



GEOLOGIST'S REPORT

OPERATOR **MURFIN DRILLING COMPANY, INC.**

LEASE **GLY # 1-27**

LOCATION **1320 FNL & 2310 FWL**

SEC. **27** TWSP **4S** RGE **31W**

COUNTY **RAWLINS** STATE **KANSAS**

FIELD **DAISY**

CONTRACTOR **Murfin Drilling Company** RIG NO. **14**

COMMENCED **29 March 2013** COMPLETED **7 April 2013**

MUD DISPLACED **3111** MUD TYPE **Chemical**

DRILLING TIME KEPT FROM **3650** TO **4560**

SAMPLES SAVED FROM **3650** TO **4560**

SAMPLES EXAMINED FROM **3650** TO **4560**

GEOLOGICAL SUPERVISION FROM **3642** TO **4560**

GEOLOGIST ON WELL **Paul Gunzelman**

ELEVATIONS

KB **2937 Ft.**

GL **2927 Ft.**

ALL MEASUREMENTS
FROM K.B.

CASING RECORD

Conductor **None**

Surface **8 5/8" @ 223'**

Production **5 1/2" @ 4558'**

ELECTRICAL SURVEYS:

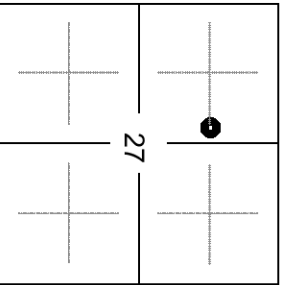
Pioneer Energy Services

Comp. Neutron Density

Dual Induction

Micro-resistivity

Comp. Sonic



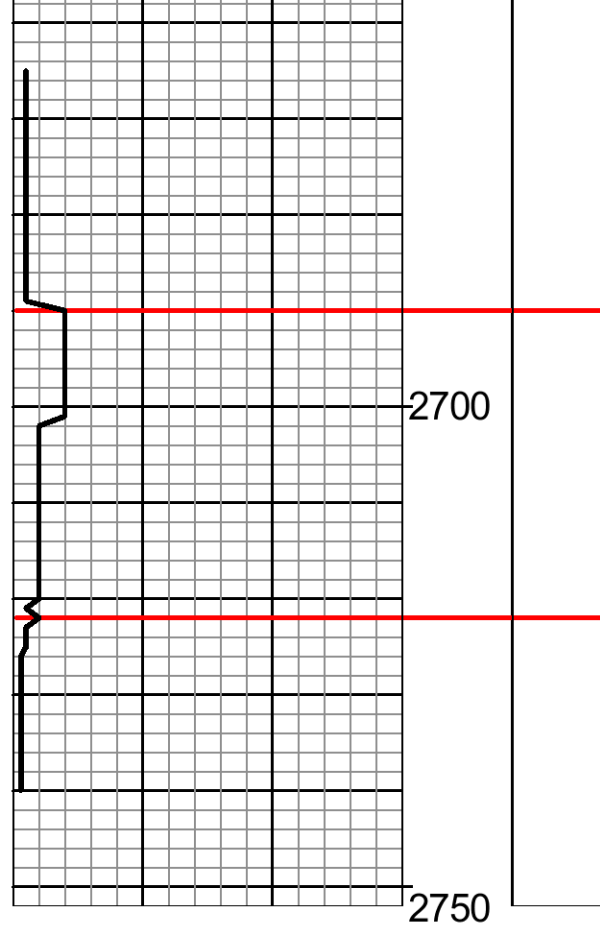
FORMATION NAME	LOG		SAMPLE	
	TOP	DATUM	TOP	DATUM
Stone Corral	2690	+247	2691	+246
Base/ Anhydrite	2722	+215	2722	+215
Topoka	3754	-817	3754	-817
Heebner Shale	3920	-983	3923	-986
Lansing	3968	-1031	3973	-1036
Stark Shale	4135	-1198	4135	-1198
Base/Kansas City	4179	-1242	4179	-1242
Cherokee	4377	-1440	4376	-1439
Mississippian	4489	-1552	4488	-1551
Total Depth	4560	-1623	4560	-1623

