



Scale: 5" / 100'
Measured Depth Log

Well Name BUTTERBALL 30C-10HZ

Location SEC 10 T2N R67W

State CO

Country USA

API Number 051233786700

Region WATTENBERG

Spud Date 10/10/2013

Surface Coordinates 459' FSL, 501' FWL

Bottom Hole Coordinates 460' FNL, 310' FWL

County WELD

Rig Number XTREME8

AFE # 2086570

Field WILDCAT

Drilling Completed 10/17/2013

Ground Elevation 4996'

K.B. Elevation 5013'

Logged Interval 7029 To 12042

Total Depth 12042

Formation CODELL

Type of Drilling Fluid FW LSND

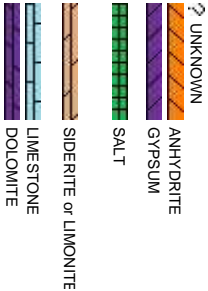
Company Anadarko

Address 1099 18th, Suite

Name Josh Garrett

Company Anadarko

Address 1099 18th, Suite



Operator

1800 Denver, CO 80202

Geologist

1800 Denver, CO 80202

Rock Types

	CHERT		SANDSTONE		IGNEOUS
	COAL		CONGLOMERATE		METAMORPHIC
	MARLSTONE		BRECCIA		CEMENT
	CLAYSTONE		TILL		SILTY SHALE
	SHALE		BENTONITE		CHALK
	SHALE GRAY		TUFF		
	SHALE COLORED				

Accessories

Fossils				Stringer	
F FOSSIL		— ARGILLACEOUS	GLAUCONITE		
GASTROPOD		/ ARGILLITE GRAIN	GYPSIFEROUS		
ALGAE		B BENTONITE	HEAVY MINERAL		ANHYDRITE STRINGER
AMPHIPORA		BITUMENOUS SUBSTANCE	KAOLIN		BENTONITE STRINGER
BELEMNITE		BRECCIA FRAGMENTS	T MARLSTONE		COAL STRINGER
BIOCLASTIC		A CALCAREOUS	MINERAL CRYSTALS		DOLOMITE STRINGER
BRACHIOPOD		CARBONACEOUS FLAKES	NODULES		GYPSUM STRINGER
BRYOZOA		CHTDK	PHOSPHATE PELLET		LIMESTONE STRINGER
CEPHALOPOD		CHLT	P PYRITE		MARLSTONE (CALC.) STRG
CORAL		COAL - THIN BEDS	SALT CAST		MARLSTONE (DOL.) STRG
CRINOID		DOLOMITIC	SANDY		SANDSTONE STRINGER
ECHINOID		+ FELDSPAR	SILTY		SHALE STRINGER
FISH		● FERRUGINOUS PELLET			
FORAMINIFERA		FERRUGINOUS	TUFFACEOUS		
		/ ANHYDRITIC			

Other Symbols

Oil Show	ORGANIC	FORMATION TOP	Rounding	L LITHOGRAPHIC
DEAD	P PINPOINT	GAS SHOW	A ANGULAR	M _X MICROXLN
EVEN	V VUGGY	MNDEPTH MN DEPTH	R ROUNDED	M _S MUDSTONE
QUESTIONABLE		NORMAL FAULT	a SUBANG	P _S PACKSTONE
SPOTTED STAINING		OIL SHOW	P SUBRND	W _S WACKESTONE
Porosity	CASING	OVERTURNED STRATA		
E EARTHY	CONNECTION (LEFT)	REVERSE FAULT	Textures	
F FENESTRAL	CONNECTION (RIGHT)	SIDEWALL CORE (LEFT)	B _S BOUNDSTONE	M MODERATE
F FRACTURE	CONNECTION GAS	SLIDE	C CHALKY	P POOR
INTERCRYSTALLINE	CORE - LOST	SURVEY	C _X CRYPTOXLN	W WELL
INTEROOLITIC	CORE - RECOVERED	TRIP GAS	E EARTHY	
MOLDIC	DST INTERVAL	WIRELINE TESTED - LEFT	F _X FINELYXLN	
	FAULT	WIRELINE TESTED - RT	G _S GRAINSTONE	

