

John Goldsmith Wellsite Service

Cell and Home Phone:
316-640-0236

427 Roosevelt St.
Cheney, KS 67025

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

Well Name: #5 Harley

Location: 1867' FSL & 737' FEL, SECTION 4-14S-44W

License Number: API: 05-017-07745

Spud Date: 06/17/2013

Region: Cheyenne County

Drilling Completed: 06/24/13

**Surface Coordinates: LAT 38.86142
LONG -102.36682**

Bottom Hole Vertical hole

Coordinates:

Ground Elevation (ft): 4307'

K.B. Elevation (ft): 4323'

Logged Interval (ft): 4100' To: RTD

Total Depth (ft): 5641'

Formation: St. Joe at RTD

Type of Drilling Fluid: Chemical

Printed by MUD.LOG from WellSight Systems 1-800-447-1534 www.WellSight.com

OPERATOR

Company: PRONGHORN OPERATING, LLC.

**Address: 8400 East Prentice Ave., Ste. 1000
Greenwood Village, CO 80111
(303) 220-0794**

GEOLOGIST

Name: John Goldsmith

Company: John Goldsmith Wellsite Service

**Address: 427 Roosevelt St.
Cheney, KS 67025
316-640-0236**

COMMENTS

Contractor: Wildcat Drilling Rig #1

Pusher: Josh Kliesen (719) 340-1212

Surface Casing: 10 joints of 13 3/8" set at 426'

Production Casing: 5.5" Production casing was installed with two port collars.

Logs by: Allied Wireline

RTD=5641'

LTD=5646'

FORMATION TOPS

FORMATION	SAMPLE TOPS		LOG TOPS	
	Depth	Datum	Depth	Datum
Shawnee	4152'	+171	4152'	+171
Heebner Shale	4338'	-15	4338'	-15
Lansing	4384'	-61	4384'	-61
Marmaton	4746'	-423	4748'	-425
Pawnee	4782'	-459	4784'	-461
Fort Scott	4812'	-489	4815'	-492
Cherokee Shale	4880'	-557	4882'	-559
Morrow	5158'	-835	5159'	-836
Keyes	5271'	-948	5273'	-950
St. Louis	5320'	-997	5322'	-999
Spergen	5396'	-1073	5399'	-1076
Warsaw	5480'	-1157	5483'	-1160
Osage	5521'	-1198	5524'	-1201
St. Joe	5572'	-1249	5576'	-1253
RTD	5641'	-1318		
LTD			5646'	-1323

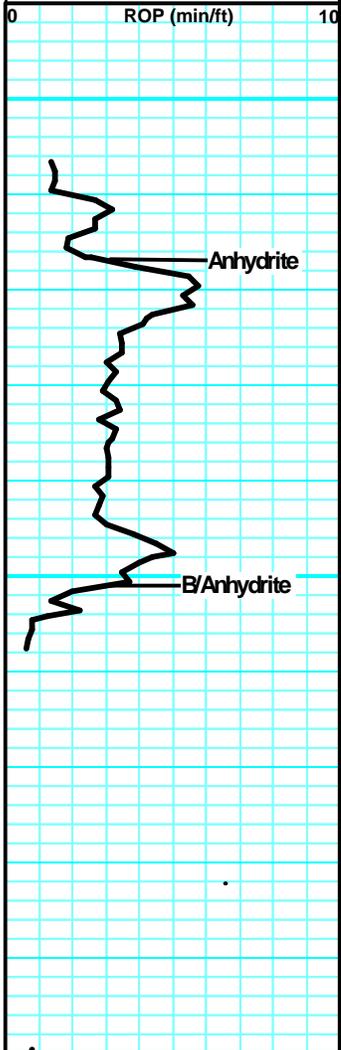
ROCK TYPES

	Anhy		Salt		Dol		Siltysh
	Cht		Shale		Dtd		Sdy dolo
	Coal		Shcol		Gry sh		Silty dolo
	Congl		Shgy		Sandylms		Shy dolo
	Dol		Sltst		Shale		Shaly ls
	Gyp		Ss		Sltstn		
	Lmst		Carb sh		Shlyslts		

ACCESSORIES

FOSSIL		Plant		Glau	STRINGER		Anhy
	Algae		Strom		Gyp		Arg
	Amph		Fuss		Hvymin		Bent
	Belm		Oomold		Kaol		Coal
	Bioclst				Marl		Dol
	Brach	MINERAL			Minxl		Gyp
	Bryozoa		Anhy		Nodule		Ls
	Cephal		Arggrn		Phos		Mrst
	Coral		Arg		Pyr		Sltstrg
	Crin		Bent		Salt		Ssstrg
	Echin		Bit		Sandy		Carbsh
	Fish		Brecfrag		Silt		Clystn
	Foram		Calc		Sil		Dol
	Fossil		Carb		Sulphur		Grysh
	Gastro		Chtdk		Tuff		Gryslt
	Oolite		Chtlt		Chlorite		Lms
	Ostra		Dol		Dol		Sandylms
	Pelec		Feldspar		Sand		Sh
	Pellet		Ferrpel		Silty		Sltstn
	Pisolite		Ferr				

ROP (min/ft)	Depth	Lithology	CFS Point	Oil Shows	Geological Descriptions	TG, C1-C5
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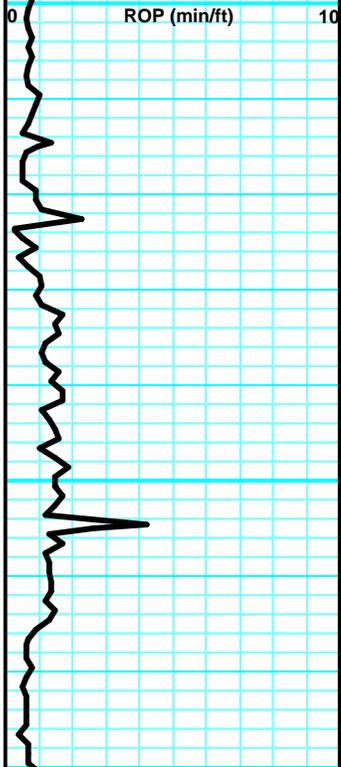
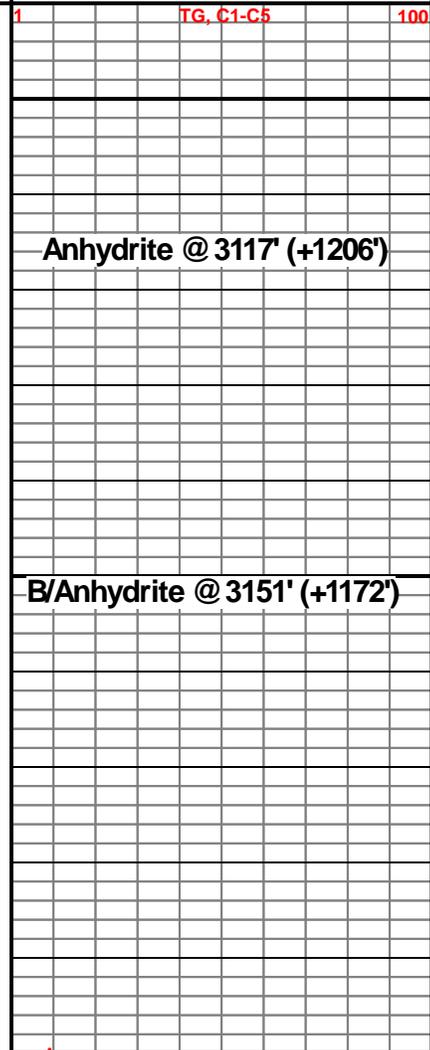