REMARKS

API 15-153-20921-00-00
 Drilling Fluids: Morgan Mud, Inc. (David Lines, engineer)
 Drill Stem Testing: Trilobite Testing, Inc.
 Gas Trailer: No Gas Trailer
 Reserve Pit Chlorides: 9,900 PPM

DRILL TIME (MIN/FT)	DEPTH	LITHOLOGY	SHOWS	SAMPLE DESCRIPTIONS	REMARKS
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2650

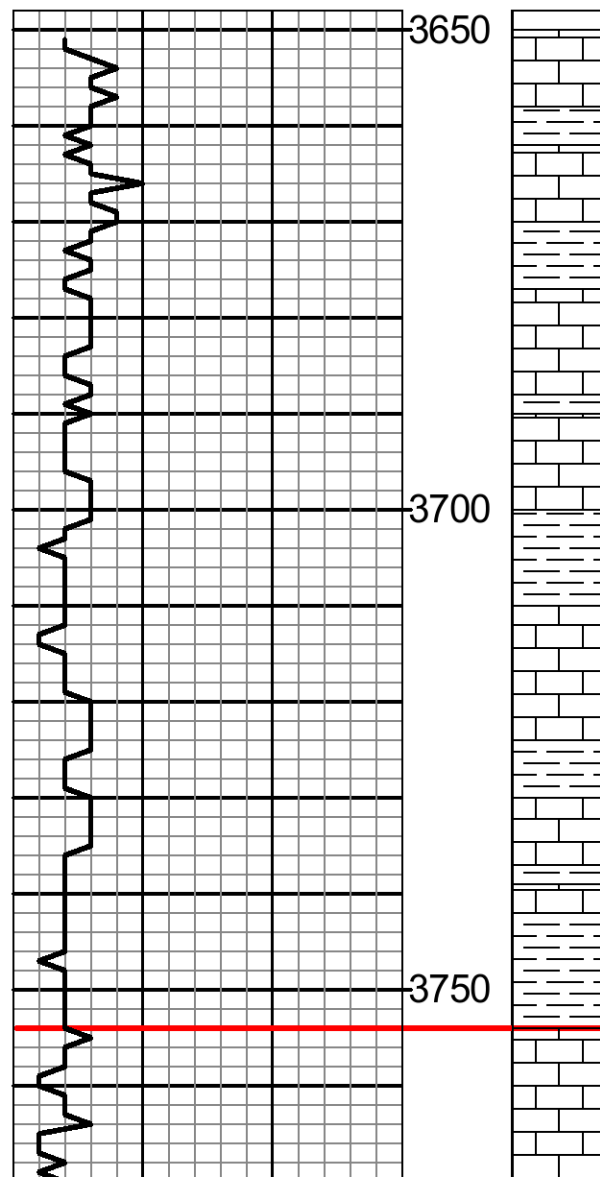


STONE CORRAL

2690 (+247)

BASE/ANHYDRITE

2722 (+215)



Ls: Crm, fxln, sli foss, cons spr calc.

9:19 AM, 1 April 2013

Ls: Crm, fxln, chky, foss (Fus) some lt yel sli pyr Ls, tr glauc.

Sh: Gy, gy-brn, lmy stly.

Ls: Crm, occ crm-tn, fxln-gran, sli ool, tr org rem, some gy-gn & arg-shly, n/s.

Ls: Crm, fxln-fnly gran, chky-sbchky, occ dol, fr intgran por, n/s.

Sh: Rd-brn, fis-blky, ea gum, some stly.

Ls: Crm, tr crm-lt gy, fxln, chky, occ v.fnly gran & dol, tr spr calc, n/s.

Sh: Rd-brn, blk gum & lt gn sly sli calc, cons crm-gy fxln arg chky Ls.

Ls: Crm-gy, occ lt yel fxln tr org rem, some arg-shly, intbd gy & gy-gn sh, n/s.

