Woolsey Operating Company, LLC
Scale 1:240 (5"=100') Imperial
Measured Depth Log

Well Name: HUBBARD #1
Location: Section 1 - Township 32 South - Range 8 West
License Number: 33168 **Region:** Harper County, Kansas
Spud Date: September 12, 2018 **Drilling Completed:**
Surface Coordinates: C NW NW NW
330' FNL & 330' FWL
Bottom Hole Coordinates:

Ground Elevation (ft): 1498' **K.B. Elevation (ft):** 1510'
Logged Interval (ft): 2000' **To:** **Total Depth (ft):**
Formation: Council Grove >>>>Simpson
Type of Drilling Fluid: Chemical Mud
Printed by MUD.LOG from WellSight Systems 1-800-447-1534 www.WellSight.com

OPERATOR

Company: Woolsey Operating Company,LLC
Address: 125 N. Market, Suite 1000
Wichita, KS 67202

GEOLOGIST

Name: Bill Klaver
Company: Woolsey Operating Co. LLC
Address: 125 N. Market, Wichita Kansas, 67202

COMMENTS

Surface Casing: Spud at 9:45 pm on 9/12/2018. Set 5 joints of 8 5/8" X 23#/ft new casing at 225' KB (tally 221') w/ 175 sx 60/40 poz (by Basic). Plug down 5:45 am on 9/13/2018. Cement did circulate. Plug back to approx. 2403' at 3002' w/175 sx common.
Production Casing:

Deviation Surveys: 3/4 at 227', 1/2 at 1032', 3/4 at 1509', 3/4 at 2092', 1 at 2318', 1 at 2617', 5 at 2999', 5 at 3002', (see detail)
Pipe Strap @ 2092', Strap: 2110.29', Board: 2110.12, strap .17' long to the board
Fossil Drilling Rig #3 Bit Record:
1) 12 1/4" Varrel RR in at 0' out at 227'
2) 7 7/8" Hughs Tool DP 606X PDC in at 227' out at 3002', 40 hr
3) 7 7/8" Varel HE-21 in at 2456' (plugged back depth) out 2791'
4) 7 7/8" Hughs Tool DP 606X in at 2791',

Gas Detector: Pason Systems (Unmanned unit)
Mud System: Mud-Co. Brad Bortz, Engineer
DSTs: Trilobite Testing, Leal Cason, Tester
E-Logs: ELI, CNL-FDC w/PE, GR & Caliper, Dual Induction Laterolog w/SP, Sonic, Micro
Hawkeye Directional: Blake Reid (MWD), Kennith Holland (Directional Driller)
Alan Dick, Woolsey Company Man

DSTs

DST #1 Neva, 2024'-2092', 30"-60"-60"-90", SB BOB in 30 seconds, Rec: 441' MCW (30%M 70%W), 1197' SW, (chl: 68, 000 ppm). IHP 1147, IFP 353-690, ICIP 868, FFP 707-859, FCIP 872, FHP 1039, BHT 96 deg.

DST #2 Indian Cave, 2282'-2318', 30"-60"-60"-90", SB BOB in 30 seconds, GTS at end of FFP, Rec: 2010' GIP, 141' GCMW (5%G 30%M 65%W), 121' MCW. IHP 1192, IFP 64-81, ICIP 927, FFP 65-132, FCIP 930, FHP 1118, BHT 97. Rw .17 @ 66 deg, chl: 75,000 ppm

DST #3 Mississippi, 4399'-4415', 30"-60"-60"-90", Fair 6" blow, Rec: 10' SOCMW (2%O, 14%M, 84%W), 186' SW, API Rw 0.1 @ 80 deg, chl. 68,000 ppm. IHP 2214, IFP 23-57, ICIP 1290, FFP 62-126, FCIP 1267, FHP 2198, BHT 1332 deg

CREWS

Rick Barringer, Tool Pusher
Pablo Luna, Days
Chris Staats, Evening
Kevin Clifft, Morning

ROCK TYPES

- Anhy
- Bent
- Brec
- Cht
- Clyst
- Coal
- Congl
- Sdy dolo
- Shy dolo
- Dol
- Gyp
- Sdy lmst
- Lmst
- Mrlst
- Salt
- Shale
- Sltst
- Ss
- Black sh
- Gry sh
- Shale
- Shysltst
- Sltysh
- Ss 2
- Shale 3
- Silty dol
- Dol lmst
- Dol 2
- Granite wash
- Lmst
- Calc dol
- Shale 3

ACCESSORIES

MINERAL

- Anhy
- Arg
- B Bent
- Bit
- Brecfrag
- Calc
- Carb
- Chtdk
- Chtlt
- Dol
- Ferrpel
- Ferr
- Glau
- Gyp
- Marl
- Nodule
- Phos
- P Pyr
- Salt
- Chlorite
- Dol
- Sand
- Slty

FOSSIL

- Algae
- Amph
- Belm
- Bioclst
- Brach
- Bryozoa
- Cephal
- Coral
- Crin
- Echin
- Fish
- Foram
- F Fossil
- Gastro
- Pelec
- Pellet
- Pisolite
- Plant
- Strom
- Fuss
- Oomoldic

STRINGER

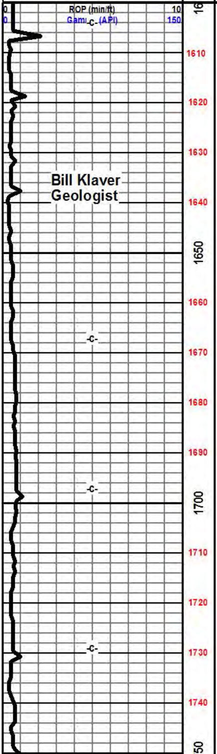
- Anhy
- Arg
- Bent
- Coal
- Dol
- Gyp
- Ls
- Mrst
- Sltstrg
- Ssstrg
- Carbsh
- Grysh
- Gryslt
- Lms
- Sandylms
- Sh
- Sltstn

TEXTURE

- BS Boundst
- C Chalky
- CX Cryxln
- E Earthy
- FX Finexln
- GS Grainst
- L Lithogr
- MX Microxln
- MS Mudst
- PS Packst
- WS Wackest

⊡	Sandy	⌽	Oolite	▬	Clystn
⊡	Silt	⊖	Ostra	▬	Dol

Curve Track 1 ROP (min/ft) Gamma (API)	Depth	Lithology	Oil Shows	Geological Descriptions	TG, C1-C5 TG (units) C1 (units) C2 (units) C3 (units) C4 (units) C5 (units)



Bill Klaver
Geologist

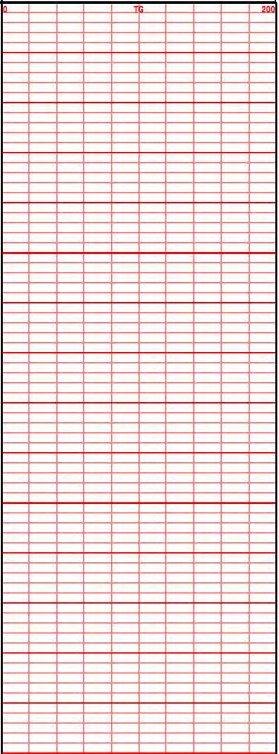
Woolsey Operating Co. LLC
Hubbard #1
C NW NW NW
330' FNL & 330' FWL
Sec. 1 - Twp 32S - Rge 8W
Harper County, Kansas
Field: Crystal Springs NW
GL 1498' KB 1510'
API # 15-077-22175-00-00

