



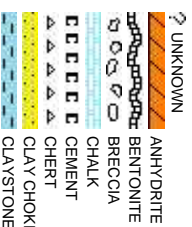
Scale: 5" / 100'
Measured Depth Log

Well Name	LOCHBUIE 4C-13HZ		
Location	SEC 13, T1N, R66W		
State	COLORADO	County	WELD
Country	USA		
API Number	05-123-38171	Rig Number	ENSIGN 132
Region	DJ BASIN	AFE #	2079407
Spud Date	2/23/2014	Field	WATTENBERG
		Drilling Completed	3/1/2014
Surface Coordinates	550' FSL & 630' FWL 40.045454 -104.732725		
Bottom Hole Coordinates	460' FNL & 1530' FWL 40.057269 -104.729444		
Ground Elevation	5079'	K.B. Elevation	5095'
Logged Interval	7059'	To	12111'
Formation	CODELL		
Total Depth	5052'		
Type of Drilling Fluid	FSNL		

Company ANADARKO PE
Address 1099 18th St, S
Denver , CO 80

Name JAKE STUART
Company ANADARKO PE
Address 1099 18th St, S
Denver , CO 80

COLUMBINE LOGGERS



Operator

ETROLEUM INC

uite 1800
202

Geologist

ETROLEUM INC.

uite 1800
202

Other

SHANA SWIRIN, CAMERON NAKOS

Rock Types

CONGLOMERATE	MARLSTONE	SHALY SANDSTONE
DOLomite	METAMORPHIC	SHALY SILTSTONE
DOLomite	NO SAMPLE	SILTY SHALE
DOLomite Limestone	SALT	SILTSTONE
GRANITE	SANDSTONE	TILL
GYPSUM	SALT-PEPPER SAND	TUFF
IGNEOUS	SHALE	WELDED TUFF
SIDERITE or LIMONITE	SHALE COLORED	
LIMESTONE	SHALE GRAY	

Accessories

Fossils	GASTROPOD	ARGILLITE GRAIN	HEAVY MINERAL
INOCERAMUS	B BENTONITE	K KAOLIN	ANHYDRITE STRINGER
ALGAE	O OOLITE	BIT BITUMENOUS SUBSTANCE	B BENTONITE STRINGER
AMPHIPORA	O OSTRACOD	B BRECCIA FRAGMENTS	COAL STRINGER
BELEMNITE	P PELECYPOD	C CALCAREOUS	DOLOMITE STRINGER
BIOCLASTIC	P PELLET	C CARBONACEOUS FLAKES	G GYPSUM STRINGER
BRACHIOPOD	P PISOLITE	CHT CHERT	LIMESTONE STRINGER
BRYOZOA	P PLANT REMAINS	COAL - THIN BEDS	MARLSTONE (CALC) STRG
CEPHALOPOD	S PLANT SPORES	DOLOMITE	MARLSTONE (DOL) STRG
CORAL	S SCAPHOPOD	F FELDSPAR	SANDSTONE STRINGER
CRINOID	S STROMATOPOROID	F FERRUGINOUS PELLET	SHALE STRINGER
ECHINOID		F FERRUGINOUS	S SILTY
FISH	Minerals	T TUFFACEOUS	
FORAMINIFERA	A ANHYDRITIC	G GLAUCONITE	
F FOSSIL	A ARGILLACEOUS	G GYPSIFEROUS	Stringer

Other Symbols

Oil Show	P PINPOINT	DST INTERVAL	W WIRELINE TESTED - LEFT	E EARTHY
V VUGGY	F FAULT	W WIRELINE TESTED - RT	F FINELY XLN	
Engineering	F FORMATION TOP	D DRILL STEM TEST	G GRAINSTONE	
D DEAD	G GAS SHOW	MN DEPTH	L LITHOGRAPHIC	
E EVEN	O OIL SHOW	MN DEPTH	M MICRO XLN	
Q QUESTIONABLE	B BIT	Rounding	M MUDSTONE	
S SPOTTED STAINING	C CONNECTION (UP)	A ANGULAR	P PACKSTONE	
Porosity	C CONNECTION (DOWN)	S SUBANG	W WACKESTONE	
E EARTHY	N NORMAL FAULT	R ROUNDED		
F FENESTRAL	O OVERTURNED STRATA	S SUBANG		
F FRACTURE	R REVERSE FAULT	S SUBANG		
I INTERCRYSTALLINE	C CASING	Textures	M MODERATE	
I INTEROOLITIC	D DOWN TIME GAS	S SIDEWALL CORE (LEFT)	P POOR	
M MOLDIC	D DOWN TIME GAS (LEFT)	S SIDEWALL CORE (RIGHT)	W WELL	
O ORGANIC	C CORE - LOST	S SLIDE		
	C CORE - RECOVERED	S SURVEY	C CRYPTOXLN	

Slide/Rotate

Columbine Logging Two Person
Rigged Up 0023hrs 02/23/2014
With Bloodhound Unit # 0313

ROP
ROF
GAMMA

Logging Started @
0710hrs 02/24/2014
at 7059' MD

Problems with Gamma

2965u
C1: 65.7%
C2: 16.9%
C3: 15.3%
C4: 4.2%

Total Gas & Chromatograph

GAS
C1
C2
C3
C4

Bit Data
Bit #: 02
Type: SMITH SD1611
Size: 8.75
Depth In: 1,276.
Depth Out: 7,992.
Jets: 6x18
S/N: JH8112

Depth Labels

% Lith

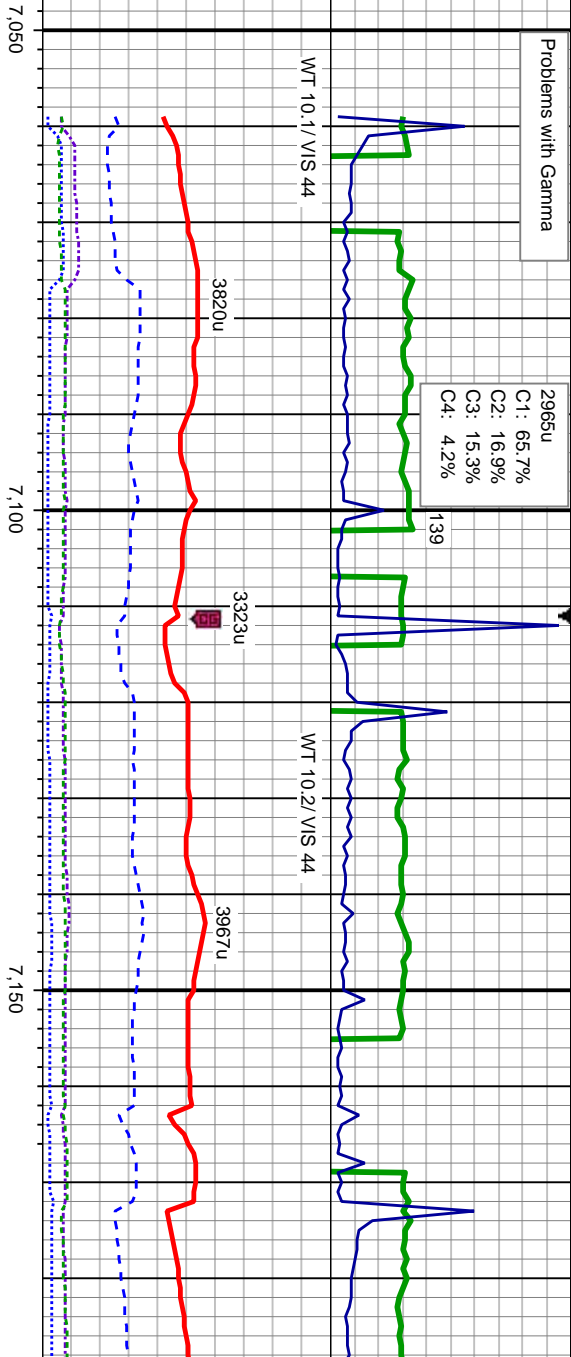
Begin in Sussex Formation

Well Bore
TVD

Acetone was used as the cutting agent with the dimple filled to the rim
The ratings are based on 7 descriptors:
None, Slight trace, Trace, Fair, Moderate, Good, and Excellent. The descriptor used is based on the loggers observations and best judgement of brilliance, color and longevity of the cut.

Oil Show

Images



MD: 7.067
TVD: 6,943.55
Inclination: 2.17
Azimuth: 0.42
VS: -449.88

MD: 7.115
TVD: 6,991.41
Inclination: 6.2
Azimuth: 358.85
VS: -446.38

MD: 7.162
TVD: 7,037.98
Inclination: 9.24
Azimuth: 355.29
VS: -440.08

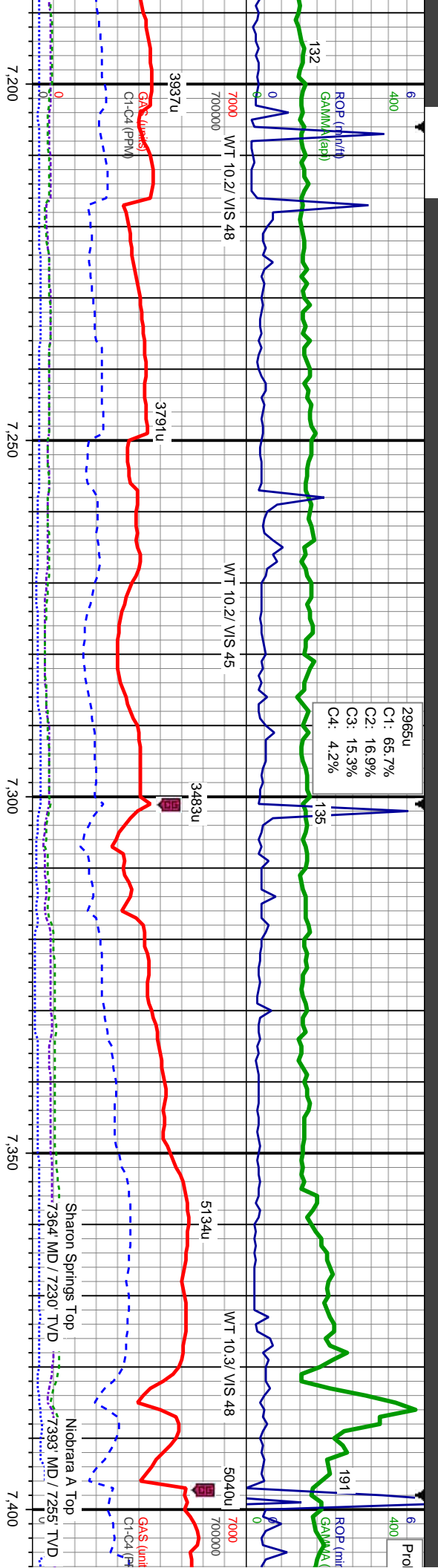
SLTY SH: lt-med gy, sb pily-sb
biky, mod sft-firm, w srt, sb
rnd-sb ang, mod fri, sting bl
cut, dull yel ring

SLTY SH: lt-med gy, sb pily-sb
biky, mod sft-firm, w srt, sb
rnd-sb ang, mod fri, sting bl
cut, dull yel ring

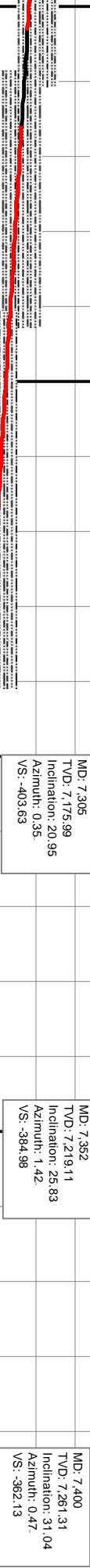
SLTY SH: lt-med gy, sb pily-sb
biky, mod sft-firm, w srt, sb
rnd-sb ang, mod fri, tr shy ss
sting bl cut, dull yel ring

ST
FM
CE

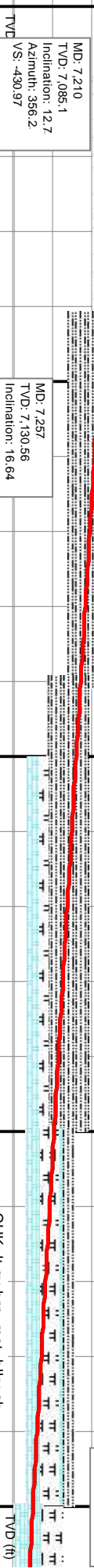




6900



6900



TVD (ft)