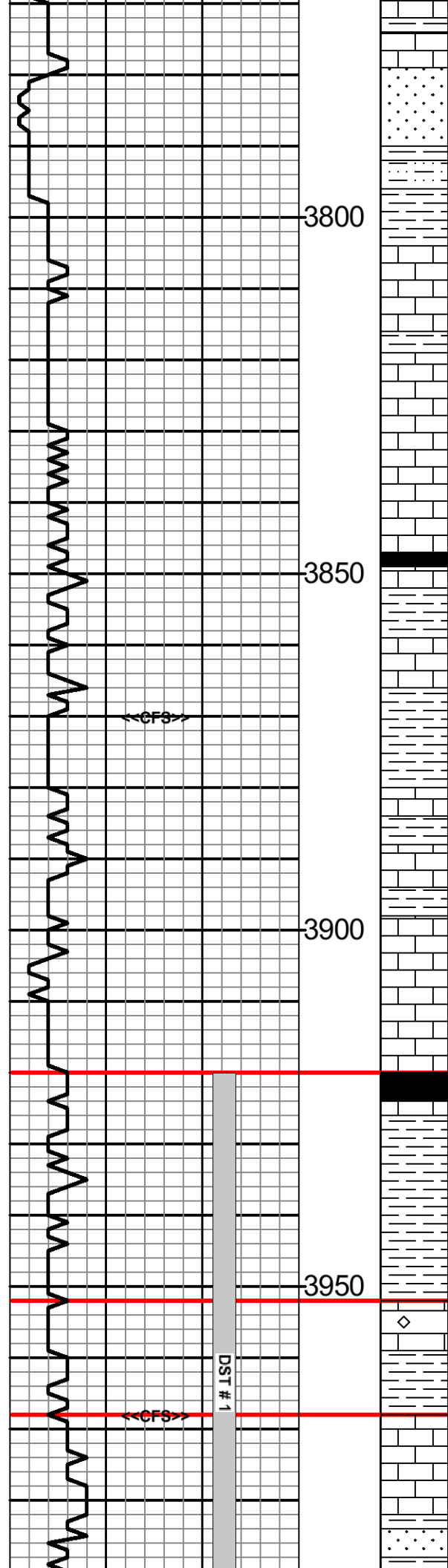
Sh: Rd-brn & v.lt rd-or, gum occ slty-sdy, some mar sdy sh.

Ls: Crm-tn, fxln-gran, v.chky, occ dol, tr amor calc, fr-gd intgran por, n/s.

TOPEKA

3754 (-817)

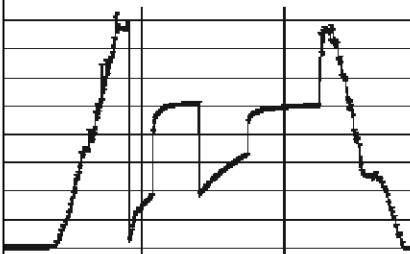
Ls: Crm-gy, gran, dol in pt, chky, occ arg, some intbd rd-brn sh, n/s.



- Sd: Crm-v.lt gy, some v.lt gn-gy, wvfn wl-srt occ arg some calc, tr carb mat, intbd rd-brn gum sh, n/s.
- Sh: Rd-brn fis-blky, slty, occ gum, cons gy-gn fis sh.
- Ls: Wh-crm, fxln, occ medxln, sli ool, cons spr calc, chky, fr intxln & pp por, n/s.
- Ls: Crm-lt gy, fxln ool, tr org rem, cons spr calc, occ arg & sli pyr.
- Ls: Crm, tr crm-lt gy, fxln sli foss (Fus) cons spr calc, some sbchky, n.v.p, n/s.
- Ls: Tn, fn-vfxln, some org rem, tr spr calc, pr pp por, n/s.
- Sh: Blk & v.dk gy-brn, fis, carb.
- Sh: Gy-gn lt gn & dk gy, fis, some slty, sli pyr, occ calc.
- Ls: Crm, fxln-gran, sli foss, some sbchky, cons spr calc, pr-fr intgran por, n/s.
- Sh: Gy-gn lt gn & dk gy-brn, fis, tr calc, r.pyr & carb mat.
- Ls: Crm, fxln-gran, sli ool, some chk, fr amt spr calc, fr pp por, n/s.
- Ls: Crm-v.lt gy, fxln, sli foss, tr ool, occ sbchky, pr pp por, no odor, r. shw FO, tr blk asph res,
- Ls: Crm, fxln, tr gran, r.ool, some sbchky, fr-gd pp por, n/s.
- Ls: Wh-crm, fxln, v.chky & gum, tr org rem, occ lt gn & arg, n/s.
- Ls: Crm, fxln, chky, some wh-crm op cht, tr foss & amor calc, r.pyr, n/s.
- Sh: Blk, thn fis, carb.
- Ls: Tn & gy-brn, vfxln, tr org rem, cons dk gy fis gum sh, n.v.p.
- Sh: Gy-gn & lt rd-brn fis-blky, cons lt gn arg sltst.
- Sh: Rd-brn, blk slty-sdy, some gum.
- Ls: Wh, fxln-frag, ool, sli pyr, tr chk pr-fr pp & intool por, tr fr vug por, sli odor, sli shw FO, spty dk brn-blk stn, some asph res.
- Sh: Lt gn, fis, sli pyr, some calc.
- Ls: Crm-v.lt gy, fn-vfxln, tr foss, gen dns w/some pr-fr pp por & fr scat vug por, no odor, fr shw dk brn FO, v.dk brn spty-sbsat stn.
- Ls: Crm, fn-vfxln, some sbchky, tr org rem, & pyr, n.v.p, n/s.
- Sh: V.lt an & lt rd-brn w/tn-lt an mott sli arg