Slide/Rotate

ROP
ROF
GAMMA

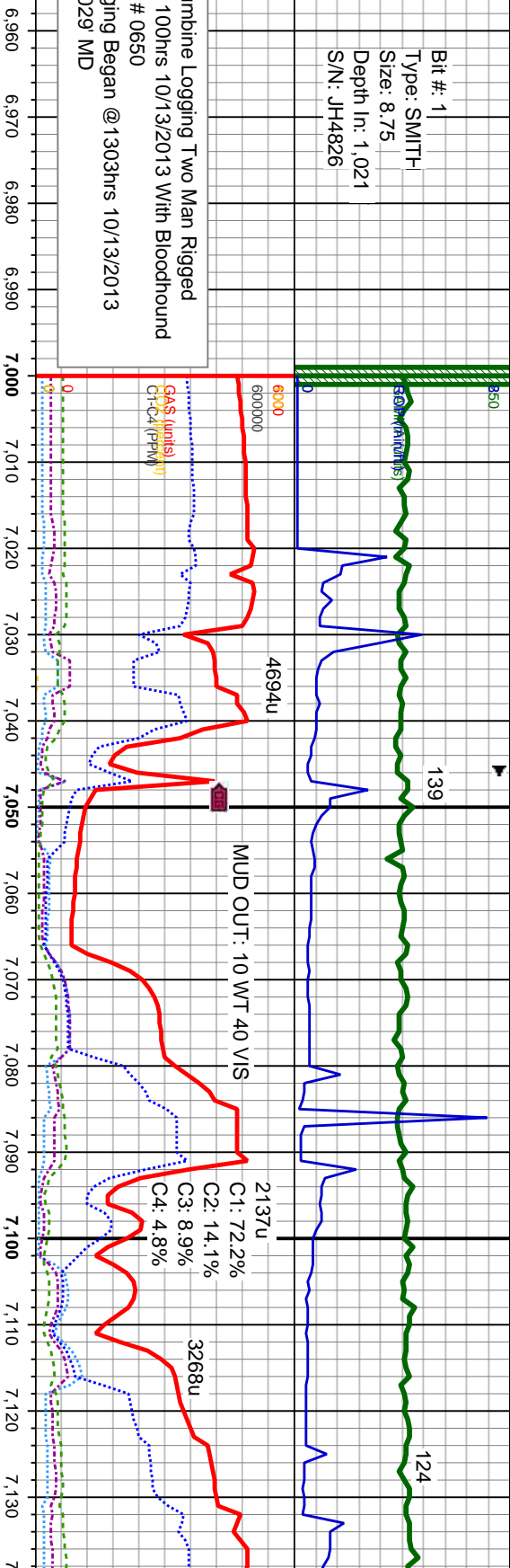
Bit #: 1
Type: SMITH
Size: 8.75
Depth In: 1,021
S/N: JH4826

Total Gas & Chromatograph

GAS
C1
C2
C3
C4
CO2

Columbine Logging Two Man Rigged
Up 1100hrs 10/13/2013 With Bloodhound
Unit # 0650
Logging Began @1303hrs 10/13/2013
at 7029 MD

Depth Labels



% Lith

6750

Acetone was used
as the cutting agent
with the dimple filled
to the rim.

Well Bore
TVD

MD: 6,999
TVD: 6,956
Inclination: 1.29
Azimuth: 314.78
VS: -390.86

MD: 7,042
TVD: 6,999.54
Inclination: 4.21
Azimuth: 345.42
VS: -388.99

MD: 7,084
TVD: 7,041.23
Inclination: 9.4
Azimuth: 348.95
VS: -384.13

MD: 7,127
TVD: 7,083.27
Inclination: 14.7
Azimuth: 347.58
VS: -375.36

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
judgment of brilliance,
color and longevity of the cut.