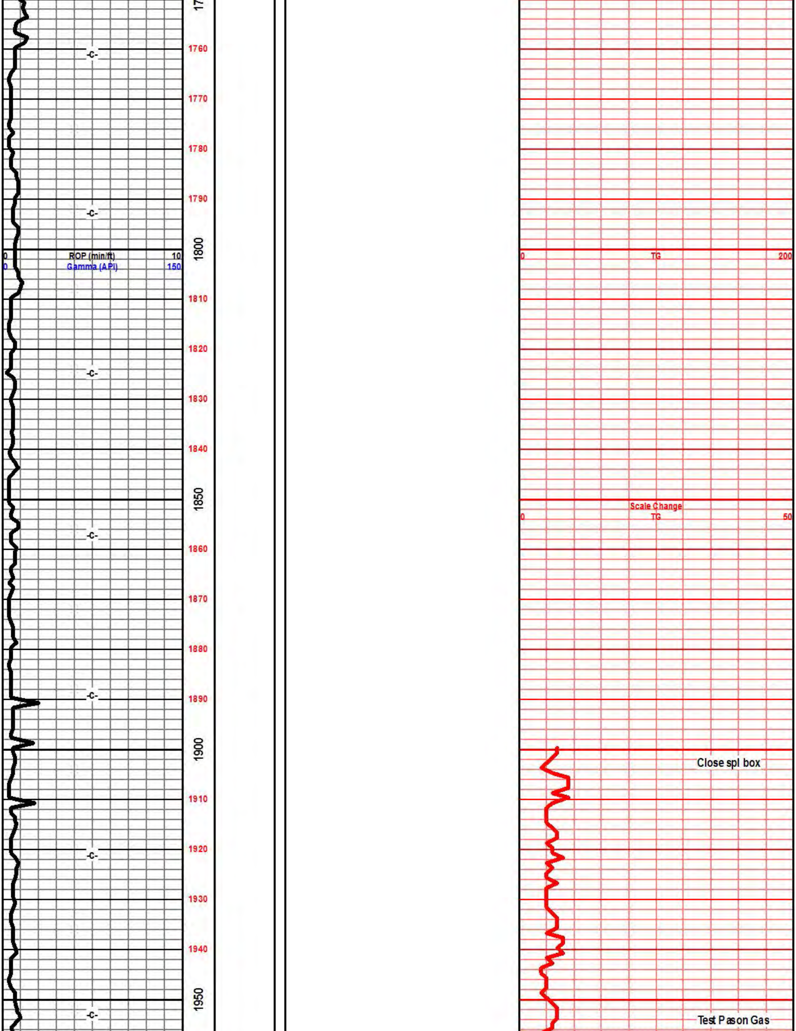
Drill time was recorded from 2000' to rotary total depth. Samples were collected from 2100' to rotary total depth. All samples were delivered to the Survey at the completion of the test.

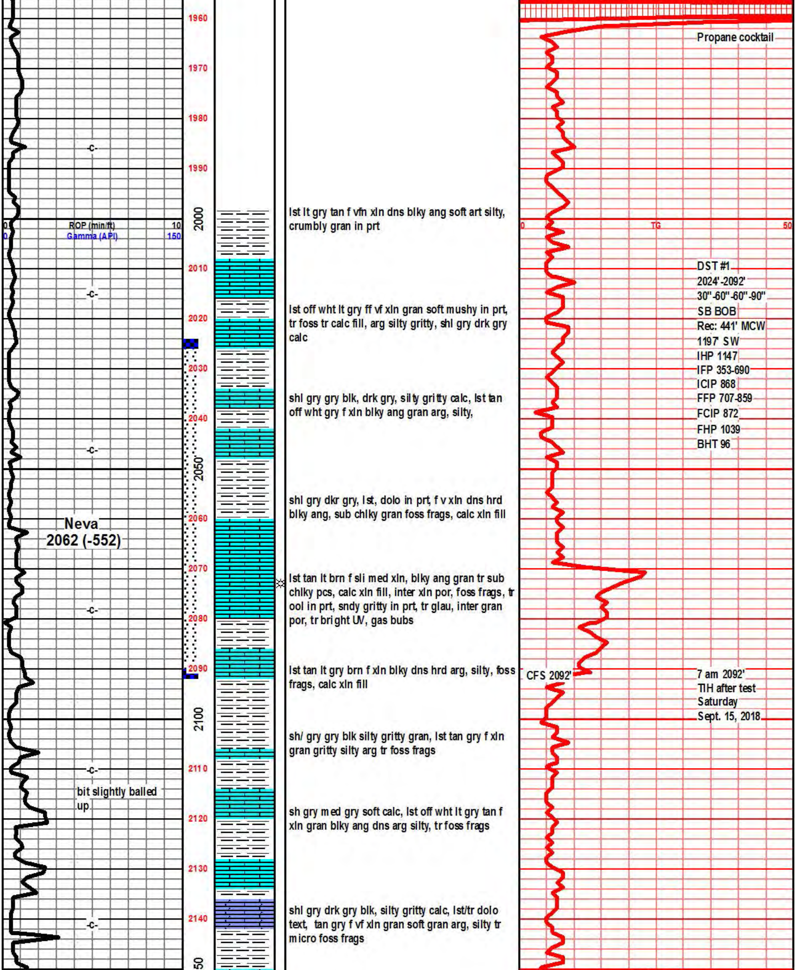
The following tests were used or structual comparison: Robinson-Sweetman's Troyer #1-A, SW NE NE NE, 2-32S-8W. Landes Expl-Sentinel Res's Wilson #1, C SE SW, 36-31S-8W. Pickrell Drilling's Alford #1, C NW SE, 35-31S-8W.

7 am Daily Progress:

September 12, 2018 MIRT/Spud
September 13, 2018 WOC
September 14, 2018 Drilling at 1401'
September 15, 2018 DST #1 at 2092'
September 16, 2018 Drilling at 2480'
September 17, 2018 WOC at 3002'
September 18, 2018 Drill plug @ 2728'
September 19, 2018 Drilling at 2825'
September 20, 2018 Drilling at 3344'
September 21, 2018 Drilling at 3715'
September 22, 2018 Drilling at 4018'
September 23, 2018 DST #3 at 4415'
September 24, 2018 CFS at 4810' in Simpson. Evening E-logs.







lst lt gry tan f vfn xln dns blky ang soft art silty, crumbly gran in prt

lst off wht lt gry ff vf xln gran soft mushy in prt, tr foss tr calc fill, arg silty gritty, shl gry drk gry calc

shl gry gry blk, drk gry, silty gritty calc, lst tan off wht gry f xln blky ang gran arg, silty,

shl gry dkr gry, lst, dolo in prt, f v xln dns hrd blky ang, sub chlky gran foss frags, calc xln fill

lst tan lt brn f sli med xln, blky ang gran tr sub chlky pcs, calc xln fill, inter xln por, foss frags, tr ool in prt, sndy gritty in prt, tr glau, inter gran por, tr bright UV, gas bubs

lst tan lt gry brn f xln blky dns hrd arg, silty, foss frags, calc xln fill

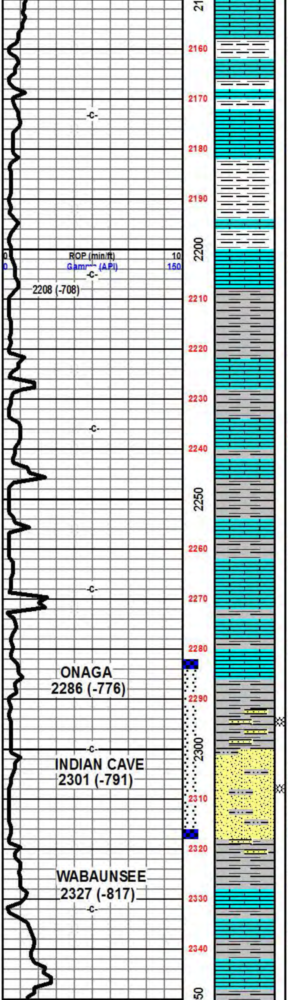
sh/ gry gry blk silty gritty gran, lst tan gry f xln gran gritty silty arg tr foss frags

sh gry med gry soft calc, lst off wht lt gry tan f xln gran blky ang dns arg silty, tr foss frags

shl gry drk gry blk, silty gritty calc, lst/tr dolo text, tan gry f vf xln gran soft gran arg, silty tr micro foss frags

DST #1
2024'-2092'
30"-60"-60"-90"
SB BOB
Rec: 441' MCW
1197' SW
IHP 1147
IFP 353-690
ICIP 868
FFP 707-859
FCIP 872
FHP 1039
BHT 96

7 am 2092'
TIH after test
Saturday
Sept. 15, 2018



shl gry med gry calc silty, lst tan off wht lt gry f xln gran soft arg silty, tr foss frags, soft mushy in prt

sh gry dkr gry tr blk silty gritty, lst tan lt gry off wht f xln gran silty girtty arg, soft mushy in prt.

shl gry drk gry tr brn blk silty gritty soft lst wht off wht lt gry f xln grna soft mushy ang arg tr micro foss frags,

shl gry dkr gry blk, silty sofft gritty calc in prt, lst aa

lst gr tan lt brn fxln blky dna ang hrd tr chlky, foss frags, calc xln fill, inter foss cast/moldic por, shls gry drk gry soft calc gran gritty

lst gry drk gry f xln gritty silty vry arg, gritty gran in prt, calc inclu, tr foss frags, dns soft mushy in prt