DST # 1 3920 - 4007
 30"-60"-60"-90"
 IF: Strong blow BOB in 3 min.
 FF: Strong blow BOB in 3 min.
RECOVERY:
 125 Ft. Oil specked Mud
 576 Ft. Watery Mud
 960 Ft. Muddy Water
 (Chlor: 95,000 ppm)

IHP: 1908 psi. FHP: 1881 psi.
 IFP: 73-463 psi. ISIP: 1277 psi.
 FFP: 476-821 psi. FSIP: 1257 psi.
 BHT: 125 deg. F.

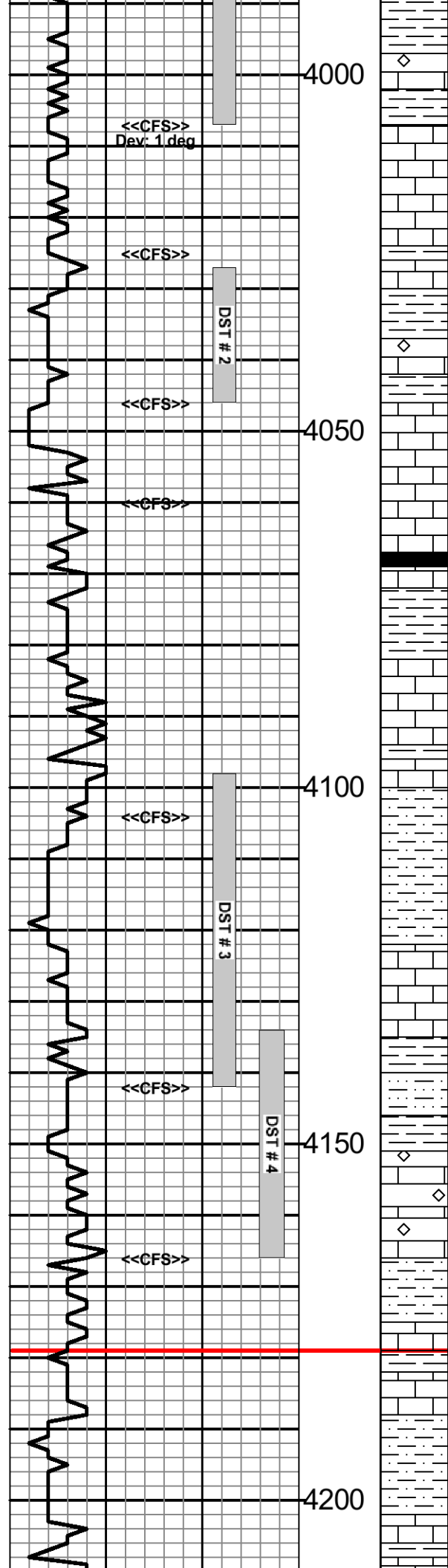


HEEBNER SHALE
 3920 (-983)

TORONTO
 3952 (-1015)

LANSING
 3968 (-1031)

Morgan Mud check @ 4007' (4/02/13)
 Vis: 56, Wt: 9.2, WL: 5.6
 Chlor: 1,200 ppm, LCM: 4#



Cr: v.lt gn & lt rd brn with lt gn mott bl arg sltst, lt brn stn, no odor, no FO.