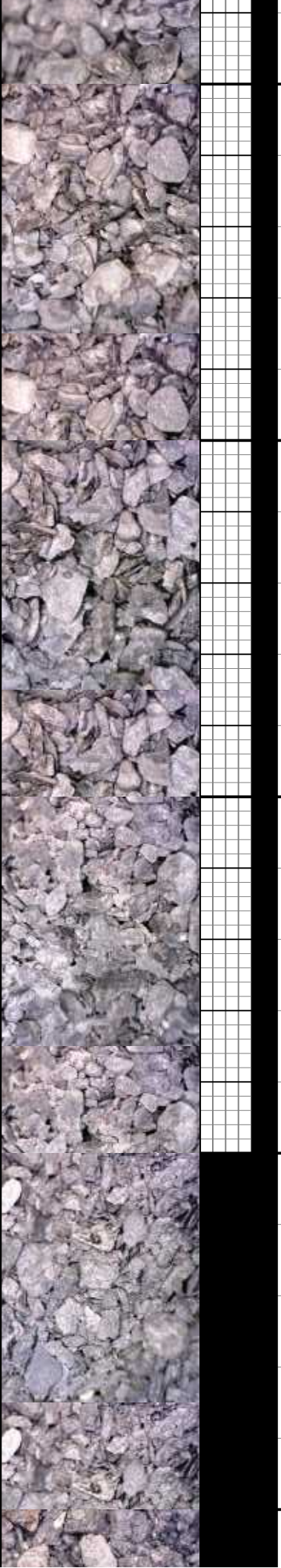
SLTY SH: lt-med gy, sb pily-sb
biky, mod sft-firm, w srt, sb
rnd-sb ang, mod fri, tr shy ss,
stmg bl cut, dull yel ring

SLTY SH: lt-med gy, sb pily-sb
biky, mod sft-firm, w srt, sb
rnd-sb ang, mod fri, tr shy ss,
stmg bl cut, dull yel ring

SLTY SH: lt-med gy, sb pily-sb
biky, mod sft-firm, w srt, sb
rnd-sb ang, mod fri, tr bent, tr
shy ss, stmg bl cut, dull yel
ring

CHK: lt gy-brn, mot, biky-sb
pily, sft-firm, sb rd-sb ang, mod
fri; MRLST: med-dk gy & blk,
biky-sb pily, sft-firm, sb rd-sb
ang, mod fri; SLTY SH: lt-med
gy, sb pily-sb biky, mod
sft-firm, w srt, sb rnd-sb ang,
mod fri, stmg bl cut, bri bl ring

7700



C1: 65.7%
C2: 16.9%
C3: 15.3%
C4: 4.2%

ROP (mbl/h)
GAMMA (api)

5375u
WT 10.2/VIS 46
5237u
5560u
4882u

7,450
7,500
7,550
7,600

Niobrara B Top
FAULTED OUT
Niobrara C Top
7505 MD / 7345' TVD

MD: 7.447
TVD: 7.300.44
Inclination: 36.17
Azimuth: 359.7
VS: -386.13

MD: 7.495
TVD: 7.337.87
Inclination: 41.3
Azimuth: 0.85
VS: -306.11

MD: 7.543
TVD: 7.372.59
Inclination: 46
Azimuth: 2.05
VS: -273

MD: 7.591
TVD: 7.403.98
Inclination: 52.28
Azimuth: 2.92
VS: -236.75

CHK: lt gy-brn, mot, blk-y-sb
ply, sft-frn, sb rd-sb ang, mod
fri: MRLST: med-dk gy & blk,
blk-y-sb ply, sft-frn, sb rd-sb
ang, mod fri, stmg bl cut, bri bl
ring

CHK: lt gy-brn, mot, blk-y-sb
ply, sft-frn, sb rd-sb ang, mod
fri: MRLST: med-dk gy & blk,
blk-y-sb ply, sft-frn, sb rd-sb
ang, mod fri, stmg bl cut, bri bl
ring

CHK: lt gy-brn, mot, blk-y-sb
ply, sft-frn, sb rd-sb ang, mod
fri: MRLST: med-dk gy & blk,
blk-y-sb ply, sft-frn, sb rd-sb
ang, mod fri, stmg bl cut, bri bl
ring

CHK: lt gy-brn, mot, blk-y-sb
ply, sft-frn, sb rd-sb ang, mod
fri: MRLST: med-dk gy & blk,
blk-y-sb ply, sft-frn, sb rd-sb
ang, mod fri, stmg bl cut, bri bl
ring

CHK: lt gy-brn, mot, blk-y-sb
ply, sft-frn, sb rd-sb ang, mod
fri: MRLST: med-dk gy & blk,
blk-y-sb ply, sft-frn, sb rd-sb
ang, mod fri, stmg bl cut, bri bl
ring

CHK: lt gy-brn, mot, blk-y-sb
ply, sft-frn, sb rd-sb ang, mod
fri: MRLST: med-dk gy & blk,
blk-y-sb ply, sft-frn, sb rd-sb
ang, mod fri, stmg bl cut, bri bl
ring

CHK: lt gy-brn, mot, blk-y-sb
ply, sft-frn, sb rd-sb ang, mod
fri: MRLST: med-dk gy & blk,
blk-y-sb ply, sft-frn, sb rd-sb
ang, mod fri, stmg bl cut, bri bl
ring

CHK: lt gy-brn, mot, blk-y-sb
ply, sft-frn, sb rd-sb ang, mod
fri: MRLST: med-dk gy & blk,
blk-y-sb ply, sft-frn, sb rd-sb
ang, mod fri, stmg bl cut, bri bl
ring

CHK: lt gy-brn, mot, blk-y-sb
ply, sft-frn, sb rd-sb ang, mod
fri: MRLST: med-dk gy & blk,
blk-y-sb ply, sft-frn, sb rd-sb
ang, mod fri, stmg bl cut, bri bl
ring

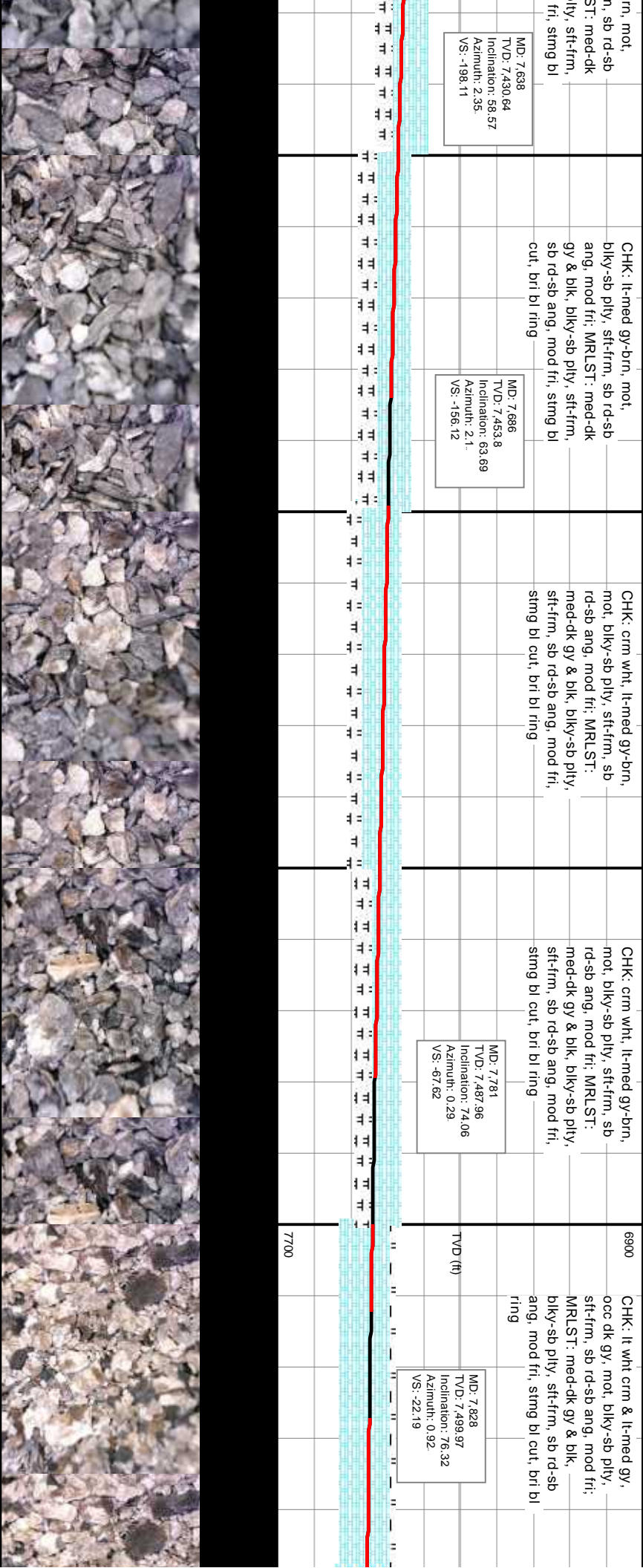
CHK: lt gy-brn, mot, blk-y-sb
ply, sft-frn, sb rd-sb ang, mod
fri: MRLST: med-dk gy & blk,
blk-y-sb ply, sft-frn, sb rd-sb
ang, mod fri, stmg bl cut, bri bl
ring

CHK: lt gy-brn, mot, blk-y-sb
ply, sft-frn, sb rd-sb ang, mod
fri: MRLST: med-dk gy & blk,
blk-y-sb ply, sft-frn, sb rd-sb
ang, mod fri, stmg bl cut, bri bl
ring

CHK: lt gy-brn, mot, blk-y-sb
ply, sft-frn, sb rd-sb ang, mod
fri: MRLST: med-dk gy & blk,
blk-y-sb ply, sft-frn, sb rd-sb
ang, mod fri, stmg bl cut, bri bl
ring

CHK: lt gy-brn, mot, blk-y-sb
ply, sft-frn, sb rd-sb ang, mod
fri: MRLST: med-dk gy & blk,
blk-y-sb ply, sft-frn, sb rd-sb
ang, mod fri, stmg bl cut, bri bl
ring

CHK: lt gy-brn, mot, blk-y-sb
ply, sft-frn, sb rd-sb ang, mod
fri: MRLST: med-dk gy & blk,
blk-y-sb ply, sft-frn, sb rd-sb
ang, mod fri, stmg bl cut, bri bl
ring



5284u
C1: 61.1%
C2: 14.9%
C3: 16.0%
C4: 8.0%

88

+ / VIS 39

WT 10.1+ / VIS 45

WT 10.1+ / VIS 40

TD Curve @ 7992
@ 0350 hrs on 02/25/2014

Start drilling the Lateral
@ 0910hrs on 02/27/2014

WT 10.5 / VIS 44

MINDEPTH
02/26/2014
02/27/2014
ROP (min/hr)
GAMMA (api)

106

0

Bit Data

Bit #: 03
Type: HDBS MMD54
Size: 6.12
Depth In: 7.992
Depth Out: 9.090
Jets: 5x18
S/N: 12405034

GAS (units)
C1-C4 (PPM)
SCALE
CHANGE

7,850

7,900

7,950

8,000

8,050

1378u

Codell Top
7894 MD/7512 TVD

3605u

3301u

3295u

CHK: lt-med gy-brn, mot,
biky-sb ply, sft-frn, sb rd-sb
ang, mod fri; MRLST: med-dk
gy & blk, biky-sb ply, sft-frn,
sb rd-sb ang, mod fri, sting bl
cut, bri bl ring

MD: 7.876
TVD: 7.509.5
Inclination: 80.77
Azimuth: 1.48
VS: 24.83

CHK: lt wht crm & lt-dk gy,
mot, biky-sb ply, sft-frn, sb
rd-sb ang, mod fri; LMST: lt
gy-brn, offwht-crm, mod
sft-mod hd, sb biky-sb ply; tr
MRLST: med-dk gy & blk,
biky-sb ply, sft-frn, sb rd-sb
ang, mod fri, sting bl cut, bri bl
ring

