



Scale: 5" / 100'
Measured Depth Log

Well Name

Holman B15-66HN HORZ

Location

SEC 14 T5N R64W

State

Colorado

Country

USA

API Number

05-123-37201

Region

DJ Basin

Spud Date

8/24/2013

Surface Coordinates

SENN SEC. 14 T5N R64W
2,163' FNL; 2298' FWL

LAT/LONG: 40.400560/-104.518540

Bottom Hole Coordinates

SWNNW SEC. 15-5N-64W
1,190' FWL; 2,910' FNL

Ground Elevation

4584'

Logged Interval

5976'

Formation

Niobrara B Chalk

Type of Drilling Fluid

LSND

County

Weld

Rig Number

H&P 315

AFE #

139201

Field

Kersey

Drilling Completed

8/31/2013

K.B. Elevation

4608'

Total Depth

12684'

Company Noble Energy Inc
Address 1625 Broadway
Denver, CO 80202

Name MARK COLE, JR
Company COLUMBINE LOGGING
Address 2385 S Lipan St
Denver, CO 80229



Slide/Rotate

ROP

ROF

08/26/2013, Mud Wt: 9.20, FV/s: 40
PV/s: 9, YP: 11, GELS: 3/7/15, API Filtr: 10.0
CAKE: 1/0, pH: 9.3, CI: 1,600, Ca: 80

Curves

GAMMA

150
ROP (ft/hr)
250
GAMMA (units)

08/26/2013
08/27/2013

MINDEPTH

124
93

Total Gas & Chromatograph

GAS

C1

C2

C3

C4

2179u
C1: 69.5%
C2: 15.5%
C3: 10.4%
C4: 4.6%

Gas & ROP data from iBall

1752u

Depth Labels

% Lith

50' Sample Interval @ 5,976' MD

5900

MD: 5,941'

TVD: 5,916.01'

Inclination: 0.87°

Azimuth: 83.38°

VS: 297.67'

TVD (ft)

MD: 6,061'
TVD: 6,035.63'
Inclination: 8.36°
Azimuth: 263.49°
VS: 296.79'

MD: 6,111'
TVD: 6,085.63'
Inclination: 8.36°
Azimuth: 296.79°
VS: 296.79'

Bit Data

Bit #: 200

Type: Reed Hycalog E1202

Size: 8.75"

Depth In: 5,976'

Jets: 5x14

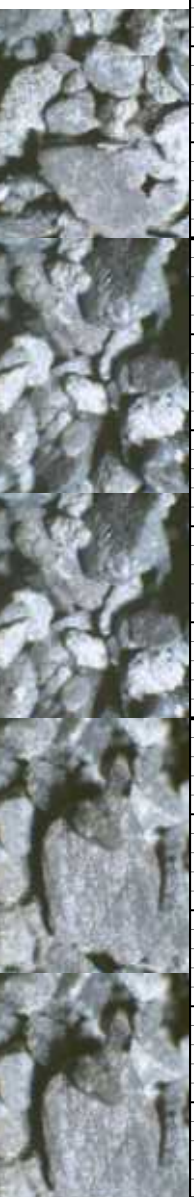
SLTY SH: lt - med gy, occ dk gy, frm - hd, ply - sb ply - sb blk, silty
- grty tex, v sl calc
SHY SS: lt gy, s&p, vfg, frm - mod hd wl brit clus, sb ang - sb rd, calc cnt grdg to SS:

SLTY SH: lt - med gy, occ dk gy, frm - hd, ply - sb ply - sb blk, silty
- grty tex, v sl calc
SHY SS: lt gy, s&p, vfg, frm - mod hd wl brit clus, sb ang - sb rd, calc cnt

SLTY SH: lt - med gy, occ dk gy, frm - hd, ply - sb ply - sb blk, silty
- grty tex, v sl calc
SHY SS: lt gy, s&p, vfg, frm - mod hd wl brit clus, sb ang - sb rd, calc cnt

Oil Show

Images

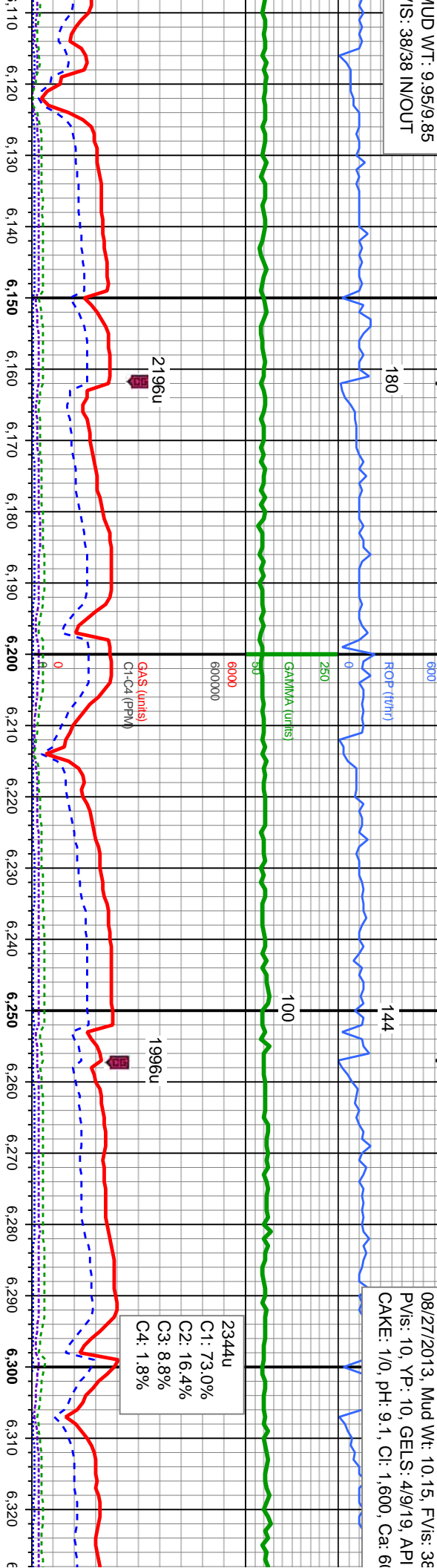


NUD WT: 9.95/9.85
IS: 38/38 IN/OUT

180

144

08/27/2013, Mud Wt: 10.15, FV/s: 38
PV/s: 10, YP: 10, GELS: 4/9/19, API
CAKE: 1/0, pH: 9.1, CI: 1.600, Ca: 6



<<Scale Change>>

MD: 6,156
TVD: 6,128.1
Inclination: 17.17 °
Azimuth: 271.31 °
VS: 296.45

MD: 6,203
TVD: 6,172.58
Inclination: 20.53 °
Azimuth: 272.1 °
VS: 296.91

MD: 6,251
TVD: 6,217
Inclination: 23.96 °
Azimuth: 269.51 °
VS: 297.14

MD: 6,298
TVD: 6,259.34
Inclination: 27.48 °
Azimuth: 266.18 °
VS: 76.39

SH: lt - med gy, occ dk gy, frm - hd, pily
y - sb blk, sily - grty tex, v sl calc
SS: lt gy, s&p, vfg, frm - mod hd wi brit
ang - sb rd, calc cnt

SLTY SH: lt - med gy, occ dk gy, frm - hd, pily
y - sb blk, sily - grty tex, v sl calc
SS: lt gy, s&p, vfg, frm - mod hd wi brit
ang - sb rd, calc cnt

SLTY SH: lt - med gy, occ dk gy, frm - hd, pily
y - sb blk, sily - grty tex, v sl calc
SS: lt gy, s&p, vfg, frm - mod hd wi brit
ang - sb rd, calc cnt

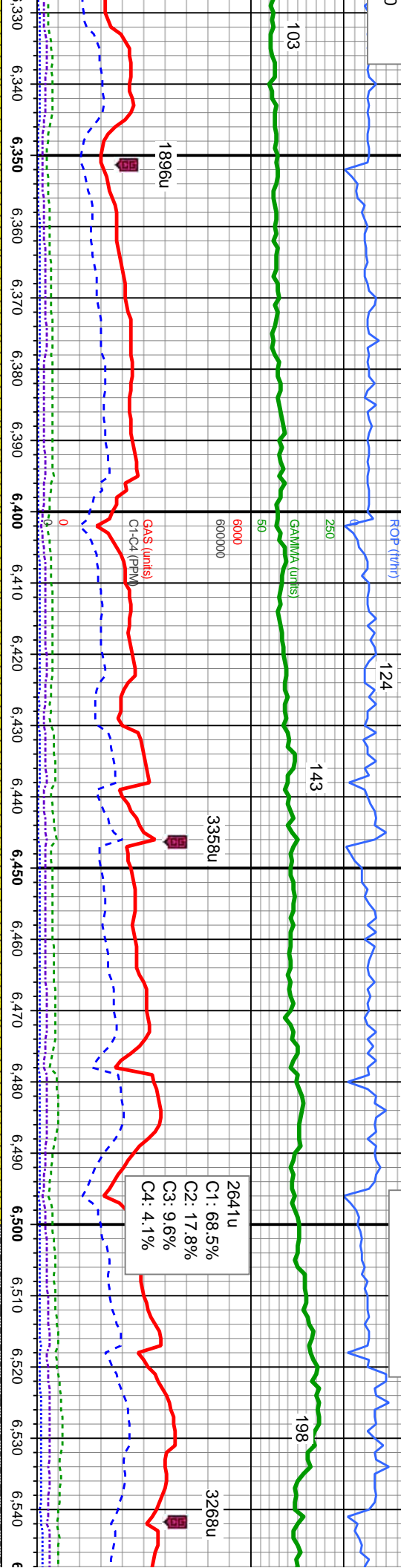
SLTY SH: lt - med gy, occ dk gy, frm - hd, pily
y - sb blk, sily - grty tex, v sl calc
SS: lt gy, s&p, vfg, frm - mod hd wi brit
ang - sb rd, calc cnt

SLTY SH: lt - med gy, occ dk gy, frm - hd, pily
y - sb blk, sily - grty tex, v sl calc
SS: lt gy, s&p, vfg, frm - mod hd wi brit
ang - sb rd, calc cnt



Filt: 9.0

MUD WT: 10.40/10.30
VIS: 36/37 IN/OUT



MD: 6,346
TVD: 6,300.94
Inclination: 32.29 °
Azimuth: 267.25 °
VS: 100.28'

MD: 6,392
TVD: 6,338.67
Inclination: 37.48 °
Azimuth: 270.42 °
VS: 126.56'

MD: 6,440
TVD: 6,375.21
Inclination: 43.3 °
Azimuth: 270.95 °
VS: 157.65'

MD: 6,487
TVD: 6,408.19
Inclination: 47.56 °
Azimuth: 270.13 °
VS: 191.11'

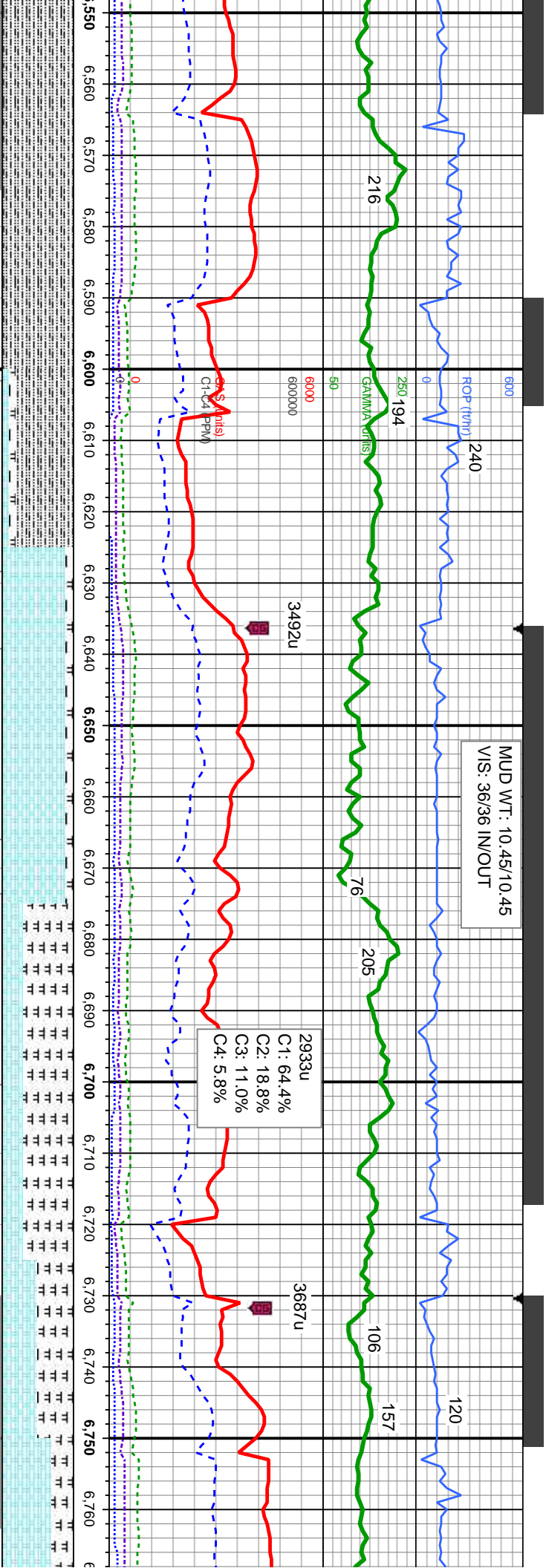
MD: 6,535
TVD: 6,439.4
Inclination: 51.32 °
Azimuth: 269.68 °
VS: 227.57'

25' Sample Interval @ 6,500' MD

Sh 6.5

MD (ft)	SLTY SH: It - med gy, occ dk gy, frm - mod hd, pily - sb pily - sb blkly, slty - grty tex, v sl	SHY SS: It gy, s&p, vfg, frm - mod hd wi brit clus, sb ang - sb rd, calc cnt
6,346	SLTY SH: It - med gy, occ dk gy, frm - mod hd, pily - sb pily - sb blkly, slty - grty tex, v sl	SHY SS: It gy, s&p, vfg, frm - mod hd wi brit clus, sb ang - sb rd, calc cnt
6,392	SLTY SH: It - med gy, occ dk gy, frm - mod hd, pily - sb pily - sb blkly, slty - grty tex, v sl	SHY SS: It gy, s&p, vfg, frm - mod hd wi brit clus, sb ang - sb rd, calc cnt
6,440	SLTY SH: It - med gy, occ dk gy, frm - mod hd, pily - sb pily - sb blkly, slty - grty tex, v sl	SHY SS: It gy, s&p, vfg, frm - mod hd wi brit clus, sb ang - sb rd, calc cnt
6,487	SLTY SH: It - med gy, occ dk gy, frm - mod hd, pily - sb pily - sb blkly, slty - grty tex, v sl	SHY SS: It gy, s&p, vfg, frm - mod hd wi brit clus, sb ang - sb rd, calc cnt
6,535	SLTY SH: It - med gy, occ dk gy, frm - mod hd, pily - sb pily - sb blkly, slty - grty tex, v sl	SHY SS: It gy, s&p, vfg, frm - mod hd wi brit clus, sb ang - sb rd, calc cnt





ation Springs Marker @
71' MD: 6,461' TVD

MD: 6,582
TVD: 6,468.24'
Inclination: 52.97°
Azimuth: 268.93°
VS: 264.68'