3100
3150
3800
3850

Morning Report Depth/Activity

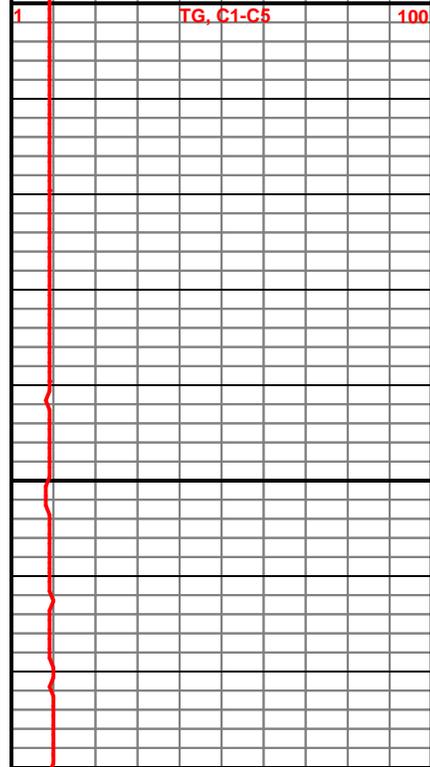
06/17/2013, Spud
 06/18/13, drill @ 436'
 06/19/13, drill @ 1017'
 06/20/13, drill @ 1650'
 06/21/13, drill @ 3032'
 06/22/13, drill @ 4046'
 06/23/13, drill @ 5023'
 06/24/13, drill @ 5641' (TD)

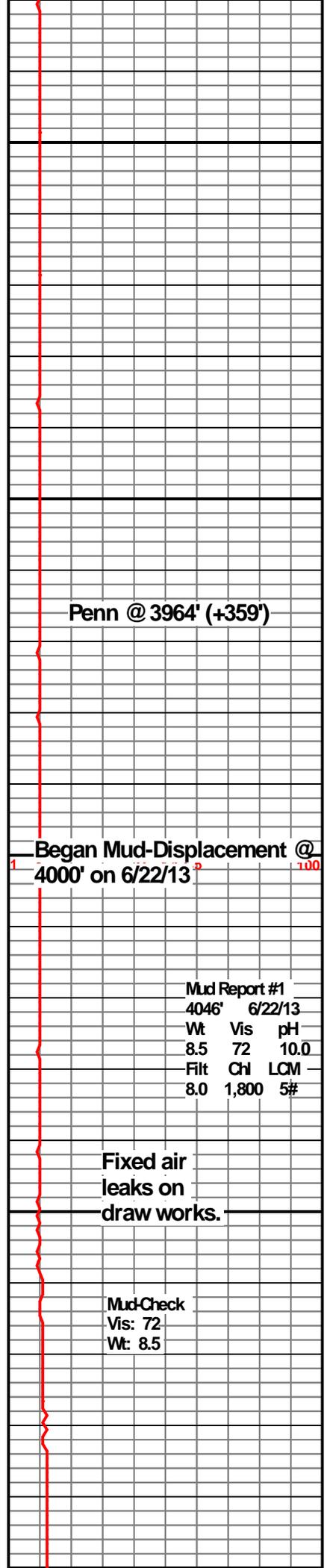
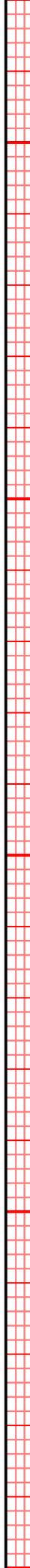
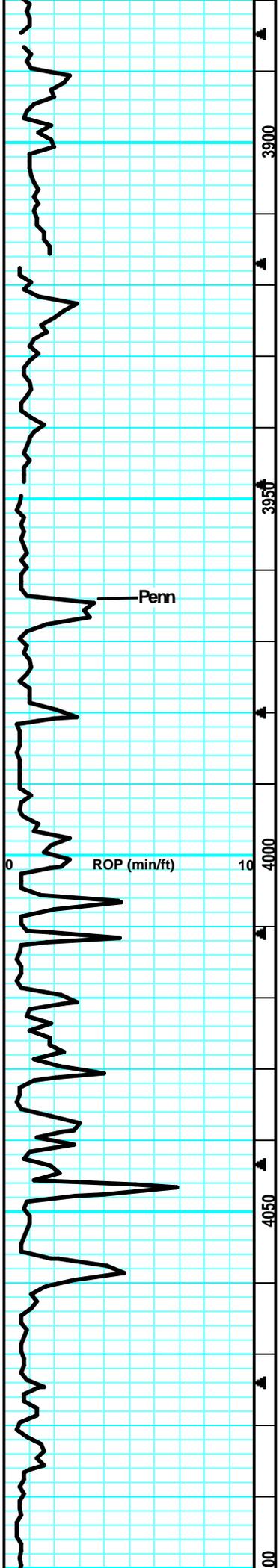
ROP Data begins @ 3700' on
 06/21/2013



3800
3850

ROP Data begins @ 3700' on
 06/21/2013





Penn @ 3964' (+359')

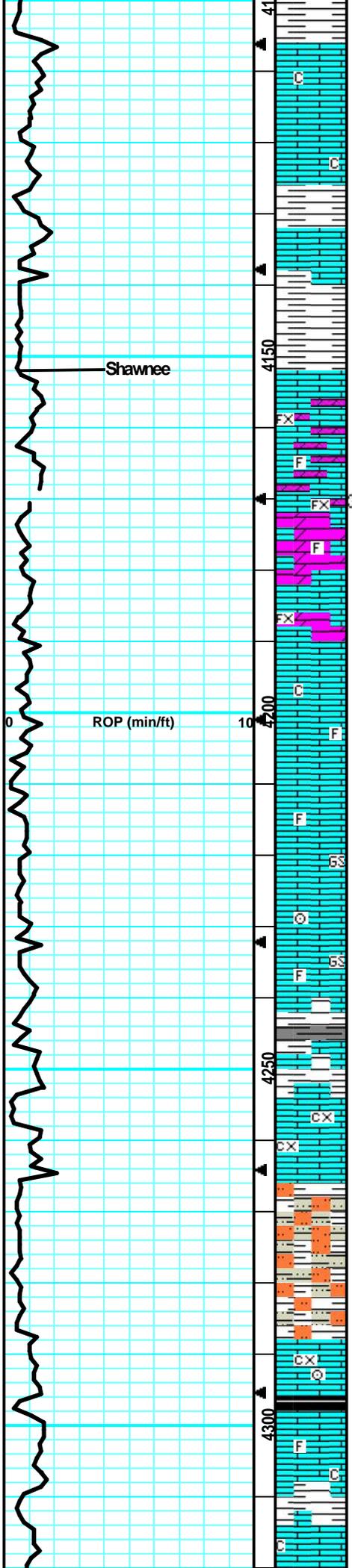
Began Mud-Displacement @ 4000' on 6/22/13

Mud Report #1		
4046'	6/22/13	
Wt: 8.5	Vis: 72	pH: 10.0
Filt: 8.0	Chl: 1,800	LCM: 5#

Fixed air leaks on draw works.

