



**Woolsey Operating Company, LLC**

Scale 1:240 (5"=100') Imperial  
Measured Depth Log

**Well Name:** STERNBERGER B-2  
**Location:** Section 12 - Township 35 South - Range 12 West  
**License Number:** 15-007-24218-0000 **Region:** Barber County, Kansas  
**Spud Date:** September 3, 2014 **Drilling Completed:** September 14, 2014  
**Surface Coordinates:** 500' FSL and 2210' FWL  
Approx. NW SE SE SW  
**Bottom Hole Coordinates:**  
**Ground Elevation (ft):** 1352' **K.B. Elevation (ft):** 1364'  
**Logged Interval (ft):** 4000' **To:** 5356' **Total Depth (ft):** 5356'  
**Formation:** Kansas City Group ---->Simpson Group  
**Type of Drilling Fluid:** Chemical Mud

Printed by MUD.LOG from WellSight Systems 1-800-447-1534 [www.WellSight.com](http://www.WellSight.com)

**OPERATOR**

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

**GEOLOGIST**

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

## COMMENTS

Surface Casing: Spud at 4:30 pm on September 3rd 2014, ran 5 joints of new 13 3/8" X 48#/ft casing to 217' KB (tally 202'). Cemented with 300 sx Class A, 2% gel, 3% cc (by Allied). Plug down 11:30 pm on Sept 3rd 2014, cement did circulate.

Production Casing: 5 1/2" X 16.5#/ft set to 5143' KB with 170 sx.

Deviation Surveys: 2 at 217', 1 at 1011', 3/4 at 1517', 3/4 at 2024', 3/4 at 2561', 1/2 at 3008', 1/2 at 3514', 3/4 at 4024', 1 1/4 at 4247', 1 at 4501', 1 1/2 at 4859', 3/4-5104', 1/2 at 5356'

Pipe Strap @ 4859', Board: 4849.76', Strap: 4848.34', Strap is 1.42' short to the Board. No corrections were made to the board.

Fossil Drilling Rig 3 Bit Record:

- 1) 17 1/2" Smith RR in at 0' out at 217'. 2.25 hours
- 2) 7 7/8" Varel HE-21 in at 217', out at 4859', 117.5 hrs.
- 3) 7 7/8" Varel HE-29 RR in at 4859', shells out at 5356', 43 3/4 hrs

Gas Detector: Woolsey Operating Company, Gas Shack #2

Mud System: Chemical Mud, Mud-Co, Brad Bortz, Terry Ison, Engineers

DSTs: Trilobite Testing, Ryan Reynolds, Tester

Company Man: Mike Tharp, Woolsey Operating Company

E-Logs: Nabors Completion and Production Services, Dual Induction Laterolog w/SP, CNL-FDC w/PE, Gamma Ray and Caliper. Ian Mabb, Engineer

## DSTs

DST #1, Mississippian (4760-4859)

30-60-60-120, IF: Strong Blow BOB in 8 min. ISI: No Blow, FF: Fair Blow 2"-7" FSI: No Blow, 250' G, 200' VSOCGM (10%G 1%O 89%M), ISIP: 850, FSIP: 1063, FP: 86-68/89-113, IH: 2369, FHP: 2167. BHT 125

DST #2 Misener Sand, 5045'-5151', 30"-60"-60"-90", SB BOB in 5 minutes of both flow periods, no blow on either shut in period. Rec: 200' GIP, 620' GMCW (10% Gas, 40% Mud, 50% Water), 1000' MGCW (5% Mud, 10% Gas, 85% Water). IHP 2633, IFP 164-434, ISIP 1825, FFP 434-795, FSIP 1823, FHP 2479. BHT 134.

## CREWS

Jim Wenrich, Pusher (rarely seen)