SLTY SH: lt - med gy, occ dk gy, frm - mod
hd, pily - sb pily - sb blk, stly - grty tex, v sl
calc, abnt bent wi dissm pyr

Niobrara Top @
6,603' MD: 6,481' TVD

Nio A Chalk Top @
6,636' MD: 6,500' TVD

Nio A Marl Top @
6,678' MD: 6,522' TVD

MD: 6,725'
TVD: 6,541.94'
Inclination: 67.47°
Azimuth: 270.46°
VS: 386.71'

Faulted into Nio B Chalk @
6,731' MD: 6,544' TVD

MD: 6,731'
TVD: 6,544'

MD: 6,630
TVD: 6,496.37'
Inclination: 55.25°
Azimuth: 269.13°
VS: 303.56'

SLTY SH: lt - medgy, occ dk gy, frm - mod hd,
sb pily - sb blk, stly - grty tex, sl calc
CHK: lt - med gy - gy brn, mot, lam, sft - frm,
sb pily - sb blk, rthy tex, v calc
MRL: lt - med gy, sme blk, sft - mod hd, sb
pily - pily, stly - grty tex, sme bent

MD: 6,677
TVD: 6,521.13'
Inclination: 61.14°
Azimuth: 269.93°
VS: 343.49'

CHK: lt - med gy - gy brn, mot, lam, sft -
frm, sb pily - sb blk, rthy tex, v calc
MRL: lt - med gy, sme blk, sft - mod hd, sb
pily - pily, stly - grty tex, sme bent

MD: 6,725'
TVD: 6,541.94'
Inclination: 67.47°
Azimuth: 270.46°
VS: 386.71'

B Chalk

MRL: lt - med gy, sme blk, sft - mod hd, sb
pily - pily, stly - grty tex, sme bent, occ fos
frag
CHK: lt - med gy - gy brn, mot, lam, sft - frm,
sb pily - sb blk, rthy tex, v calc

MD: 6,731'
TVD: 6,544'

B Chalk

CHK: lt - med gy
sb pily - sb blk,
MRL: lt - med gy
pily - pily, stly - grty tex, sme bent, occ fos
frag



MUD WT: 10.60/10.60
VIS: 37/37 IN/OUT

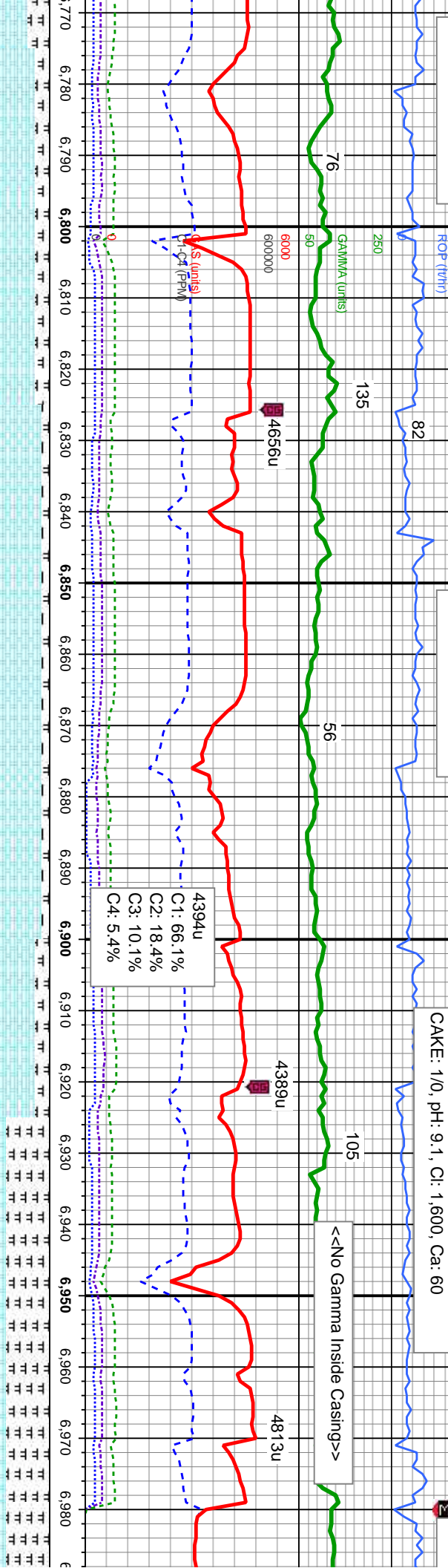
MUD WT: 10.70/10.70
VIS: 37/37 IN/OUT

08/28/2013, Mud Wt: 10.8, FV/s: 37
P/vis: 10, YP: 10, GELS: 4/9/19, API Filt: 9.0
CAKE: 1/0, pH: 9.1, Cl: 1.600, Ca: 60

08/27/2013

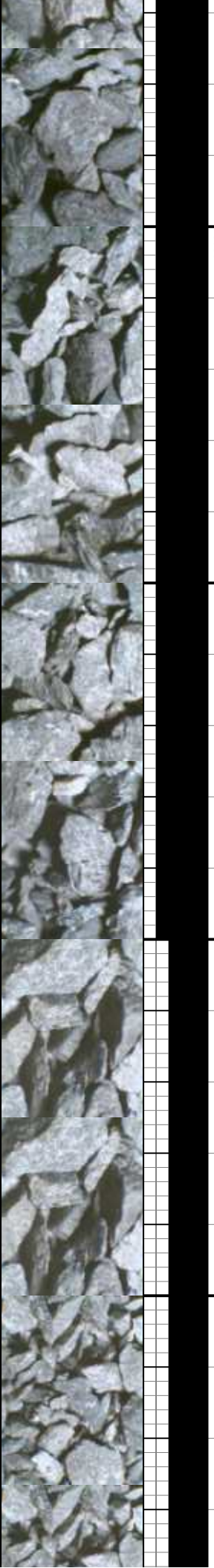
08/28/
08/29/

MIN DEPTH



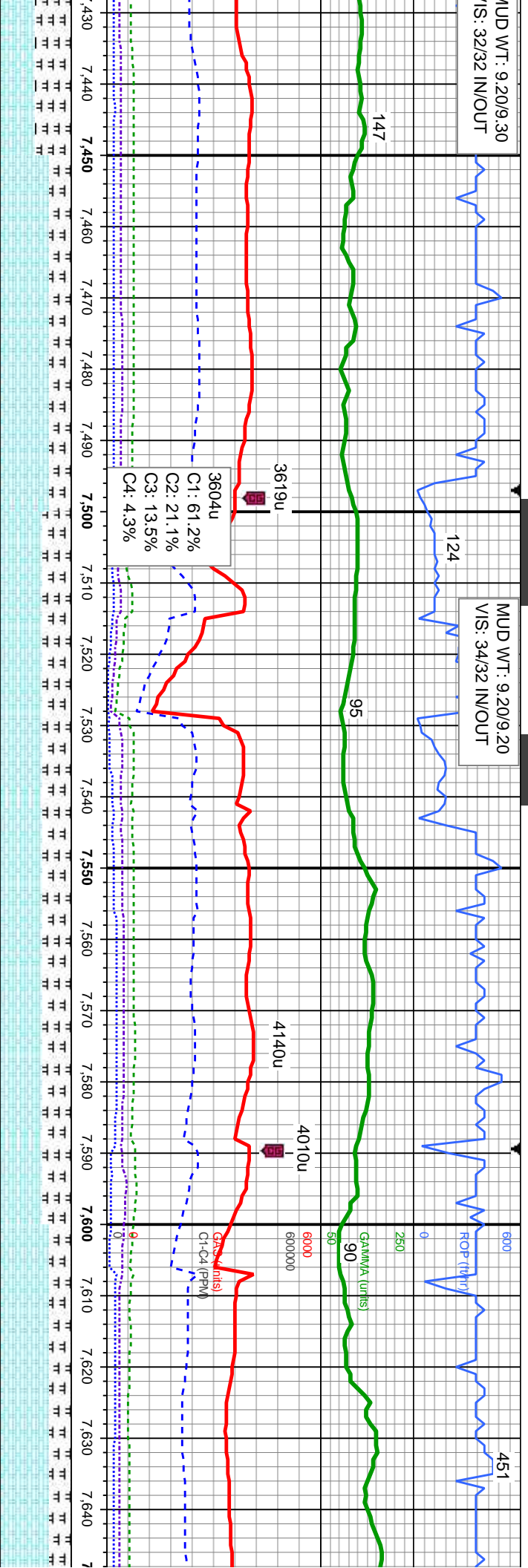
6,772	6,772	6,772
MD: 6,558.54	MD: 6,820	MD: 6,979
Inclination: 71.15 °	TV/D: 6,572.47	TV/D: 6,597.88
Depth: 270.74 °	Inclination: 75.1 °	Inclination: 87.12 °
	Azimuth: 270.75 °	Azimuth: 266 °
	VS: 476.58	VS: 632.66

6,772	6,772	6,772
MD: 6,558.54	MD: 6,820	MD: 6,979
Inclination: 71.15 °	TV/D: 6,572.47	TV/D: 6,597.88
Depth: 270.74 °	Inclination: 75.1 °	Inclination: 87.12 °
	Azimuth: 270.75 °	Azimuth: 266 °
	VS: 476.58	VS: 632.66



MUD WT: 9.20/9.30
VIS: 32/32 IN/OUT

MUD WT: 9.20/9.20
VIS: 34/32 IN/OUT



MD: 7,433'
TVD: 6,602.83'
Inclination: 91.02 °
Azimuth: 264.93 °
VS: 1,084.84'

MD: 7,526'
TVD: 6,600.98'
Inclination: 91.26 °
Azimuth: 267.39 °
VS: 1,177.67'

B Chalk

MD: 7,618'
TVD: 6,598.75'
Inclination: 91.51 °
Azimuth: 267.05 °
VS: 1,269.58'

B Marl

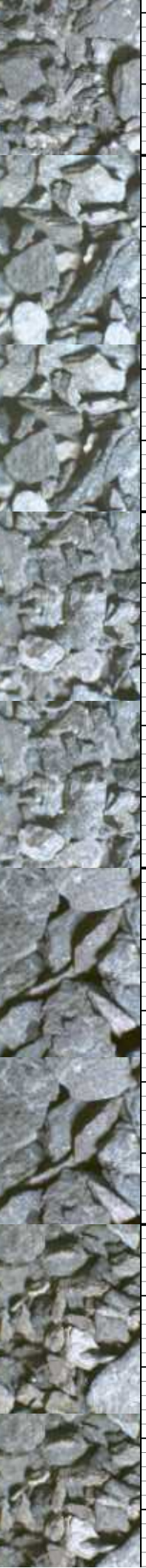
A Marl

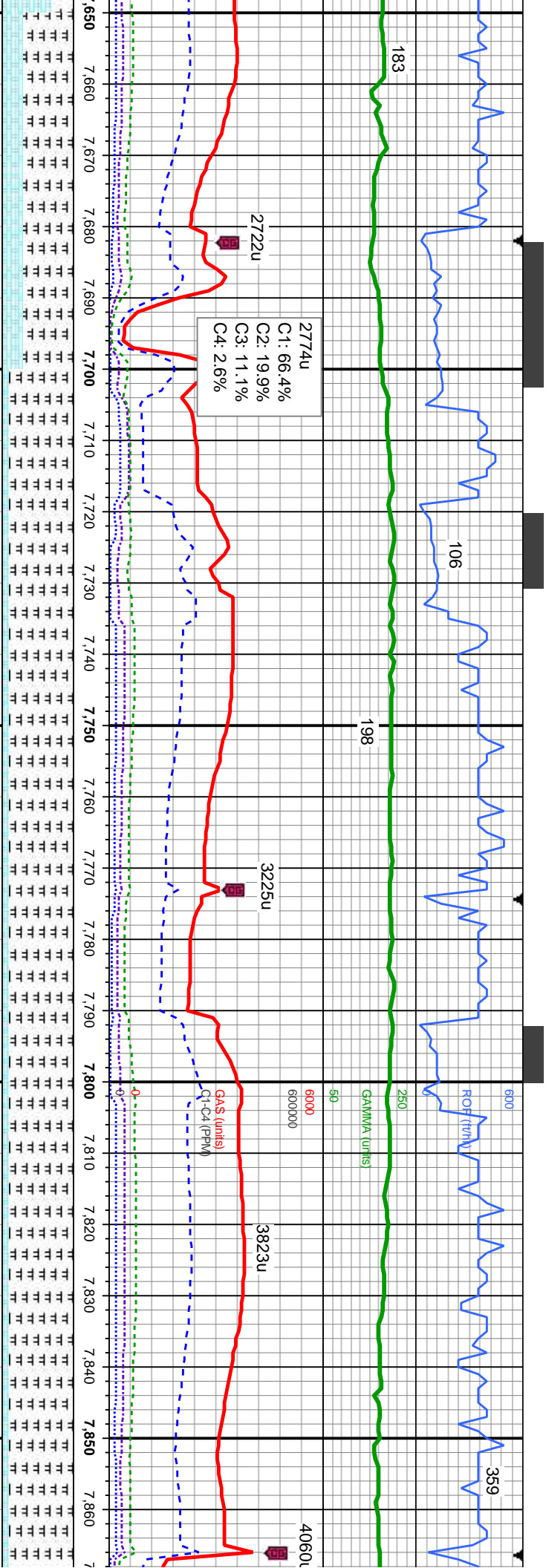
70%CHK: It - med gy - gy brn, mot, lam, sft - frn, sb pty - sb blk, rthy tex, v calc
40%MR.L: It - med gy, sme blk, sft - mod hd, sb pty - pty, silty - grty tex, sme bent, about fos frag

60%CHK: It - med gy - gy brn, mot, lam, sft - frn, sb pty - sb blk, rthy tex, v calc
40%MR.L: It - med gy, sme blk, sft - mod hd, sb pty - pty, silty - grty tex, tr bent, about fos frag

60%CHK: It - med gy - gy brn, mot, lam, sft - frn, sb pty - sb blk, rthy tex, v calc
40%MR.L: It - med gy, sme blk, sft - mod hd, sb pty - pty, silty - grty tex, tr bent, sme fos frag

70%CHK: It - med gy - gy brn, mot, lam, sft - frn, sb pty - sb blk, rthy tex, v calc
30%MR.L: It - med gy, sme blk, sft - mod hd, sb pty - pty, silty - grty tex, tr bent, sme fos frag