Mud-Check
Vis: 72
Wt: 8.5

Drill cutting samples at 20' intervals start at 4100'.



SH: gry/grn/blk, sm per red, silty, sm soft, fw waxy, fw LS: gry/lt tan, fn xln, fw flakey/mealy, sm brittle, fw chlky-sub chlky, tr-nvp, no cup odr, ns.

Abund SH: gry/grn/brn, silty, sm soft, sm LS: tan/lt gry/gry, mott in prt, fn xln, sm brittle, fw chlky in prt, tr-pr fn inxln por in sm, no cup odr, svrl per red bed, most likely cavings from above.

SH: gry/drk gry/brn, silty, sm soft, fw waxy, svrl LS: gry/lt gry, fn xln, mostly brittle, fw gritty/grainy, foss in prt, tr ppt fn inxln por in sm, no cup odr, ns.

LS: gry/lt tan, tr mot, xfn-fn xln, mostly brittle, fw pcs w/ pr-tr ppt inxln por, wk dul yel fluor, por lght brn stns, sm DOL: lt tan/tan, fn xln, sm brittle, tr xln por pos lght brn stns, sm dul yel fluor, no-? cut, v fnt-? cup odr, nsfo.

DOL: lt gry/lt tan, fn xln, mostly brittle, fw pcs w/ pr fn xln por, wk dul yel fluor in sm, fw pcs w/ pos lght brn stns, no cut resid, fw pcs LS: gry/lt gry, fn xln, mostly dense, sm brittle, fw pcs w/ tr fn inxln por, mostly tight, no cut resid, v fnt-? cup odr, nsfo.

DOL: lt tan/lt gry, sm mott in prt, xfn-fn xln, foss in prt, sm dense, mostly brittle, fw pcs w/ fn ppt inxln por, fw pcs w/ lght brn stns, sm wk dul yel fluor, no cut resid, fnt-? cup odr, no sfo.

LS: gry/lt gry, fn xln, sm dense, sm brittle, fw flakey/mealy, tr-nvp, fw chlky-sub chlky, fw DOL: lt gry/lt tan, xfn-fn xln, sm brittle, fw foss in prt, tr-pr fn ppt inxln por in fw, fw pos lght brn stns? fw pcs w/ v wk-? dul yel fluor, nsfo, no cup odr.

LS: gry/lt gry, mott in prt, fn xln, fw foss in prt, sm brittle, fw gritty/grainy, tr-? xfn ppt inxln por in prt, fw SH: gry/brn, silty, soft, fw perm redds, fw SltStr: brn/red, grainy/gritty, soft, sm muddy like, no cup odr, ns.

LS: gry/drk gry, sm mott, fn xln, fw foss in prt crin/frags, sm brittle, fw gritty/grainy, sm chlky-sub chlky, tr-nvp, svrl SH: brn/gry/red, silty, sm soft, fw perm, fw SltStr: brn/red, soft, gritty/grainy, no cup odr ns.

LS: lt gry/lt tan/crm, fw mott in prt, fn xln, fw pcs xfn-fn xln, mostly brittle, somewhat dense, good vug por, sm w/ gd 2nd rxln, lght brn stns in vug holes, fr sfo on brk, dul yel fluor, strm resid cut, strng cup odr, svrl pcs SH: brn/red/gry, silty, no cup odr, ns.

LS: lt gry/lt tan, fw mott in prt, fn xln, fw foss in prt, sm ool, mostly dense, fw pcs w/ fr vug por, and sso, much like desc above, large influx of dense ool tan/lt tan LS, tr-nvp, nsfo, strng cup odr, svrl SH: gry/brn, silty, sm soft, sm muddy.

LS: tan/lt tan, fn xln, sm foss in prt crin/plant frags, sm pcs dense, mostly brittle w/ a fw flakey/mealy, 1-2 pcs w/ fr vug por, vssfo may be from above, fw Chert: wht/opaque, sharp, fw SH: brn/gry, silty, sm soft, no cup odr, vssfo.

LS: tan/lt tan, xfn-fn xln, fw pcs foss in prt, fw pcs w/ sm 2nd rxln, mostly dense, fw pcs pos slightly dol, fw sub-chlky, tr-nvp, sm SH: gry/grn/brn, silty, no cup odr, ns.

LS: gry/tan, mott in part, fn xln, fw gritty, sm DOL like, sm foss in prt, sm chlky-sub chlky, fw brittle, fw pcs

Mud-Check
Vis: 67
Wt: 8.5

Several Permian red bed cavings in samples.

Shawnee 4152' (+171)

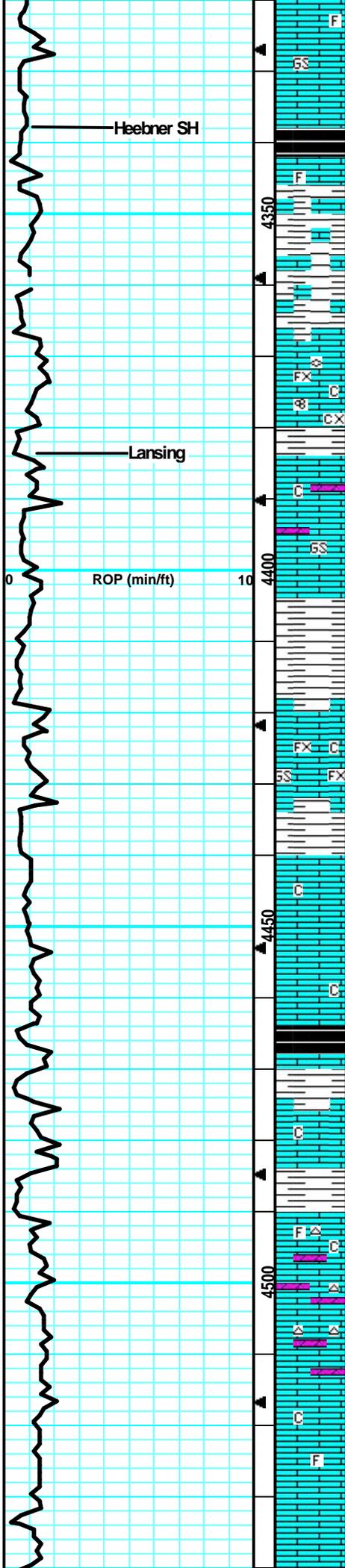
CFS @ 4170' Only
Circ 30" Drilling Engineer was afraid of loosing circ.