Ls: Wh-lt gy, fxln-frag, ool, tr dru calc, pr-fr pp & intool por, some fr vug por, sli shw v.dk brn-blk FO, spty-sbsat stn, no odor.

Sh: Lt gy-gn & lt gn, fis, sli calc.

Ls: V.lt gy, fxln, sli ool, tr org rem, some rexlzd, fr pp por, tr vug por, v.sli odor (crush) fr shw med brn O, med brn spty-sbsat stn.

Ls: Crm-v.lt gy, fxln, sbchky, tr pyr, n/s.

Sh: Lt gy-gn fis, slty, sli pyr,

Ls: Crm, fxln, sbchky, tr pyr, n.v.p.

Sh: Lt gn & gy-gn, fis, sli pyr, some slty, bcm rd-brn & lt rd-or ea occ gum.

Ls: Lt gy, frag-fxln, ool, cons spr calc, pr intool por, tr fr pp por, sli shw med brn FO, med brn sbsat-sat stn, some spty lt stn, no odor.

Sh: Rd-brn tr gy, thk fis ea.

Ls: V.lt gy, fn-vfxln, tr foss (Fus) fr-gd pp por, gd scat vug por, fr shw dk brn bleed O/G, dk brn spty stn-sbsat, v.sli odor.

Ls: Wh-crm, fn-vfxln, sbchky, tr pyr, occ v.lt gn & arg, n.v.p, n/s.

Sh: Blk, thn fis, carb.

Sh: Lt gy-gn lt olv gn, fis, occ calc, some gum, bcm rd-brn blk ea, tr gum.

Ls: Crm-v.lt gy, fn-vfxln, some spr calc, tr sbchky, pr pp por, no FO, v.dk brn-blk spty stn, no odor.

Ls: Tn-gy, vfxln, some rexlzd ool & spr calc, tr lt gy op cht, n.v.p.

Ls: Lt gy-gn occ mott w/tn, fxln, withd-sbchky, arg, tr org rem, n.v.p.

Sh: Rd-brn, blk ea, slty, occ gum, some mar v.arg sltst, tr lt gn fis sh.

Ls: Tn, fn-vfxln, sli foss (Fus) pr intxn por, fr-gd scat vug por, fr shw med brn O, sbsat stn, sli odor.

Ls: Crm-tn, lt gy, fn-vfxln, sbchky, tr org rem, dns.

Sh: V.dk gy-blk, thn fis, some carb, bcm lt gn fis tr pyr.

Sh: V.lt gy-gn tr yel, fis, much rd-brn v.arg sltst.

Ls: Crm-v.lt gy, fxln, ool, cons sec calc, pr pp & intool por, v.sli shw bleed O, dk brn spty stn, no odor.

Ls: Crm, fxln, tr sbchky, r.org rem, some v.lt gn & arg, n.v.p.

Sh: Dk gy, fis, some slty, tr carb mat, bcm rd-brn ea occ gum.

Ls: Crm mott w/rd-brn sh, bcm tn fxln tr org rem, some sbchky, n.v.p.

Sh: Gy & gy-gn, calc, occ gum.

Ls: Crm-gy, fxln sbchky, much arg-shly, n.v.p.

Sh: Lt gy, gy-gn & yel fis, slty, cons rd-brn fis-blky ea occ gum sh.

Ls: Lt gy, fxln-gran, sbchky, some slty, arg, n.v.p.

Ls: Lt gy-crm, fxln chky, some arg, cons gy-

Morgan Mud check @ 4007' (4/03/13)
 Vis: 74, Wt: 8.5, WL: 5.2
 Chlor: 800 ppm, LCM: 15#
 **Lost returns while pulling DST #1
 Could not fill the hole, Lost >600 Bbl.**

DST # 2 4027 - 4046
 30"-60"-30"-60"
 IF: Weak 1 1/2 inch blow
 FF: V.Weak 3/4 inch blow
RECOVERY:
 54 Ft. Mud Cut Oil (35% Mud, 65% Oil)
 96 Ft. Oil & Water Cut Mud (10%Oil, 30%Water, 60%Mud)
 IHP: 1882 psi. FHP: 1843 psi.
 IFP: 16-43 psi. ISIP: 395 psi.
 FFP: 54-74 psi. FSIP: 387 psi.
 BHT: 118 deg. F.