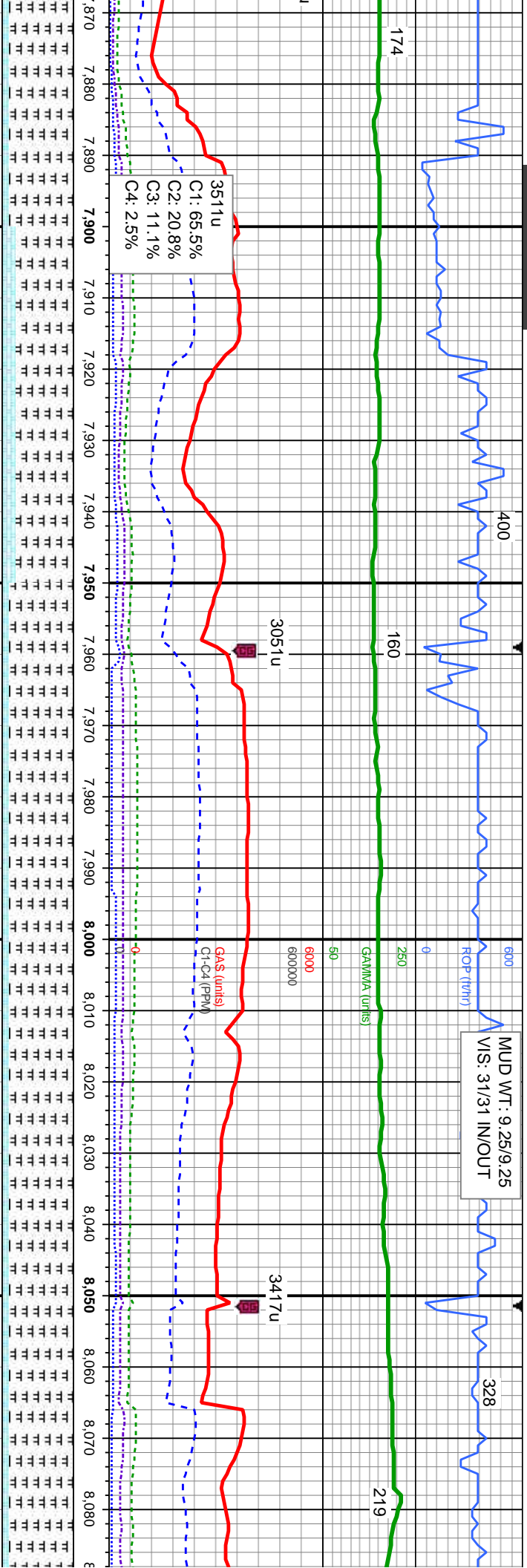
MD: 7.710
TVD: 6,597.15
Inclination: 90.49 °
Azimuth: 267.72 °
VS: 1,361.51

MD: 7.804
TVD: 6,597.75
Inclination: 88.77 °
Azimuth: 267.16 °
VS: 1,455.46

Chalk

30%CHK: lt - med gy - gy brn, mot, lam, sft - frm, sb pily - sb blkly, rthy tex, v calc	10%CHK: lt - med gy - gy brn, mot, lam, sft - frm, sb pily - sb blkly, rthy tex, v calc	10%CHK: lt - med gy - gy brn, mot, lam, sft - frm, sb pily - sb blkly, rthy tex, v calc	10%CHK: lt - med gy - gy brn, mot, lam, sft - frm, sb pily - sb blkly, rthy tex, v calc
70%MRl: lt - med gy, mod hd, - hd, sb pily - pily, sily - grly tex, tr bent, sme fos frag	90%MRl: lt - med gy, mod hd - hd, sb pily - pily, sily - grly tex, abnt bent, sme fos frag	90%MRl: lt - med gy, mod hd - hd, sb pily - pily, sily - grly tex, abnt bent, sme fos frag	90%MRl: lt - med gy, mod hd - hd, sb pily - pily, sily - grly tex, sme bent, sme fos frag



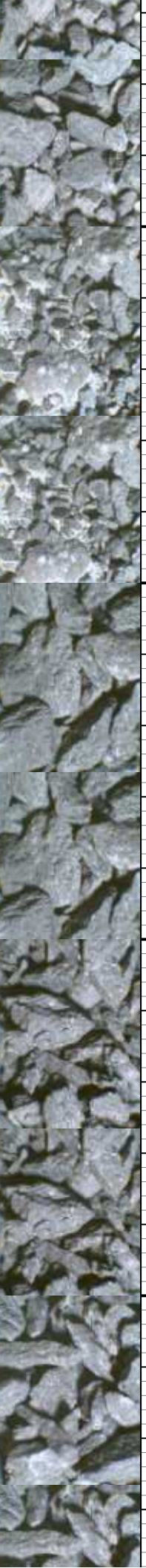


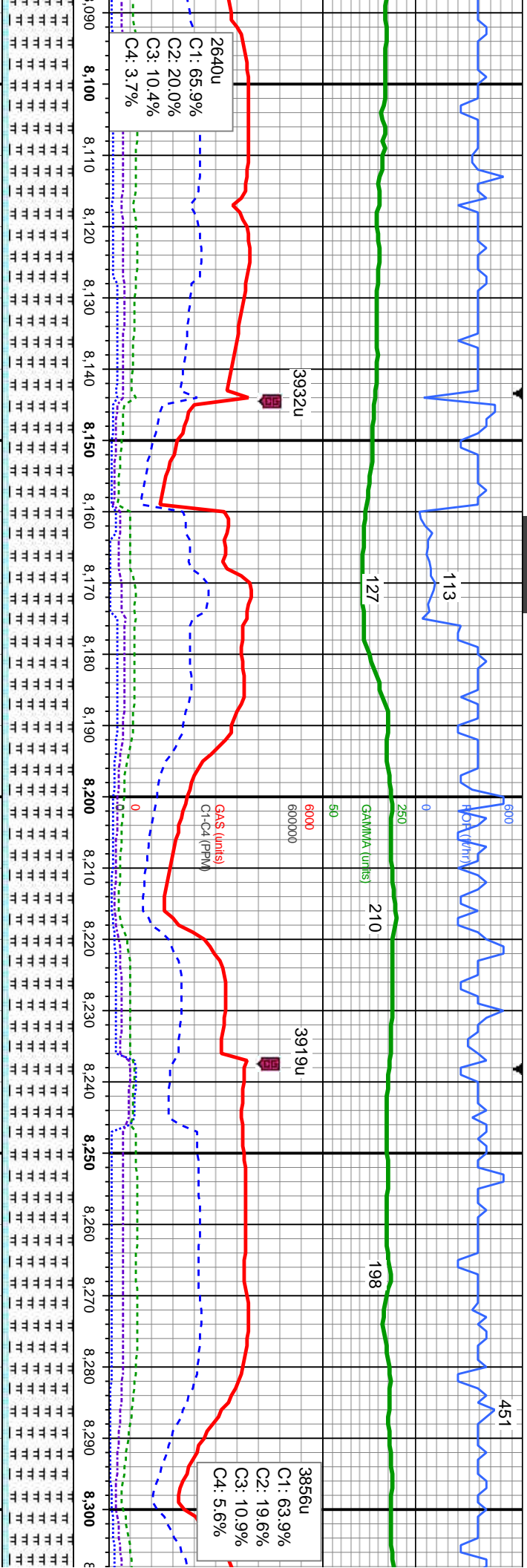
MD: 7.897
TVD: 6,599.33
Inclination: 89.29 °
Azimuth: 267.07 °
VS: 1,548.37

MD: 7.989
TVD: 6,600.86
Inclination: 88.8 °
Azimuth: 267.44 °
VS: 1,640.3

MD: 8.083
TVD: 6,602.03
Inclination: 89.
Azimuth: 267.2
VS: 216.4

bed gy - gy brn, mot, lam, sft sb blkly, rthy tex, v calc	20%CHK: lt - med gy - gy brn, mot, lam, sft - frm, sb pily - sb blkly, rthy tex, v calc 80%MR: lt - med gy, mod hd - hd, sb pily - pily, silty - grty tex, tr bent, sme fos frag	10%CHK: lt - med gy - gy brn, mot, lam, sft - frm, sb pily - sb blkly, rthy tex, v calc 90%MR: lt - med gy, mod hd - hd, sb pily - pily, silty - grty tex, tr bent, sme fos frag	10%CHK: lt - med gy - gy brn, mot, lam, sft - frm, sb pily - sb blkly, rthy tex, v calc 90%MR: lt - med gy, mod hd - hd, sb pily - pily, silty - grty tex, tr bent, tr fos frag	10%CHK: lt - med gy - gy brn, mot, lam, sft - frm, sb pily - sb blkly, rthy tex, v calc 90%MR: lt - med gy, mod hd - hd, sb pily - pily, silty - grty tex, tr bent, tr fos fra
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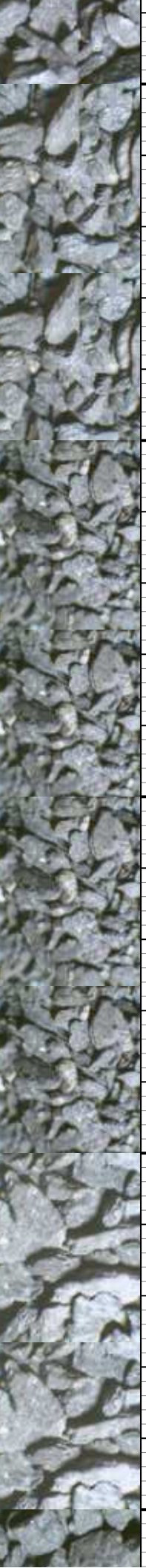


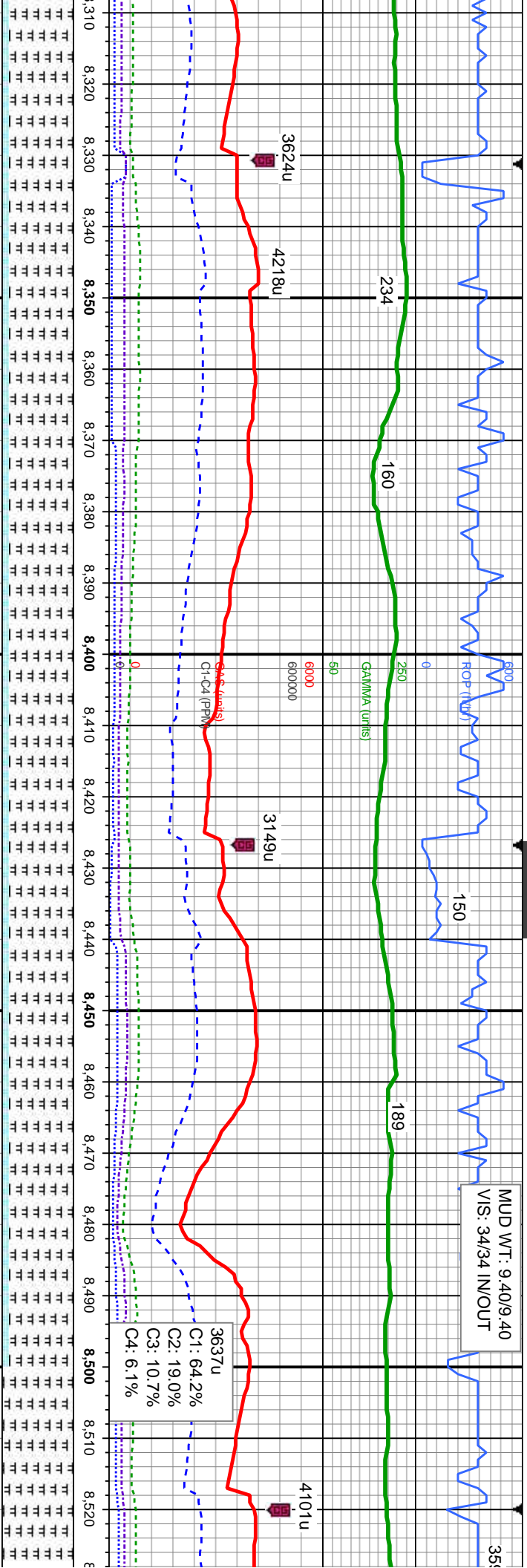


MD: 8,177'
TVD: 6,602.89'
Inclination: 89.17°
Azimuth: 267.16°
VS: 211.81

MD: 8,270'
TVD: 6,603.89'
Inclination: 89.6°
Azimuth: 267.27°
VS: 207.29

lam, sft -	10%CHK: lt - med gy - gy brn, mot, lam, sft	10%CHK: lt - med gy - gy brn, mot, lam, sft -	10%CHK: lt - med gy - gy brn, mot, lam, sft -	10%CHK: lt - med gy - gy brn, mot, lam, sft
3	- frm, sb pily - sb blkly, rthy tex, v calc	frm, sb pily - sb blkly, rthy tex, v calc	frm, sb pily - sb blkly, rthy tex, v calc	- frm, sb pily - sb blkly, rthy tex, v calc
3	90%MR: lt - med gy, mod hd - hd, sb pily	90%MR: lt - med gy, mod hd - hd, sb pily -	90%MR: lt - med gy, mod hd - hd, sb pily -	90%MR: lt - med gy, mod hd - hd, sb pily -
3	- pily, silty - grty tex, tr bent, tr fos frag	pily, silty - grty tex, tr bent, tr fos frag	pily, silty - grty tex, tr bent, tr fos frag	pily, silty - grty tex, tr bent, tr fos frag