Mud-Check
Vis: 70
Wt: 8.5

TG, C1-C5 100

Mud-Check
Vis: 61
Wt: 8.4

Mud-Check
Vis: 50
Wt: 8.6



w/ pr intfoss por in prt, svrl SH: gry/brnblk, silty, fw carb, sm StStr: brn, soft, gritty/grainy, no cup odr, ns.

LS: gry/tan, fn xln, sm brittle, fw foss in prt, sm sub-chlky, fw gritty/sandy, fw dense, fw flakey/mealy, tr-nvp, sm SH: brn/gry/blk, silty, sm soft, fw fissile, fw carb, no cup odr, ns.

LS: tan/lt tan, fw mott in prt, xfn-fn xln, sm dense, mostly friable, sm foss fuss/foram, fw chlky, fw pcs w/ 2nd rxln w/in foss por, fw pcs w/ pr-fr intfoss por, lght brn stns, vssfo on brk, dul yel fluor, wk resd cut, gd cup odr, sm SH: brn/gry, silty, soft.

LS: tan/lt gry, xfn-fn xln, mostly dense, fw brittle, sm sub-chlky, fw gritty/sandy in prt, fw pcs slightly DOL, fw SH: brn/gm, silty, soft, no cup odr, ns.

LS: tan/gry, fn xln, mostly uniform, sm dense, fw brittle, fw sub-chlky, sm sandy/silty in prt, fw pcs w/ pr fn intxn-slightly vug por, fw lght brn stns, dul yel fluor, gd cut resd, vssfo in 1-2 pcs, slight-wk cup odr.

LS: lt gry/lt tan, xfn-fn xln, mostly unifrom, dense in prt, sm sub-chlky, mostly brittle, tr-pr fn intxn por in sm, svrl SH: brn/gry/blk, silty, fw fissile, fw carb, no cup odr, ns.

LS: tan/lt gry, mott in prt, fn xln, sm dense, sm brittle, sm chlky, fw brittle, tght xln mtrx, fw pcs pur chl, svrl intbed SH: brn/gry/gm/blk, silty, soft, sm waxy, v fw carb, fw StStr: brn, soft, gritty/grainy, no cup odr, ns.

LS: gry/lt tan, xfn-fn xln, mostly dense, sm brittle, sm sub-chlky, sm 2nd rxln in mtrx, tr-nvp, abund SH/StStr: brn/gry, soft, sm gritty/grainy, sm SH waxy, no cup odr, ns.

LS: tan/gry, fn-crs xln, sm dense, sm 2nd rxln, fw pcs foss in prt, fw pcs sub-chlky in prt, fw pcs pur chl, tr-nvp, fw Chert: wht/opaque, sharp, fw SH: gry/brn, silty, fw muddy, soft, no cup odr, ns.

LS: tan/gry, fw mott in prt, fn xln, fw dense, sm brittle, fw pcs sub-chlky in prt, fw pcs foss in prt, tr-nvp, sm SH: gry/brn/blk, silty, fw carb, fw gritty, no cup odr, ns.

LS: gry/tan-brn fw mott fw foss in prt fw dense fw brittle

Heebner SH @ 4338' (-15)

Mud-Check
Vis: 48
Wt: 8.5

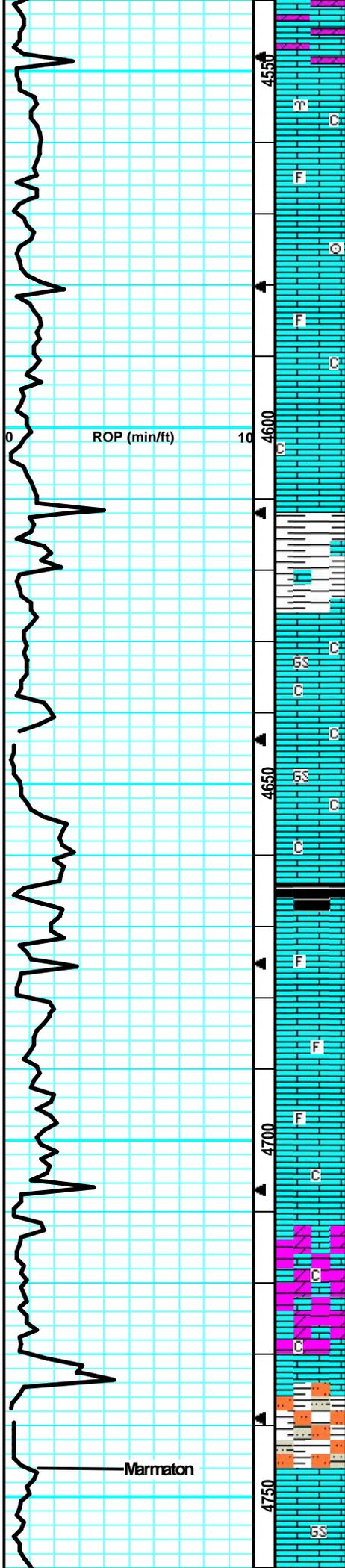
Lansing @ 4384' (-61)

TG, C1-C5 100

Mud-Check
Vis: 47
Wt: 8.5

Mud-Check
Vis: 52
Wt: 8.7

Mud-Check
Vis: 49
Wt: 8.7



gry/lt tan, mott in part, xfn-fn xln, fw foss frags, mostly brittle, sm dol like, fairly uniform, mostly chlky-sub chlky, tr-nvp, fw pcs pur chlk, svrl SH: gry/drk gry, silty, sm soft, no cup odr, ns.

LS: tan/gry, fn-crs xln, fw mott in part, foss in prt bryz/crin, sm flakey/mealy, sub-chlky mtrx in prt, fw tr-? intxln por in flakes, fw pcs pur chlk, fw SH: gry, silty, fw gritty, soft, no cup odr, ns.

LS: tan/lt gry, fn xln, fw mott in prt, foss in prt crin/plnt frags, sm flakey/mealy, fw crs 2nd rxln, sub-chlky mtrx, fw dense, tr-pr intxln por in fw pcs fw SH: gry/lt brn, silty, sm gritty, sm soft, no cup odr, ns.

LS: gry/tan, xfn-fn xln, mostly dense, tr of 2nd rxln in fw pcs, sub-chlky mtrx in prt, fw flakey/mealy, fw hard, tr-? fn intxln por in sm flakes, fw pcs pur chlk, fw SH: gry/lt brn, silty, soft, sm gritty, no cup odr, ns.

LS: gry/tan, xfn-fn xln, sm dense, tr of 2nd rxln in fw pcs, sub-chlky in prt, fw flakey/mealy, svrl pcs pur chlk, tr-nvp por, fw SH: gry/blu/grn, silty, sm gritty, soft, no cup odr, ns.