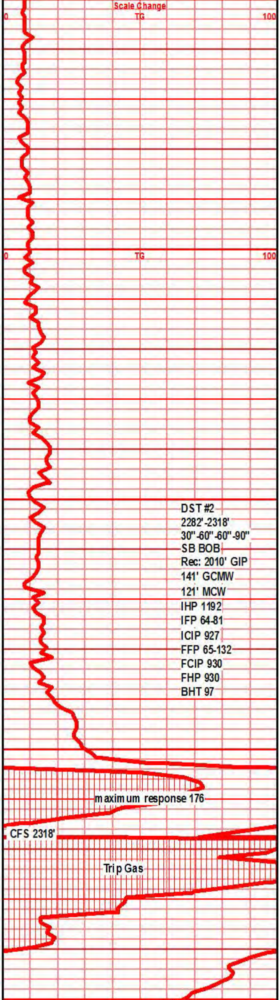
lst gry drk gry f vf xln dns hrd blky ang arg silty, tr micro foss frags, shls gry drk gry brn silty calc

shl gry lt gry, silty gritty sndy in prt, snd grn inclu,

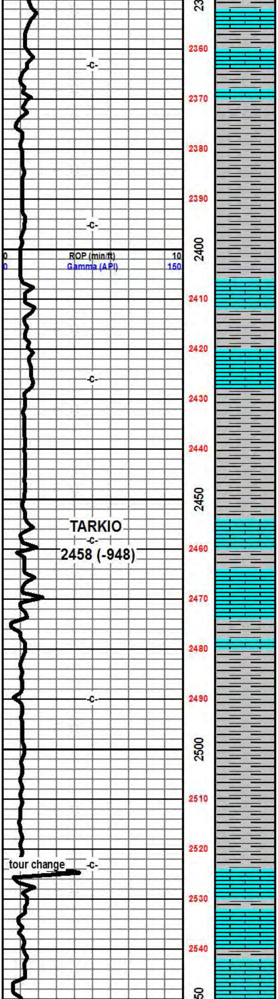
sst off wht wht lt gry f vf grnd, sub ang grns, prly srted, mstly fair to prly cem, tr sub fria, tr mic, tr glau, tr carb flecks, sst lt gry off wht f v grnd, sub ang grns, fria/crumbly clstrs, fair to prly srted, tr mic, tr glau, blk carb flecks, gas bubs, fair UV

shl gry med gry silty gritty sndy, tr sst aa, trip sample

lst crm tan off wht ff xln blky dns hrd foss frags, sli chlky in prt, tr soft gran text



DST #2
2282'-2318'
30"-60"-60"-90"
SB BOB
Rec: 2010' GIP
141' GCMW
121' MCW
IHP 1192
IFP 64-81
ICIP 927
FFP 65-132
FCIP 930
FHP 930
BHT 97



TARKIO
2458 (-948)

tour change

shl gry drk gry. lst crm lt gry tan, f xln blky ang dns hrd foss frags, tr soft gran ang arg silty

shl med drk gry, silty gritty

shl gry drk gry silty gritty gran soft, tr calc text

lst wht off wht lt gry f xln blky ang hrd dns, micro foss frags, tr arg silty gritty, shl gry calc blky hrd pcs

sh gry med gry silty gritty soft

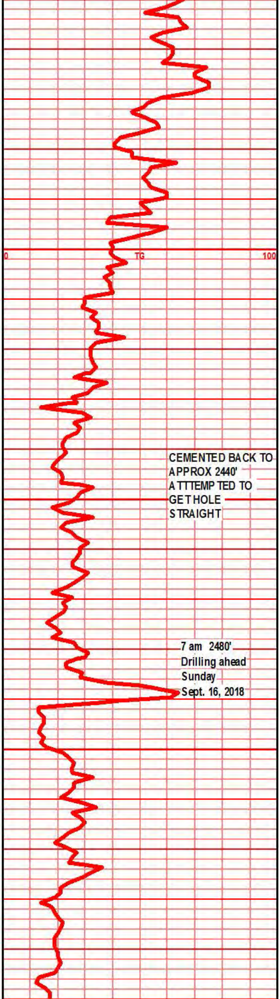
lst gry tan lt brn f sli med xln dns hrd blky ang arg, calc in prt, foss frags, dns hrd arg, shl gry drk med gry calc silty

lst crm tan mstly brn ff vf xln dns hrd blky ang calc xln fill, micro foss frags, tr arg, shl gry brn calc dns/calc inclu

shl gry med gry silty gritty sndn, slstn/sst gry f grnd, sub ang grns, prly srted sub fria mic, arg silty mic, blk carb flecks

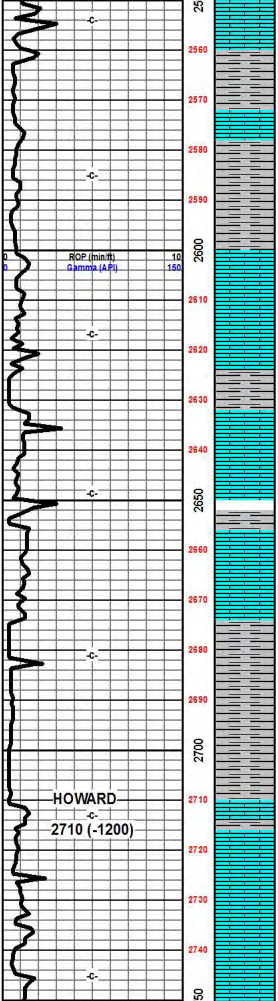
shl gry med gry silty sndy gritty, mic, slstn f grnd, sub ang grns, prly srtd, sub fria arg silty, mic

lst crm tan brn mott f sli med xln, blky ang dns, foss frags, calc xln fill, arg in prt, shls gry med gry silty gritty



CEMENTED BACK TO
APPROX 2440'
ATTTEMPTED TO
GET HOLE
STRAIGHT

7 am 2480'
Drilling ahead
Sunday
Sept. 16, 2018



lst crm tan lt brn in prt, blky ang sub chlky foss frags, calc xln fill, tr soft mushy, arg tr clay fill

shl gry med /drk gry, silty gritty calc, lst tan gry brn mott f vf xln dns hrd blkyang arg sitly

shl aa, lst gry drk gry tan tr brn f vf xln dns hrd ang arg, silty soft mushy in prt, foss frags, tr calc xln fill

lst tan off wht lt gry f vf xln blky ang dns hrd, micro foss frags, calc xln fill,

lst crm tan lt brn, crrm tan mott f vf xln dns blky ang pcs, sub chlky in prt, foss frags, calc xln fill, chrty, chrt tan brn shrp frsh

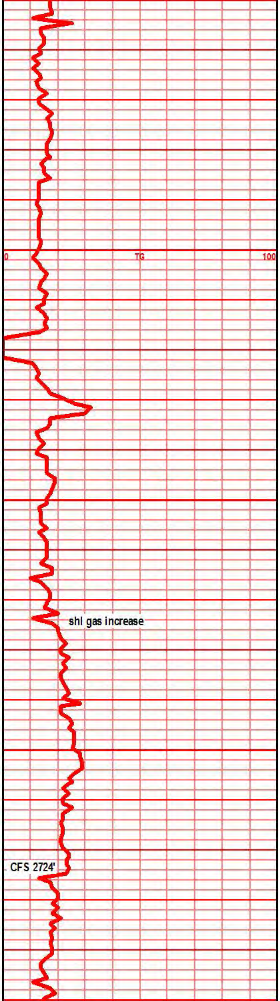
lst crm offf wth tan, tr tan lt brn mott f xln blky ang dns, tr sub chlky foss frags, chrty, chrt tan lt brn shrp frsh

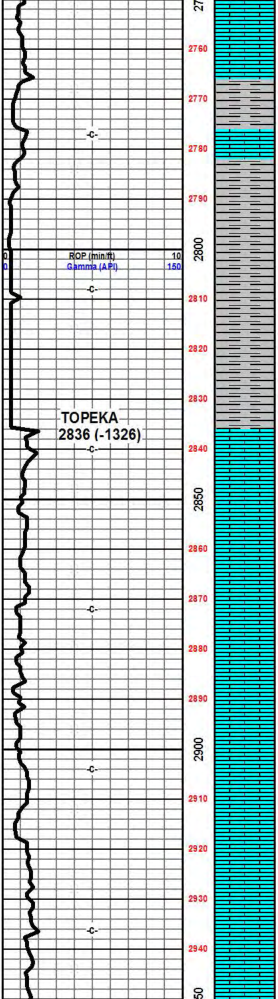
lst aa in spl, shl gry drk gry, flky gritty sub sndy in prt, mic, blk carb flecks,

shl gry drk/med gry gritty, silty, tr miro sndy in prt, mic, flky, blk carb flecks

lst bufff wht, off wht f xln blky ang dns pcs, sub chlky in prt, crsly micro foss in prt, calc xln fill, tr inter xln por, tr foss mold por, NS

lst tanbuff off wht f vf xln gran sub chlky trr foss frags, calc xln fill, mstly dns chlky tr soft mushy





lst wht buff off wht tan f xln gran soft sub chlky, micro foss frags, soft , tr calc xln fill

lst crm off wht buff f xln gran sub chlky soft gran foss frags, calc xln fill, shl gry med gry silty

shl gry me drk gry silty gritty, blk carb flecks, mic, gritty/sndy

shl gry drk med gry silty gritty, micro silty, blk carb flecks gas bubs, mic gritty/sndy

lst buff crm lst gry/tan f vf xln blky dns sub chlky foss frags, calc fill, some sofft mushy, gran