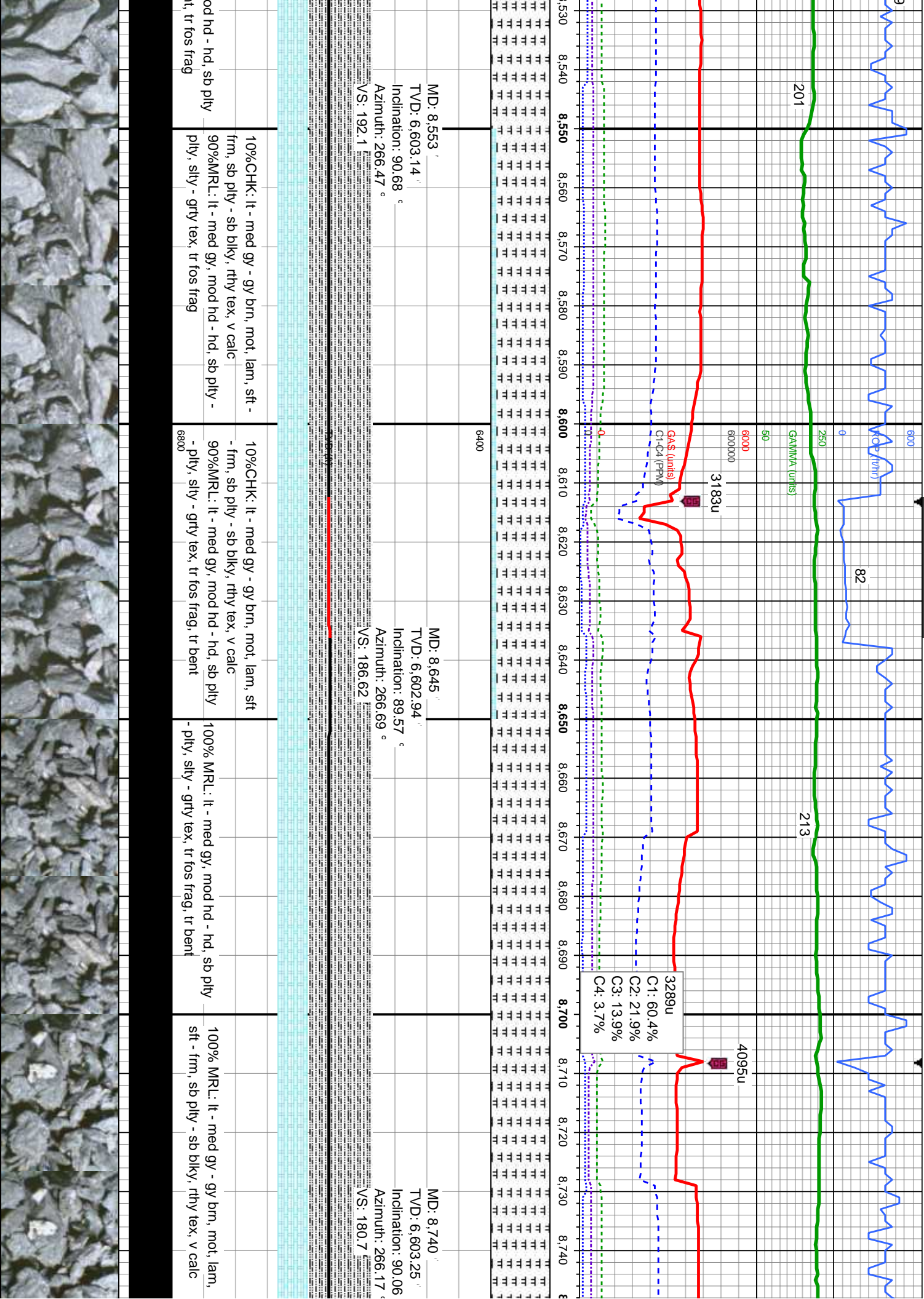


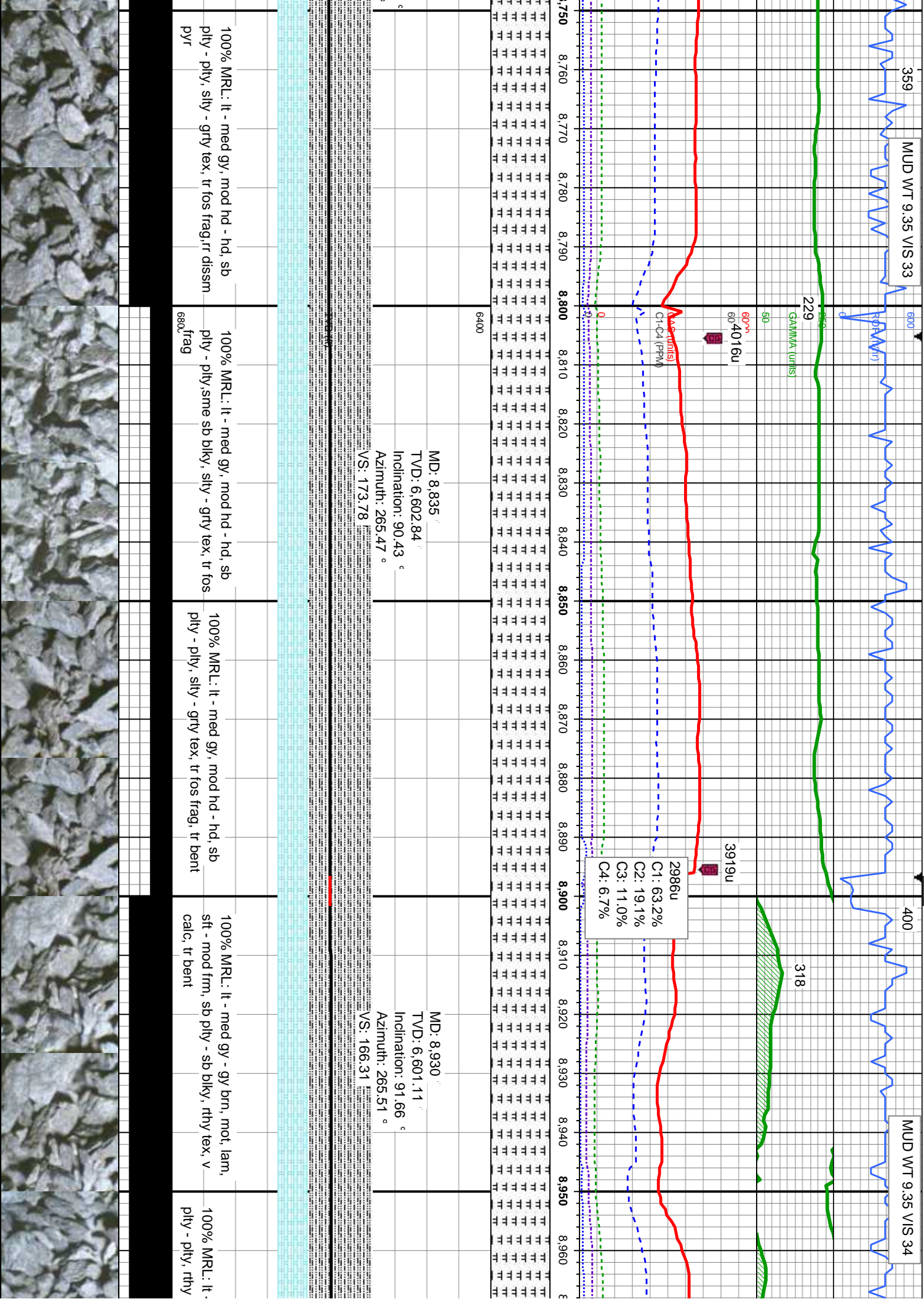
MD: 8,363 '
TVD: 6,603.86 '
Inclination: 90.43 °
Azimuth: 267.27 °
VS: 202.86

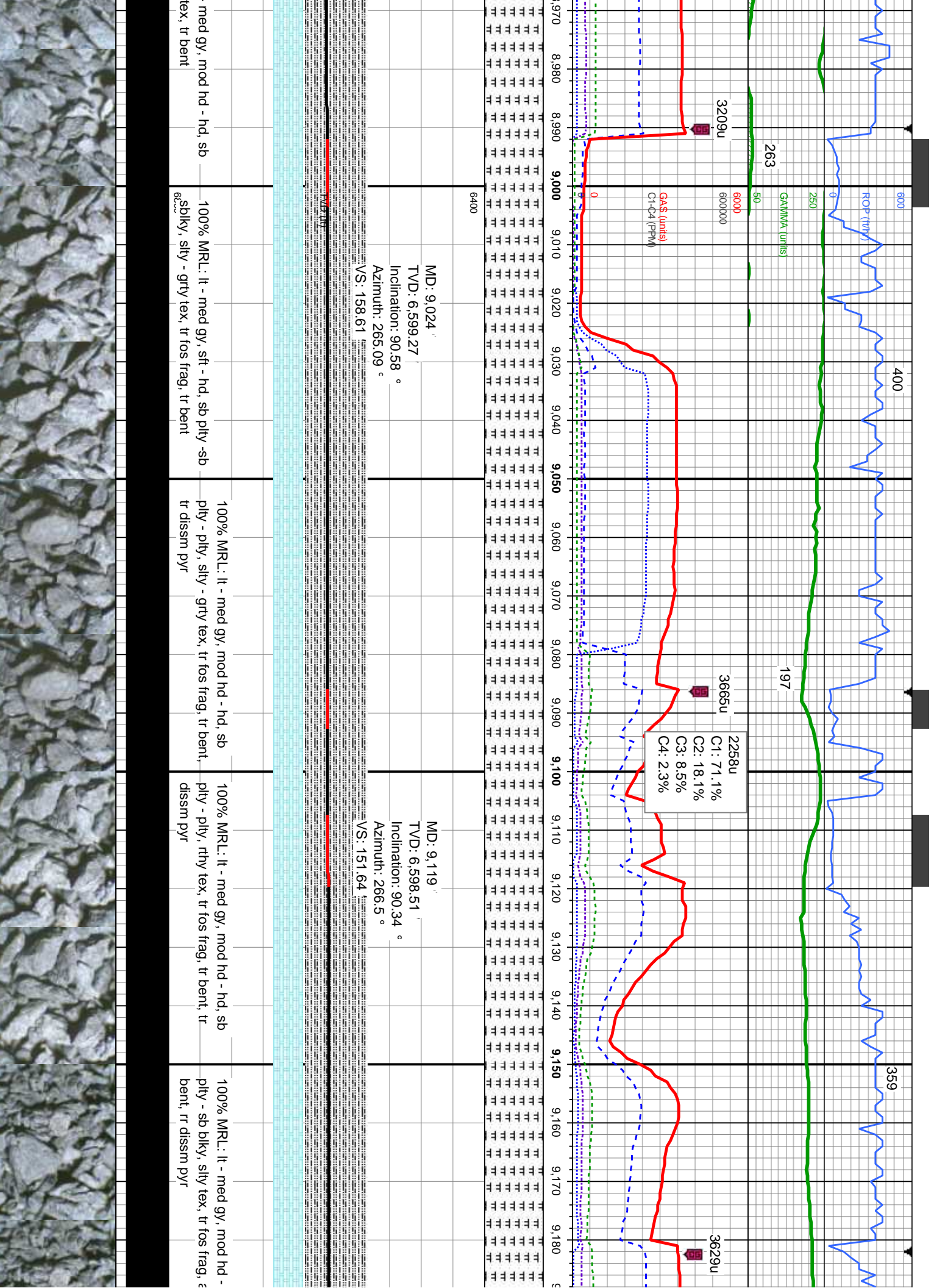
MD: 8,458 '
TVD: 6,603.6 '
Inclination: 89.88 °
Azimuth: 266.64 °
VS: 197.81

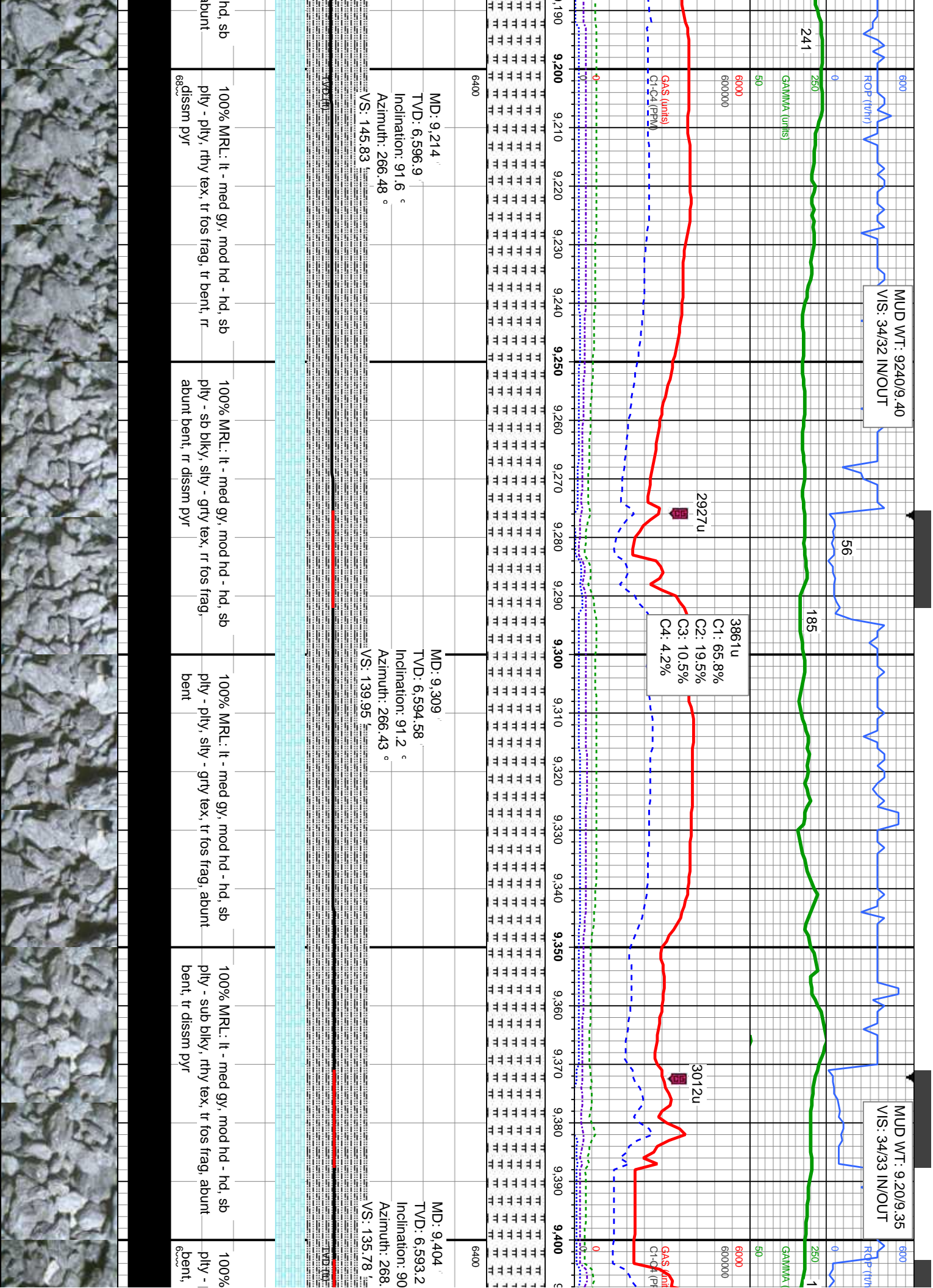
CHK: It - med gy - gy brn, mot, lam, sft sb pily - sb blkyy, rthy tex, v calc	10%CHK: It - med gy - gy brn, mot, lam, sft - frm, sb pily - sb blkyy, rthy tex, v calc	10%CHK: It - med gy - gy brn, mot, lam, sft - frm, sb pily - sb blkyy, rthy tex, v calc	10%CHK: It - med gy - gy brn, mot, lam, sft - frm, sb pily - sb blkyy, rthy tex, v calc
RL: It - med gy, mod hd - hd, sb pily -	90%MR: It - med gy, mod hd - hd, sb pily -	90%MR: It - med gy, mod hd - hd, sb pily -	100%MR: It - med gy, m
grty tex, tr bent, tr fos frag	- pily, stly - grty tex, tr bent, tr fos frag	- pily, stly - grty tex, tr bent, tr fos frag	- pily, stly - grty tex, tr ber

