crm/lt gry, sing, xf to vf xln, NVP, dnse, calc IP, sli dol, sbang, sily IP, n/s Sh, blk carb/dk gry Ls, crm/tan/brn, f xln, Ool IP, pr intfoss por, calc, sbang, sily IP, Tr Chk, n/s Ls, aa, m xln IP, chky	
5050	Cherokee 5034 (-1352) Sh, blk carb Ls, crm/lt gry, f to m xln, Tr foss, v pr intpart por, dnse, calc, abund Chk, n/s Ls, wht/crm/tan, f xln, Tr foss, v pr to NVP, calc, dnse, hd to chky, n/s Sh, rd/gn/gn, sily IP Slst, clr, f to m gr, mod srt, fr intgrn por, sub-rndd, fri, sli calc, n/s Ls, crm/tan, sing, vf xln, NVP, dnse, sli calc, scat Chk, Tr glau, n/s Sh, blk carb/gry Sh, blk carb Sh, vari, carb IP, fess IP Sh, aa Ls, crm/tan, f xln, foss IP, Tr pr intOolc por, calc, fri IP, scat Chk, n/s Sh, gry/vari, glauc IP, Tr pyr Sh, gry/brn, sily, mica IP	<b>Morgan Mud @ 5141'</b> Wt: 9.2 Vis: 6.9 Wt: 5.6 Chl: 1,000 LCM: 3#
5150	Atoka 5155 (-1473) Ls, crm, sing, f xln, sli foss, NVP, dnse, calc, n/s Ls, crm/tan, sing, f xln, sli foss, NVP, dnse, calc, Tr tan Chk, chky, n/s Sh, gry, sily Ls, dk brn/lt gry, f xln, NVP, calc IP, dnse, hd, Tr intbdr micr pyr, scat Chk, n/s Sh, gry/vari, sily, Tr pyr Sh, dk gry, pyr	<b>DST #5</b> (Morrow) 5198'-5318' 30-60-30-60 IF: Weak blow, 1" FF: No blow Rec: 5' M w/ oil spots (100%M) IHF: 21 - 26 FFP: 27 - 31 ISIP: 477 FSP: 414 IHP: 2731 FHP: 2530 BHT: 146°
5250	Morrow Sh 5227 (-1545) Sh, blk carb, mica IP Sh, gry/gn, fess, pyr, rr G Bubbis Sh, gry/gn/orm/blk carb, fess IP, mica IP, intbdr pyr Sh, gry/blk carb, pyr, sily Sh, gry, sily, fess IP Sh, aa	
5300	Mississippi 5311 (-1629) Slst, clr, f to m gr, mod srt, fr intgrn por, sub-rndd, fri, sli calc, n/s Ls, crm, f xln, foss, v pr vis por, calc, dnse, blkly to sbang, sub-chky IP, n/s Ls, crm/lt gry, f xln, Tr Ool, pr por, dolc, dnse, Tr calc, glauc IP, scat pyr, scat Chk, aa, sub-chky IP, n/s Chk, wht, frs to sli whd, foss, no to v pr vis por, transl to op, trip, sli fri, abund crm Ls, aa, n/s Chk, aa, crtan IP Dol, tan/crm, sing, m xln, fr por, dnse, sli calc, fri IP, scat pyr, n/s Ls, brn, sing, vf xln, NVP, dnse, hd, blkly, dolc IP, n/s Ls, aa, scat orm Sh Ls, tan/brn/crm, f xln, foss IP, pr vis por, dolc IP, scat brn dd O fls, glis IP, v chky, NSLO Ls, aa, n/s Ls, tan/crm, sing, f xln, foss IP, pr-fr por, dolc, dnse, calc, fri to chky, n/s Dol, tan/brn, f xln, sli mott, foss, fr intpart por, dnse, fri, scat trip Chk, chky, n/s	<b>Morgan Mud @ 5318'</b> Wt: 9.2 Vis: 5.8 Wt: 6.0 Chl: 1,000 LCM: 6#
5450	RTD 5450 (-1768)	