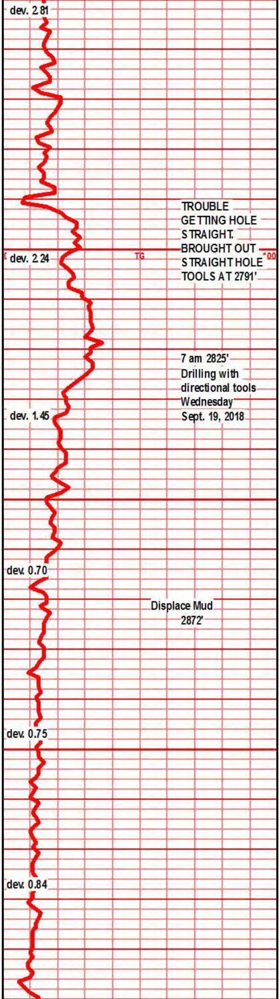
lst crm buff tan. wht f sli med xln blky flky foss frags, calc xln fill, foss mold por, inter gran por, tr mushy

lst crm buff tan f xln blky ang dns tr soft mushy, foss frags foss mold por, inter xln por, tr calc xln fill

lst buff tan tr lt gry f vf xln dns hrd blky, calc xln fill, foss frags, tr inter xln por, tr chlky soft

lst buff tan lt gry off wht f vf xln dns hrd blky ang foss frags, sub chlky, inter xln por, tr chkly soft

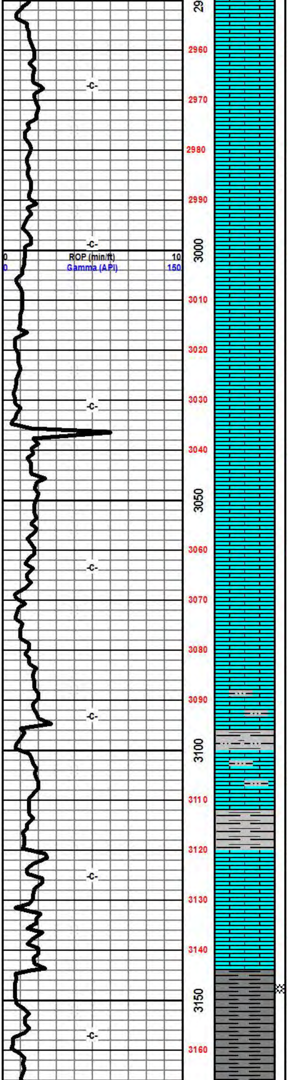
lst tan buff lt gry f vf xln dns hrd blky ang foss frags, calc xln fill, foss mold por, tr inter xln por



TROUBLE GETTING HOLE STRAIGHT. BROUGHT OUT STRAIGHT HOLE TOOLS AT 2791'

7 am 2825'
Drilling with directional tools
Wednesday
Sept. 19, 2018

Displace Mud
2872'



lst wtht off wht buf f sli med xln blky flky ang, calc, calc xln fill, foss frags, inter xln por, foss mold por, tr chlky

lst wht tan buff, mostly wht, f sli med xln blky ang tr sub chlky, foss frags, calc fill, inter xln por, foss mold por

lst wht off wht buff f sli med xln blky ang tr sub chlky, calc xln fill, foss frags, crsly in prt, int xln moldic por

lst wht off wht crm buff f sli med xln gran flky blky sub chlky foss frags, calc xln fill, foss mold por

lst wht off wht buff f sli med xln blky flky foss frags, sub chlky, calc xln fill, foss mold por,

lst wht off wht buff f xli med xln blky flky tr gran, foss frags, calc xln fill, foss mold inter xln por

lst crm tan off wht tr lt gry/wht f sli med xln gran sub chlky foss frags,calc xln fill, inter xln por,

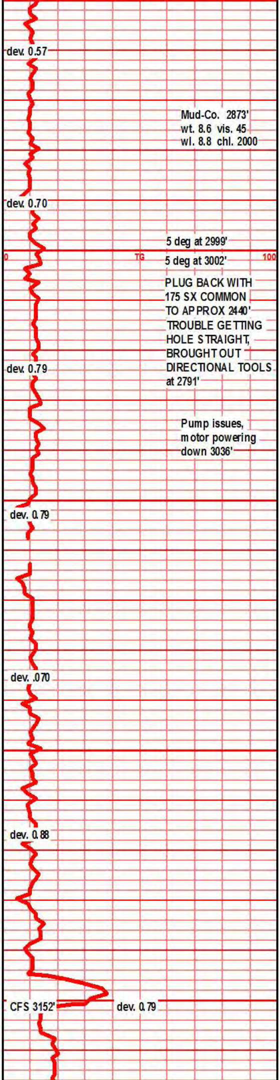
lst off wht tan lt gry f xln blky bec dns, hrder, sub chlky tr foss frags, tr arg text, lst aa, sli incr gry shls??

lst crm tan lt gry in prt f xln dns blky ang pcs, sli chlky, calc fill foss frags, lst lt tan gry mott f xln tr arg text, dns hrd sub chlky

lst tan, tan gry mott, f xln blky dns hrd sub chlky tr micro foss, arg text

shl gry drk gry blk silty gritty blk carb flecks, shl lt gry green silty gritty, mic in prt, carb bands gas bubs

shl gry med gry, silty gritty, banded, bedded, blk carb flecks

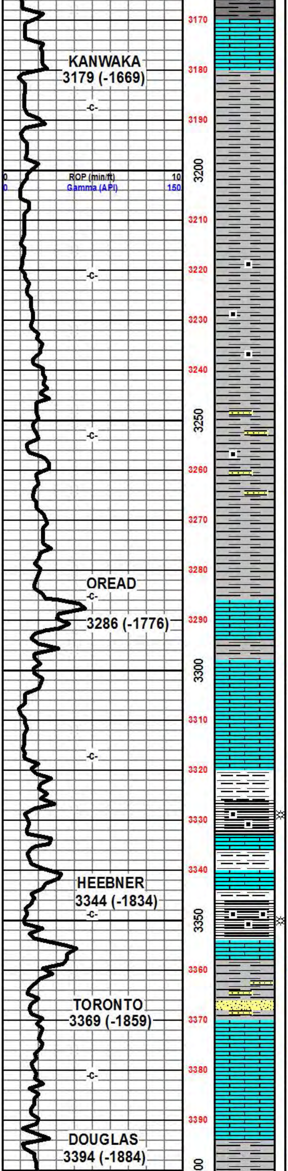


Mud-Co. 2873'
wt. 8.6 vis. 45
wl. 8.8 chl. 2000

5 deg at 2999'
5 deg at 3002'

PLUG BACK WITH
175 SX COMMON
TO APPROX 2440'
TROUBLE GETTING
HOLE STRAIGHT,
BROUGHT OUT
DIRECTIONAL TOOLS
at 2791'

Pump issues,
motor powering
down 3036'



lst drk tan brn, med brn f vf xln dns hrd, blky ang pcs, calc xln fill, tr micro foss,

shl gry lt gry green silty gritty, fnly silty/sndy/gritty, mic in prt, much blk carb inclu, bld carb flecks w/gas bubs

shl gry lt gry, gry/lt green silty gritty, micro sndy mic, blk carb fill/beds

shl gry med gry, gry/lt gry-green, silty gritty, mico sndy, mic, blkcarb beds, gas bubs

shl med gry/green silty grritty sndy in prt, snd grn inclu, mic, much blk carb fill, beddid banded

shl gry med gry, sndy gritty silty, sltstn, sst gry gry/green vf grnd sub ang prly srted, prly cem, hvy clay/shl fill mic arg much blk carb content

shl gry med gry green silty gritty, bedded banded, blk carb beds, much blk carb fill

lst tan gry tr gry brn f vf xln dns hrd blky, ang dns, lst crm tan lt tan/brn f xln dns hrd sub chlky, tr micro foss frags.