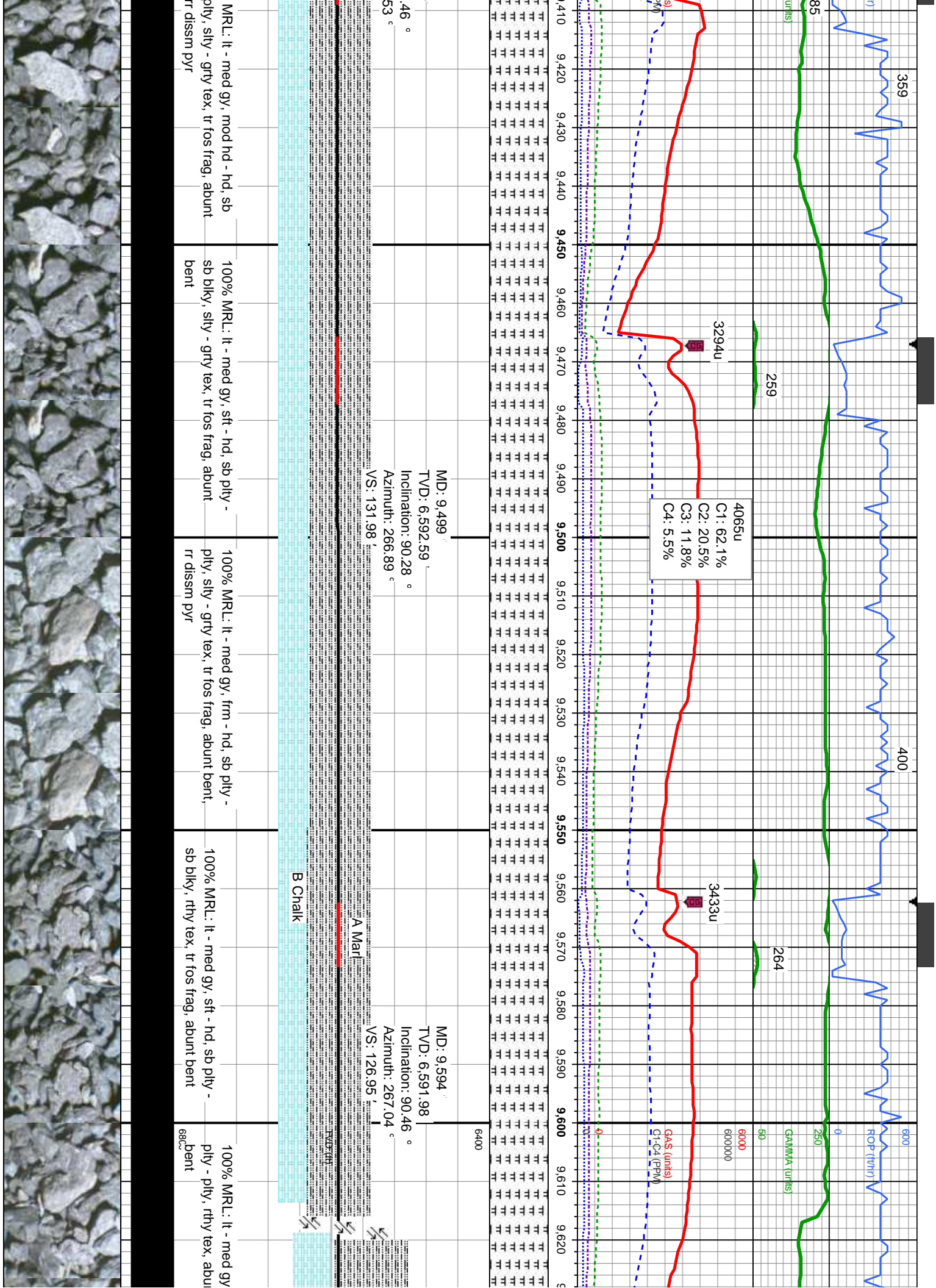






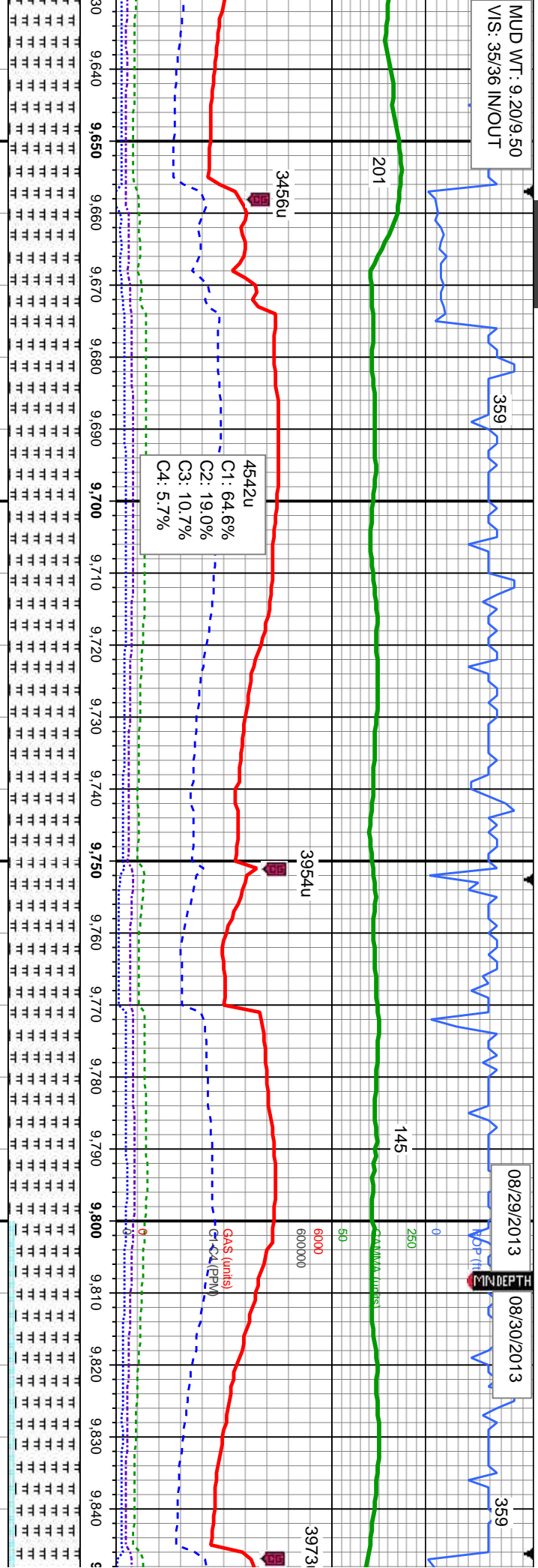






MUD WT : 9.20/9.50
VIS: 35/36 IN/OUT

08/29/2013 08/30/2013



MD: 9,688
TVD: 6,592.48
Inclination: 88.92 °
Azimuth: 266.97 °
VS: 122.04

MD: 9,783
TVD: 6,593.25
Inclination: 90.15 °
Azimuth: 267.73 °
VS: 117.65

B Chaik

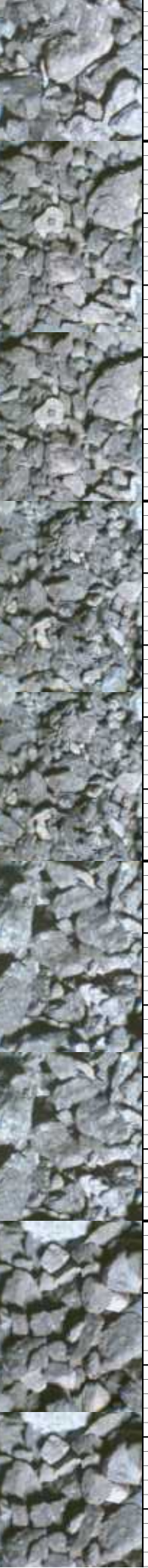
mod hd - hd, sb
fos frag, abunt

100% MRL: lt - med gy, mod hd - hd, sb
- pily, silty - grty tex, tr fos frag, tr bent

100% MRL: lt - med gy, mod hd - hd, sb pily
- pily, silty - grty tex, tr fos frag, abunt bent

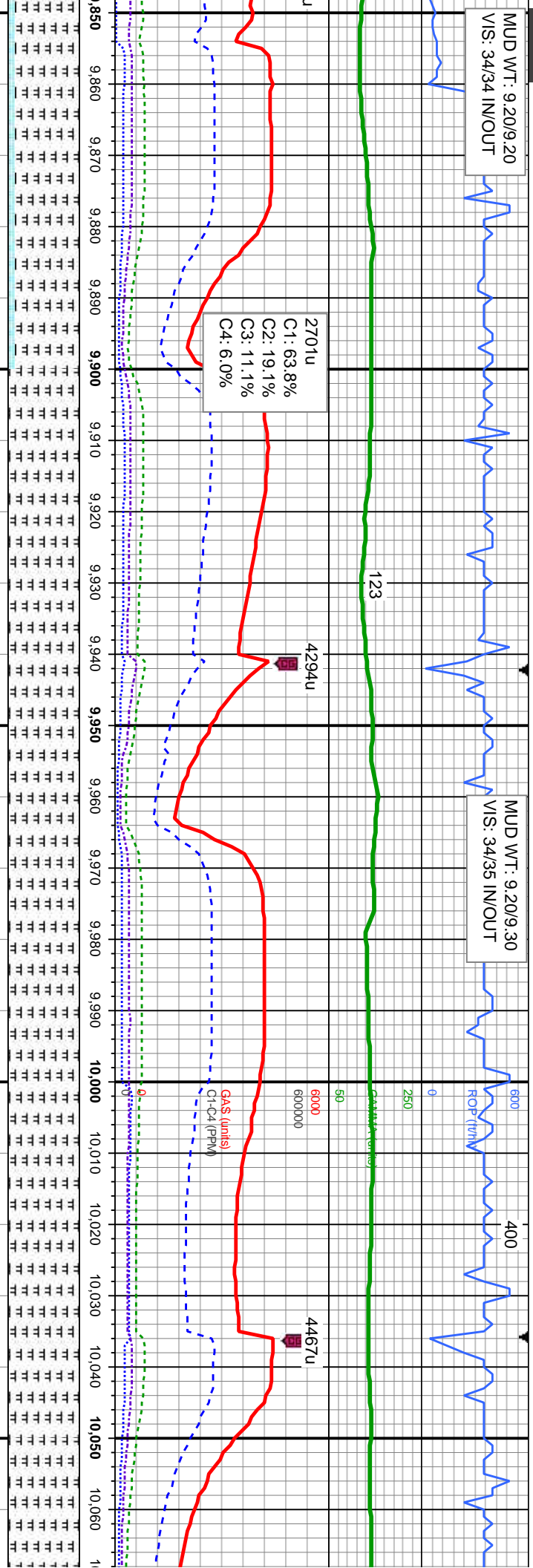
100% MRL: lt - med gy, mod hd - hd, sb
pily - sb blkly, silty - grty tex, tr fos frag, abunt bent

10%CHK: lt - med gy - gy bnm, mot, lam, sft
frm, sb pily - sb blkly, rthy tex, v calc
90% MRL: lt - med gy, mod hd - hd, sb pily
e pily, silty - grty tex, tr fos frag, tr bent



MUD WT: 9.20/9.20
VIS: 34/34 IN/OUT

MUD WT: 9.20/9.30
VIS: 34/35 IN/OUT



MD: 9,878 '
TVD: 6,594.26 '

MD: 9,973 '
TVD: 6,595.82 '

MD: 10,06 '
TVD: 6,599 '

Inclination: 88.64 °
Azimuth: 266.86 °
VS: 113.17

Inclination: 89.48 °
Azimuth: 266.68 °
VS: 107.81

Inclination: 2 °
Azimuth: 2 °
VS: 101.7

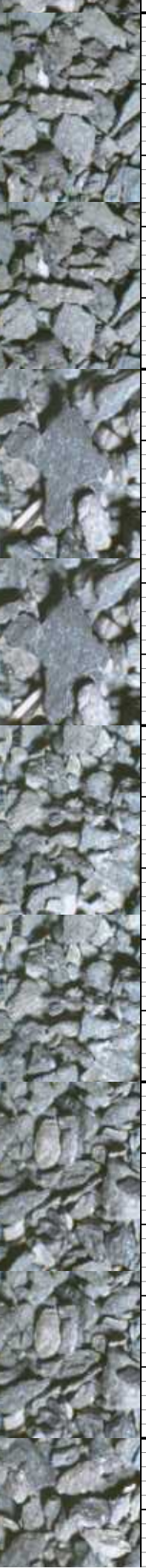
10%CHK: lt - med gy - gy brn, mot, lam,
sft - frm, sb pily - sb blkly, rthy tex, v calc
90% MRL: lt - med gy, mod hd - hd, sb pily
- pily, silty - grty tex, tr fos frag, tr bent

100% MRL: lt - med gy, mod hd - hd, sb pily
- sb blkly, silty-rthy tex, tr fos frag, abunt bent

100% MRL: lt - med gy, mod hd - hd, sb pily
- pily, silty - rthy tex, tr fos frag, abunt bent

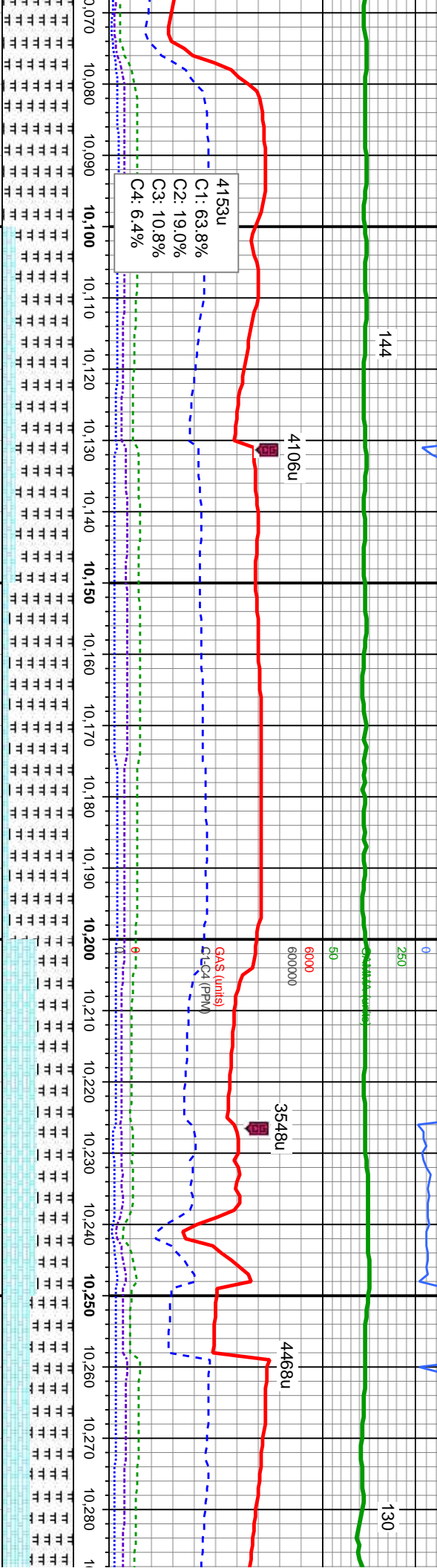
100% MRL: lt - med gy, mod hd - hd, sb
pily - pily, silty - grty tex, tr fos frag, abunt
bent