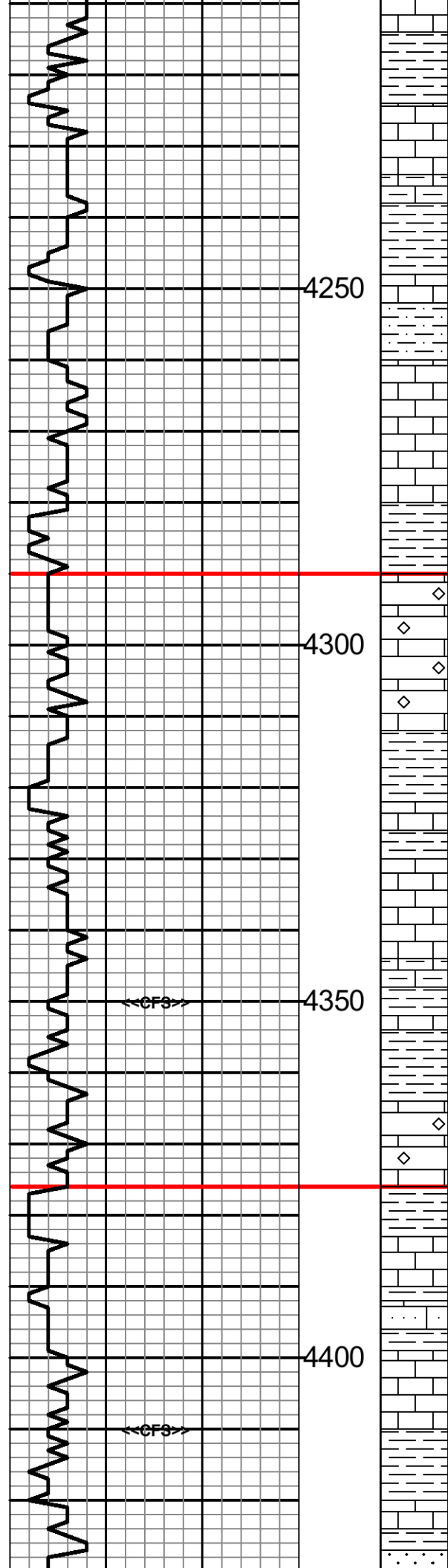
DST # 3 4098 - 4142
 30"-60"-30"-60"
 IF: V. Weak surface blow
 FF: No blow
RECOVERY:
 10 Ft. Oil Cut Mud (15%Oil, 85%Mud)
 IHP: 1942 psi. FHP: 1912 psi.
 IFP: 15-20 psi. ISIP: 36 psi.
 FFP: 21-22 psi. FSIP: 27 psi.
 BHT: 115 deg. F.

Morgan Mud check @ 4142'
 Vis: 59, Wt: 8.7, WL: 5.2
 Chlor: 1,100 ppm, LCM: 12#

Morgan Mud check @ 4166'
 Vis: 52, Wt: 8.9, WL: 5.6
 Chlor: 1,200 ppm, LCM: 10#

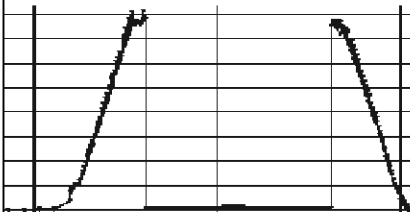
BASE/KANSAS CITY
4179 (-1242)

DST # 4 4134 - 4166
 30"-60"-30"-60"
 IF: V.Weak surface blow
 FF: No blow
RECOVERY:
 2 Ft. Mud
 IHP: 1915 psi. FHP: 1907 psi.