pp spls, ground mush, lst tan crm lt brn in prt, f vf xln blky ang sub chlky foss frags, arg silty gritty in prt

shl gry blk, blk carb, blky ang pcs, abun gas bubs

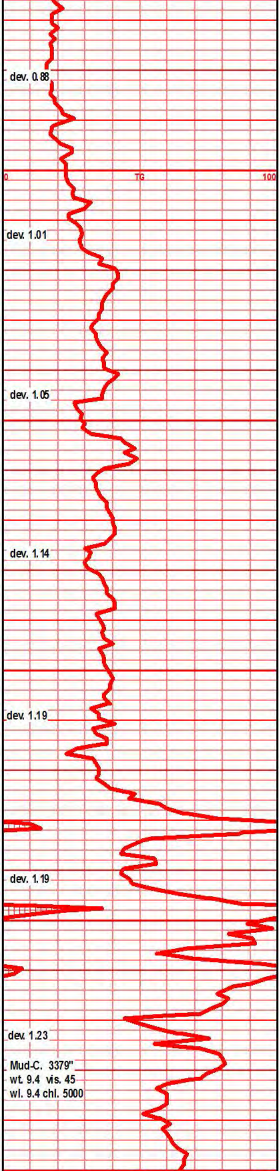
lsst off wht tan f xln blk ang dns hrd foss frags, tr arg,

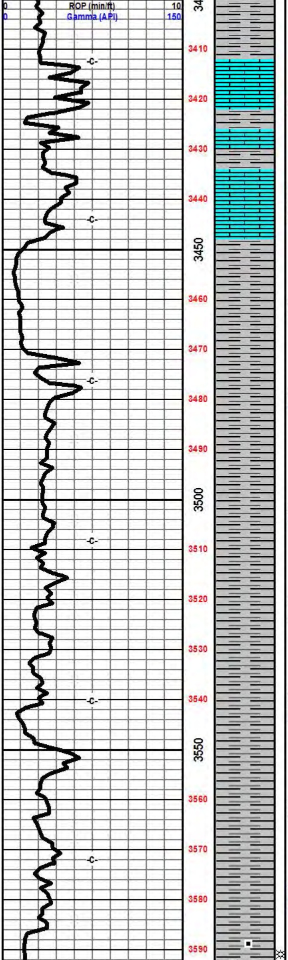
shl drk gry blk, blk carb, blky ang wxy grsy pcs, gas bubs

lst drk tam, mstly brn f vf xln dns hrd blky ang, micro foss frags, shl gry drk gry silty calc, foss inclu in some

lst crm off wht tan f xn gran sndy, sli chlky tr foss frags, sst wht off wht, ang blky clstrs, sub ang grns, w/cem, calc cem, w/srtd, sub fria to vry tite, glau, NS

shl gry med gry, lst wht f sli med xln, blky ang sub chlky, micro foss, some soft gran, tr inter xln por, mstly chlky dns





shl gry drk gry/med gry sitly gritty, tr mic, tr blk carb flecks,

lst dull tan buff fn vfn xln blky ang sub chlky/chlky, foss frags, tr calc xln fill, mstly soft gran chlky, shl gry med gry soft silty

shl gry med drk gry silty mussy, tr sndy, tr mic, tr blk carb flecks

shl gry med dry gry, tr gry green, silty gritty, muddy, spls wsh gry, tr sndy, tr mic, tr blk carb

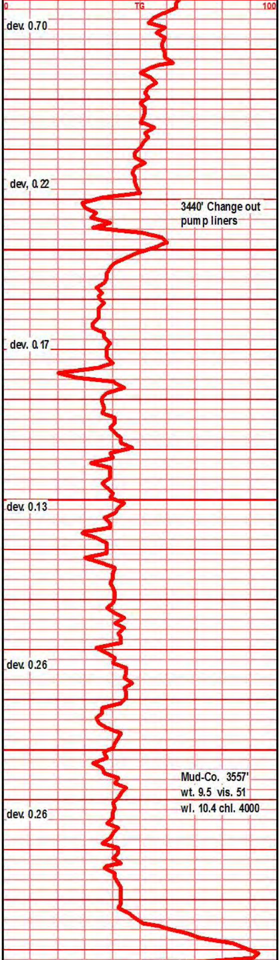
shl gry med gry tr gry green silty soft, spls mushy, tr mic, tr pyritic, micro sndy

shl gry med gry, soft mushy, silty, tr mic, tr pyritic, tr sndy text,

sh gry med gry, tr gry green silty gritty, tr mic, soft mushy, tr carb beds, tr sndy micro sndy text

shl gry drk med gry soft silty tr gritty, mic micro sndy

shl gry drk gry silty gritty, bec bedded, tr banded, tr splintery, blk carb indu, blk carb flecks



dev. 0.70

dev, 0.22

3440' Change out
pump liners

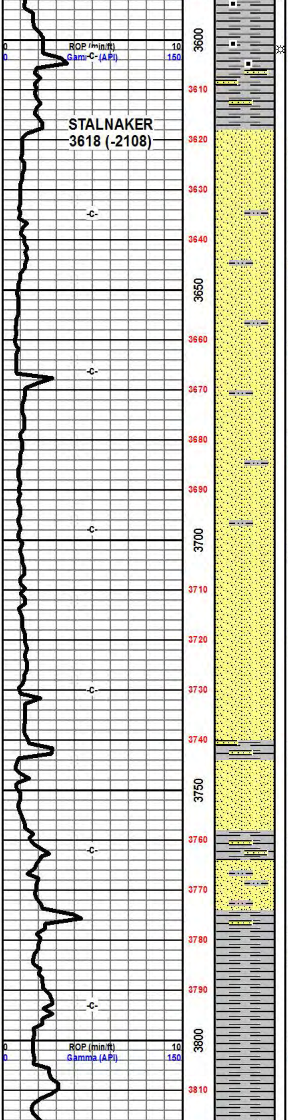
dev. 0.17

dev. 0.13

dev. 0.26

Mud-Co. 3557'
wt. 9.5 vis. 51
wl. 10.4 chl. 4000

dev. 0.26



shl srk gry blky ang pcs, silty tr bedded, much blk carb material/content, sple wsh muggy gry. in spl: lst drk tan brn f xln blky ang dns hrd, calc fill, micro foss frags (Haskell ?)

sst wht off wht clstrs, f grnd, tr vf grnd, sub ang grns, fair to prly srtd, sub fria to hrd blky clstrs, packed dns, fair to prly cem, calc cem, inter gran por, silty arg, tr mic, blk bio/carb material

sst wht off wht lt gry clstrs, f grnd, sub ang grns, fair/poorly srted, sub fria to soft fria clstrs, prly and w/cem calc cem, mslty packed dns, tr silty arg, tr bio/carb mat, inter gran por

sst off wht lt gry f grnd, sub ang grns, prly srted, fair cem calc cem, sub fria, tr clay fill, arg, blk carb fill

sst off wht lt gry f grnd, sub ang tr rded grans, fair to well srted, sub fria, fair cem, calc cem, blky ang clstrs, blk carb fill

sst off wht lt gry f grnd, sub ang grns, fail srted, sub fria, w/p cem calc cem, tr arg/clay fill, blk carb fill/flecks

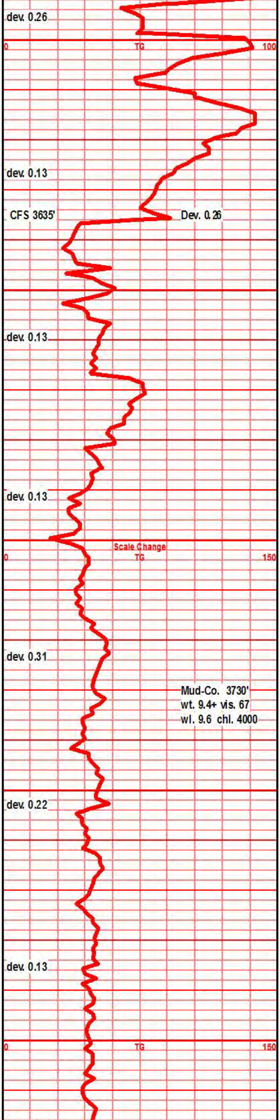
sst wht off wht lt gry f grnd clstrs, sub ang grns, w/srted, prly cem, calc cem, sub fria, clay fill tr arg, blk carb flecks