100% MRL: lt -
pily - pily, silty -
bent, rr dissim p



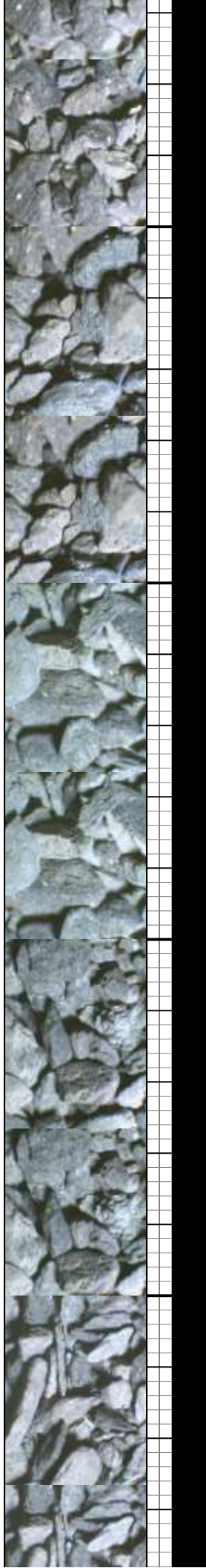
MUD WT: 9.20/9.25
VIS: 33/34 IN/OUT

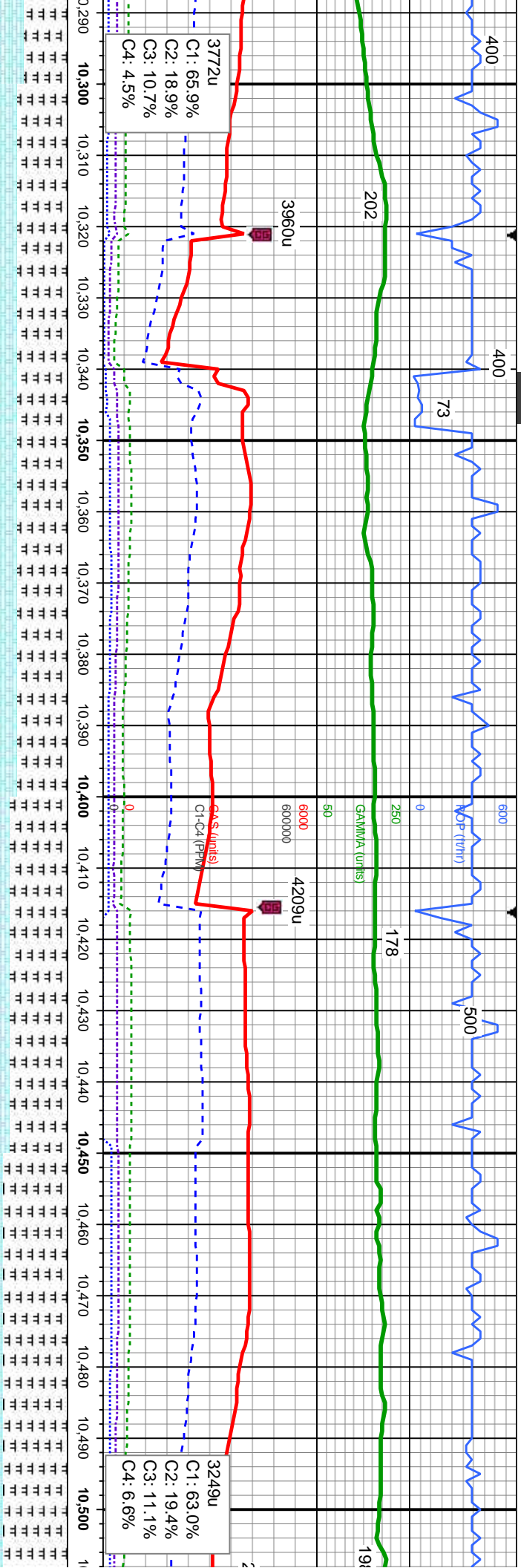
08/30/2013, Mud Wt: 9.25, FVis: 33
PVs: 8, YP: 5, GELS: 214/8, API Filtr: 8.0
CAKE: 11/0, pH: 8.7, Cl: 2.100, Ca: 40



MD: 10.163 TVD: 6,596.84 Inclination: 89.35 Azimuth: 262.87 VS: 92.57	MD: 10.258 TVD: 6,597.07 Inclination: 90.37 Azimuth: 265.59 VS: 83.02
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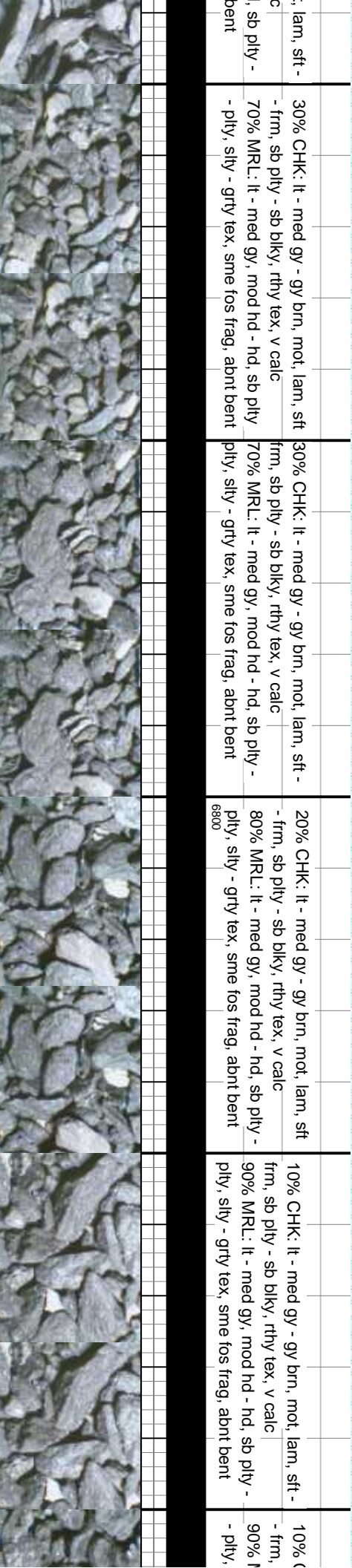
med gy, mod hd - hd, sb rthy tex, tr fos frag, abunt	20% CHK: lt - med gy - gy brn, mot, lam, sft - frm, sb pily - sb blk, rthy tex, v calc 80% MRL: lt - med gy, mod hd - hd, sb pily - pily, silty - grty tex, tr fos frag, tr bent	10% CHK: lt - med gy - gy brn, mot, lam, sft - frm, sb pily - sb blk, rthy tex, v calc 90% MRL: lt - med gy, mod hd - hd, sb pily - pily, silty - grty tex, tr fos frag, tr bent	50% CHK: lt - med gy - gy brn, mot, lam, sft - frm, sb pily - sb blk, rthy tex, v calc 50% MRL: lt - med gy, mod hd - hd, sb pily - pily, silty - grty tex, tr fos frag, abnt bent	40% CHK: lt - med gy - gy brn, mot, lam, sft - frm, sb pily - sb blk, rthy tex, v cal 60% MRL: lt - med gy, mod hd - hd pily, silty - grty tex, tr fos frag, abnt
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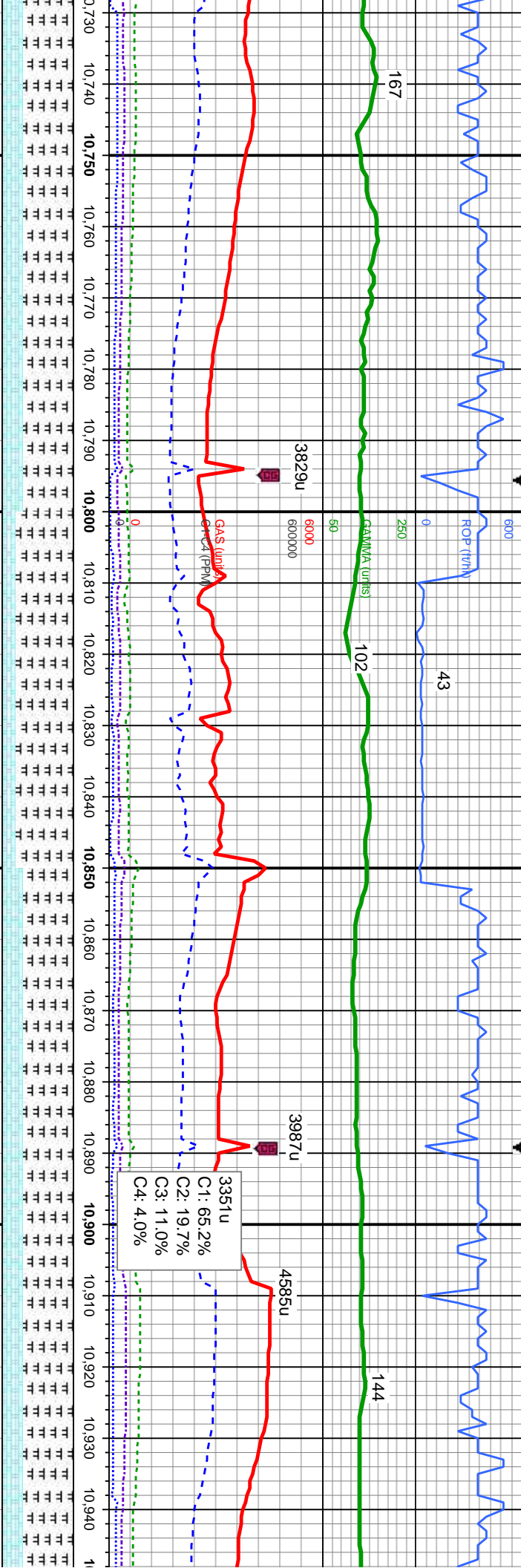




MD: 10,353
TVD: 6,596.12
Inclination: 90.77
Azimuth: 265.31
VS: 75.49

MD: 10,447
TVD: 6,594.35
Inclination: 91.39
Azimuth: 264.79
VS: 67.38





MD: 10.827
TVD: 6,587.89
Inclination: 90.43 °
Azimuth: 266.15
VS: 36.33

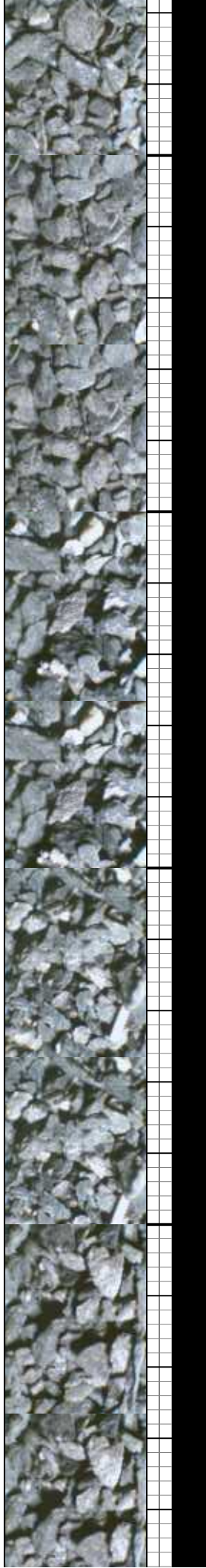
MD: 10.922
TVD: 6,589.21
Inclination: 87.97 °
Azimuth: 265.45
VS: 29.37

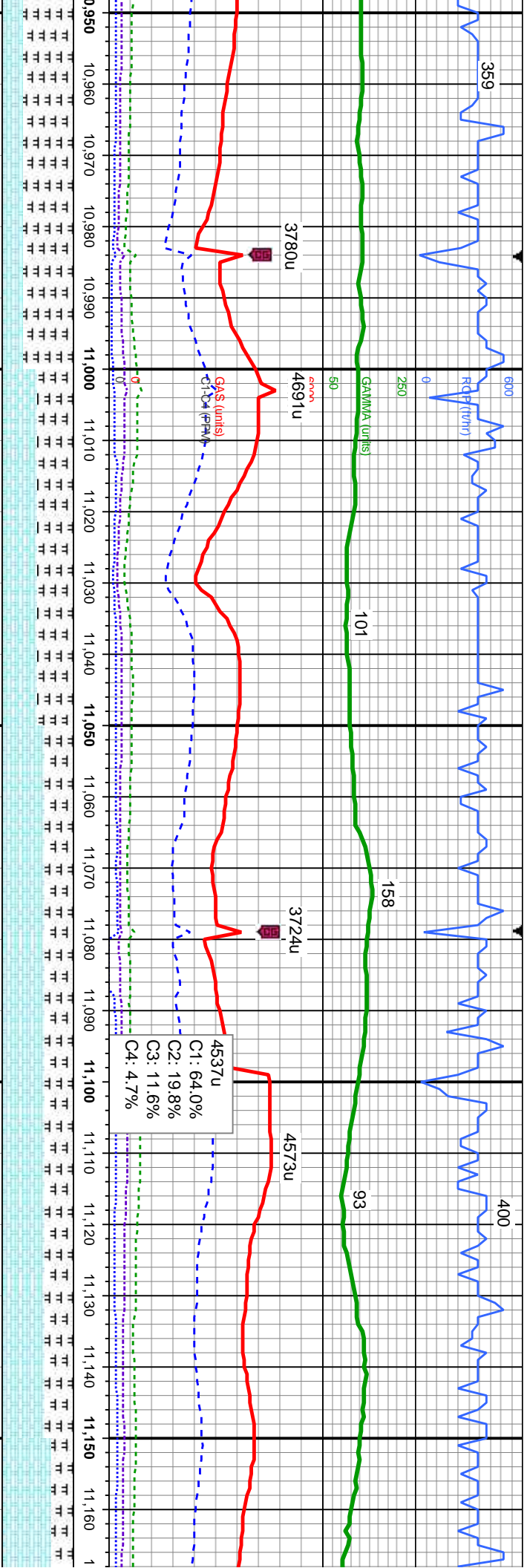
30% CHK: It - med gy - gy brn, mot, lam, sft
- frm, sb ply - sb blk, rthy tex, v calc
70% MRL: It - med gy, mod hd - hd, sb ply -
ply, silty - grty tex, abnt fos frag, abnt bent

20% CHK: It - med gy - gy brn, mot, lam, sft
- frm, sb ply - sb blk, rthy tex, v calc
80% MRL: It - med gy, mod hd - hd, sb ply -
ply, silty - grty tex, abnt fos frag, abnt bent

30% CHK: It - med gy - gy brn, mot, lam, sft
- frm, sb ply - sb blk, rthy tex, v calc
70% MRL: It - med gy, mod hd - hd, sb ply -
ply, silty - grty tex, abnt fos frag, abnt bent

30% CHK: It - med gy - gy brn, mot, lam, sft
- frm, sb ply - sb blk, rthy tex, v calc
70% MRL: It - med gy, mod hd - hd, sb ply -
ply, silty - grty tex, abnt fos frag, abnt bent





MD: 11,017
TVD: 6,591.36
Inclination: 89.44 °
Azimuth: 264.82 °
VS: 21.32

MD: 11,111
TVD: 6,591.37
Inclination: 90.55 °
Azimuth: 263.99 °
VS: 12.15

TVD (ft)

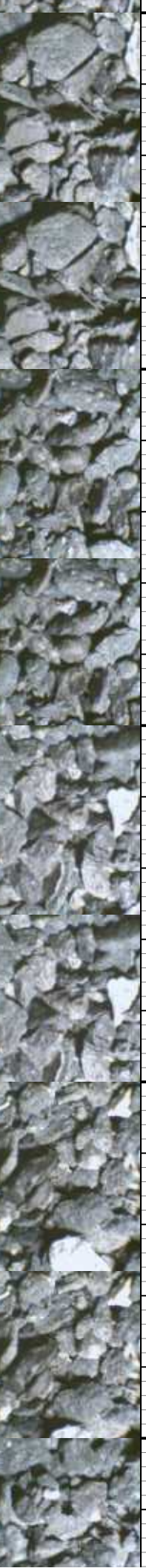
30% CHK: It - med gy - gy brn, mot, lam, sft
- frm, sb pily - sb blkly, rthy tex, v calc
70% MRL: It - med gy, mod hd - hd, sb pily -
pily, silty - grty tex, abnt fos frag, abnt bent