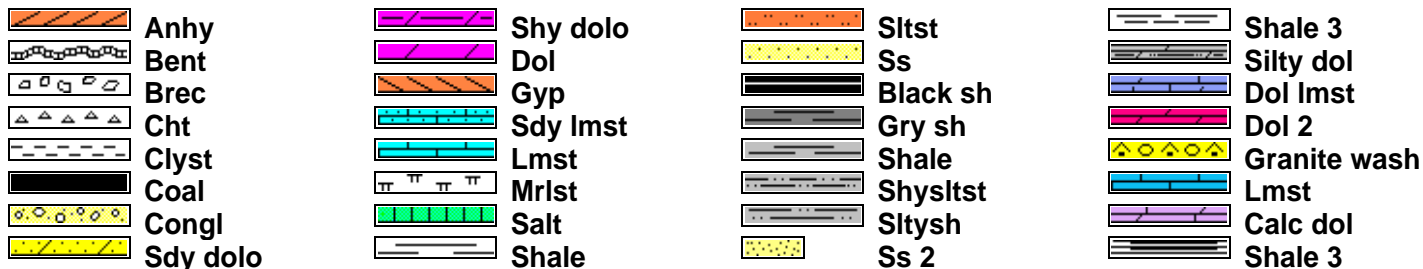
Daniel Orrantia, Daylights

Ron Burns, Evening

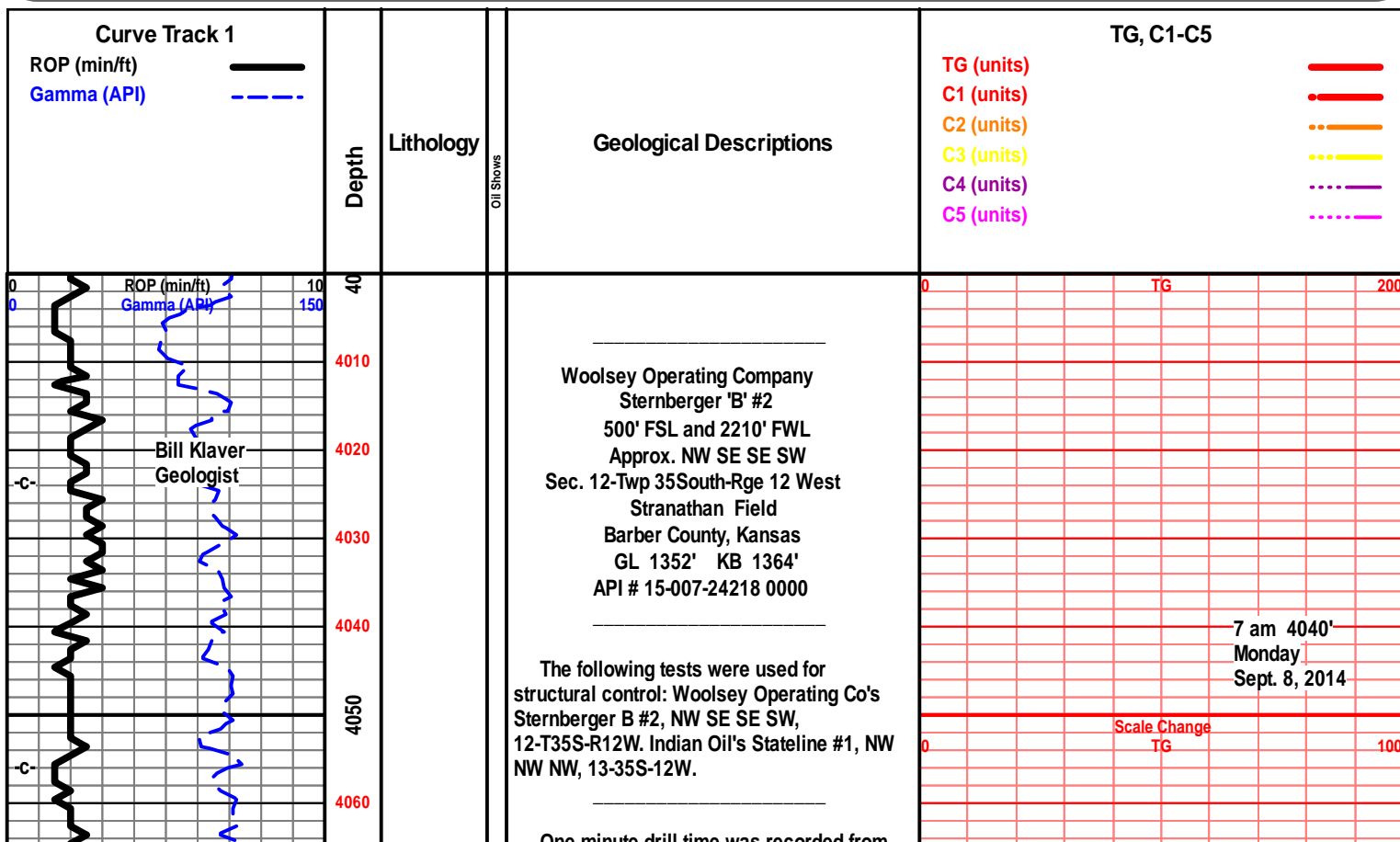
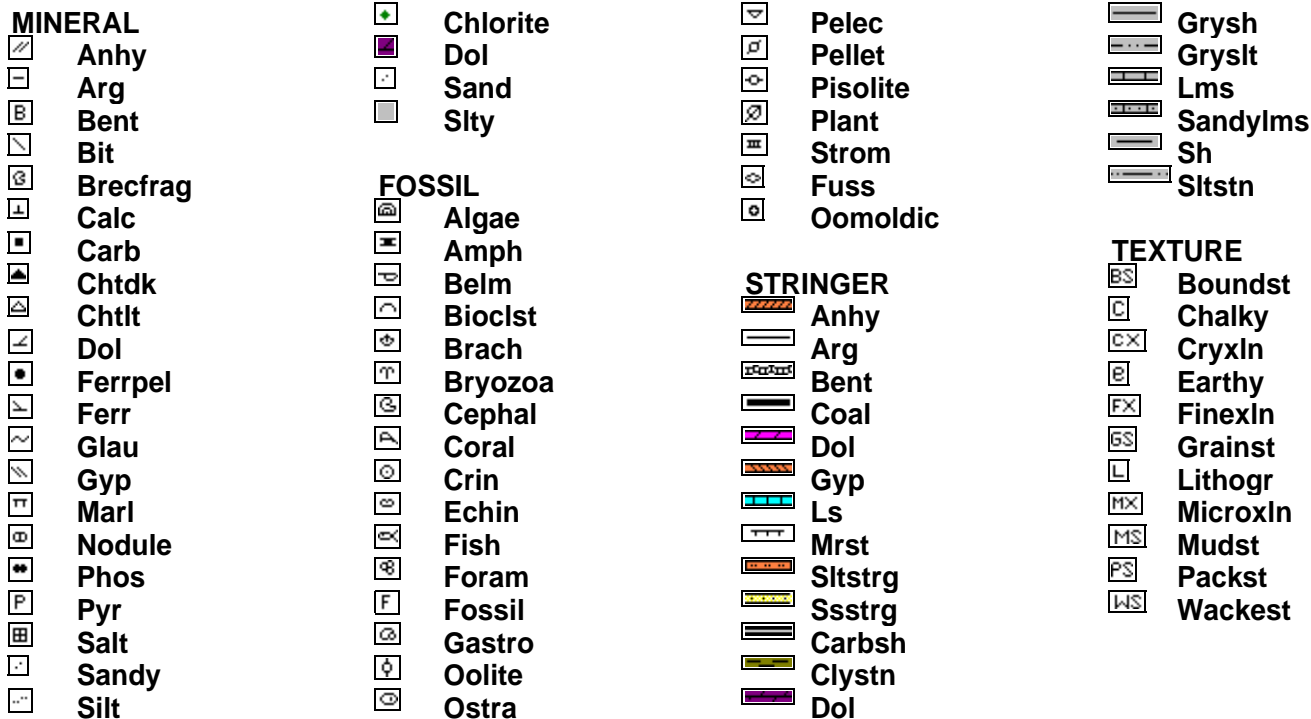
Kirk Shuman, Morning