LS: gry/lt gry, xfn-fn xln, fw dense, mostly brittle, mostly sub-chlky, fw pcs v chlky, fw flakey/mealy, fw gritty/sandy, tr-nvp, svrl pcs pur chlk, svrl SH: gry/blu/blk, silty, sm soft, gritty, fw carb, no cup odr, ns.

SH: gry/lt gry, silty, soft, fw muddy like, abund pur chlk, fw LS: lt tan, fn xln, mostly brittle, chlky-sub chlky in most, arg, tr-nvp, no cup odr, ns.

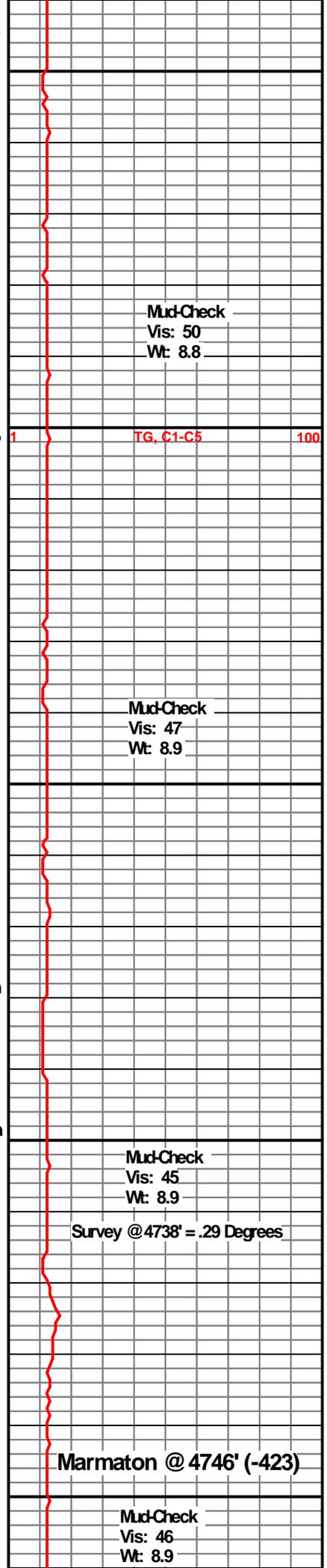
LS: gry/tan, mott in part, xfn-fn xln, flakey/mealy in prt, lrg amout of 2nd rxln, fw foss in prt, tr-? fn intxln por in 2nd rxln and flakey, fw chlky, svrl SH: gry/blk, silty, soft, svrl carb, no cup odr, ns.

LS: gry/drk gry/tan, fw mott in part, tr foss in prt, mostly dense, fw brittle, sm flakey/mealy, sub-chlky in prt, fw hard, tr-nvp, svrl SH: gry, silty, sm gritty, sm soft, no cup odr, ns.

LS: gry/lt tan, mott in part, xfn-fn xln, fw foss frags, mostly brittle, sm dol like, fairly uniform, mostly chlky-sub chlky, tr-nvp, fw pcs pur chlk, svrl SH: gry/drk gry, silty, sm soft, no cup odr, ns.

LS: gry/tan, fw mott in prt, xfn-fn xln, sub-chlky in part, mostly uniform, sm dense, fw gritty/silty like, fw flakey/mealy, tr-nvp, fw pcs pur chlk, fw SH: gry/drk gry/blk, silty, sm soft, fw carb, no cup odr, ns.

SH: gry/drk gry/grn, silty, sm soft, sm gritty, fw SH: gry/lt gry, v soft, gritty/grainy, sm muddy like, fw LS/DOL: lt tan/tan, xfn-fn xln, mostly dense, mostly



uniform, fw pcs sub-chlky in prt, tr-? in ppt por in fw pcs, fw pcs pur chlk, no cup odr, ns.

LS: gry/drk gry/lt brn, xfn-fn xln, fw mott in prt, fw ool, mostly dense, tr-nvp, fw lt tan pcs foss in prt, sub-chlky, slightly dol, tr-? ppt intxn por in fw, svrl SH/StStr: gry/drk gry, soft, sm gritty/griany, no cup odr, ns.

LS: gry/lt tan, xfn-fn xln, mostly dense, sm brittle, sub-chlky in prt, fw flakey/mealy in prt, tr-nvp, fw pcs pur chlk, sm SH gry/lt gry/blu, silty, sm soft, fw StStr: lt gry, soft gritty, sm muddy like, no cup odr, ns.

LS: gry/lt tan/lt brn, mott in prt, xfn-fn xln, sm ool in prt, fw pcs flakey/mealy, sm dense, fw brittle, sm sub-chlky, sm 2nd rxln on frac facie, tr-? inxln por in sm flakes, svrl SH gry/lt gry, silty, sm soft, sm gritty, fw waxy like, no cup odr, ns.

LS: lt tan/crm, mott in part, xfn-fn xln, many foss in part, fw pcs flakey/mealy, mostly brittle, svrl sub-chlky mtrx, fw dense, tr-nvp, fw SH gry/grn/blk, silty, sm soft, fw waxy, fw carb, no cup odr, ns.

LS: gry/lt tan/crm, xfn-fn xln, fw foss in part, fw flakey/mealy, mostly brittle, sub-chlky mtrx, fw dense, tr-? fn intxn por in flakeys, fw pcs pur chlk, no cup odr, ns.

LS: gry/drk gry/lt tan, mott in prt, xfn-fn xln, fw flakey/mealy, mostly dense, fw hard, fw sub-chlky in prt, tr-nvp, fw pcs pur chlk, no cup odr, ns.

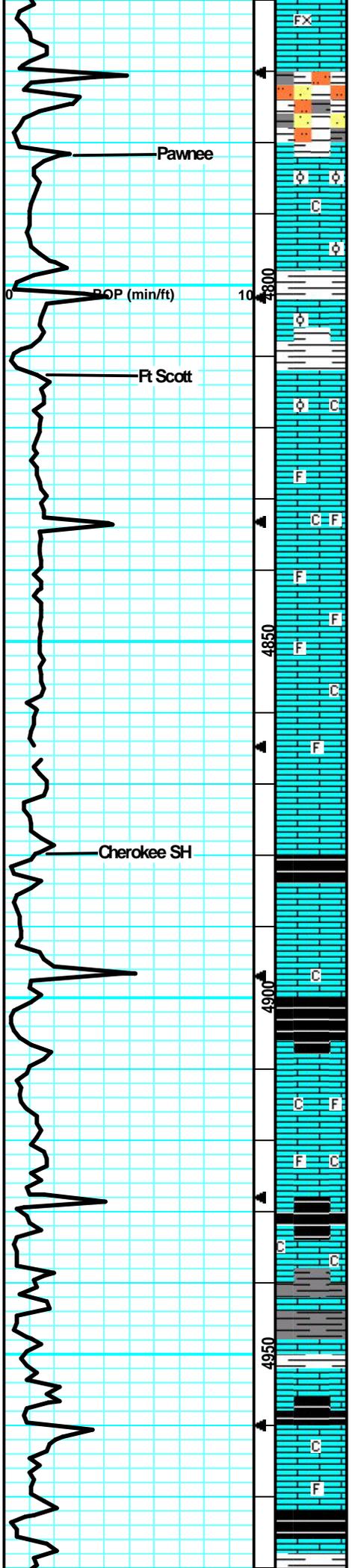
LS: gry/drk gry, fw mott in prt, xfn-fn xln, mostly dense, sm hard, fw flakey/mealy, fw sub-chlky in prt, tr-nvp, lrg influx SH gry/drk gry/blk, silty, sm soft, fw fissile, many carb, no cup odr, ns.