MD: 7.923
TVD: 7.515.86
Inclination: 83.67
Azimuth: 1.51
VS: 71.38

MD: 7.945
TVD: 7.517.77
Inclination: 86.36
Azimuth: 1.63
VS: 93.28

CHK: lt wht crm & lt-dk gy,
mot, biky-sb ply, sft-frn, sb
rd-sb ang, mod fri; MRLST:
med-dk gy & blk, biky-sb ply,
sft-frn, sb rd-sb ang, mod fri;
LMST: lt gy-brn, offwht-crm,
mod sft-mod hd, sb biky-sb
ply, sting bl cut, bri bl ring

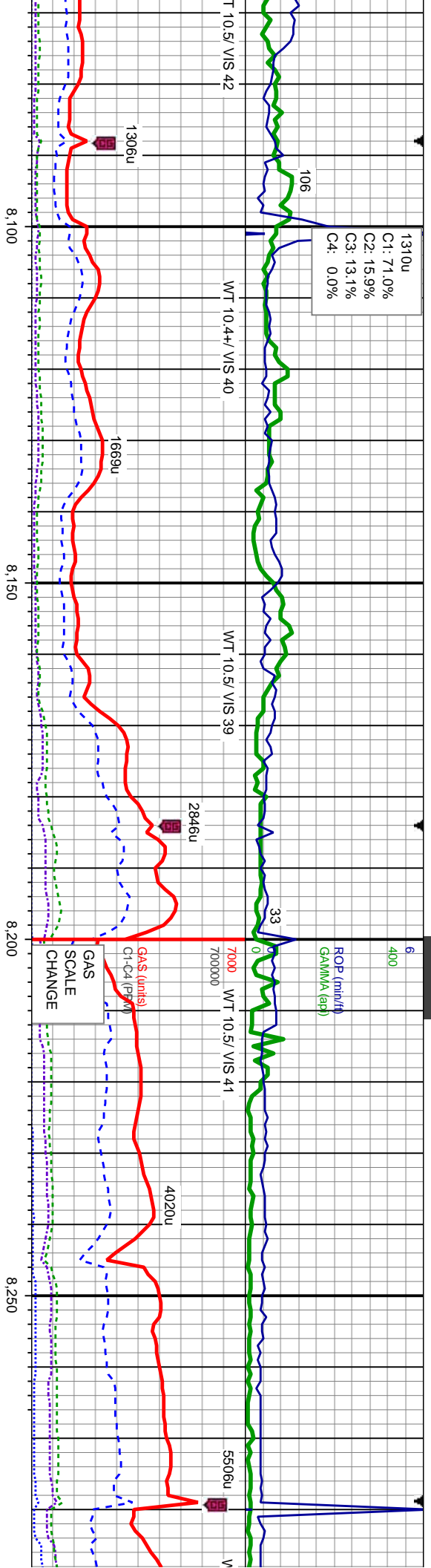
CHK: lt wht crm & lt-dk gy,
mot, biky-sb ply, sft-frn, sb
rd-sb ang, mod fri; MRLST:
med-dk gy & blk, biky-sb ply,
sft-frn, sb rd-sb ang, mod fri,
sting bl cut, bri bl ring

TVD
SCALE
CHANGE

MD: 8.047
TVD: 7.521.29
Inclination: 89.69
Azimuth: 0.98
VS: 195.18



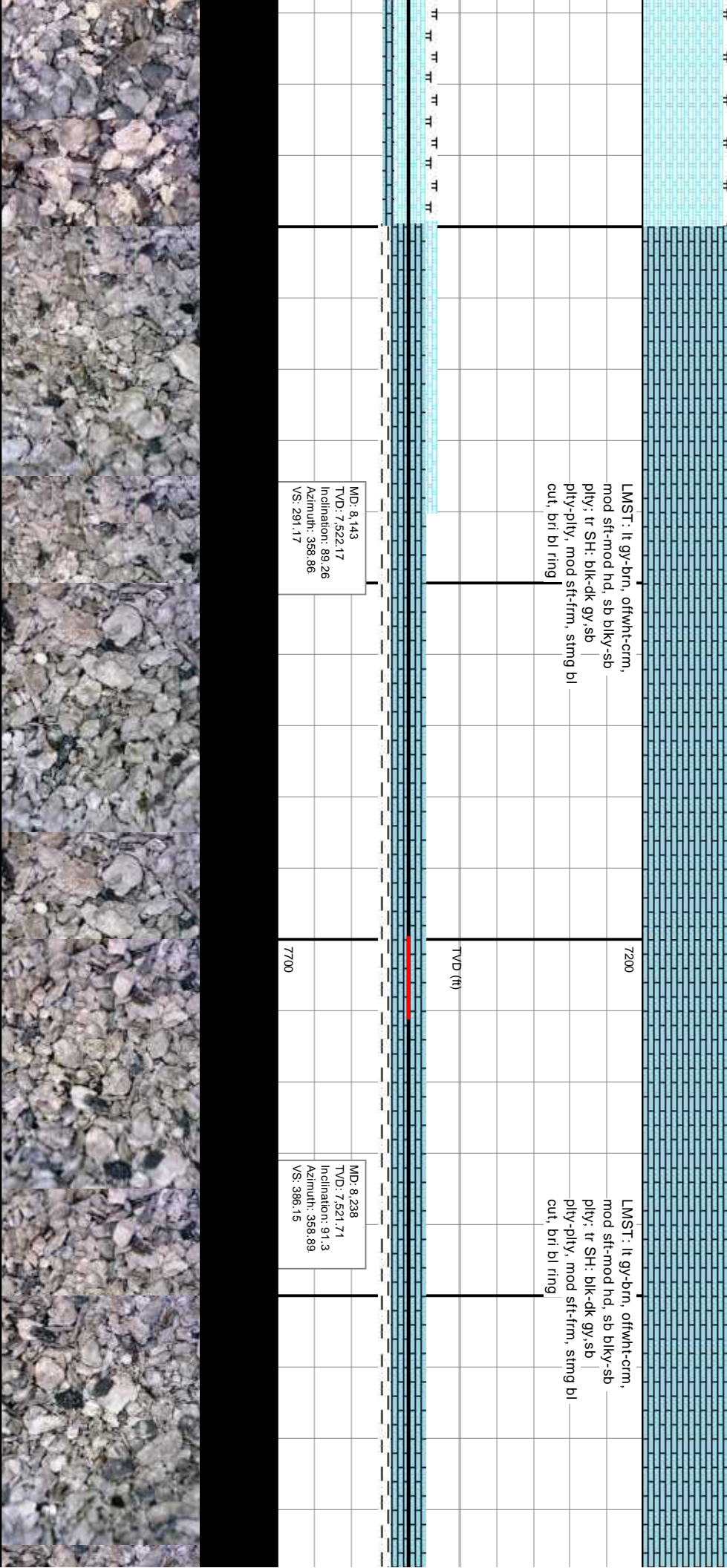
C1: 71.0%
C2: 15.9%
C3: 13.1%
C4: 0.0%



LMST: lt gy-brn, ofwht-frm,
mod sft-mod hd, sb blk-ty-sb
ply; tr SH: blk-dk gy, sb
ply-pty, mod sft-frm, sting bl
cut, bri bl ring

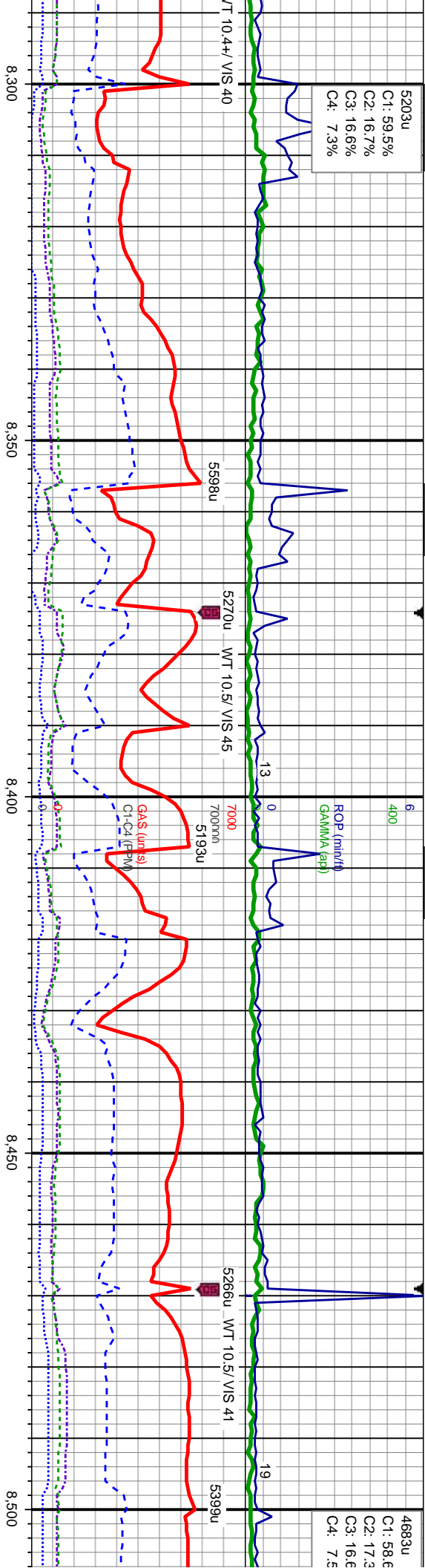
MD: 8.143
TVD: 7.522.17
Inclination: 89.26
Azimuth: 358.86
VS: 291.17

MD: 8.238
TVD: 7.521.71
Inclination: 91.3
Azimuth: 358.89
VS: 386.15



5203u
C1: 59.5%
C2: 16.7%
C3: 16.6%
C4: 7.3%

4683u
C1: 58.6%
C2: 17.3%
C3: 16.6%
C4: 7.5%

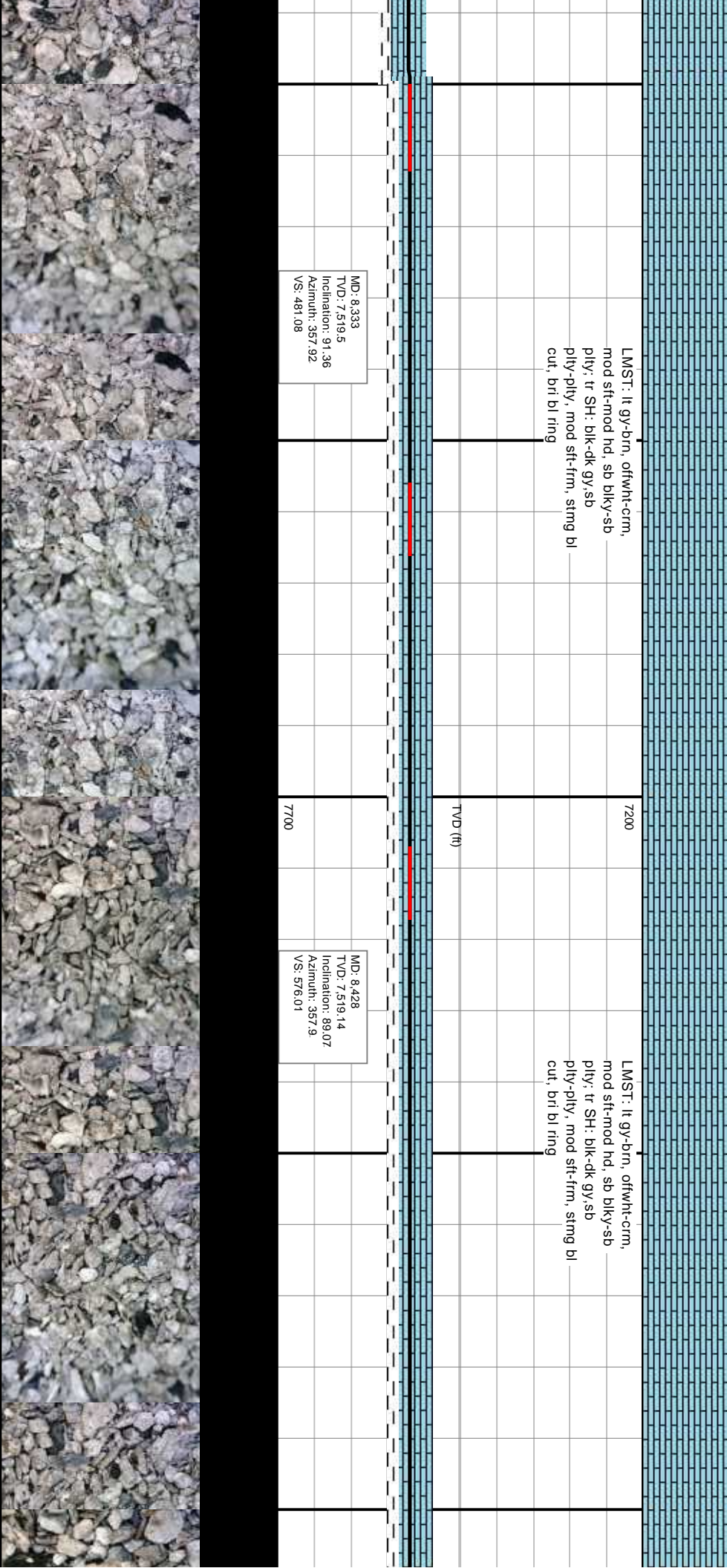


LMST: lt gy-brn, offwht-crm,
mod sft-mod hd, sb blk-ly-sb
ply; tr SH: blk-dk gy,sb
ply-ply, mod sft-frm, sting bl
cut, bri bl ring