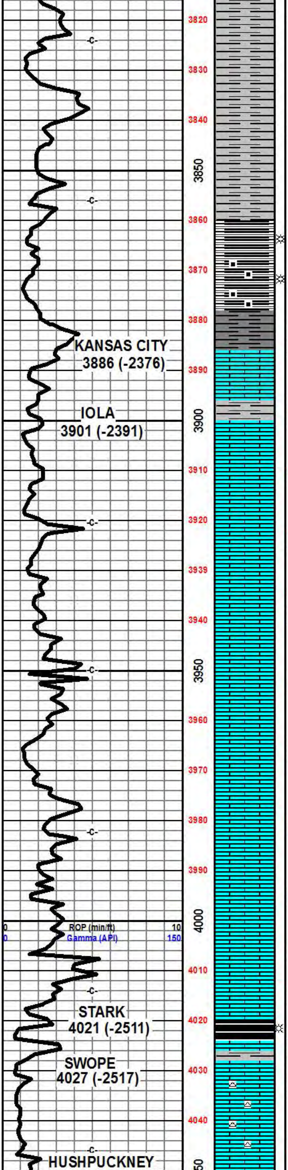
shl gry silty sndy, sst wht off wht lt gry, fn grnd clstrs, w/srted sub ang grns, sub fria, fair/cem, mic blk carb flecks

shl drk gry blky ang gritty sndy, sst lt gry off wht clstrs, f grnd, sub ang grns, w/srted w/cem, calc cem arg, blk carb

sst off wht lt gry clstrs, f grnd, sub ang grns, w/srtd, w/cem, calc cem, blky ang clustrs, shl gry drk gry blky ang gritty sndy pcs

shl gry drk gry blky ang pcs, silty gritty sndy in prt, mic, blk carb beds





shl gry drk gry, blky ang gritty

shl gry drk gry, blky ang pcs, micro silty, tr gas bubs on break

shl drk gry blk, drk reddish brn/ blk, blky ang pcs, carb text, abun gas bubs,

shl gry drk gry blk, drk brn tinted blk carb shl, blky ang sli bedded pcs, abun gas bubs

lst dull tan lt gry f vf xln dns hrd blky ang, tr chlky, micor foss frags, calc xln fill, 5-6 pcs 3900' spl

lst crm tan lt gry f xln sub chlky, micro foss frags, calc xln fill foss frag, inter xln por, foss mold por

lst crm buff tan, f sli med xln gran sub chlky foss frags, calc xln fill, inter xln por, tr gran chlky text

lst crm tan f xln blky ang chlky foss frags, chrt lt gry tan shrp frsh

lst wht crm tan, f xln sub chlky, vry chlky in prt, foss frags, dns hard foss frags, chrt gry tan opaq shrp

lst tan crm off wht f xln blky dns ang hrd chlky foss frags, chrt lt gry shrp frsh opaq

lst wht crm tan f xln blky ang sub chlky foss in prt, frags, calc xln fill chrt lt gry shrp frsh opaq, tr foss ool

lst tan off wht crm f xln blky ang pcs, calc xln fill foss frags, chrt tan gry shrp frsh opaq

lst crm wht tan f xln blky sub chlky, foss frags blky ang pcs, calc xln fill

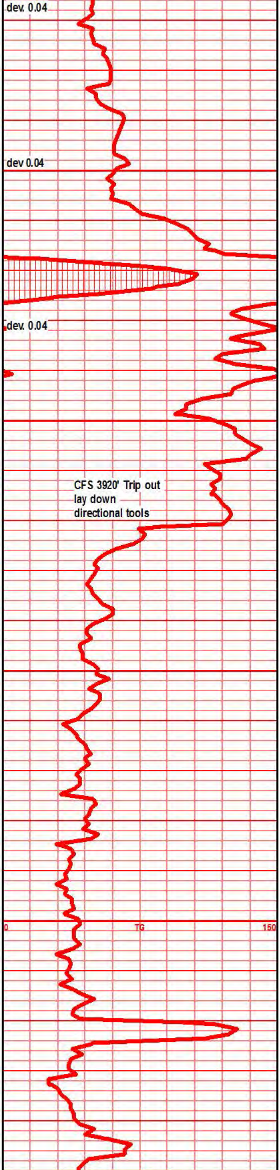
lst tan wht f xln blky ang dns chlky foss frags, calc xln fill

lst crm tan lt gry f xln dns hrd blky ang sub chlky foss frags calc xln fill

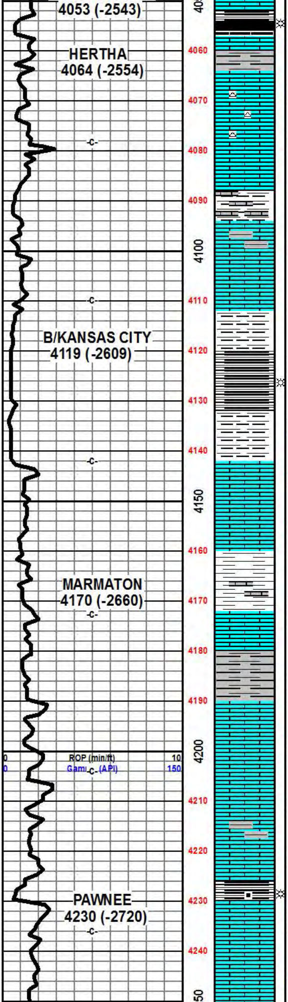
shl drk gry blk carb, blky ang pcs, wxy grsy text, gas bubs

lst wht crm f sli med xln blky ang gran sub chlky to soft, micro foss frags, inter foss mold por, inter xln port, chrt wht tan shrp frsh opaq

lst wht tan tl gry f xln dns hrd blky sub chlky foss frags, inter xln por, chrt tan shrp frsh



CFS 3920' Trip out lay down directional tools



sh gry blk blk carb, blky ang pcs, wxy grsy gas bubs

shl gry med gry blky calc, lst crm tan lt gry blky ang sli arg, foss frags, sub chlky inter xln por, tr chrt lt gry shrp frsh

lst crm tan off wht f xln blky ang sub chlky foss frags, calc xln fill, chrt aa

lst tan mstly gry f vf xln dns hrd chlky, arg, tr foss frags, spls wsh gry wht

lst cry tan mstly gry f vf xln gran gritty arg, chlky tr foss frags, shl gry med gry silty gritty arg

shl gry drk gr blk semi carg, wxy grsy pcs, blky ang pcslst drk gry vf xln dns hrd massive arg

shl gry drk gry blk, silty gritty, calc, lst drk gry dns hrd blky f xln arg silty

shl gry drk gry blk, blky ang semi carb, tr calc, silty gritty

lst tan gry drk gry f vf xln gran dns hrd arg silty, chrt tan gry shrp frsh

lst dull crm tan lt gry mott f vf xln dns, hrd blky ang sub chlky tr arg, massive , shl gry gry blk, gritty silty, bedded/banded

shl gry gry/blk gran calc in prt, gritty platey text.lst tan lt gry mott, f vf xln dns hrd blky ang dns sub chlky tr micro foss frags

sh gry med drk gry/green silty calc hrd, foss inclu, lst tan gry mott f vf xln dns hrd blky ang arg, tr chrt gry brn dull shrp

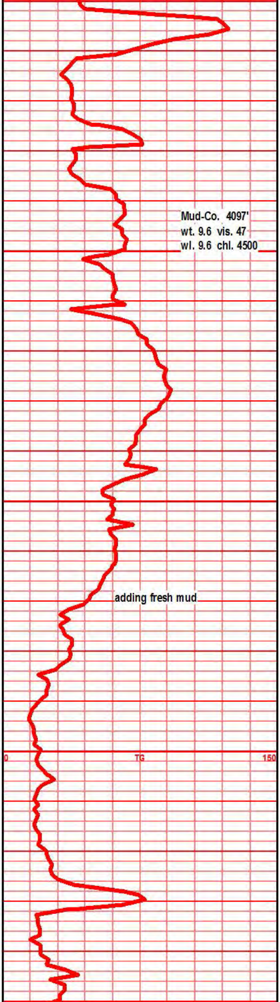
lst crm off wth drk tan, f vf xln dns hrd blky , bec sub chlky micor foss frags, tr pp inter xln por, mstly dns hrd

lst crm tan tr buff f xln blky ang dns tr micro foss frags, tr inter xln por, sli sub chlky in prt