LS: gry/lt tan, xfn-fn xln, fw foss in prt, sm dense, fw brittle, fw flakey/mealy, sm sub-chlky in part, fw pcs pur chlk, tr-? fn ppt intxn por in fw lght colrd foss pcs, fw SH gry/drk gry/blk, silty, sm soft, fw gritty, fw carb, no cup odr, ns.

LS: gry/lt tan, xfn-fn xln, sm foss in part, mostly brittle, sm chlky-sub-chlky mtrx, fw flakey/mealy, sm v friable, fw pcs pur chlk, tr-nvp, lrg amnt SH/StStr: gry/drk gry/blk, silty, sm gritty, sm v soft, many carb, no cup odr, ns.

LS: gry/tan, mott in prt, fn xln, mostly dense, sm flakey/mealy, rare-no 2nd rxln in prt, sub-chlky, tr-nvp, abund SH gry/drk gry/blk, silty, fw fissile, sm soft, many carb, no cup odr, ns.

LS: gry/lt tan, mott in prt, fn xln, tr foss in prt, mostly dense, sm hard, fw flakey/mealy, rare 2nd rxln in prt, sub-chlky mtrx, tr-nvp, abund SH gry/drk gry/blk, silty,



Pawnee @ 4782' (-459)

Mud-Check
Vis: 45
Wt: 8.9

TG, C1-C5 100

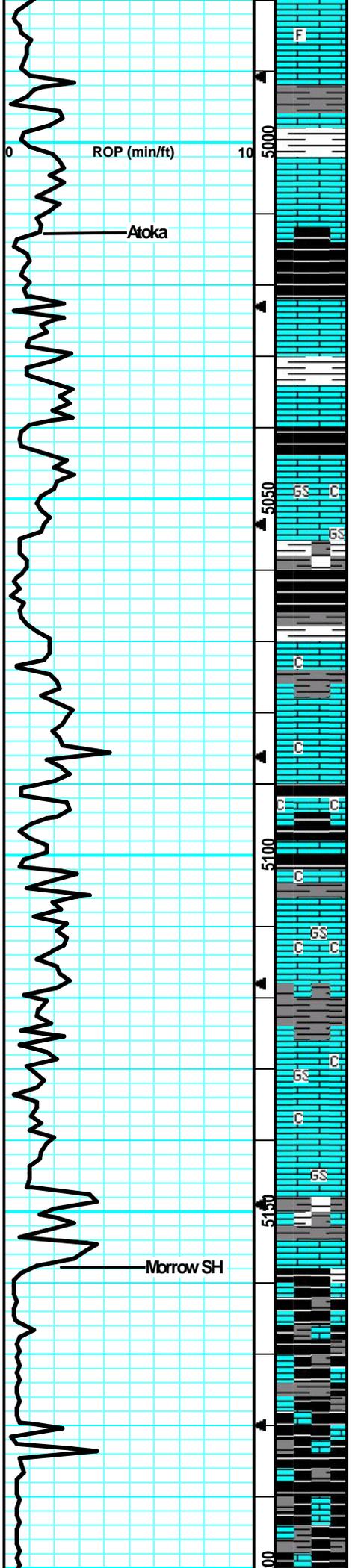
Ft Scott @ 4812' (-489)

Mud-Check
Vis: 45
Wt: 8.9

Cherokee @ 4880' (-557)

Small shale kick
in gas curve.

Mud-Check
Vis: 48
Wt: 8.8



sub-chlky mtrx, tr-nvp, abund SH: gry/drk gry/blk, silty, sm soft, many carb, no cup odr, ns.

LS: gry/lt gry, mott in prt, xfn-fn xln, mostly dense, sm flakey/mealy, fw hard, sm sandy/gritty, sm friable, sub-chlky mtrx, tr-nvp, abund SH: gry/drk gry/blk, silty, sm soft, many carb, no cup odr, ns.

SH: blk/gry/drk gry, silty, many soft, abund carb, v fw LS: gry/tan, mott in prt, fn xln, fw flakey/mealy, fw hard, sm 2nd rxln in prt, tr-? ppt in xln por in v fw, no cup odr, ns.

Much of same as above.

LS: gry/lt tan, mostly mott, fn xln, sm sub-chlky mtrx in prt, sm sandy/gritty, sm flakey/mealy, sm hard, sm 2nd rxln in fw pcs, abund SH: gry/drk gry/blk, silty, mostly carb, sm soft/muddy like, no cup odr, ns.

LS: gry/lt tan, mott in prt, foss in prt, sm crs 2nd rxln, sm brittle, sm fr in xln por in 2nd rxln facies, sm SH: gry/blk/drk gry, silty, sm carb, fw fissile, sm soft, no cup odr, ns.

LS: gry/lt tan, mott in prt, chlky-sub chlky, foss in prt, fw flakey/mealy, sm brittle, svrl pcs pur chl, tr-? in xln por in sm flakes, svrl SH: gry/blk/drk gry, silty, sm carb, sm soft, no cup odr, ns.

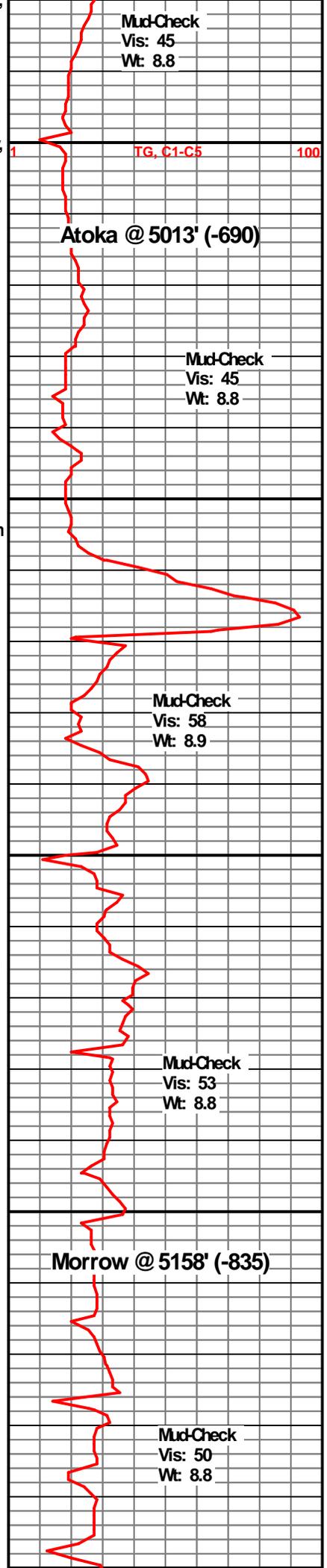
LS: lt tan/gry, mott in prt, chlky-sub chlky mtrx, foss in prt, fw flakey/mealy, sm brittle, fw sandy/gritty, fw pcs pur chl, tr-nvp, sm SH: gry/blk/brn, silty, sm soft, many carb, no cup odr, ns.