LMST: lt gy-brn, offwht-crm,
mod sft-mod hd, sb blk-ly-sb
ply; tr SH: blk-dk gy,sb
ply-ply, mod sft-frm, sting bl
cut, bri bl ring

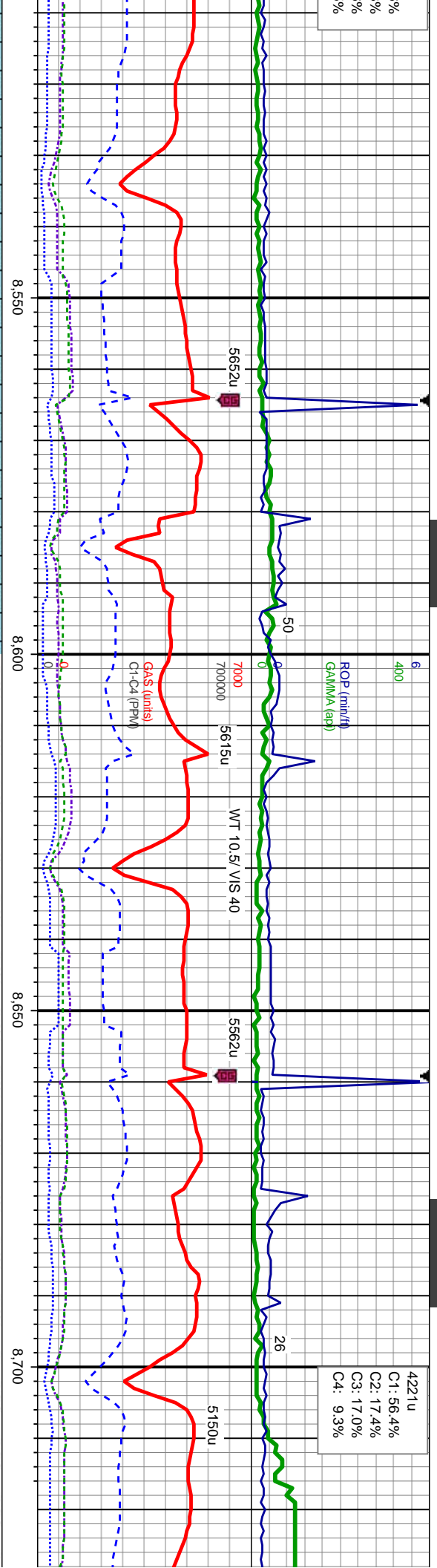
MD: 8.333
TVD: 7.519.5
Inclination: 91.36
Azimuth: 357.92
VS: 481.08

MD: 8.428
TVD: 7.519.14
Inclination: 89.07
Azimuth: 357.9
VS: 576.01



%
%
%

4221u
C1: 56.4%
C2: 17.4%
C3: 17.0%
C4: 9.3%



LMST: lt gy-brn, ofwht-frm,
mod sft-mod hd, sb blk-ly-sb
ply; tr SH: blk-dk gy, sb
ply-pty, mod sft-frm, stmg bl
cut, bri bl ring

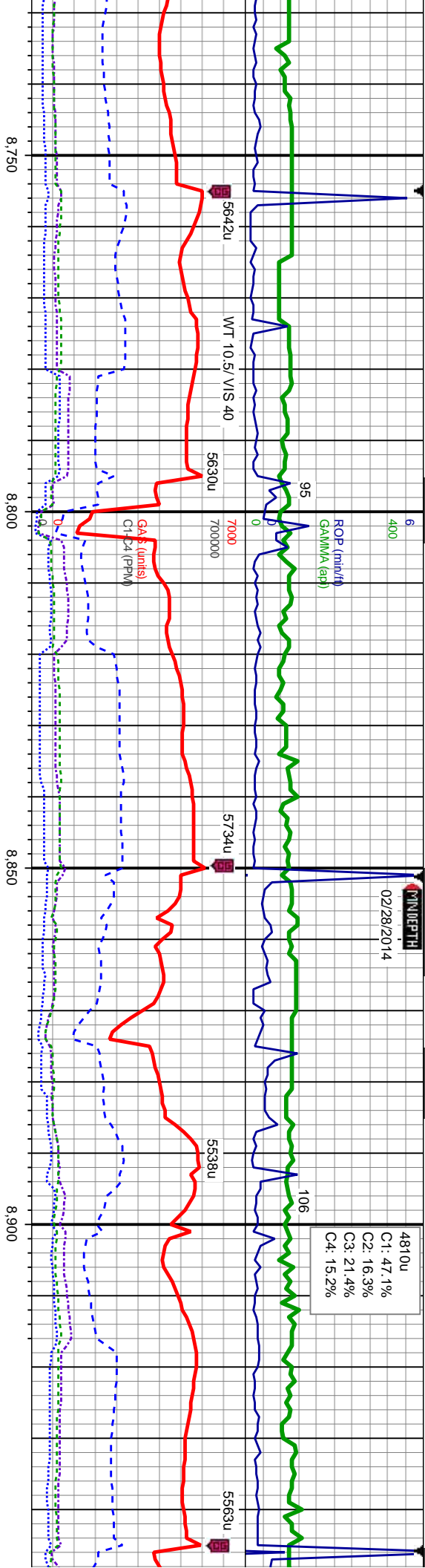
LMST: lt gy-brn, ofwht-frm,
mod sft-mod hd, sb blk-ly-sb
ply; SH: blk-dk gy, sb ply-pty,
mod sft-frm, stmg bl cut, bri bl
ring

MD: 8.523
TVD: 7.519.92
Inclination: 90
Azimuth: 357.42
VS: 670.93

MD: 8.619
TVD: 7.520.27
Inclination: 89.57
Azimuth: 357.04
VS: 766.82

MD: 8.714
TVD: 7.522.32
Inclination: 87.96
Azimuth: 358.09
VS: 861.71





4810u
C1: 47.1%
C2: 16.3%
C3: 21.4%
C4: 15.2%

02/28/2014

LMST: lt gy-brn, offwht-crm,
mod sft-mod hd, sb blk-ly-sb
ply; SS: med gy, med-dk brn,
clr-s&p, clus, w srt, mod
sft-hd, w rd, med gr, non-sl
calc; SH: blk-dk gy/sb ply-pty,
mod sft-frm, sting bl cut, bri bl
ring

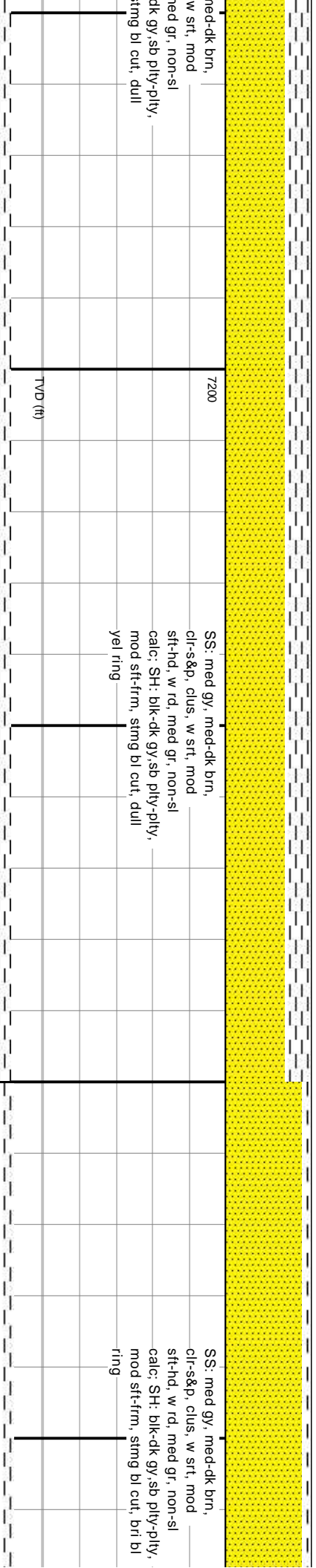
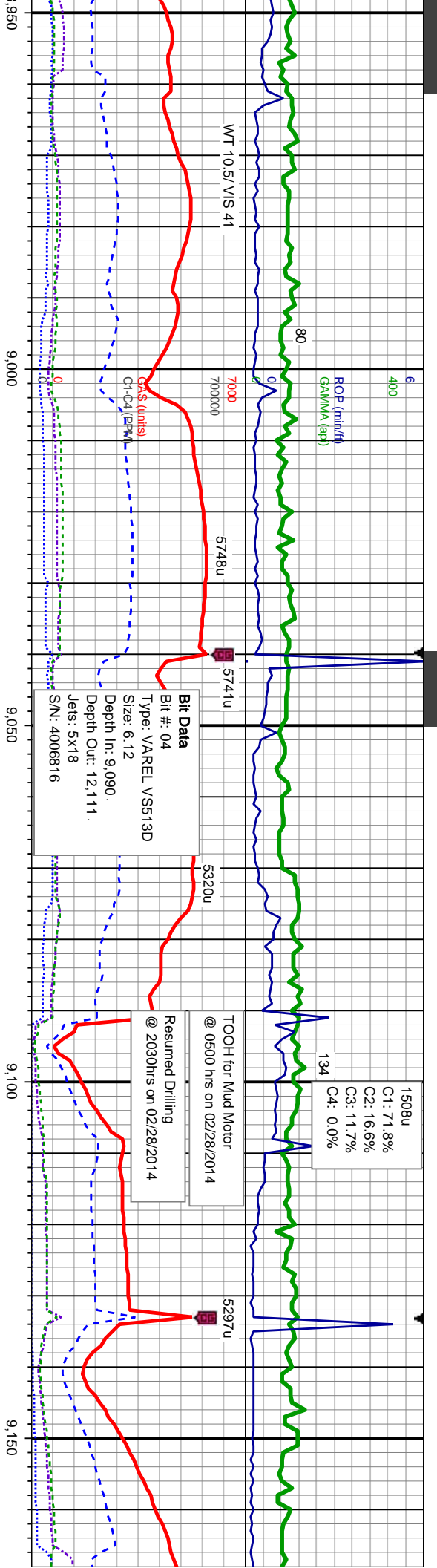
SS: med gy, med-dk brn,
clr-s&p, clus, w srt, mod
sft-hd, w rd, med gr, non-sl
calc; SH: blk-dk gy/sb ply-pty,
mod sft-frm; tr LMST: lt gy-brn,
offwht-crm, mod sft-mod hd,
sb blk-ly-sb ply, sting bl cut, bri
bl ring

SS: med gy, r
clr-s&p, clus,
sft-hd, w rd, n
calc; SH: blk-
mod sft-frm, s
yel ring