Chris Slatts, Relief

### ROCK TYPES



### ACCESSORIES



One minute drill time was recorded from 4000' to rotary total depth. Ten foot and circulation samples were rough neck gathered from 4500' to rotary total depth. All samples were delivered to the Survey at the completion of the test.

7 am Progress:

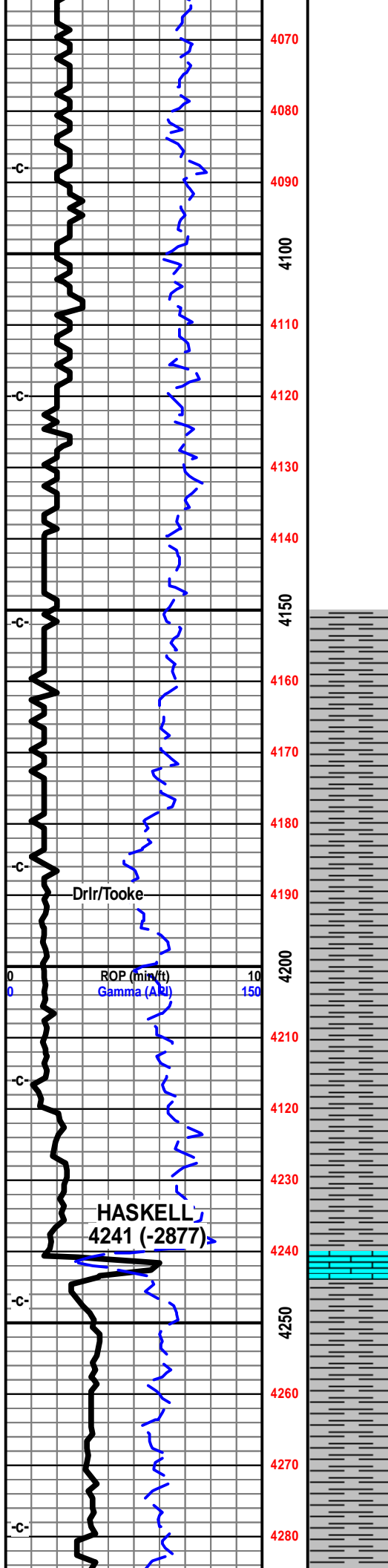
September 3, 2014 MIRT/SPUD  
 September 4, 2014 WOC, drill plug 8 am  
 September 5, 2014 Drilling at 1715'  
 September 6, 2014 Drilling at 2640'  
 September 7, 2014 Drilling at 3455'  
 September 8, 2014 Drilling at 4040'  
 September 9, 2014 Drilling at 4501'  
 September 10, 2014 Drilling at 4724'  
 September 11, 2014 Drilling at 4859'  
 September 12, 2014, Drilling at 5090'  
 September 13, 2014 Drilling at 5162'  
 September 14, 2014 TOOH for E-logs at 5356'. RR bit shells out in Wilcox. E-Logs out at 1 pm

Mud-Co. 4088'  
 wt. 9.0 vis. 62  
 wl. 9.2 chl. 3,000

E-Log Tops:

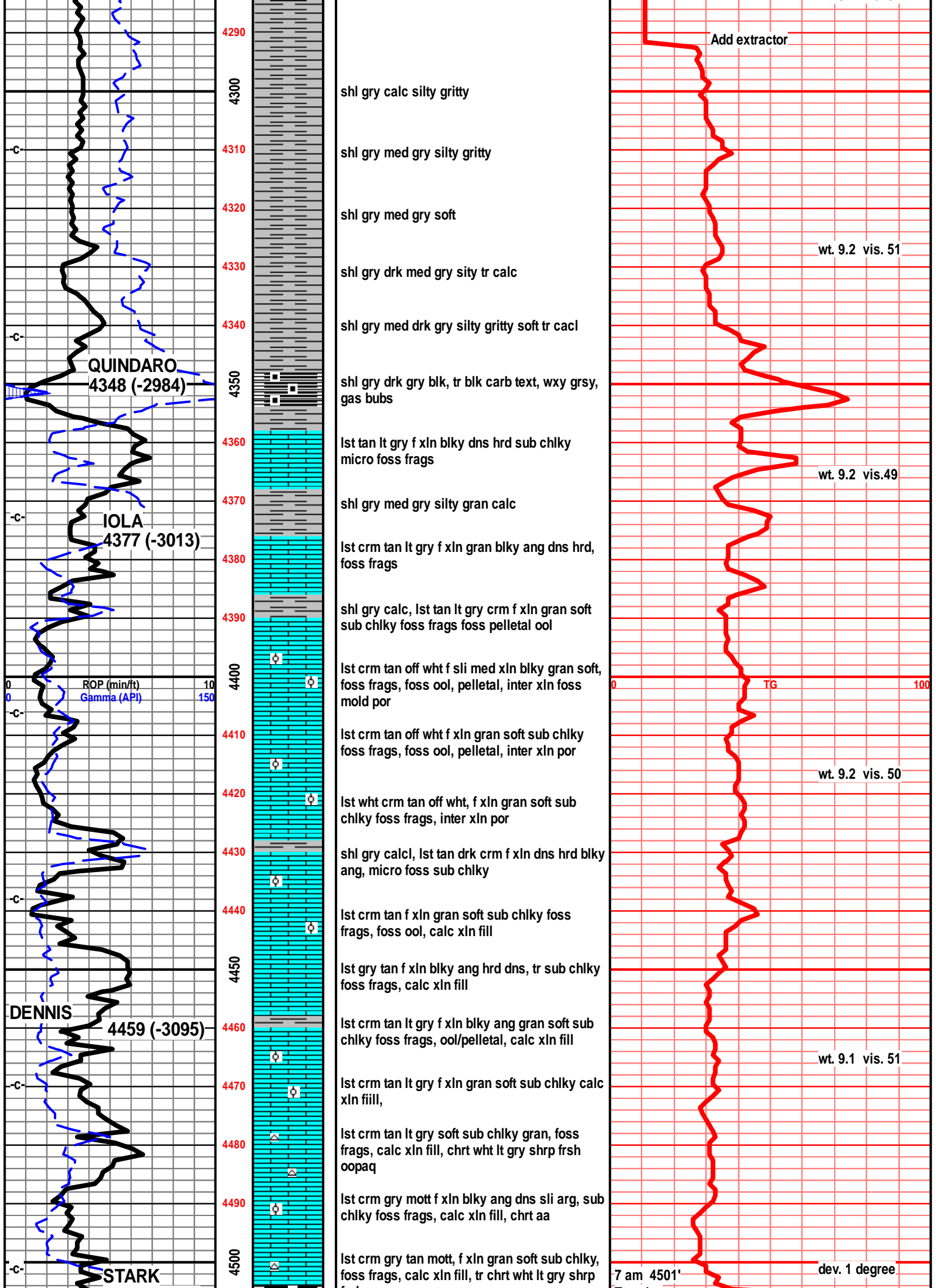
- Herrington 1867 (-503)
- Onaga 2734 (-1370)
- Wabaunsee 2792 (-1428)
- LeCompton 3591 (-2227)
- Kanwaka 3619 (-2255)
- Heebner 3810 (-2446)
- Toronto 3823 (-2459)
- Douglas Grp 3848 (-2484)
- Douglas Shale 3872 (-2508)
- Haskell (Brown) Lime 4239 (-2875)
- Quindaro 4347 (-2983)
- Iola 4377 (-3013)
- Drum 4430 (-3066)
- Dennis 4465 (-3101)
- Stark 4503 (-3139)
- Swope 4515 (-3151)
- Hushpuckney 4536 (-3172)
- Hertha 4543 (-3179)
- B/Kansas City 4586 (-3222)
- Pawnee 4693 (-3329)
- Cherokee Group 4739 (-3375)
- Mississippi 4805 (-3441)
- C3 4805 (-3441)
- C2A 4814 (-3450)
- C2 4862 (-3498)
- C1 4910 (-3546)
- Osage 5032 (-3668)
- Northview Shale 5035 (-3671)
- Compton 5039 (-3675)
- Kinderhook 5047 (-3683)
- Woodford 51230(-3759)
- Misener 5144 (-3780)
- Viola 5163 (-3799)
- Simpson Group 5300 (-3936)
- Wilcox Sand 5323 (-3959)
- LTD 5356 (-3959)

Geo on Location  
 4152' 11 am  
 Sept. 8, 2014



0 TG 100

Survey 1 1/2 deg  
 at 4147', dec WOB



Tuesday  
Sept. 9, 2014

4505 (-3141)

**SWOPE**  
4519 (-3155)

**H'PUCKNEY**  
4538 (-3174)

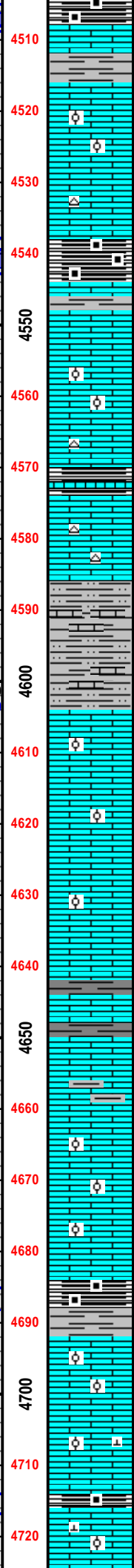
**HERTHA**  
4548 (-3184)