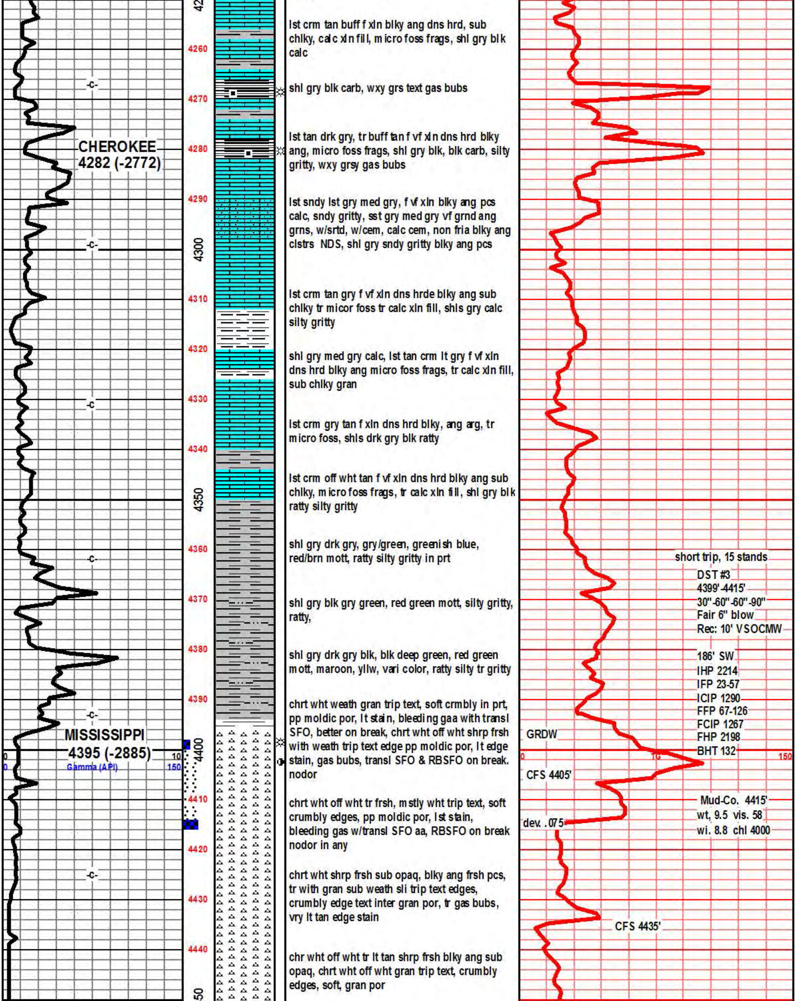
lst crm buff tan f xln blky ang dns tr sub chlky calc xln fill, micro foss, mircro ool

sh gry drk gry blk, carb, wxy grsy pcs, gas bubs, lst crm buff f xln blky ang micro foss frgs, sli chlky, micro foss, foss oo, calc xln fill

lst crm buff lt gry/tan f vf xln dns blky ang sub chlky micro foss frags, tr foss micro ool



Mud-Co. 4097'
wt. 9.6 vis. 47
wl. 9.6 chl. 4500



lst crm tan buff f xln blky ang dns hrd, sub chlky, calc xln fill, micro foss frags, shl gry blk calc

shl gry blk carb, wxy grs text gas bubs

lst tan drk gry, tr buff tan f vf xln dns hrd blky ang, micro foss frags, shl gry blk, blk carb, silty gritty, wxy grsy gas bubs

lst sndy lst gry med gry, f vf xln blky ang pcs calc, sndy gritty, sst gry med gry vf grnd ang grns, w/srtd, w/cem, calc cem, non fria blky ang clstrs NDS, shl gry sndy gritty blky ang pcs

lst crm tan gry f vf xln dns hrde blky ang sub chlky tr micor foss tr calc xln fill, shls gry calc silty gritty

shl gry med gry calc, lst tan crm lt gry f vf xln dns hrd blky ang micro foss frags, tr calc xln fill, sub chlky gran

lst crm gry tan f xln dns hrd blky, ang arg, tr micro foss, shls drk gry blk ratty

lst crm off wht tan f vf xln dns hrd blky ang sub chlky, micro foss frags, tr calc xln fill, shl gry blk ratty silty gritty

shl gry drk gry, gry/green, greenish blue, red/brn mott, ratty silty gritty in prt

shl gry blk gry green, red green mott, silty gritty, ratty,

shl gry drk gry blk, blk deep green, red green mott, maroon, yllw, vari color, ratty silty tr gritty

chrt wht weath gran trip text, soft crmbly in prt, pp moldic por, lt stain, bleeding gaa with transl SFO, better on break, chrt wht off wht shrp frsh with weath trip text edge pp moldic por, lt edge stain, gas bubs, transl SFO & RBSFO on break. nodor

chrt wht off wht tr frsh, mstly wht trip text, soft crumbly edges, pp moldic por, lst stain, bleeding gas w/transl SFO aa, RBSFO on break nodor in any

chrt wht shrp frsh sub opaq, blky ang frsh pcs, tr with gran sub weath sli trip text edges, crumbly edge text inter gran por, tr gas bubs, vry lt tan edge stain

chr wht off wht tr lt tan shrp frsh blky ang sub opaq, chrt wht off wht gran trip text, crumbly edges, soft, gran por

short trip, 15 stands

DST #3
4399'-4415'
30"-60"-60"-90"
Fair 6" blow
Rec: 10' VSOCMW
186' SW
IHP 2214
IFP 23-57
ICIP 1290
FFP 67-126
FCIP 1267
FHP 2198
BHT 132

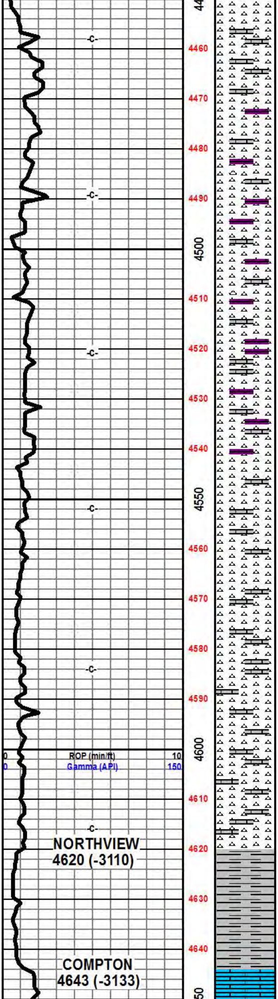
GRDW

CFS 4405'

dev. .075

Mud-Co. 4415'
wt, 9.5 vis. 58
wi. 8.8 chl 4000

CFS 4435'



chrt wht off wht tr lt tan shrp frsh opaq blky ang hrd pcs, chrt wth bone wht frsh with gran trip weath text edges, pp moldic por,

chrt aa, shrp frsh wht off wht frsh opaq with weath gran trip text edges, crumbly soft in prt, lst wht off wth lt tan f xli blky dns ang hrd, tr foss chrty

chrt aa, lst crm buff tan f sli med xln, blkyang flky dns, dolo lt gry gry f vfn xln gran sli sucr, blky dns hrd foss frags

chrt wht off wht shrp frsh opaq, with gran weath trip text edge, lst wht off wth f xln blky ang dns micro foss frags, dolo lt gry f xln gran sli sucr, blky ang chlky foss frags

chrt wht off wht lt gry shrp frsh opaq, blky ang, lst wht off wht f med xln crlsy foss, frags, chrty, chrty inclu,

chrt wht off wht lt gry shrp frsh opaq, blky ang, lst tan off wht lt gry f med xln blky ang dns hrd foss crsly in prt, chrty, wht gry chrt inclu

chrt aa, lst wht off wht lt gry/blue f xln dns, hrd blky ang dns tr sub chlky gran, gritty

chrt wth off wht shrp frsh opaq blk w/weath gran trip text edge, kst tan off wht buff f med xln blky flky crsly foss in prt, chrty, chrt inclu, dolo aa,

chrt gry off wht wht shrp frsh opaq w/weath gran trip edges, lst wht off wht tr lt gry blue f xln dns hrd dolo in prt, gritty gran in prt tr foss

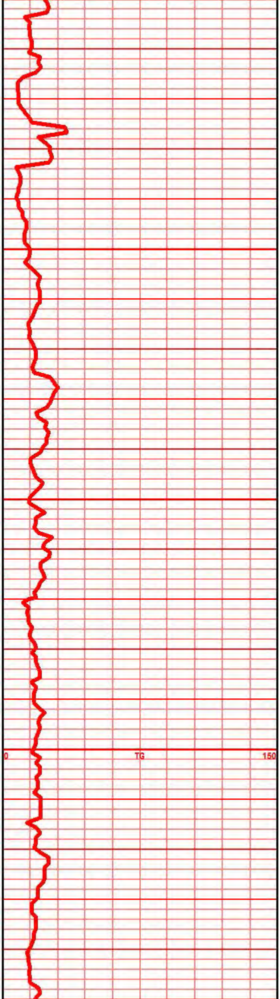
shl drk gry, m stly red brn gritty silty