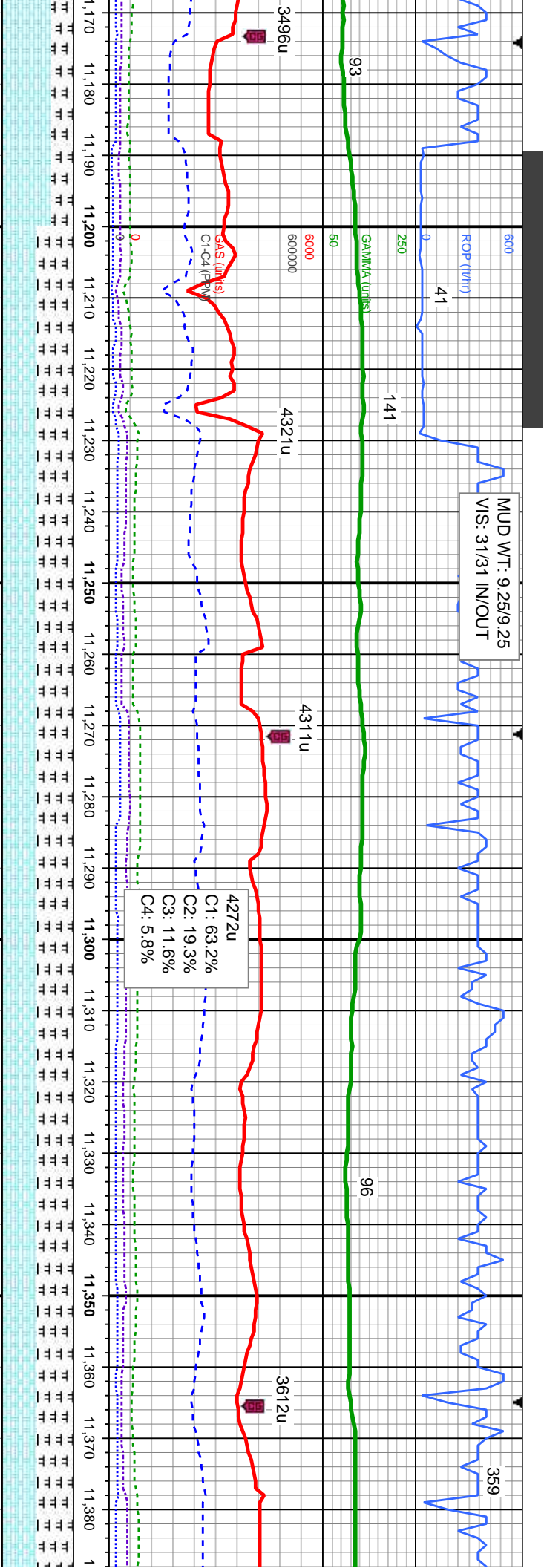
40% CHK: It - med gy - gy brn, mot, lam, sft
- frm, sb pily - sb blkly, rthy tex, v calc
60% MRL: It - med gy, mod hd - hd, sb pily -
pily, silty - grty tex, abnt fos frag, abnt bent

60% CHK: It - med gy - gy brn, mot, lam, sft
- frm, sb pily - sb blkly, rthy tex, v calc
40% MRL: It - med gy, mod hd - hd, sb pily -
pily, silty - grty tex, abnt fos frag, abnt bent

60% CHK: It - med gy - gy brn, mot, lam, sft
- frm, sb pily - sb blkly, rthy tex, v calc
40% MRL: It - med gy, mod hd - hd, sb pily -
pily, silty - grty tex, abnt fos frag, abnt bent

70% CHK: It - r
- frm, sb pily - s
30% MRL: It - r
pily, silty - grty





MD: 11,206
TVD: 6,590.86
Inclination: 90.06
Azimuth: 265.25
VS: 3.25

MD: 11,301
TVD: 6,591.83
Inclination: 88.77
Azimuth: 266.37
VS: -3.69

TVD (ft)

med gy - gy brn, mot, lam, sft
to blkly, rthy tex, v calc
med gy, mod hd - hd, sb pily -
ex, abnt fos frag, abnt bent

50% CHK: It - med gy - gy brn, mot, lam, sft
- frm, sb pily - sb blkly, rthy tex, v calc
50% MRL: It - med gy, mod hd - hd, sb pily -
pily, silty - grty tex, abnt fos frag, abnt bent
6800

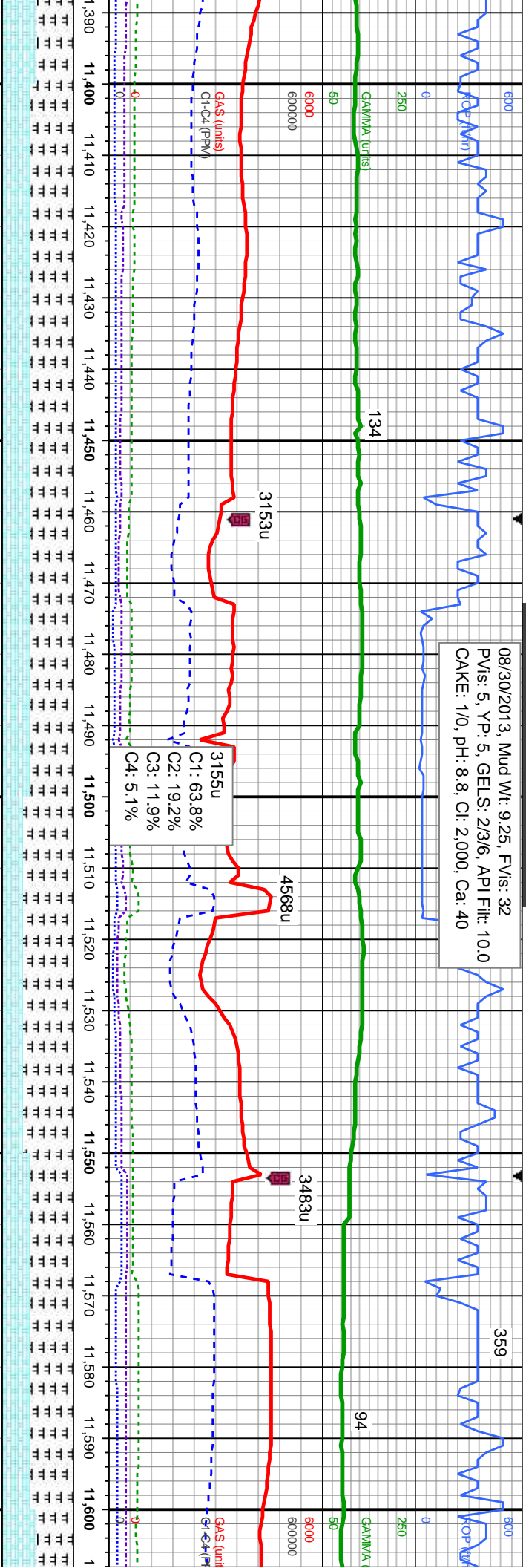
50% CHK: It - med gy - gy brn, mot, lam, sft -
frm, sb pily - sb blkly, rthy tex, v calc
50% MRL: It - med gy, mod hd - hd, sb pily -
pily, silty - grty tex, abnt fos frag, abnt bent

50% CHK: It - med gy - gy brn, mot, lam, sft
- frm, sb pily - sb blkly, rthy tex, v calc
50% MRL: It - med gy, mod hd - hd, sb pily -
pily, silty - grty tex, abnt fos frag, abnt bent

50% CHK: It - med gy - gy brn, mot
frm, sb pily - sb blkly, rthy tex, v cal
50% MRL: It - med gy, mod hd - hd
pily, silty - grty tex, abnt fos frag, ab



08/30/2013, Mud Wt: 9.25, FVIs: 32
PVIs: 5, YP: 5, GELS: 23/6, API Filt: 10.0
CAKE: 1/0, pH: 8.8, Cl: 2,000, Ca: 40

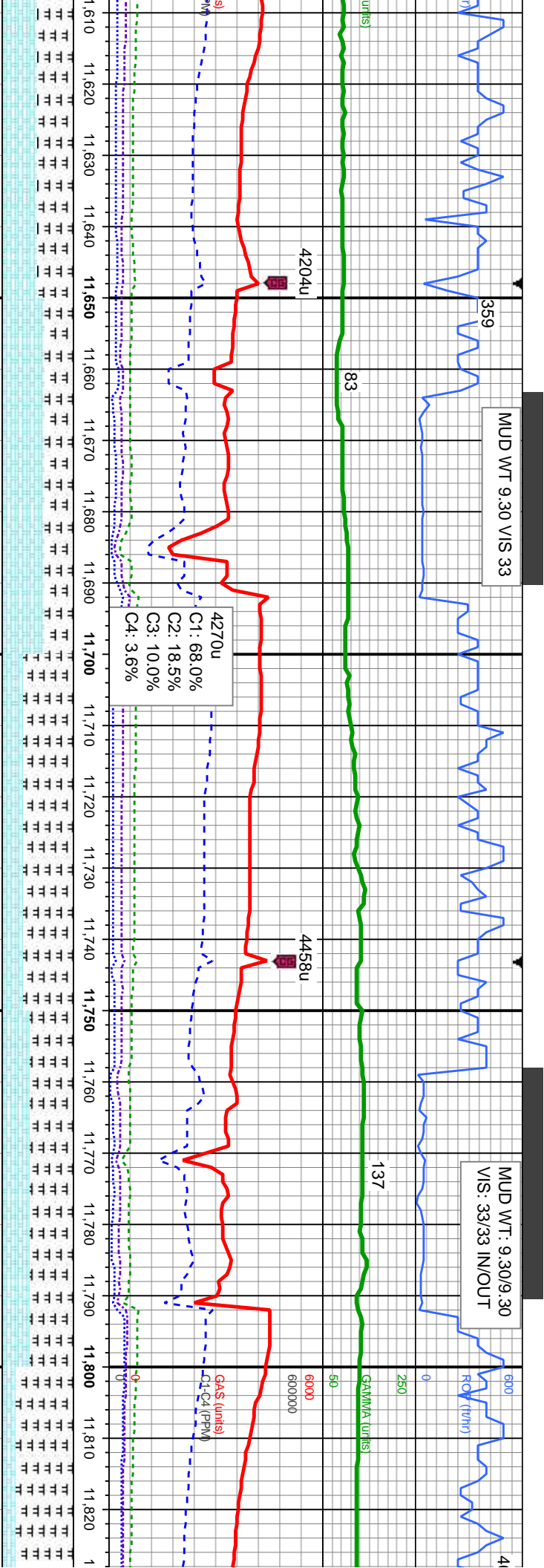


MD: 11,396 TVD: 6,592.62 Inclination: 90.28 ° Azimuth: 265.16 ° VS: -10.71	MD: 11,491 TVD: 6,592.95 Inclination: 89.32 ° Azimuth: 265.46 ° VS: -18.48	MD: 11,586 TVD: 6,594.87 Inclination: 88.36 ° Azimuth: 266.03 ° VS: -25.52
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TVD (ft) TVD (ft)

lam, sft - sb ply - nt bent	40% CHK: It - med gy - gy brn, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v calc 60% MRL: It - med gy, mod hd - hd, sb ply - ply, silty - grty tex, abnt fos frag, abnt bent	40% CHK: It - med gy - gy brn, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v calc 60% MRL: It - med gy, mod hd - hd, sb ply - ply, silty - grty tex, abnt fos frag, abnt bent	40% CHK: It - med gy - gy brn, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v calc 60% MRL: It - med gy, mod hd - hd, sb ply - sb blk, silty - grty tex, abnt fos frag, abnt bent	50% C frm, sb 50% M bly, sil
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MD: 11,681
TVD: 6,596.31
Inclination: 89.91
Azimuth: 266.56
VS: -31.66

MD: 11,776
TVD: 6,595.74
Inclination: 90.77
Azimuth: 268.57
VS: -35.7

TVD (ft)

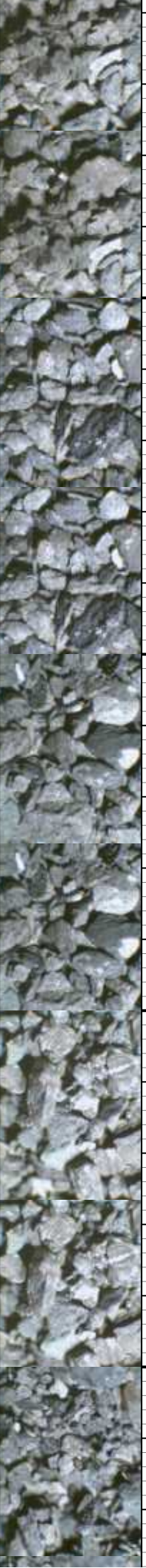
HK: It - med gy - gy brn, mot, lam, sft -
ply - sb blkly, rthy tex, v calc
RL: It - med gy, mod hd - hd, sb ply -
ty - grty tex, abnt fos frag, abnt bent

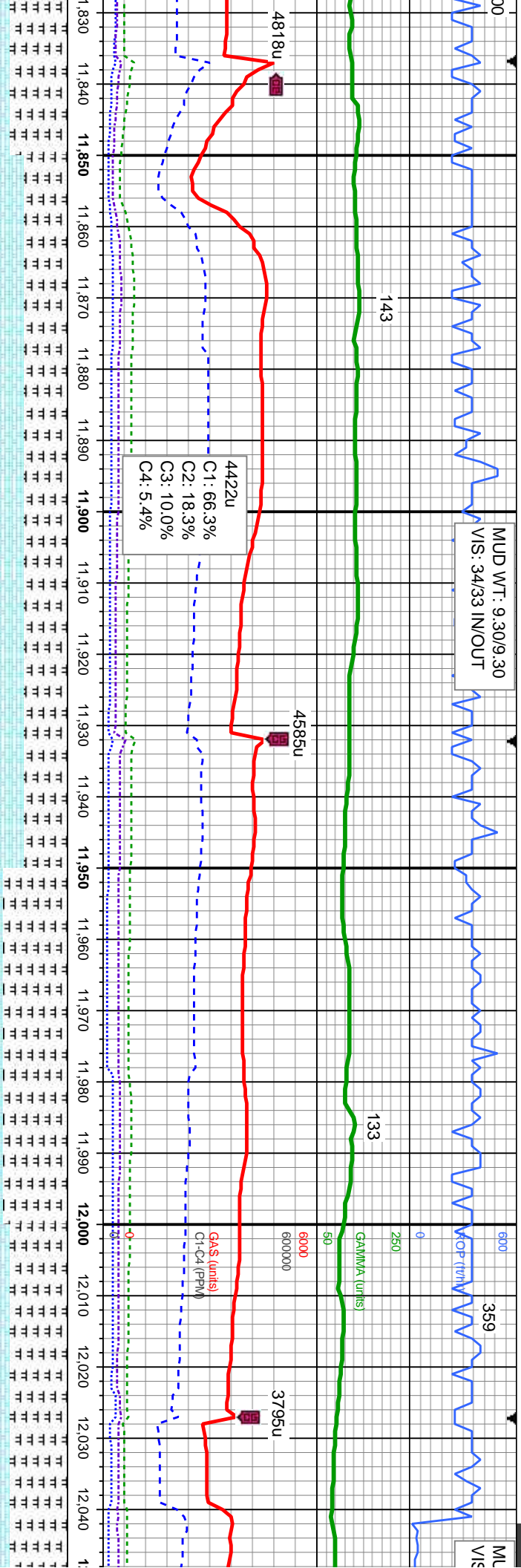
60% CHK: It - med gy - gy brn, mot, lam, sft
- sl hd, sb ply - sb blkly, rthy tex, v calc
40% MRL: It - med gy, mod hd - hd, sb ply -
blkly, rthy tex, abnt fos frag, abnt bent

30% CHK: It - med gy - gy brn, mot, lam, sft -
sl hd, sb ply - sb blkly, rthy tex, v calc
70% MRL: It - med gy, mod hd - hd, sb ply -
blkly, rthy tex, abnt fos frag, abnt bent

40% CHK: It - med gy - gy brn, mot, lam, sft -
sl hd, sb ply - sb blkly, rthy tex, v calc
60% MRL: It - med gy, mod hd - v hd, sb ply -
sb blkly, silty-grty tex, abnt fos frag, abnt bent