**B/KC**  
4586 (-3222)

ROP (min/ft)  
Gamma (API)

**PAWNEE**  
4693 (-3329)

CFS 4705'



trsh

shl gry drk gry, gry blk carb, wxy grsy text, gas bubs, 1st tan drk gry f xln blk ang dns, arg, silty, calc xln fill micro foss

1st crm buff tan f xln, blk ang gran, sub chlky, calc xln fill, foss frags, pelletal, ool, inter xln por pp por

1st crm buff tan f xln dn shrd blk sub chlky foss frags, foss ool, pelletal, calc xln fill, chrt tan wht shrp frsh opa

shl gry blk, blk carb, wxy grsy text, gas bubs, flood blk carb shl, 1st tan crm off wht f xln blk ang dns hrd foss frags, micro foss frags, tr sub hlkmy

1st crm tan f xln blk ang sub chlky, micro foss frags, foss frags ool, pelletal, calc xln fill, inter xln por tr foss mold por

shl gry blk, tr blk carb text, 1st tan crm buff f xln blk ang dns hrd sli chlky, foss frags, foss ool, chrt tan wht shrp frsh

1st tan lt gry f vf xln dns hrd blk sli chlky, micro foss frags, calc xln fill, chrt tan lt gry shrp frsh opa

shl gry green, gry brn mott, silty gritty, pyritic, calc in some/ 1st drk brn vf xln dns hrd blk ang pcs, micro xln in prt,

shl gry, gry green, silty gritty, calc in prt, fnly silty, pyritic, 1st aa

shl gry drk gry blk, gry brn, 1st drk gry brn f mic xln dns hrd arg blk dns, 1st lt gry green f mic xln blk ang dns hrd pcs

1st gry green, f mic xln dns hrd blk ang. 1st tan brn drk gry/brn f vf xln dns hrd blk ang arg silts

shl aa, 1st drk tan buff, brn f vf xln dns hrd blk ang, micro foss frags, calc xln fill poor sample

1st crm buff tan f vf xln dns hrd, blk ang pcs, micro foss frags, micro ool, shl drk gry, tr gry blk

short trip pulled vry tite, reamed 7 stnds back to bottom, spls all garbage

1st crm buff tan f vf xln blk ang hrd, tr sub chlky, micro foss frags, micor foss ool, calc xln fill

1st crm tan buff, f vfn xln, blk hrd, mstly dns, tr sub chlky, micro foss frags, micro ool, calc xln fill

1st crm tan buff f vf xln dns hrd blk, sli sub chlky, micro foss frags, micro ool, calc xln fill

shl gry, grk gry blk, tr carb text, grsy wxy text, gas bubs

1st lt tan, crm buff tan f vf xln, blk dns hrd, foss frags, foss micro ool, much calc xln fill mstly dns, tr inter xln por, sli sub chlky in prt

1st crm tan buff f vf xln blk ang tr sub chlky, foss frags, foss ool, calc xln fill, hrd

1st crm tan buff f vf xln blk ang tr sub chlky, foss frags, foss ool, calc xln fill, hrd

Mud-Co. 4549'  
wt. 9.2 vis. 57  
wl. 9.0 chl. 3,000

TG 100

wt. 9.2 vis. 52

Short trip 4560'  
7 pm Tuesday  
Sept. 9, 2014  
Pulled "tite" -  
ream to bottom  
6 1/2 hour ST

CFS 4705'

vis. 74  
wt. 9.1  
lcm. 3#

7 am 4724'  
Wednesday  
Sept. 10, 2014

1st crm tan buff f vf xln blkly ang tr sub chlky,  
foss frags, foss ool, calc xln fill, hrd

drk gry-blk sh, carb, silty, gritty, pyritic, sub  
ang, soft, trc gas bubs on brk, nsfo

off wt-tan ls, micro xln, chlky, trc foss frags,  
trc pyrite, sub ang, hrd, nso&g, trc off wt-lt brn  
chlky chrt

off wt-tan ls, micro xln, trc argill, chlky, trc  
foss frags, trc pyrite, sub ang, hrd, nso&g, trc  
off wt-lt brn chlky chrt

off wt-tan ls, micro xln, trc argill, chlky, trc  
foss frags, trc pyrite, sub ang, hrd, nso&g, trc  
off wt-lt brn chlky chrt

gry sh, silty, gritty, trc vfn snd, trc waxy look,  
drk blk clay clasts, sub ang, firm, nso&g

gry sh, silty-vfn snd, waxy look, drk blk clay  
clasts, sub ang, firm, nso&g

gry sh, silty-vfn snd, waxy look, drk blk clay  
clasts, sub ang, firm, nso&g

brt wt chrt, trc lt brn edges, xln, ang, shrp, hrd,  
nso&g

brt wt chrt, mottled, weathered, pin-point por,  
hrd, spotted light brn-drk brn stain, trc  
asphaltic stain, good odor, bleeding gas bubs  
with light brown oil drops

brt wt chrt, mottled, weathered, pin-point por,  
firm, trc brt wt-lt blue xln chrt, spotted brn-drk  
brn stain, trc asphaltic stain, good odor,  
bleeding gas bubs with light brown oil drops

brt wt chrt, mottled, weathered, pin-point por,  
firm, trc brt wt-lt blue xln chrt, drk brn-blk  
stain, trc asphaltic stain, strong odor,  
bleeding gas bubs with light brown oil drops