Much of same as above.

LS: gry/lt tan/lt brn, mott in prt, sub-chlky mtrx in prt, sm flakey/mealy, fw brittle, tr-? scat ppt in xln por in sm flakes, pr-? rxln in prt, w/ tr-? ppt por, mostly dense, svrl SH: gry/blk, silty, soft, many carb, no cup odr, ns.

LS: gry/lt tan, fw mott in prt, sub-chlky mtrx in prt, mostly brittle, tr-? foss frags in prt, mostly dense, tr-nvp, fw hard, fw SH: gry/blk, silty, sm carb, soft, no cup odr, ns.

SH: blk/drk gry, silty, mostly carb, sm soft, fw pcs lt gry/blu, silty, v soft, v fw LS: gry/lt tan, fn xln, mott in prt, sub-chlky mtrx, flakey/mealy, mostly brittle, tr-?



Mud-Check
Vis: 45
Wt: 8.8

TG, C1-C5

Atoka @ 5013' (-690)

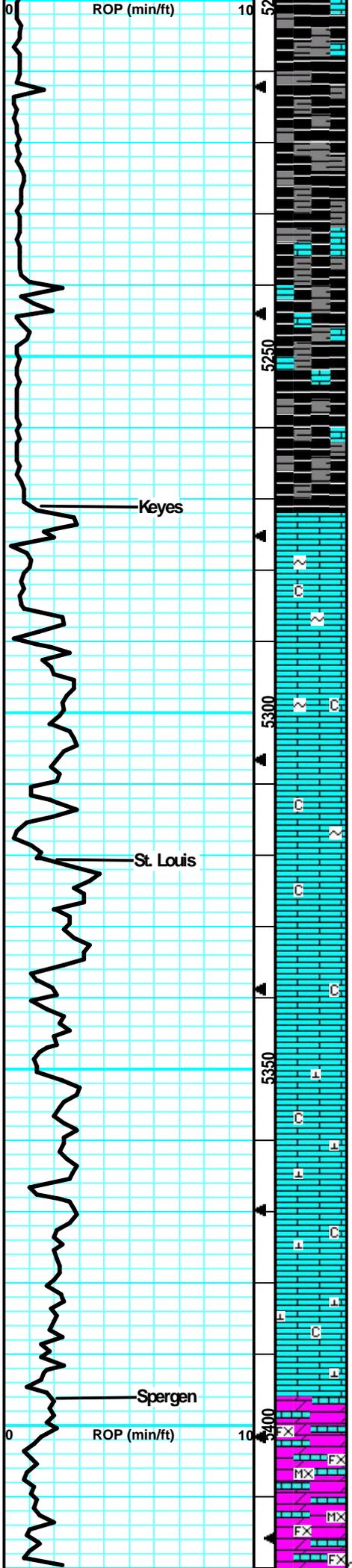
Mud-Check
Vis: 45
Wt: 8.8

Mud-Check
Vis: 58
Wt: 8.9

Mud-Check
Vis: 53
Wt: 8.8

Morrow @ 5158' (-835)

Mud-Check
Vis: 50
Wt: 8.8



pr, sub-chlky mtrx, flakey/mealy, mostly brittle, tr-
inbxln por in sm flakes/nodules, no cup odr, ns.

Much of the same as above. Less LS.

Much of the same as above, fw LS: tan, partially mott
in sm, fn xln, fw sandy/gritty, brittle, tr-nvp, no cup odr,
ns.

Much of the same as above.

Keyes

LS: lt tan/crm/grn, xfn-fn xln, sm brittle, fw glauc frags,
fw flakey/mealy, tr-? ppt inbxln por in fw pcs, abund
shale slough from up hole.

5250

5300

LS: lt tan/crm, xfn-fn xln, mostly brittle, fw glauc frags,
mostly sub-chlky mtrx, sm arg, fw flakey/mealy, sm
2nd rxln, fw sandy/gritty like, tr-nvp, fw pcs pur chlk,
no cup odr, ns.

St. Louis

LS: lt tan/crm/lt brn, xfn-fn xln, mostly brittle, sm
sub-chlky mtrx in prt, fw arg, fw dense, fw
flakey/mealy, tr-nvp, still have shale slough from
uphole.

5350

Much of same as above.

LS: crm/lt tan/lt brn, xfn-fn xln, sm dense, sm brittle,
sub-chlky mtrx in prt, fw flakey/mealy, 2nd rxln? pos
lrg calc xls, sm v chlky/v friable, tr-nvp, abund of
shale slough.

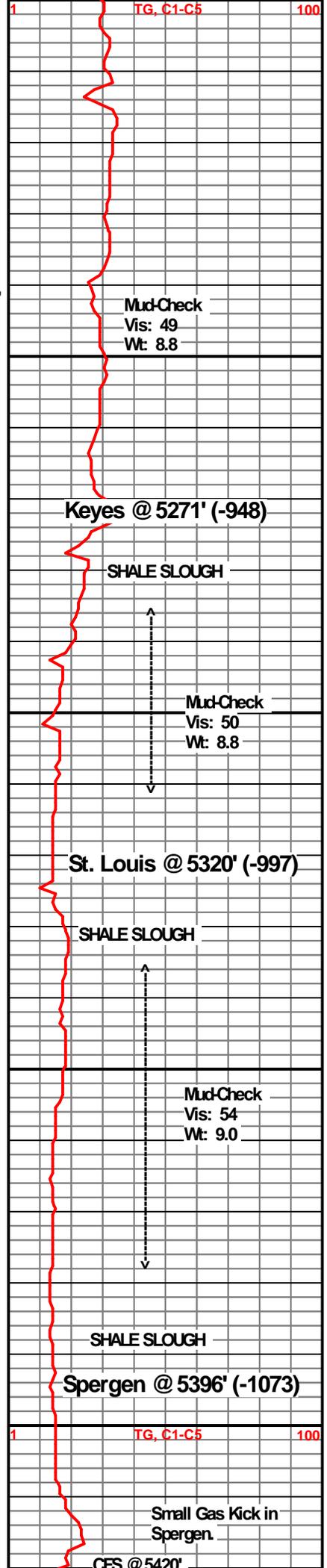
Much of same as above.

LS: lt tan/crm, xfn-fn xln, chlky-sub chlky mtrx, sm 2nd
rxln, v brittle, v friable, tr-nvp, svrl pcs pur chlk, sm
lrg calc nodules, faint-? cup odr, nsfo, pos of cuttings
no circ up yet.