20% CHK: It - med gy - g
- sl hd, sb ply - sb blkly, r
80% MRL: It - med gy, m
ply, silty-grty tex, abnt fos



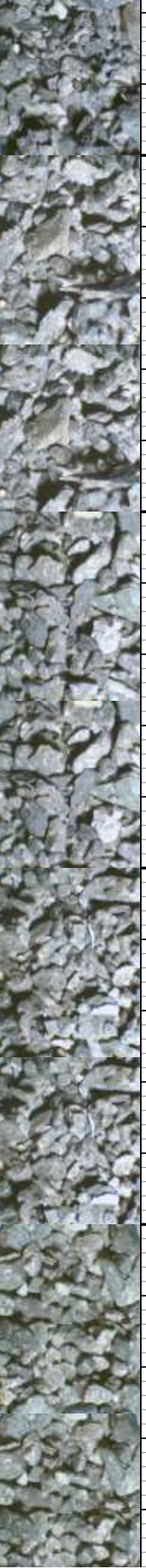


MD: 11,871'
TVD: 6,594.62'
Inclination: 90.59 °
Azimuth: 267.5 °
VS: -38.96 °

MD: 11,966'
TVD: 6,592.72'
Inclination: 91.7 °
Azimuth: 267.43 °
VS: -43.16 °

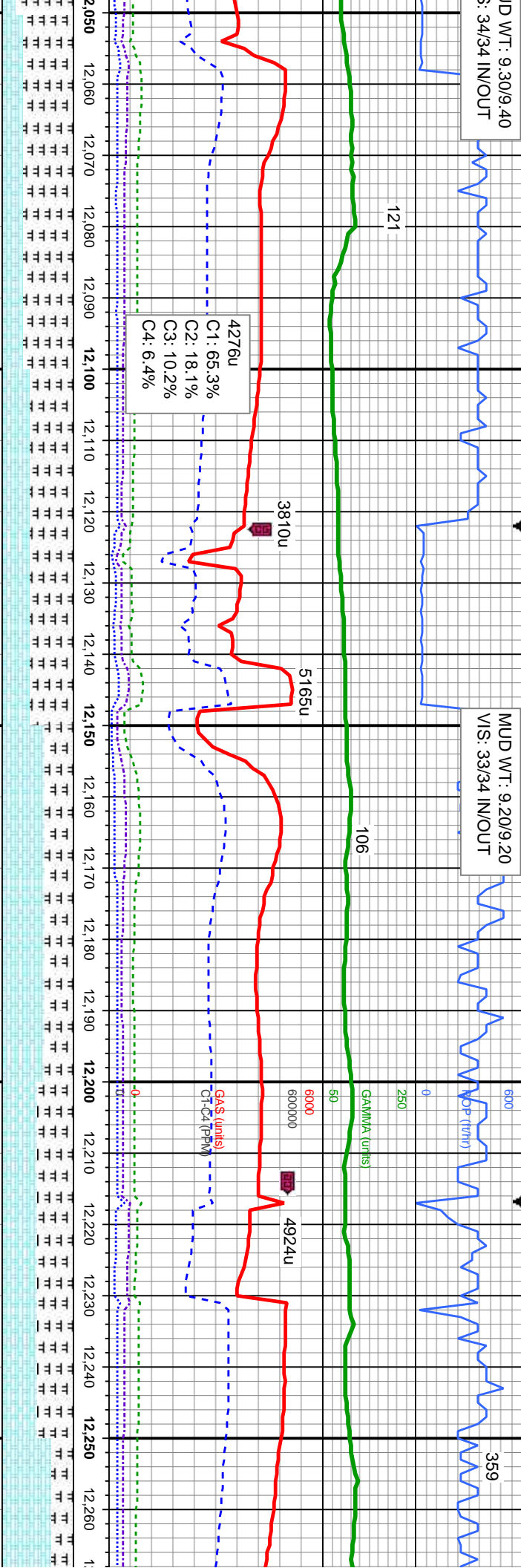
40% CHK: lt - med gy - gy brn, mot, lam, sft - sl hd, sb ply - sb blk, rthy tex, v calc 60% MRL: lt - med gy, mod hd - hd, sb ply - ply, silty-grty tex, abnt fos frag, abnt bent, rrr diss m pyr	40% CHK: lt - med gy - gy brn, mot, lam, sft - sl hd, sb ply - sb blk, rthy tex, v calc 60% MRL: lt - med gy, mod hd - hd, sb ply - ply, silty-grty tex, abnt fos frag, abnt bent, rrr diss m pyr	10% CHK: lt - med gy - gy brn, mot, lam, sft - sl hd, sb ply - sb blk, rthy tex, v calc 90% MRL: lt - med gy, mod hd - hd, sb ply - ply, silty-grty tex, abnt fos frag, abnt bent, rrr diss m pyr	10% CHK: lt - med gy - gy brn, mot, lam, sft - sl hd, sb ply - sb blk, rthy tex, v calc 90% MRL: lt - med gy, mod hd - hd, sb ply - sb blk, rthy tex, abnt fos frag, abnt bent
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TVD (ft)



D WT: 9.30/9.40
3: 34/34 IN/OUT

MUD WT: 9.20/9.20
VIS: 33/34 IN/OUT



MD: 12,060
TVD: 6,589.73

MD: 12,155
TVD: 6,588

MD: 12,250
TVD: 6,586.98

Inclination: 91.94
Azimuth: 268.26
VS: -46.69

Inclination: 90.15
Azimuth: 269.26
VS: -48.74

Inclination: 91.08
Azimuth: 268.94
VS: -50.24

30% CHK: It - med gy - gy brn, mot, lam, sft - mod hd, sb ply - sb blk, rthy tex, v calc
70% MRL: It - med gy, mod hd - hd, sb ply - ply, silty-grty tex, tr fos frag, tr bent

40% CHK: It - med gy - gy brn, mot, lam, sft - mod hd, sb ply - sb blk, rthy tex, v calc
60% MRL: It - med gy, mod hd - hd, sb ply - ply, rthy tex, tr fos frag, tr bent

60% CHK: It - med gy - gy brn, mot, lam, sft - mod hd, sb ply - sb blk, rthy tex, v calc
40% MRL: It - med gy, mod hd - hd, sb ply - sb blk, rthy tex, tr fos frag, tr bent

50% CHK: It - med gy - gy brn, mot, lam, sft - brit, sb ply - blk, rthy tex, v calc
50% MRL: It - med gy, mod hd - hd, sb ply - sb blk, silty-grty tex, tr fos frag, tr bent

70% CHK: It - med gy - gy brn, mot, lam, sft - brit, sb ply - blk
30% MRL: It - med gy, mod hd - hd, sb ply - sb blk, silty-grty

TVD (ft)

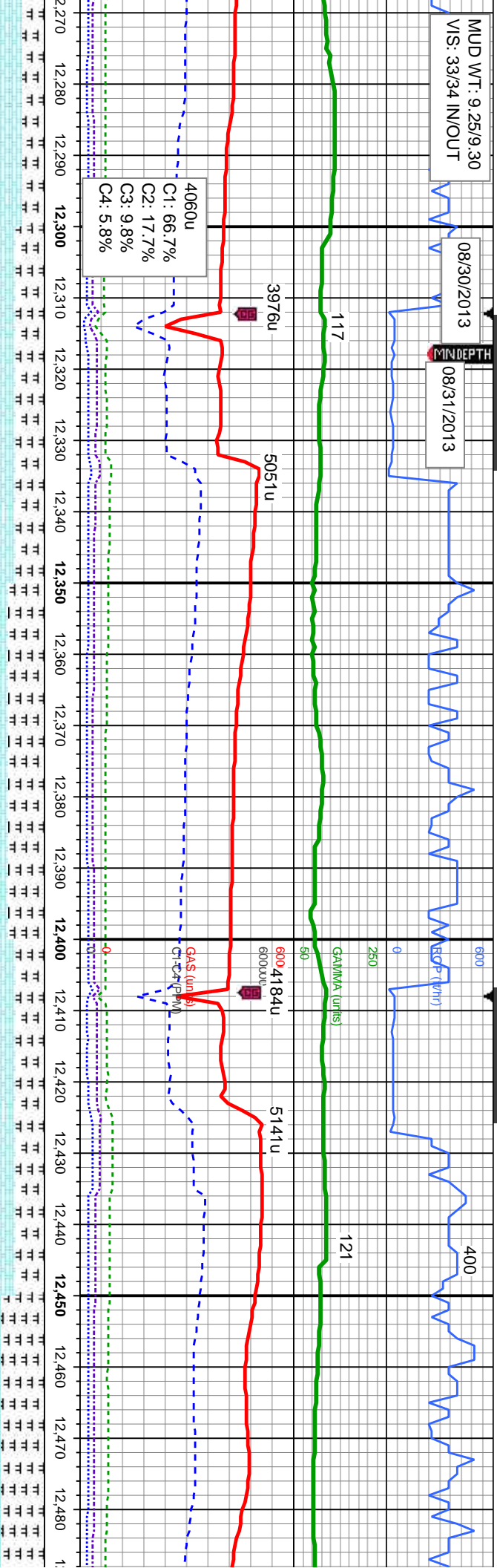


MUD WT: 9.25/9.30
VIS: 33/34 IN/OUT

08/30/2013

08/31/2013

MINDEPTH



MD: 12,345
TVD: 6,585.8

Inclination: 90.34
Azimuth: 267.6
VS: -53.1

6400

MD: 12,440
TVD: 6,586.06

Inclination: 89.35
Azimuth: 267.56
VS: -57.12

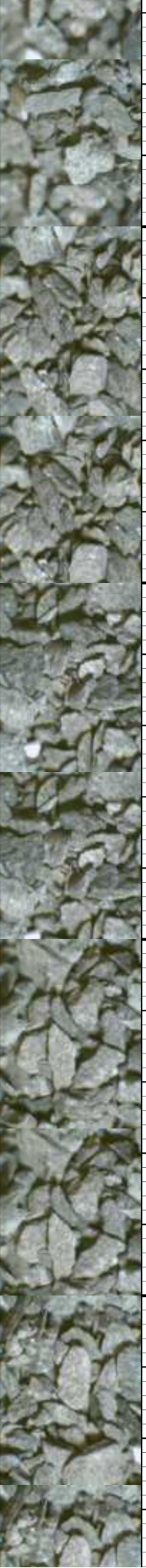
TVD (ft)

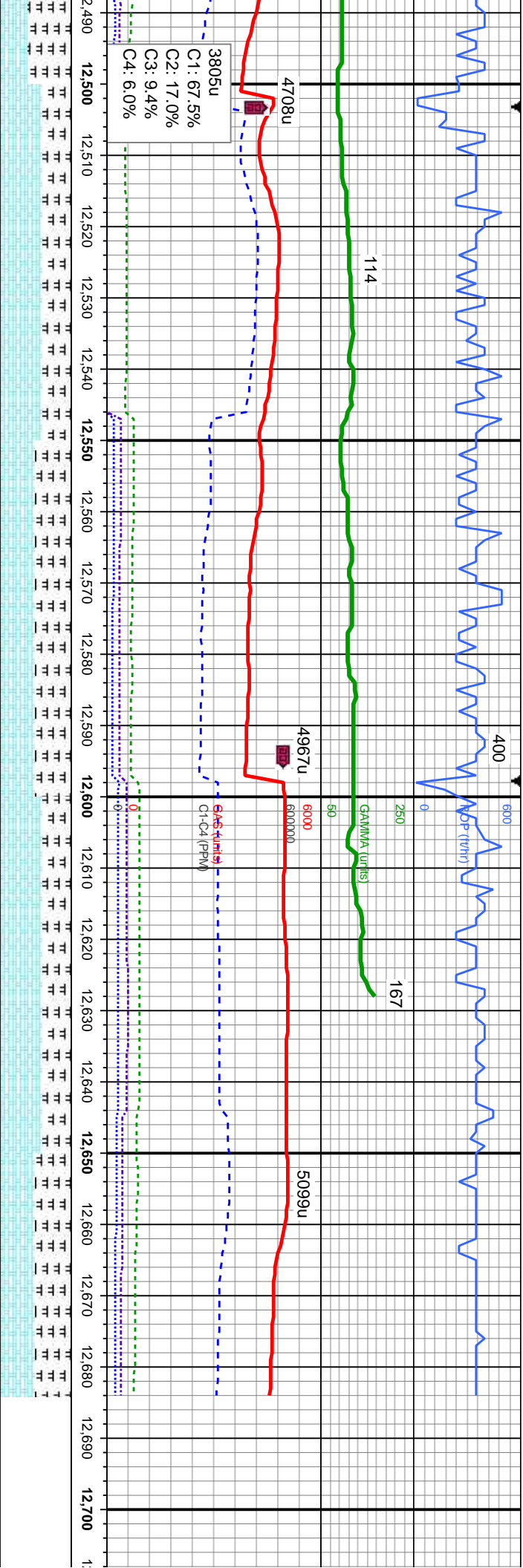
70% CHK: It - med gy - gy brn, mot, lam, sft -
mod hd, sb ply - blk, rthy tex, v calc
30% MRL: It - med gy, mod hd - hd, sb ply -
blk, rthy tex, tr fos frag, about bent, rr dissm
pyr

50% CHK: It - med gy - gy brn, mot, lam, sft -
mod hd, occ hd, sb ply - blk, rthy tex, v calc
50% MRL: It - med gy, mod hd - hd, sb ply -
ply, silty-grty tex, tr fos frag, about bent

60% CHK: It - med gy - gy brn, mot, lam, sft
- mod hd, occ hd, sb ply - blk, rthy tex, v
calc
40% MRL: It - med gy, mod hd - hd, sb ply -
ply, silty-grty tex, tr fos frag, about bent

40% CHK: It - med gy - gy brn, mot
mod hd, occ hd, sb ply - blk, silty-
calc
60% MRL: It - med gy, mod hd - hd
sb blk, silty-grty tex, tr fos frag, abu





MD: 12,535
TVD: 6,586.6
Inclination: 90.0°
Azimuth: 267.86°
VS: -60.91

MD: 12,621
TVD: 6,585.98
Inclination: 90.83°
Azimuth: 265.54°
VS: -65.86

Projection to Bit:
MD: 12,684
TVD: 6,585.06
Inclination: 90.83°
Azimuth: 265.54°
VS: -70.76

TVD (ft)

lam, sft - grty tex, v
- brt, sb ply - blk, rthy tex, v calc
40% MRL: It - med gy, mod hd - hd, sb ply - bent
- sb blk, silty-grty tex, tr fos frag, tr bent

60% CHK: It - med gy - gy brn, mot, lam, sft - mod hd, sb ply - blk, rthy tex, v calc
50% MRL: It - med gy, mod hd - hd, sb ply - blk, rthy tex, tr fos frag, about bent

60% CHK: It - med gy - gy brn, mot, lam, bndd, sft - mod hd, sb ply - blk, rthy tex, v calc
40% MRL: It - med gy, mod hd - hd, sb ply - blk, rthy tex, tr fos frag, about bent

50% CHK: It - med gy - gy brn, mot, lam, bndd, sft - mod hd, sb ply - blk, rthy tex, v calc
50% MRL: It - med gy, mod hd - hd, sb ply - blk, rthy tex, about fos frag, about bent

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