off wt-lt tan dol, fn xln, brt wt xln shrp chrt  
inclus, siliceous, trc glauc, trc grainy look,  
sub ang, hrd, lt brn-drk brn spotted stain along  
chrt-dol contact, no gas, nsfo

off wt-lt gry dol, vfn-fn xln, trc silty, trc grainy,  
trc siliceous, glauc, trc argill, trc wt-lt brn  
chlky chrt, trc drk gry shl inclus, sub ang,  
blkly, hrd, nso&g

off wt-lt gry dol, vfn-fn xln, trc silty, trc grainy,  
trc siliceous, glauc, trc argill, trc wt-lt brn  
chlky chrt, trc drk gry shl inclus, sub ang,  
blkly, hrd, nso&g

lt gry dol, vfn-fn xln, trc shaly, trc silty, trc  
grainy, siliceous, glauc, trc argill, brt wt-lt  
brn xln chrt inclus, trc drk gry shl inclus, sub  
ang, blkly, hrd, nso&g

lt gry-gry dol, vfn-fn xln, trc shaly, silty,  
grainy, siliceous, trc glauc, argill, trc brt  
wt-lt brn xln chrt inclus, drk gry shl inclus,  
sub ang, blkly, hrd, nso&g

lt gry-gry dol, vfn-fn xln, silty, grainy,  
siliceous, trc glauc, argill, trc brt wt-lt brn  
xln chrt inclus, drk gry shl inclus, sub ang,  
blkv. hrd. nso&g

**CHEROKEE GRP**  
4742 (-3378)

ROP (min/hr)  
Gamma (API)  
**C2A**  
4806 (-3442)

**C2**  
4854 (-3490)

Mud-Co 4763'  
wt. 9.1 vis. 74  
wl. 9.0 chl. 4,000

Note TG  
Scale  
Change

Scale Change  
TG

DST #1 Miss  
(4760-4859)  
30-60-60-120  
250' G  
200' VSOCGM  
ISIP 850  
FSIP 1063  
IF 86-68  
FF 89-113

CFS 4822'

vis. 62  
wt. 9.1  
lcm. 3#

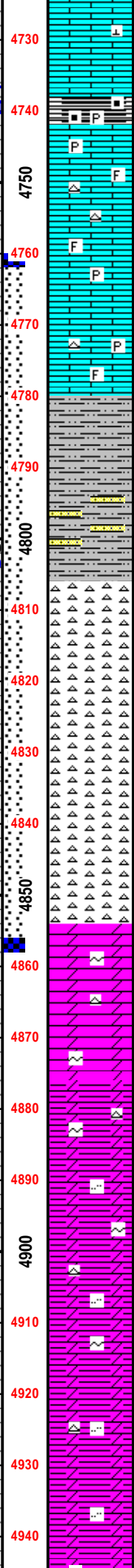
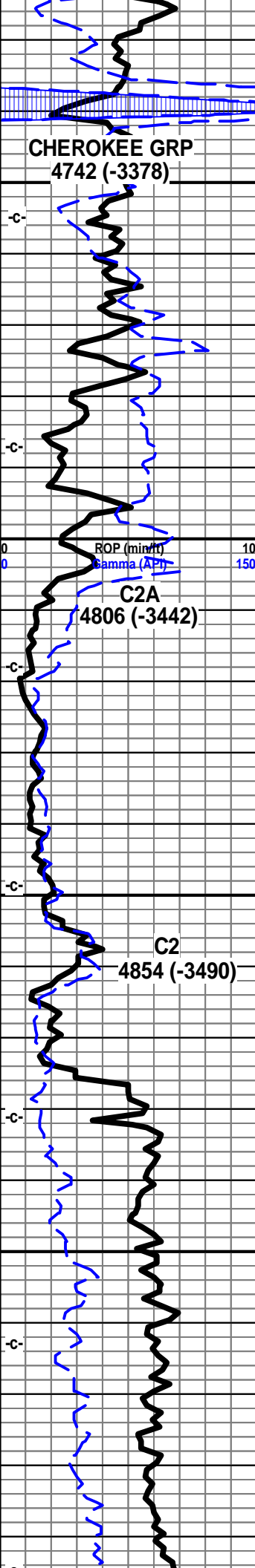
CFS 4859'