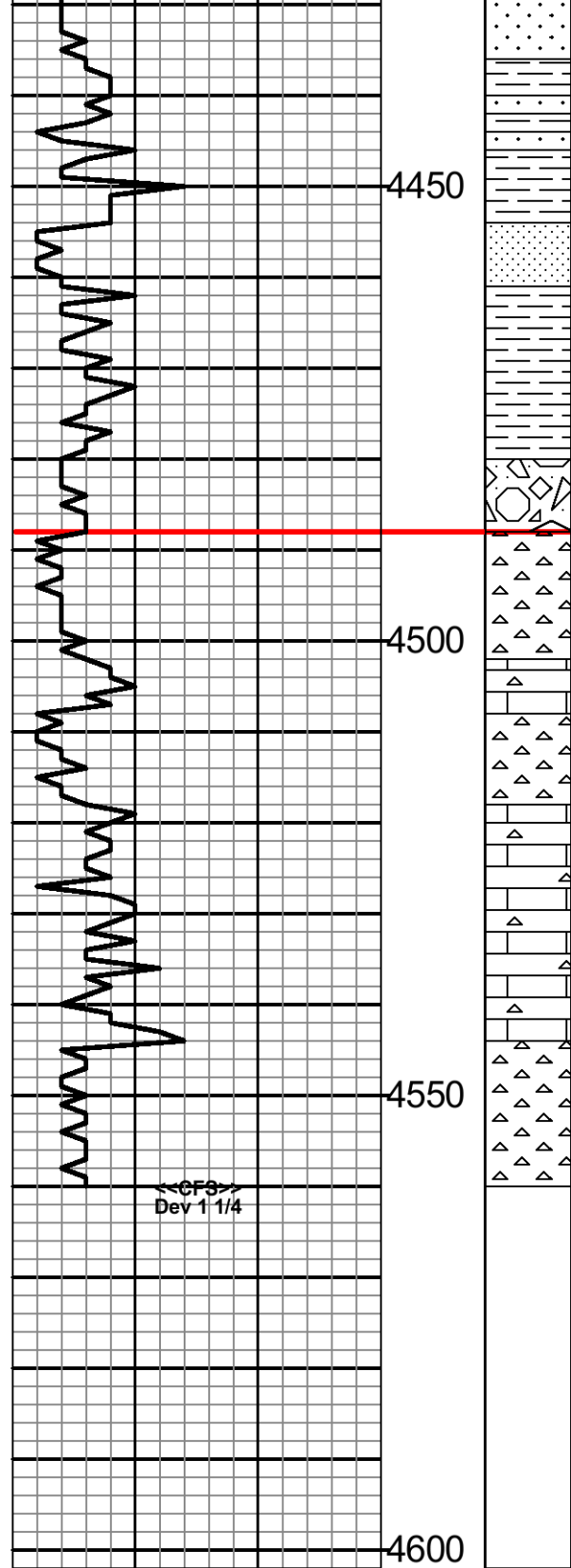
- Ls: Lt gy crm, fxln chky, some arg, some gy gn lt gy & rd-brn sh, n.v.p.
- Sh: Tn, v.lt rd-brn & rd-or, ea gum, occ slty, intbd mar-purp calc sltst & wh-crm chky Ls.
- Ls: Lt gy-wh, fxln, sbchky, some arg, tr ool, n.v.p.
- Sh: Gy-brn rd-brn, intbd purp arg sltst, tr gy med-co sbrnd cht.
- Ls: Lt gy tn tr yel & gy-brn, fxln-frag, arg, some slty, cons intbd rd-brn sh.
- Slst: Purp-gy, calc-lmy arg, tr sdy, intbd gy-brn & rd-brn sh, some gy fxln shly Ls, n/s.
- Ls: Gy-purp tr mar, slty, v.arg, intbd gy yel & olv gn fis slty sh.
- Ls: Crm-tn, fxln, tr ool, withd, n.v.p.
- Sh: Tn gy-gn brn olv gn & rd-brn, tr yel, some slty, tr sbwxy.
- Ls: Wh-crm, fxln-frag, ool, tr org rem, sbchky, some amor calc, pr intrfrag por, n/s.
- Ls: Wh-crm, fxln, tr gran, sbchky, tr org rem, r.pyr, n.v.p, n/s.
- Sh: Blk, thn fis carb, cons dk gy-brn gy-gn olv gn & gn fis sh, tr calc, r.slty.
- Ls: Crm-tn, fxln-frag, ool, withd, tr sec calc, n.v.p.
- Sh: Gy-gn olv gn & yel, fis, tr carb mat.
- Ls: Crm, fxln-frag, ool, withd-sbchky, some spr calc, tr lt gy op cht, n.v.p, n/s.
- Ls: Tn-gy gy-gn dk olv gn, arg-shly, tr org rem, some slty, n.v.p.
- Sh: Dk gy gy-brn & olv brn, fis, some carb mat, occ slty, tr vgt, intbd tn-brn arg Ls.
- Ls: Crm-tn, fn-vfxln, ool, some chky, cons sec calc, tr tn-brn vfxln dns Ls, n/s.
- Ls: Crm, fn-vfxln, sbchky, tr ool & org rem, some spr calc, n/s.
- Sh: Lt gy-gn & lt rd-brn, v.gum sft, some rd-brn & mar fis ea sh.
- Ls: Wh crm tn, fxln-vfxln, sbchky, tr ool, some pnk rd-brn & yel arg Ls, n/s.
- Ls: Wh-crm, some tn, fn-vfxln sbchky, occ frac, mott w/pnk lt gn & yel in pt, n/s.
- Sd: Brn & rd-brn, vfn-fn tr med, v.wl-cmt, calc-lmy in pt, arg, some sec qtz, n/s.
- Ls: Wh-v.lt gy, fxln, occ sbchky, some v.lt gn sh inc, tr sdy, intbd gy dk gy & gy-gn fis sh, n/s.
- Sh: Gn yel mar rd-brn, tr purp, sbwxy mott occ sdy.
- Sd: Wh pnk v.lt rd-brn, fn-vfn sbang sbfri calc org, rd intrfrag por, cons gy gn lt gn & rd