Spergen

Mostly LS: crm/lt tan, xfn-fn xln, sm 2nd rxln in prt, v
brittle, sm v friable, tr-nvp, fw DOL: tan/lt brn, fn xln, fn
inbxln por, sm fr sucrosic por, dul yel fluor, fr cut pal
blu, no gas bub, faint cup odr, vssfo.

Dol: tan/lt brn, fn xln, sm 2nd rxln, brittle in prt, sm
quite friable, fr sucrosic por, good sat and heavy
stains, vssfo on brk, faint cup odr, uniform dul yel



TG, C1-C5 100

Mud-Check
Vis: 49
Wt: 8.8

Keyes @ 5271' (-948)

SHALE SLOUGH

Mud-Check
Vis: 50
Wt: 8.8

St. Louis @ 5320' (-997)

SHALE SLOUGH

Mud-Check
Vis: 54
Wt: 9.0

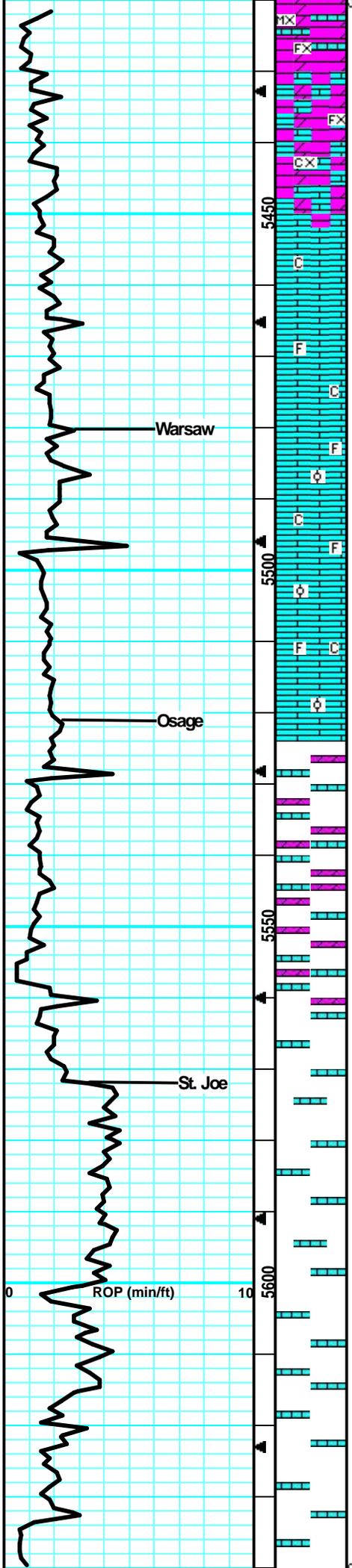
SHALE SLOUGH

Spergen @ 5396' (-1073)

TG, C1-C5 100

Small Gas Kick in
Spergen.

CES @ 5420'



fluor, strm cut pal blu, svrl LS: crm/lt tan, xfn-fn xln, chlky-sub chlky in prt, sm 2nd rxln, v friable, tr-nvp.

Dol: tan/lt brn, fn xln, rare 2nd rxln, brittle, gd sucrosic inbxdn por, rare scat vuggy por, dul yel fluor, strm cut pal blu/whit, mostly sat, ssfo oil on brk, faint-wk cup odr, sm LS: lt tan/crm, xfn-fn xln, sub-chlky in prt, sm 2nd rxln, tr-nvp.

LS: gry/lt tan/lt brn, mott in prt, xfn-fn xln, fw dense, sm brittle, sm flakey/mealy, sub-chlky in prt, rare 2nd rxln, tr-? fn inbxdn por in sm flakes, fw pcs Dol as desc above, most likely from up hole, also with ssfo.

LS: crm/lt gry, mott in prt, xfn-fn xln, foss in prt, sub-chlky mtrx in prt, mostly brittle, many friable, sm scat 2nd rxln, fw sandy/gritty like, tr-nvp, svrl StStn: lt brn, v soft, gritty, sm muddy like, no cup odr, ns.

LS: gry/lt gry/crm, mott in prt, xfn-fn xln, foss in prt, sm ool, chlky-sub chlky mtrx, mostly brittle, sm friable, sm scat 2nd rxln, fw pcs pur chlk, tr-nvp, fw SH/StStn: gry/lt brn, soft, sm gritty, sm muddy like, no cup odr, ns.

LS: gry/crm, mott in prt, xfn-fn xln, sm foss in prt, chlky-sub chlky mtrx, v brittle, mostly friable, sm scat 2nd rxln, tr-nvp, fw Dol: gry/lt brn, xfn-fn xln, smwhit brittle, tr-? ppt inbxdn por, no cup odr, ns.

Much like desc above, fw pcs Dol: lt brn, xfn-fn xln, brittle, tr-? ppt inbxdn por, w/ pos drk brn oil strns, wk scat fluor, no cut resid, no cup odr.

LS: crm/lt tan, mott in prt, xfn-fn xln, sub-chlky mtrx in prt, mostly brittle, fw foss in prt, sm 2nd rxln in many, sm arg, tr-nvp, svrl Chert: wht/opaque, foss in prt, sharp, hard, fw SH: gry/grn, silty, sm soft, fw waxy, no cup odr, ns.

LS: lt tan/crm, fw mott in prt, xfn-fn xln, sub-chlky mtrx in prt, mostly brittle, scat 2nd rxln in fw pcs, tr-pr fn inbxdn por in fw, svrl Chert: wht/opaque, sharp, foss, fw SH: gry/grn, silty, sm waxy, no cup odr, ns.

Much of the same as above.

LS: tan/lt tan, fw mott in prt, xfn-fn xln, sub-chlky mtrx in prt, sm friable, mostly brittle, fw pcs w/ scat 2nd rxln, tr-? inbxdn por in fw pcs, fw Chert: wht/opaque, sharp, no cup odr, ns.

LS: lt tan/crm/lt gry, fw mott in prt, xfn xln, sub-chlky mtrx in prt, mostly brittle, fw pcs w/ fr 2nd rxln, arg in most, tr-nvp, fw pcs pur chlk, fw SH: gry/grn, silty, soft, sm waxy, no cup odr, ns.

(30"/60")

Mud-Check
Vis: 53
Wt: 9.1

Mud-Check
Vis: 56
Wt: 9.1

Warsaw @ 5480' (-1157)

Mud-Check
Vis: 54
Wt: 9.1

Osage @ 5521' (-1198)

Sample quality was poor. Believe non-representative samples were filling the sample box. A thorough evaluation could not be given.

St. Joe @ 5572' (-1249)

Mud-Check
Vis: 50
Wt: 9.2

Abund of chalky LS was repeated in the samples. A true sample description cannot be given.

Mud-Check
Vis: 54
Wt: 9.2

CFS @ 5640'

RTD = 5641' (-1318)

LTD = 5646' (-1323)

5650

5

(30"/60")