SLTY SH: dk-med gy-gy brn, sb ply-sb
biky, med sft-firm, mod fri-sl brit, v sl
calc, v slty, strng milky bl cut, gn ring

SLTY SH: dk-med gy-gy brn, sb ply-sb
biky, med sft-firm, mod fri-sl brit, v sl
calc, v slty, strng milky bl cut, gn ring

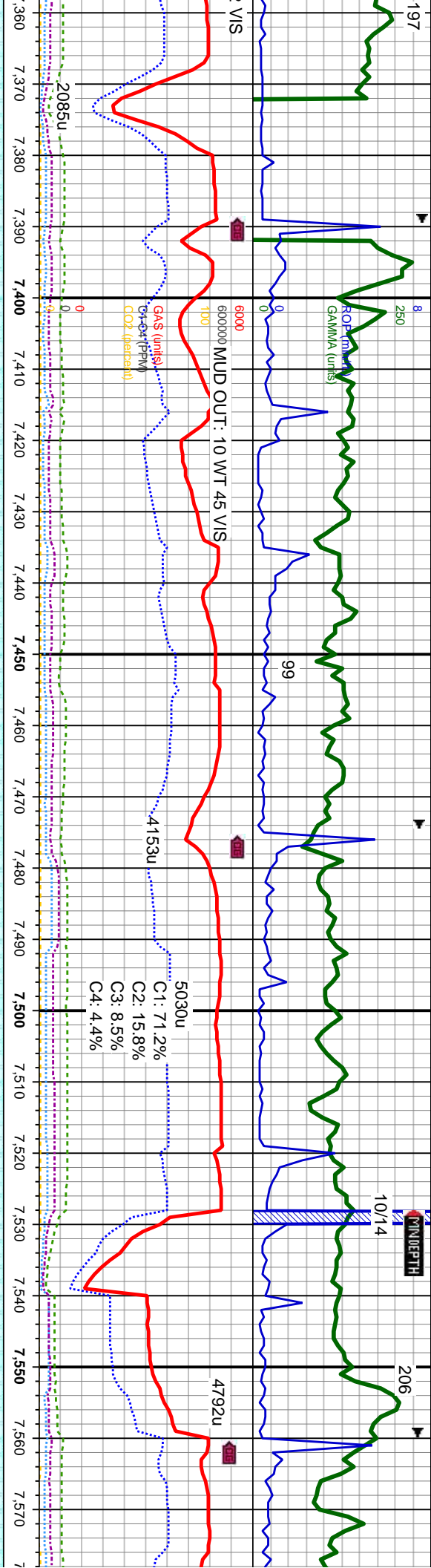
SLTY SH: dk-med gy-gy brn, sb ply-sb
biky, med sft-firm, mod fri-sl brit, v sl
calc, v slty, tr bent, strng milky bl cut, gn ring

Oil Show

TR
P
FR
G
E

Images





MD: 7.384'
TVD: 7.312.62'
Inclination: 38.69 °
Azimuth: 6.57 °
VS: -263.91'

<< SCALE CHANGE >>

MD: 7.427'
TVD: 7.345.23'
Inclination: 42.62 °
Azimuth: 7.76 °
VS: -236.11'

Niobrara B
7.431' MD
7.348' TVD

MD: 7.469'
TVD: 7.375.29'
Inclination: 45.95 °
Azimuth: 7.17 °
VS: -207.01'

MD: 7.512'
TVD: 7.404.29'
Inclination: 49.21 °
Azimuth: 5.68 °
VS: -175.46'

MD: 7.555'
TVD: 7.431.41'
Inclination: 52.56 °
Azimuth: 4.88 °
VS: -142.23'

Niobrara C
7.564' MD
7.437' TVD

Y SH: dk-med gy-gy brn, sb pily-sb med sft-frn, mod fr-sl brit, v sl v silty, bent, CHK: med gy, sb blkly, calc, wxy-rthy tex, rr bent, fast string v bl cut, bri bl ring