IFP: 1919 psi. FFP: 1907 psi.
 IFP: 15-16 psi. ISIP: 33 psi.
 FFP: 15-16 psi. FSIP: 27 psi.
 BHT: 111 psi.



PAWNEE
4290 (-1353)

CHEROKEE
4376 (-1439)



arg, gu migran pot, cons gy-gn lt gn & rd-brn sh, n/s.

Sh: Rd-brn blk, sbwxy, much slty-sdy, cons dk rd-brn vfn-fn shly sd, n/s.

Sd: Wh-v.lt gy, vfn wl-srt sbang-sbrnd, calc in pt, n/s.

Sh: Rd-brn purp yel mar & lt gn, fis wxy some sdy, intbd lt gy fxln dns Ls.

Sd: Wh, vfn sbang-sbrnd calc, sbfri, sli pyr, abd sh, some co ang qtz, n/s.

Sh: Yel mar & gn, fis, occ mott wxy, some yel & lt gy co ang qtz.

Sh: Yel dk rd-brn & mar, lt yel crm & wh op vit cht, tr sli wthd cht & co ang qtz.

MISSISSIPPIAN
4488 (-1551)

Cht: Wh crm yel, tr rd-or, frs & devit. some ool, occ mott, n.v.p, n/s.

Cht: Wh-crm & yel, op frs & devit, some crm & lt yel fxln Ls, tr sbchky, pr por in cht, n/s.

Cht: Yel wh & crm, tr pnk, op vit, tr devit, some yel fxln wthd Ls, tr glauc, n/s.

Ls: Wh-crm, fn & vfxln, sbhcky in pt, cons spr calc, occ silic, cons cht, n/s.

Ls: Wh-v.lt gy, tr v.lt yel, fxln rexld, some sbchky, cons wh & lt gy cht, n/s.

Cht: Wh-v.lt gy, tr crm lt yel & pnk, op vit, tr wthd, some wh-v.lt gy fxln occ silic Ls, tr sbchky, n/s.

TOTAL DEPTH
4560 (-1623)

4:45 AM, 6 April 2013

<<CF3>>
Dev 1 1/4

Operator: MURFIN DRILLING COMPANY, INC.

Lease: GLY # 1-27

Location: 1320 FNL & 2310 FWL SEC. 27 TWSP 4S RGE 31W

County: RAWLINS State: KANSAS