MD: 8.809
TVD: 7,526.32
Inclination: 87.22
Azimuth: 357.41
VS: 956.55
71

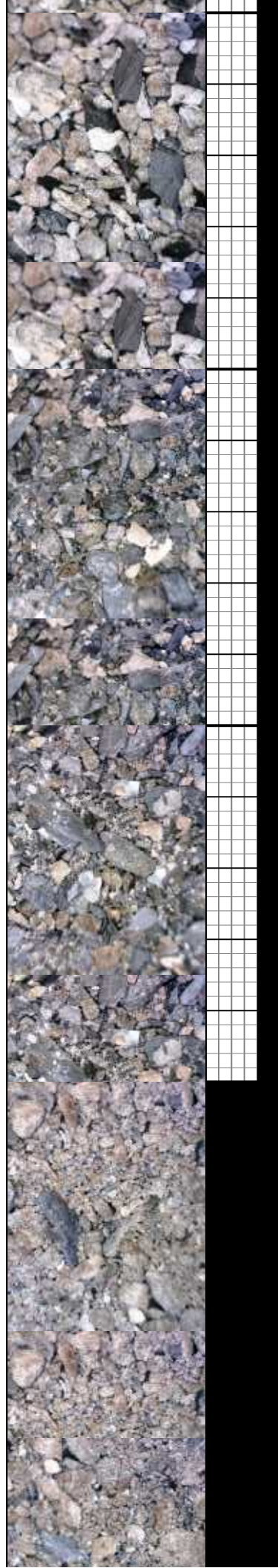
MD: 8.904
TVD: 7,529.7
Inclination: 88.7
Azimuth: 359.36
VS: 1,051.44

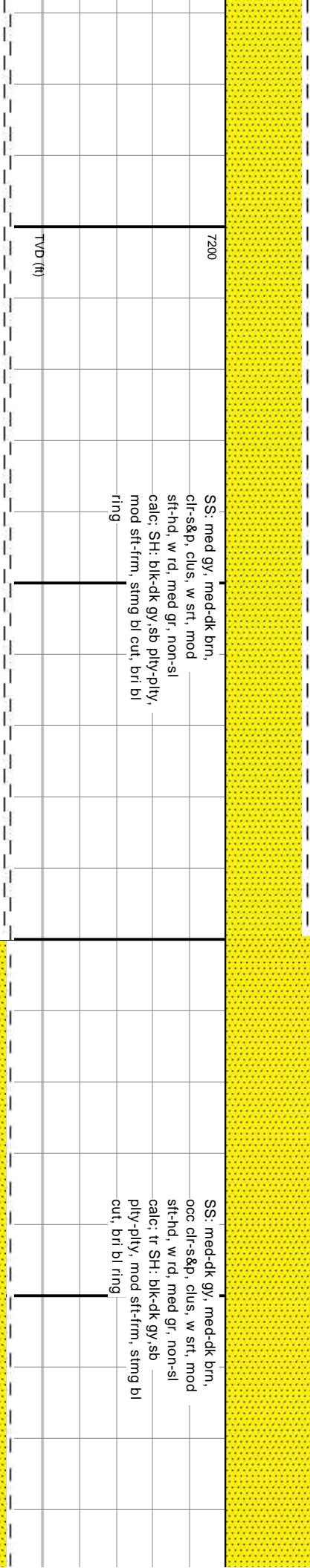
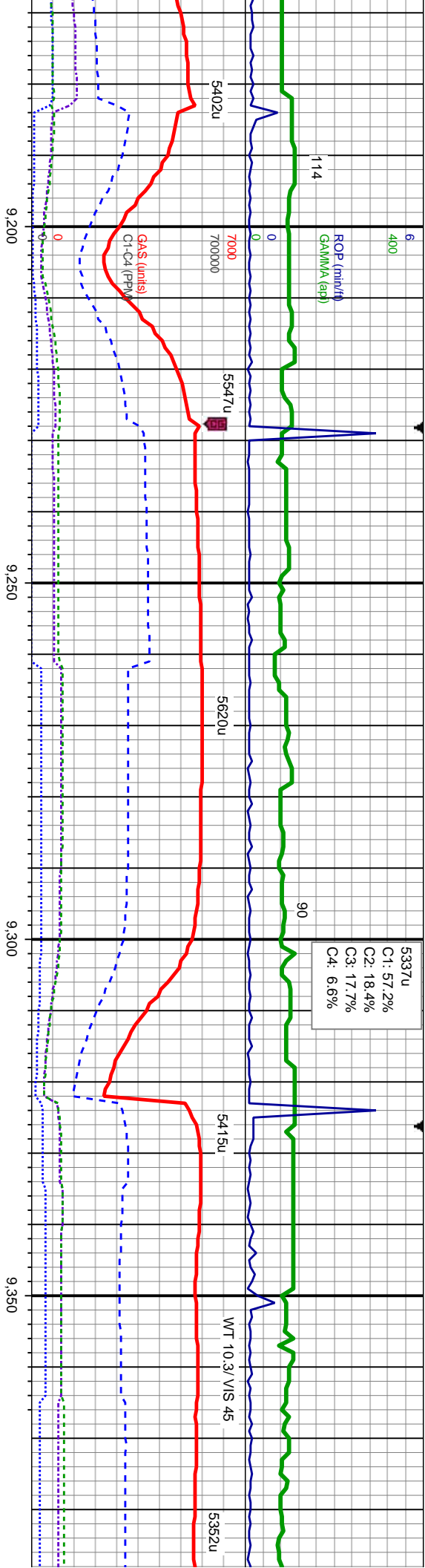




MD: 8.999
TVD: 7,531.08
Inclination: 89.63
Azimuth: 0.5
VS: 1,146.43

MD: 9.095
TVD: 7,530.82
Inclination: 90.68
Azimuth: 0.86
VS: 1,242.42



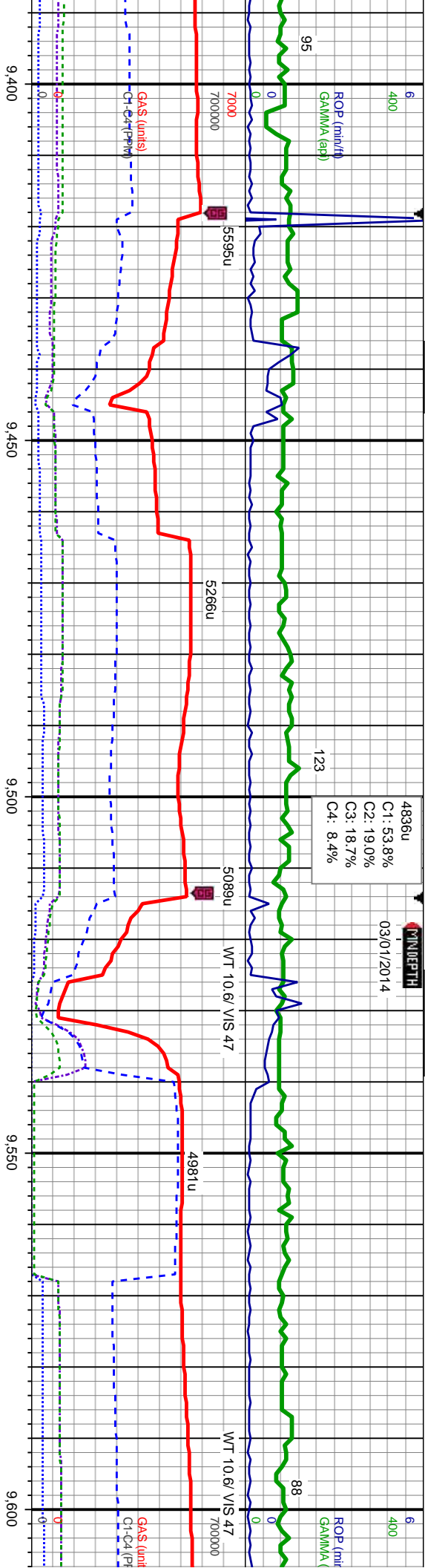


MD: 9.190
TVD: 7.529.6
Inclination: 90.8
Azimuth: 359.93
VS: 1.337.41

MD: 9.286
TVD: 7.527.84
Inclination: 91.3
Azimuth: 359.13
VS: 1.433.39

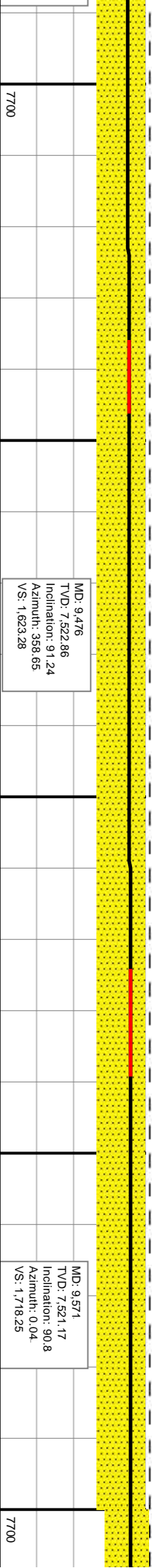
MD: 9.381
TVD: 7.525.33
Inclination: 91.73
Azimuth: 358.63
VS: 1.528.34

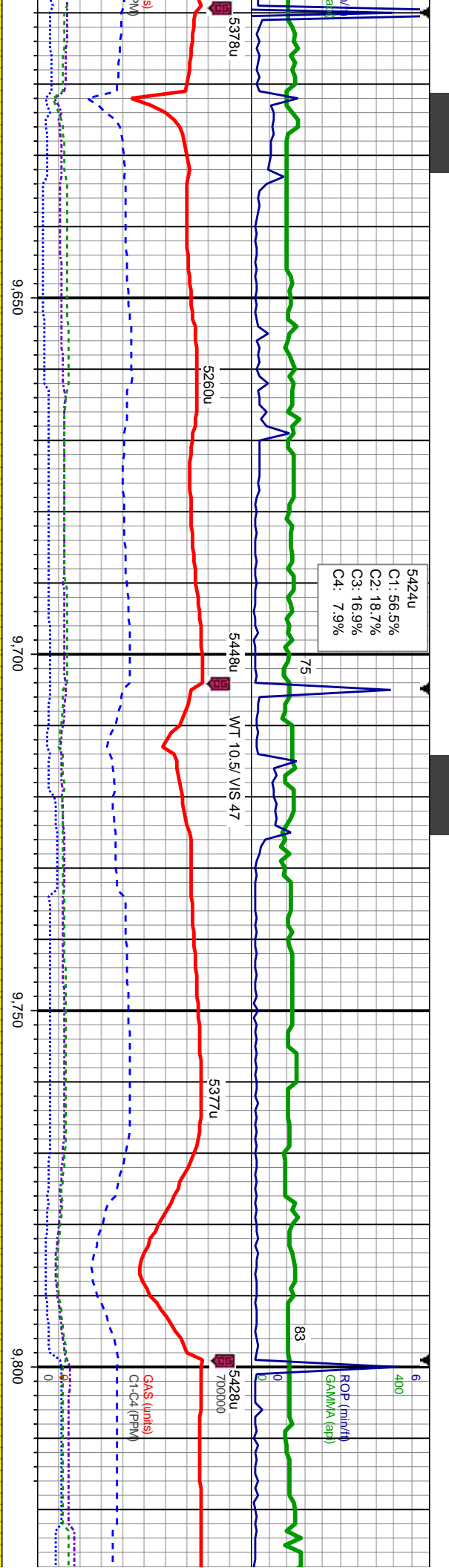




SS: med-dk gy, med-dk brn,
occ cl-r-s&p, clus, w srl, mod
sft-hd, w rd, med gr, non-sl
calc; tr SH: blk-dk gy, sb
ply-pty, mod sft-frn, sting bl
cut, bri bl ring

SS: med-dk gy, med-dk brn,
occ cl-r-s&p, clus, w srl, mod
sft-hd, w rd, med gr, non-sl
calc, sting bl cut, bri bl ring