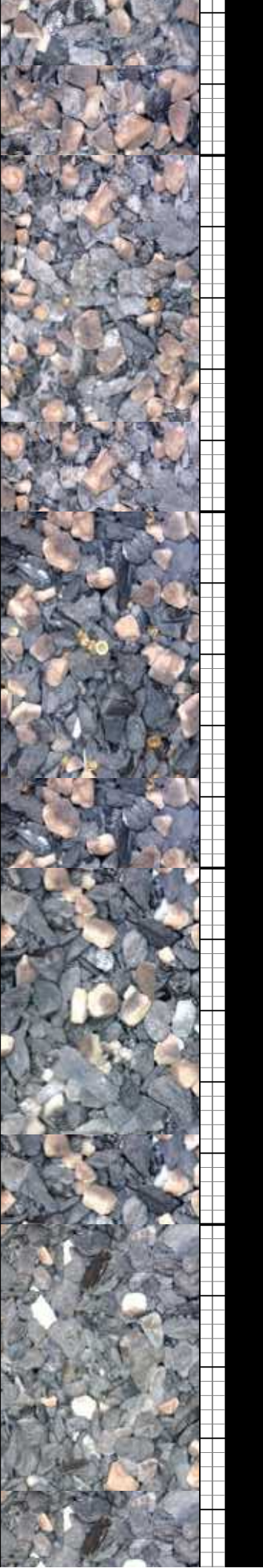
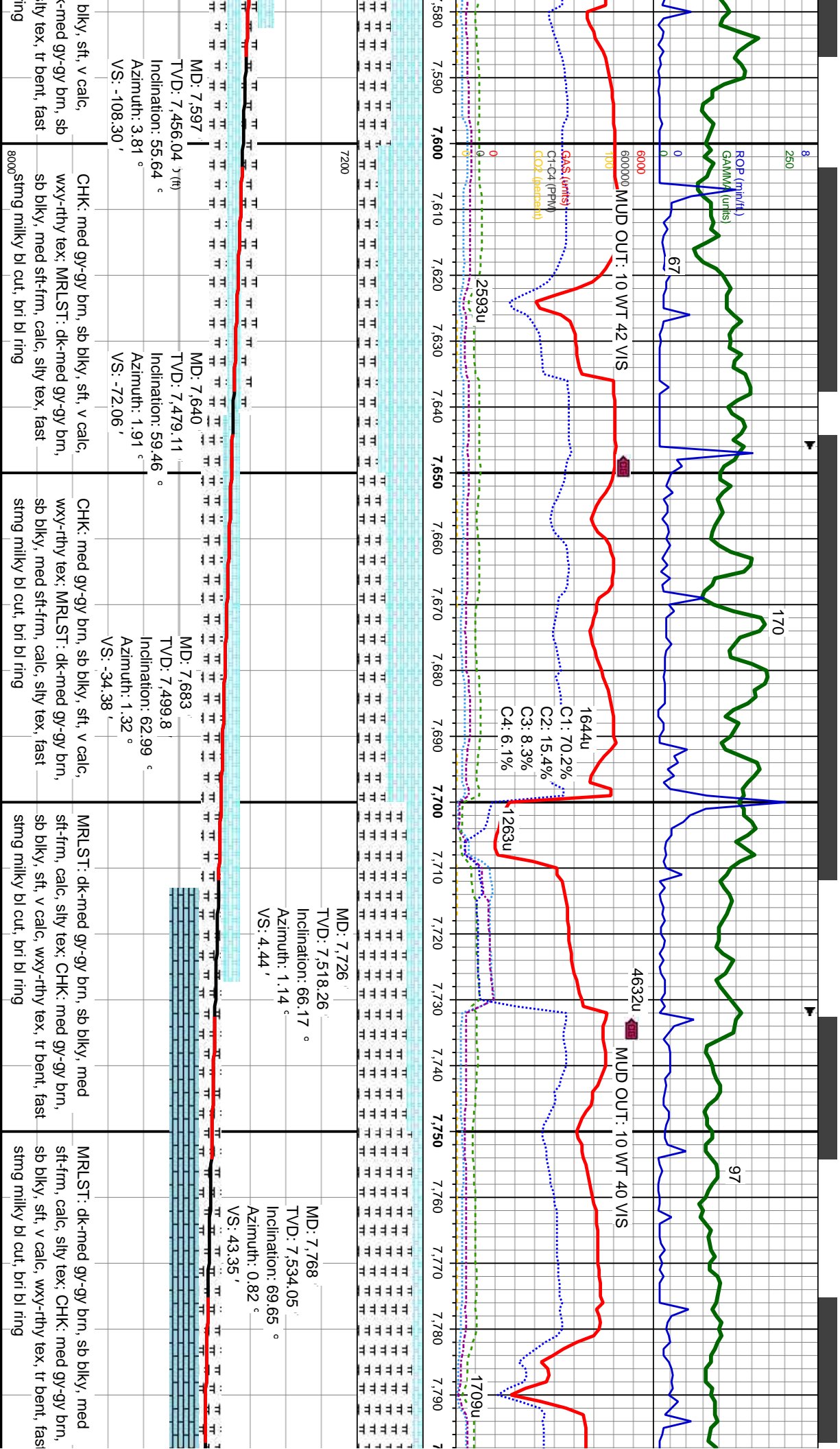
CHK: med gy-gy brn, sb blkly, sft, v calc, wxy-rthy tex, MRLST: dk-med gy-gy brn, sb blkly, med sft-frn, calc, silty tex, fast string milky bl cut, bri bl ring