7 am 4859'  
Thursday  
Sept. 11, 2014

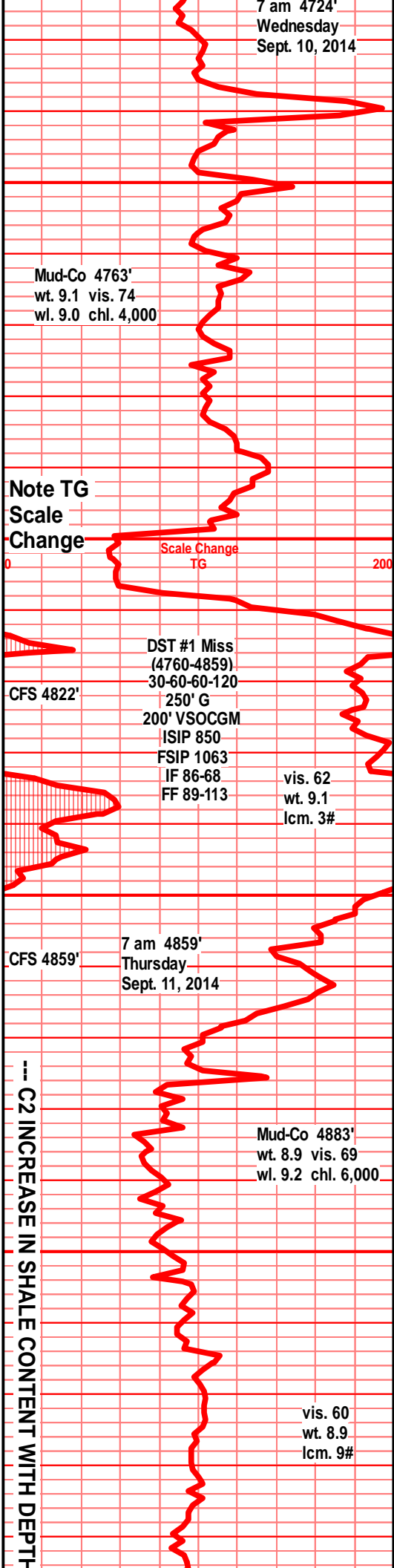
--- C2 INCREASE IN SHALE CONTENT WITH DEPTH

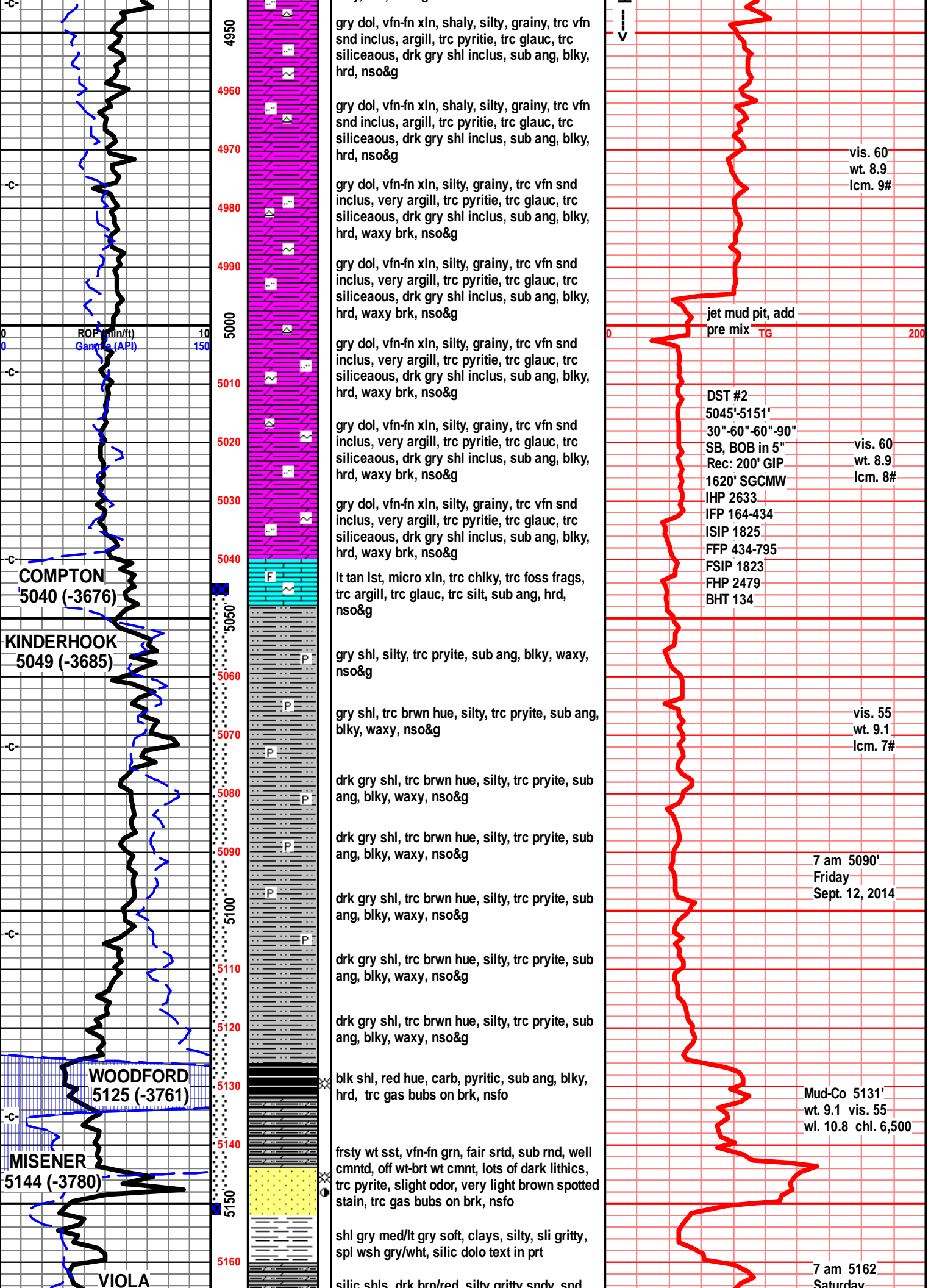
Mud-Co 4883'  
wt. 8.9 vis. 69  
wl. 9.2 chl. 6,000