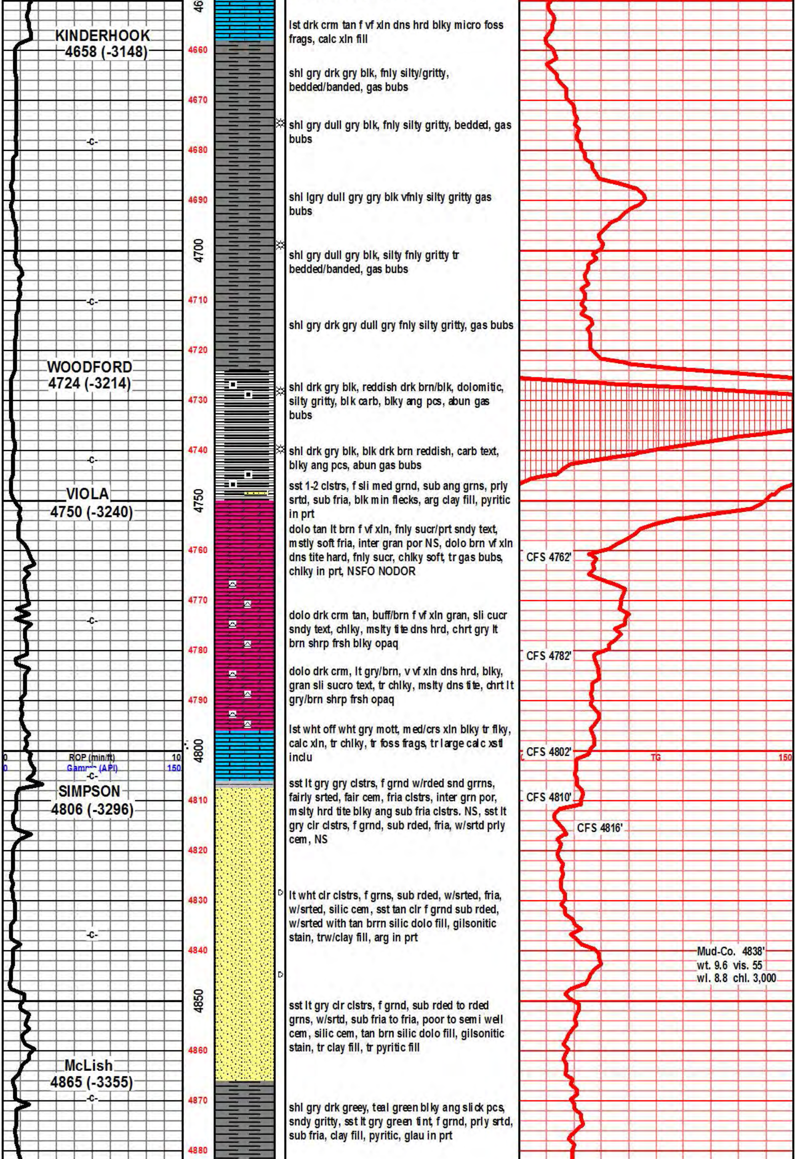
chrt aa, lst/dolo gry tan, blue gry silty gritty arg, gritty, lst wht off wht f med xln blky dns hrd chrty, shl drk gry brn, brn red silty gritty, calc inclu

shl gry drk gry, green drk green/gry, blk ang slick pcs,

shl drk gry, drk gry/green, gry blk, click blky ang pcs

lst tan buff, drk tan, f vf xln dns hrd blky ang, micro foss frags, tr calc xln fill





lst drk crm tan f vf xln dns hrd blky micro foss frags, calc xln fill

shl gry drk gry blk, fnly silty/gritty, bedded/banded, gas bubs

shl gry dull gry blk, fnly silty gritty, bedded, gas bubs

shl lgry dull gry gry blk vfnly silty gritty gas bubs

shl gry dull gry blk, silty fnly gritty tr bedded/banded, gas bubs

shl gry drk gry dull gry fnly silty gritty, gas bubs

shl drk gry blk, reddish drk brn/blk, dolomitic, silty gritty, blk carb, blky ang pcs, abun gas bubs

shl drk gry blk, blk drk brn reddish, carb text, blky ang pcs, abun gas bubs

sst 1-2 clstrs, f sli med grnd, sub ang grns, prly srtd, sub fria, blk min flecks, arg clay fill, pyritic in prt

dolo tan lt brn f vf xln, fnly sucr/prt sndy text, mstly soft fria, inter gran por NS, dolo brn vf xln dns tite hard, fnly sucr, chlky soft, tr gas bubs, chlky in prt, NSFO NODOR

dolo drk crm tan, buff/brn f vf xln gran, sli cucr sndy text, chlky, mslty tite dns hrd, chrt gry lt brn shrp frsh blky opaq

dolo drk crm, lt gry/brn, v vf xln dns hrd, blky, gran sli sucro text, tr chlky, mslty dns tite, chrt lt gry/brn shrp frsh opaq

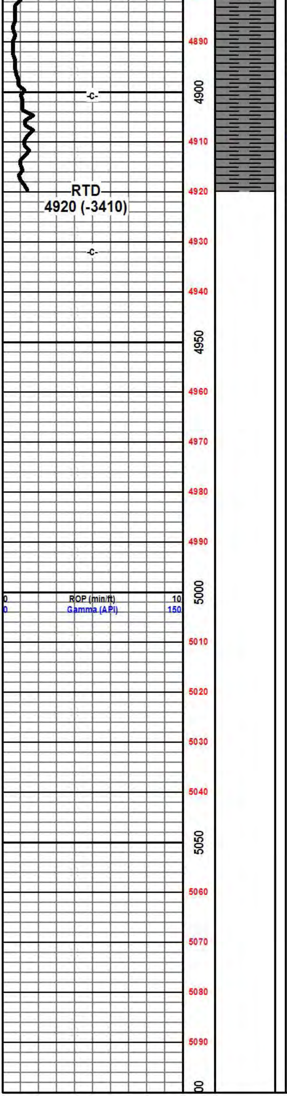
lst wht off wht gry mott, med/crs xln blky tr flky, calc xln, tr chlky, tr foss frags, tr large calc xstl inclu

sst lt gry gry clstrs, f grnd w/rded snd grrns, fairly srted, fair cem, fria clstrs, inter grn por, mslty hrd tite blky ang sub fria clstrs. NS, sst lt gry clr clstrs, f grnd, sub rded, fria, w/srtd prly cem, NS

lt wht clr clstrs, f grns, sub rded, w/srted, fria, w/srted, silic cem, sst tan clr f grnd sub rded, w/srted with tan brrn silic dolo fill, gilsonitic stain, trw/clay fill, arg in prt

sst lt gry clr clstrs, f grnd, sub rded to rded grns, w/srtd, sub fria to fria, poor to semi well cem, silic cem, tan brn silic dolo fill, gilsonitic stain, tr clay fill, tr pyritic fill

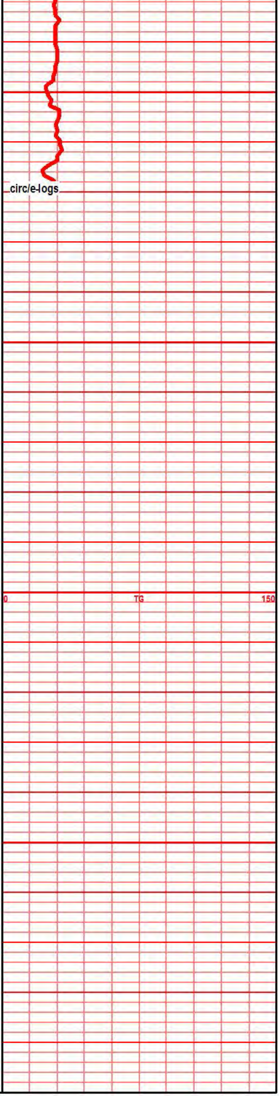
shl gry drk greey, teal green blky ang slick pcs, sndy gritty, sst lt gry green tint, f grnd, prly srtd, sub fria, clay fill, pyritic, glau in prt



shl gry drk gry, teal green, slick greasy text, sndy gritty in prt, snd grn inclu w/glau, pyritic fill

shl drk gry, drk gry/green, teal green, slick grsy wxy text, snd grn inclu,

shl gry, drk gry green teal green, slick greasy wxy text aa, snd grn inclu,



Woolsey Operating Company LLC
Hubbard #1
C NW NW NW
330' FNL & 330' FWL
Sec. 1 - Twp 32S - Rge 8W
Harper County, Kansas
Crystal Springs NW
GL 1498' KB 1510'
API # 15-077-22175-00-00