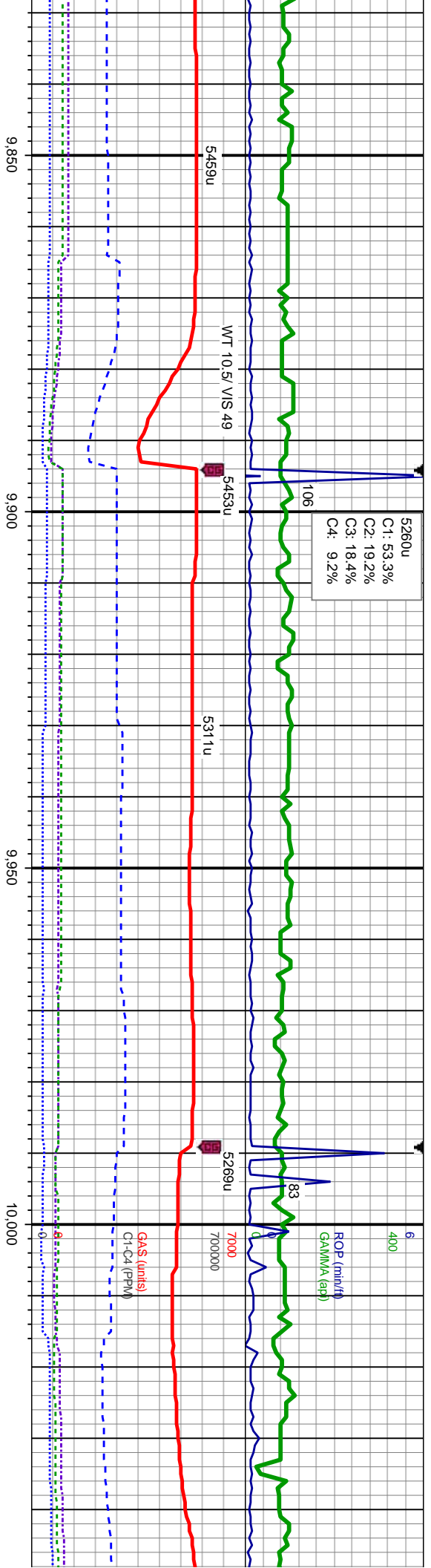
SS: med-dk gy, med-dk brn,
occ cl-r-s&p, clus, w srl, mod
sft-hd, w rd, med gr, non-sl
calc, sting bl cut, brl bl ring

SS: med-dk gy, med-dk brn,
occ cl-r-s&p, clus, w srl, mod
sft-hd, w rd, med gr, non-sl
calc, sting bl cut, brl bl ring

MD: 9.666
TVD: 7,520.41
Inclination: 90.12
Azimuth: 0.26
VS: 1.813.25

MD: 9.761
TVD: 7,520.88
Inclination: 89.32
Azimuth: 0.35
VS: 1.908.25





SS: med-dk gy, med-dk brn,
occ clt-s&p, clus, w srt, mod
sft-hd, w rd, med gr, non-sl
calc: tr SH: blk-dk gy, sb
ply-pty, mod sft-firm, sting bl
cut, bri bl ring

SS: med-dk gy, med-dk brn,
occ clt-s&p, clus, w srt, mod
sft-hd, w rd, med gr, non-sl
calc: tr SH: blk-dk gy, sb
ply-pty, mod sft-firm, sting bl
cut, bri bl ring

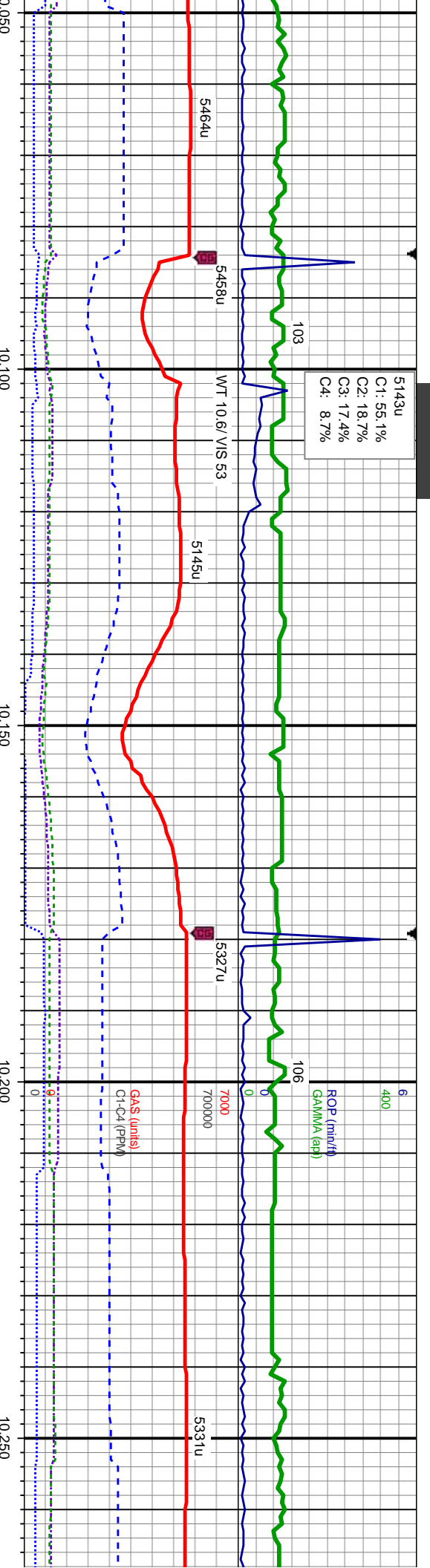
SS: med-dk
occ clt-s&p
sft-hd, w rd
calc: tr SH:
ply-pty, m
cut, bri bl r

MD: 9.856
TVD: 7,521.75
Inclination: 89.63
Azimuth: 359.45
VS: 2.003.24

MD: 9.952
TVD: 7,522.01
Inclination: 90.06
Azimuth: 359.33
VS: 2.099.24

MD: 10.04
TVD: 7,52
Inclination:
Azimuth:
VS: 2.194





gy, med-dk brn, clus, w srt, mod, med gr, non-sl, blk-dk gy, sb, mod sft-firm, sting bl

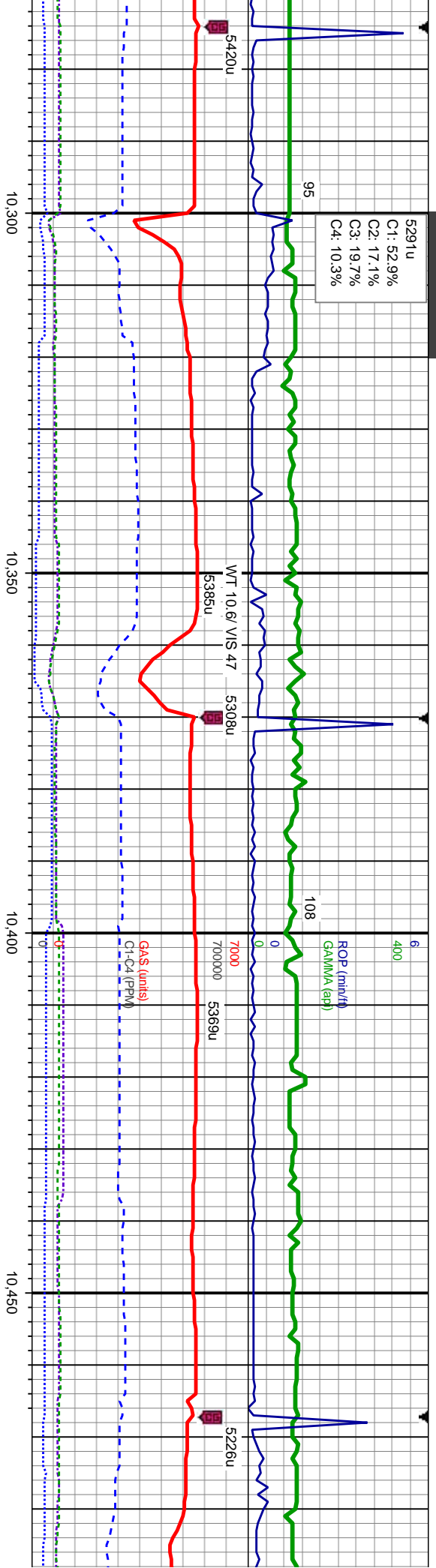
SS: med-dk gy, med-dk brn, occ cl-s&p, clus, w srt, mod sft-hd, w rd, med gr, non-sl calc: tr SH: blk-dk gy, sb pty-pty, mod sft-firm, sting bl cut, bri bl ring

SS: med-dk gy, med-dk brn, rr cl-s&p, clus, w srt, mod sft-hd, w rd, med gr, non-sl calc: SH: blk-dk gy, sb pty-pty, mod sft-firm, sting bl cut, bri bl ring

MD: 10.142	MD: 10.237
TVD: 7,521.85	TVD: 7,522.1
Inclination: 89.75	Inclination: 89.94
Azimuth: 0.23	Azimuth: 359.95
VS: 2,289.21	VS: 2,384.21



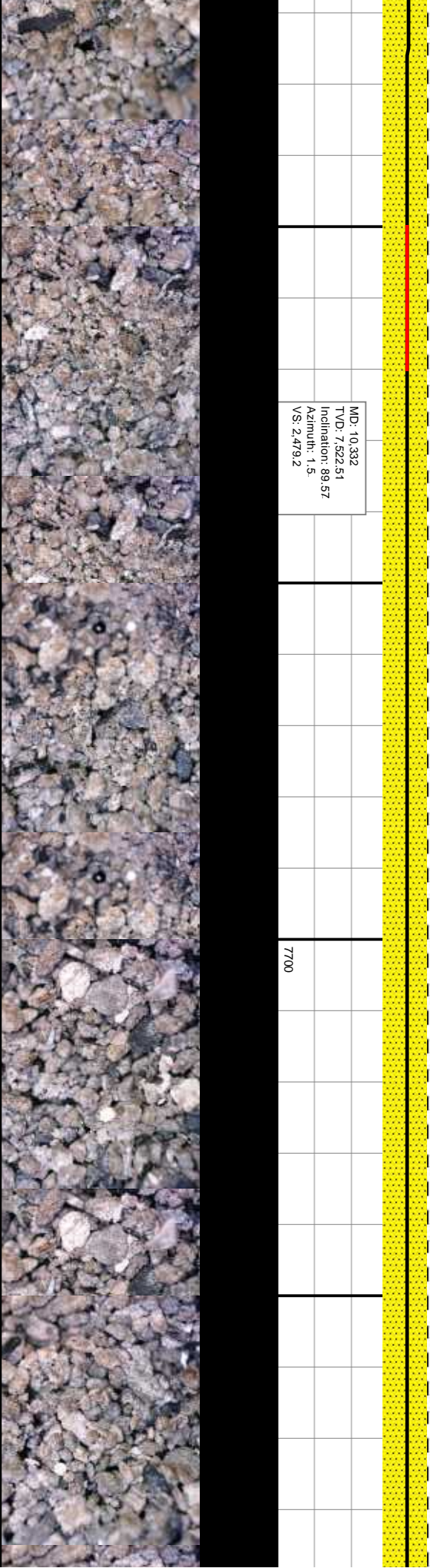
5291u
C1: 52.9%
C2: 17.1%
C3: 19.7%
C4: 10.3%



SS: med-dk gy, med-dk brn, rr
clr-s&p, clus, w srt, mod
sft-hd, w rd, med gr, non-sl
calc: SH: blk-dk gy, sb pty-pty,
mod sft-frm, sting bl cut, bri bl
ring

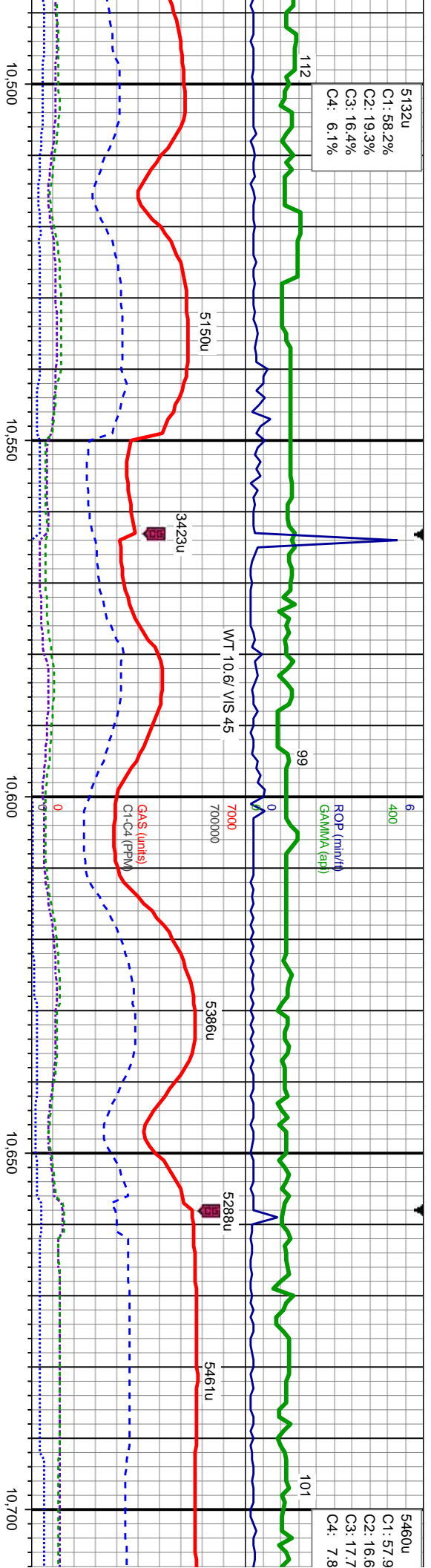
SS: med-dk gy, med-dk brn, rr
clr-s&p, clus, w srt, mod
sft-hd, w rd, med gr, non-sl
calc: SH: blk-dk gy, sb pty-pty,
mod sft-frm, sting bl cut, bri bl
ring