vis. 60  
wt. 8.9  
lcm. 9#

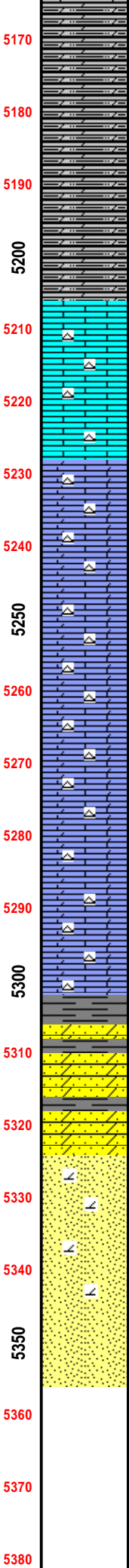
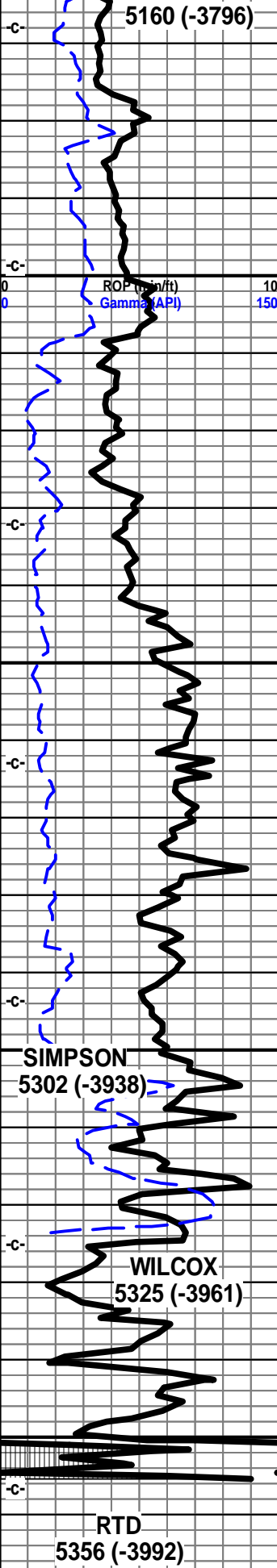


Vertical text column containing detailed lithological descriptions for each depth interval, such as '1st crm tan buff f vf xln blkly ang tr sub chlky, foss frags, foss ool, calc xln fill, hrd'.









shl, dolo shl, silic, drk brn/red, silty gritty, silty, snd  
sndy, abun snd grn inclu, soft gran in prt,  
abun gas bubs

shl, silic dolo shls, drk blk/red, drk brn/red,  
silty gritty, snd grn inclu, gran hrd blk pcs

shl silty gritty silic/dolo shl, blk reddish brn  
snd grn inclu, blk ang pcs gas bubs

shl drk gry blk, blk/red, drk brn red, gritty  
gran silty, tr snd grn inclu gas bubs

lst wht crm/wht f sli med xln blk ang, sli  
chlky to sub chlky, crsly foss in prt, lst wht lt  
gry mott f sli med xln, blk ang, calc xln fill,  
inter xln por, tr foss frags, tr chrt wht sub  
opaq, shrp frsh blk,

lst wht off wht tr crm, lst crm wht w/gry tint f  
sli med xln, blk ang pcs, crs calc xstls,  
pyritic, inter xln por, sli chlky in prt, tr large  
foss frags chrt, wht sub opaq, shrp frsh

lst crm gry mott f sli med xln blk ang dns  
pcs, crs calc xln text, foss frags, tr pyritic, sli  
sub chlky in prt, chrt wht off wth shrp frsh sub  
opaq

lst aa, lst/dolo drk tan, lt brn f vf xln gran, tr sli  
sucr text, snd grn inclu, arg in prt, chrt in prt,  
chrt dull tan lt brn, shrp frsh foss sub opaq

lst/dolo crm tan lt brn f vf xln gran arg, sli  
sucr/sndy text, sub chlky, chrt, chrt dull tan  
lt brn shrp frsh sub opaq

lst/dolo crm tan lt brn/brn, f vf xln dns hrd  
blk, sli sub chlky, sli sucu sndy text, chrt,  
chrt dull tan brn shrp frsh sub opaq

lst/dolo crm tan, mstly drk tan brn f vf xln,  
gran blk, sli sub chlky, sli sucu/sndy text in  
prt, chrt, chrt dull tan brn shrp frsh sub opaq

lst/dolo drk tan brn f vf xln dns hrd blk, sli  
chlky/gran text, sli sucu/sndy text, chrt in prt,  
chrt dull tan brn shrp frsh sub opaq

shl drk gry/blk, drk green silty wxy grsy sndy,  
snd grn inclu, sst lt gry lt green, f grnd sub  
ang grns, w/srtd, w/cem, silic cem, pyritic, tr  
clay fill, sst lt tan clr clstrs, f grnd, rded grns,  
w/srtd, prly cem, silic cem, fria/soft inter gran  
por, NS

sst lt gry clr clstrs, f grnd, sub ang/sub rded  
grns, w/srtd, prly cem, sub fria, inter gran por,  
NS

sst clr off wht, tr lt gry clstrs, frosted grns, f  
grnd, sub ang/sub rded grns, fairly w/srtd,  
prly cem, silic cem, inter gran por, gran soft,  
NS

sst aa. sst lt gry f grnd, sub ang/sub rded  
grns, fair to w/srtd, w/cem, sub fria, tr silic  
fill, mstly dns blk ang clstrs, much loose clr  
rded fn grnd snd grns in sample tray