MD: 10.332
TVD: 7.522.51
Inclination: 89.57
Azimuth: 1.5
VS: 2.479.2



5132u
C1: 58.2%
C2: 19.3%
C3: 16.4%
C4: 6.1%

5460u
C1: 57.9
C2: 16.6
C3: 17.7
C4: 7.8



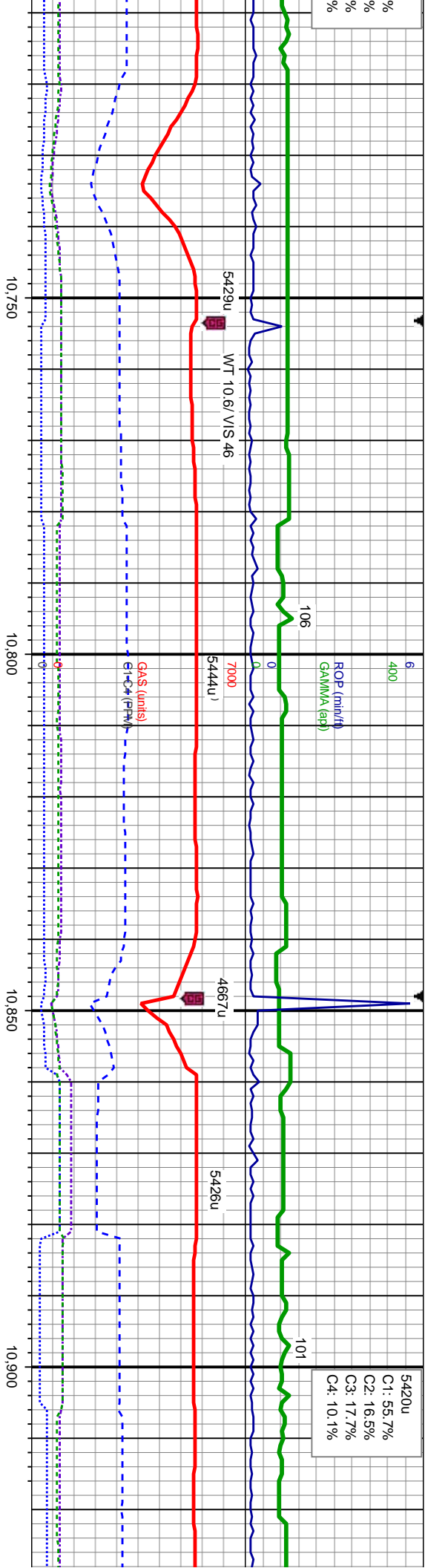
SS: med-dk gy, med-dk brn, rr
clr-s&p, clus, w srt, mod
sft-hd, w rd, med gr, non-sl
calc; SH: blk-dk gy, sb ply-pty,
mod sft-firm, sting bl cut, bri bl
ring

SS: med-dk gy, med-dk brn, rr
clr-s&p, clus, w srt, mod
sft-hd, w rd, med gr, non-sl
calc; tr SH: blk-dk gy, sb
ply-pty, mod sft-firm, sting bl
cut, bri bl ring

MD: 10.523
TVD: 7.522.61
Inclination: 90.37
Azimuth: 1.74
VS: 2.670.12

MD: 10.618
TVD: 7.522.3
Inclination: 90
Azimuth: 1.08
VS: 2.765.09





SS: med-dk gy, med-dk brn, rr
clr-s&p, clus, w srl, mod
sft-hd, w rd, med gr, non-sl
calc: tr SH: blk-dk gy, sb
ply-pty, mod sft-firm, string bl
cut, bri bl ring

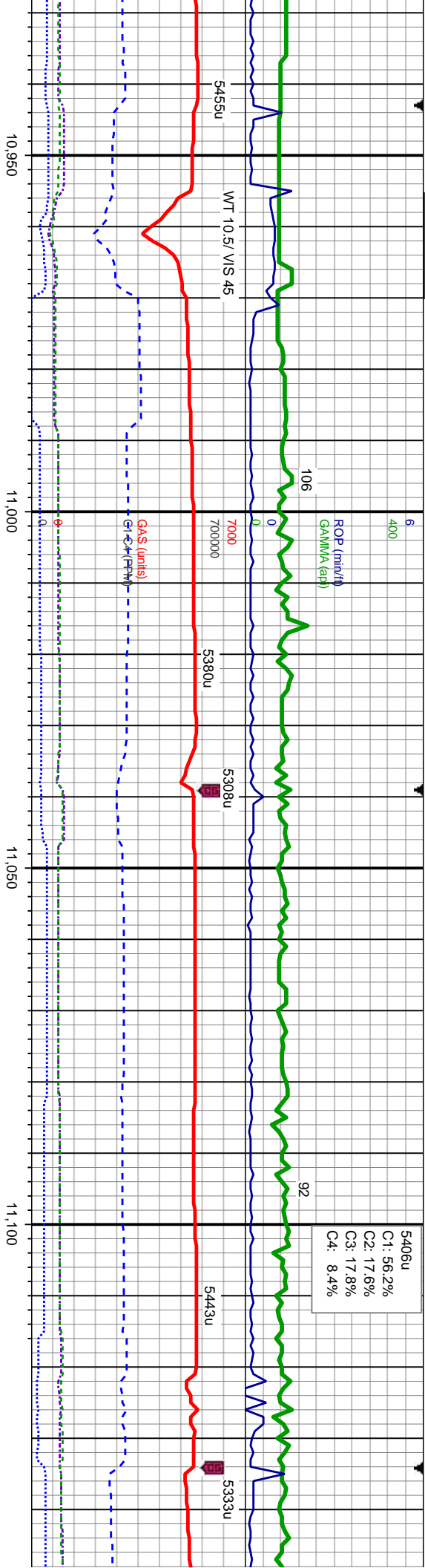
SS: med-dk gy, med-dk brn, rr
clr-s&p, clus, w srl, mod
sft-hd, w rd, med gr, non-sl
calc: tr SH: blk-dk gy, sb
ply-pty, mod sft-firm, string bl
cut, bri bl ring

MD: 10.713
TVD: 7,522.3
Inclination: 90
Azimuth: 0.66
VS: 2.860,08

MD: 10.808
TVD: 7,522.35
Inclination: 89.94
Azimuth: 0.19
VS: 2.955,07

MD: 10.903
TVD: 7,522.66
Inclination: 89.69
Azimuth: 359.74
VS: 3.050,07





SS: med-dk gy, med-dk brn, rr
clr-s&p, clus, w srl, mod
sft-hd, w rd, med gr, non-sl
calc: tr SH: blk-dk gy, sb
ply-pty, mod sft-firm, sting bl
cut, bri bl ring

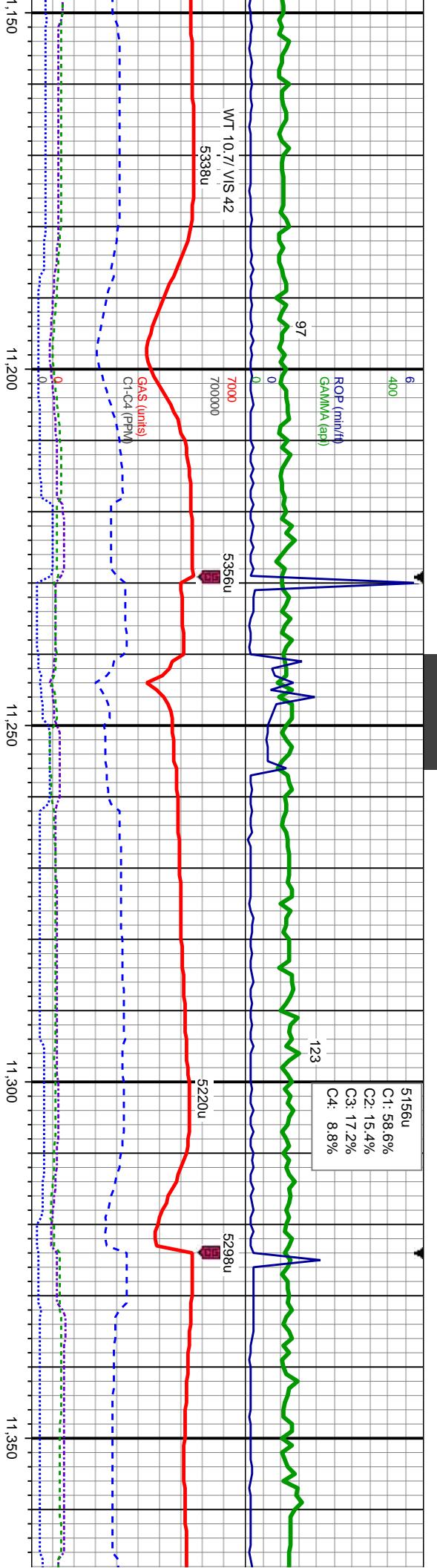
SS: med-dk gy, med-dk brn, rr
clr-s&p, clus, w srl, mod
sft-hd, w rd, med gr, non-sl
calc: tr SH: blk-dk gy, sb
ply-pty, mod sft-firm, sting bl
cut, bri bl ring

SS: med-dk
clr-s&p, clu
sft-hd, w rd
calc: tr SH:
ply-pty, m
cut, bri bl r

MD: 10.999
TVD: 7,522.76
Inclination: 90.19
Azimuth: 1.25
VS: 3.14607

MD: 11.094
TVD: 7,522.35
Inclination: 90.31
Azimuth: 0.67
VS: 3.241.05





gy, med-dk brn, rr
s, w srl, mod
med gr, non-sl
blk-dk gy, sb
mod sft-firm, sting bl
ng

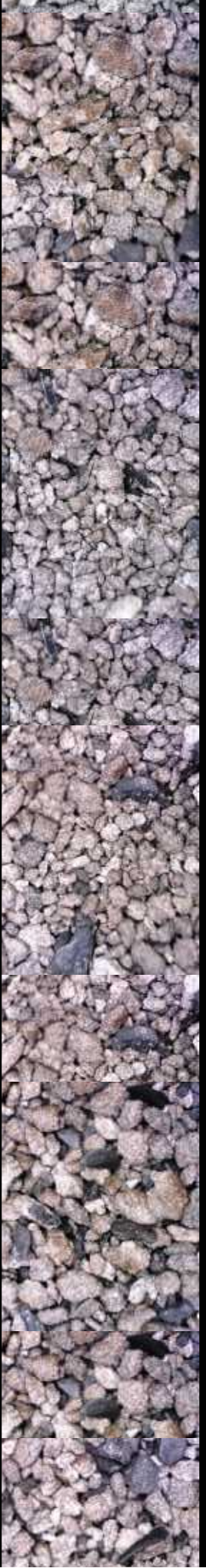
SS: med-dk gy, med-dk brn, rr
clt-s&p, clus, w srl, mod
sft-hd, w rd, med gr, non-sl
calc: tr SH: blk-dk gy, sb
ply-pty, mod sft-firm, sting bl
cut, bri bl ring

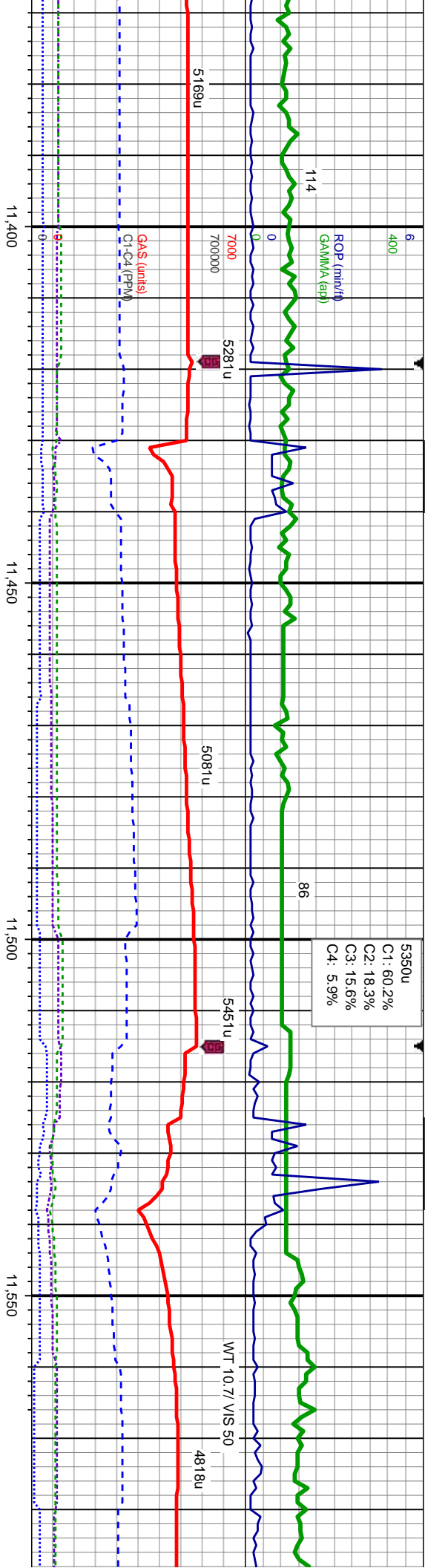
SS: med-dk gy, med-dk brn, rr
clt-s&p, clus, w srl, mod
sft-hd, w rd, med gr, non-sl
calc: SH: blk-dk gy, sb ply-pty,
mod sft-firm, sting bl cut, bri bl
ring

TVD (ft)

MD: 11.189
TVD: 7,521.78
Inclination: 90.37
Azimuth: 359.74
VS: 3.336.05

MD: 11.284
TVD: 7,520.81
Inclination: 90.8
Azimuth: 1.38
VS: 3.431.04





SS: med-dk gy, med-dk brn, rr
clr-s&p, clus, w srl, mod
sft-hd, w rd, med gr, non-sl
calc; tr SH: blk-dk gy, sb
ply-pty, mod sft-firm, sting bl
cut, bri bl ring

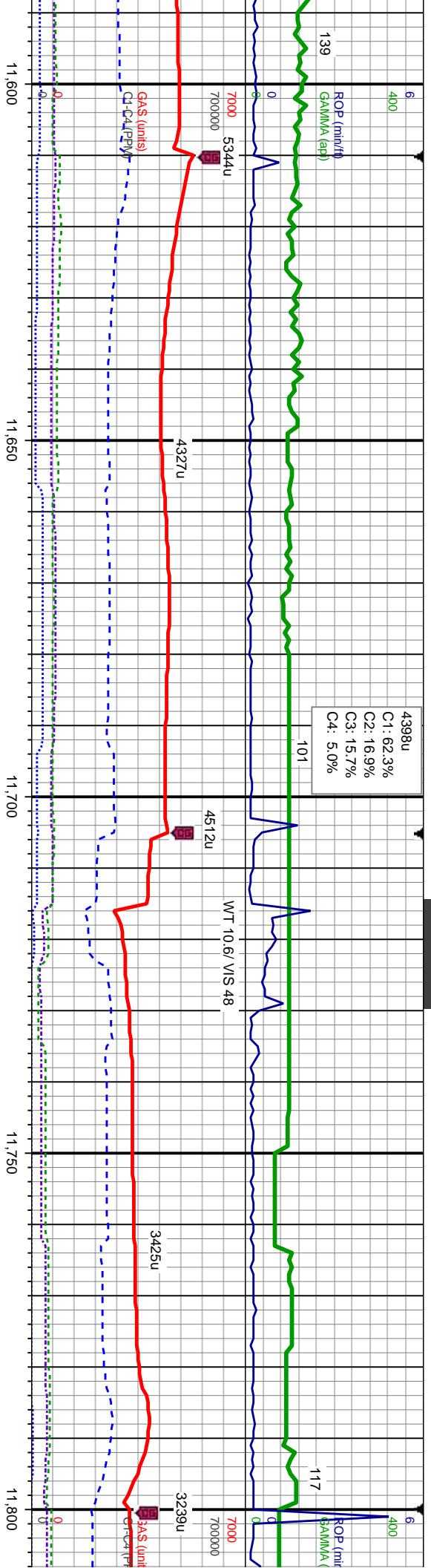
SS: med-dk gy, med-dk brn, rr
clr-s&p, clus, w srl, mod
sft-hd, w rd, med gr, non-sl
calc; tr SH: blk-dk gy, sb
ply-pty, mod sft-firm, sting bl
cut, bri bl ring

MD: 11.379
TVD: 7,519.43
Inclination: 90.87
Azimuth: 1.31
VS: 3.526

MD: 11.475
TVD: 7,518.49
Inclination: 90.25
Azimuth: 0.92
VS: 3.621.98

MD: 11.570
TVD: 7,519.51
Inclination: 88.52
Azimuth: 0.8
VS: 3.716.96

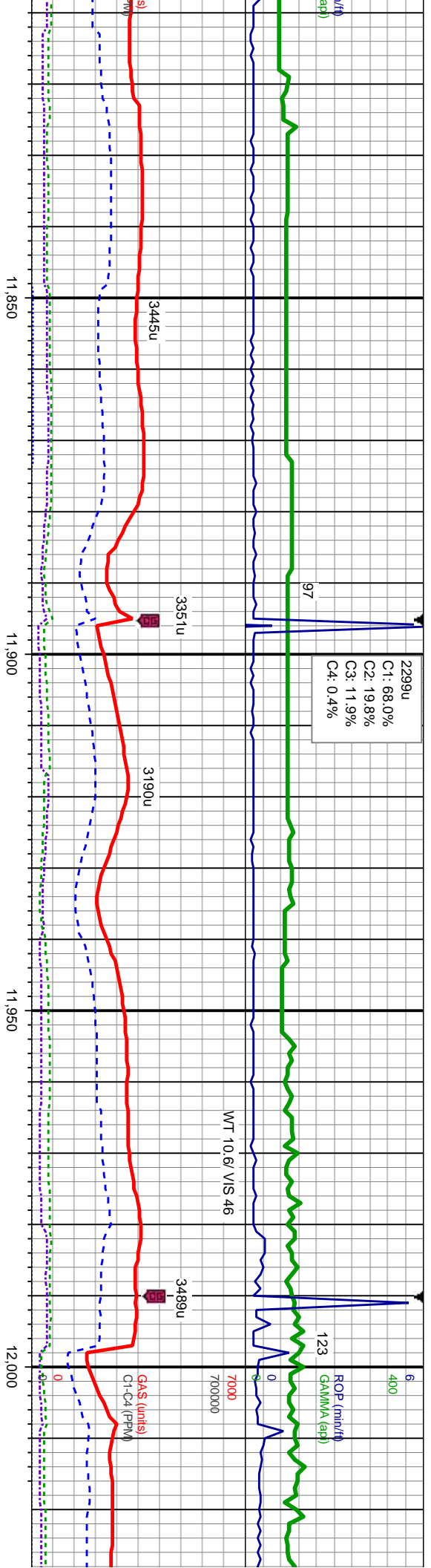




7200	SS: med-dk gy, med-dk brn, rr clr-s&p, clus, w srt, mod sft-hd, w rd, med gr, non-sl calc: tr SH: blk-dk gy, sb ply-pty, mod sft-frn, sting bl cut, bri bl ring	7200
TVD (ft)		TVD (ft)

7700	MD: 11.665 TVD: 7,522.12 Inclination: 88.33 Azimuth: 0.92 VS: 3.811.91	7700
7700	MD: 11.760 TVD: 7,523.41 Inclination: 90.12 Azimuth: 1.18 VS: 3.906.88	7700





SS: med-dk gy, med-dk brn, rr
clr-s&p, clus, w srl, mod
sft-hd, w rd, med gr, non-sl
calc: SH: blk-dk gy, sb pty-pty,
mod sft-firm, string bl cut, bri bl
ring

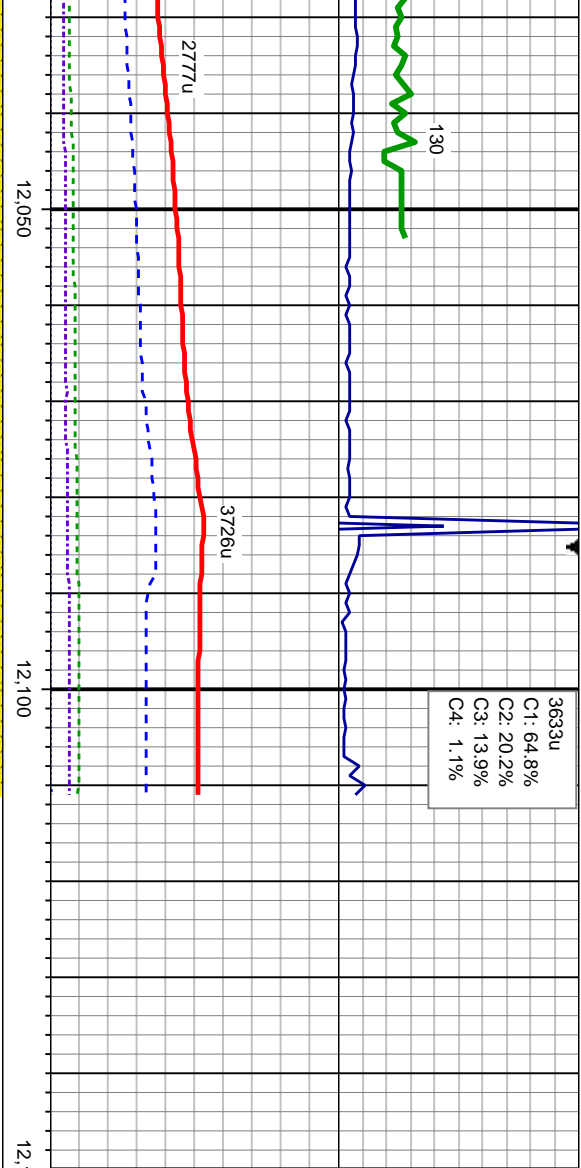
SS: med-dk gy, med-dk brn, rr
clr-s&p, clus, w srl, mod
sft-hd, w rd, med gr, non-sl
calc: tr SH: blk-dk gy, sb
pty-pty, mod sft-firm, string bl
cut, bri bl ring

MD: 11.855
TVD: 7,523.1
Inclination: 90.25
Azimuth: 0.51
VS: 4,001.87

MD: 11.950
TVD: 7,522.59
Inclination: 90.37
Azimuth: 359.79
VS: 4,096.87

7700





SS: med-dk gy, med-dk brn, rr
cl-r-s&p, clus, w srt, mod
sft-hd, w rd, med gr, non-sl
calc: tr SH: blk-dk gy, sb
ply-pily, mod sft-frn, stmg bl
cut, brl bl ring

PROJECTION TO BIT

ANADARKO
LOCHBUEAC-13HZ
WELL TD @ 12111' MD
ON 03/01/2014 @ 2210HRS

THANK YOU FOR USING
COLUMBINE LOGGING INC.

MD: 12,045
TVD: 7,522.38
Inclination: 89.88
Azimuth: 359.42
VS: 4,191.86

MD: 12,071
TVD: 7,522.38
Inclination: 90.12
Azimuth: 359.41
VS: 4,217.86

MD: 12,111
TVD: 7,522.29
Inclination: 90.12
Azimuth: 359.41
VS: 4,257.86