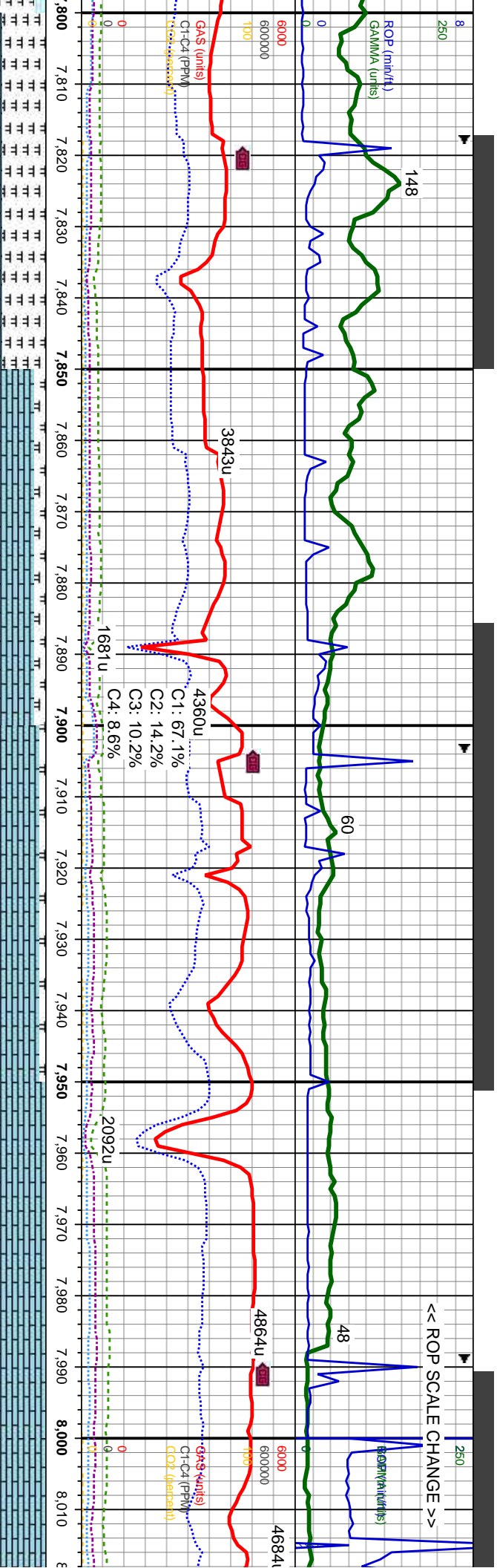
CHK: med gy-gy brn, sb blkly, sft, v calc, wxy-rthy tex, MRLST: dk-med gy-gy brn, sb blkly, med sft-frn, calc, silty tex, fast string milky bl cut, bri bl ring

CHK: med gy-gy brn, sb blkly, sft, v calc, wxy-rthy tex, MRLST: dk-med gy-gy brn, sb blkly, med sft-frn, calc, silty tex, tr bent, fast string milky bl cut, bri bl ring

CHK: med gy-gy brn, sb wxy-rthy tex, MRLST: dk-med gy-gy brn, sb blkly, med sft-frn, calc, silty tex, fast string milky bl cut, bri bl ring







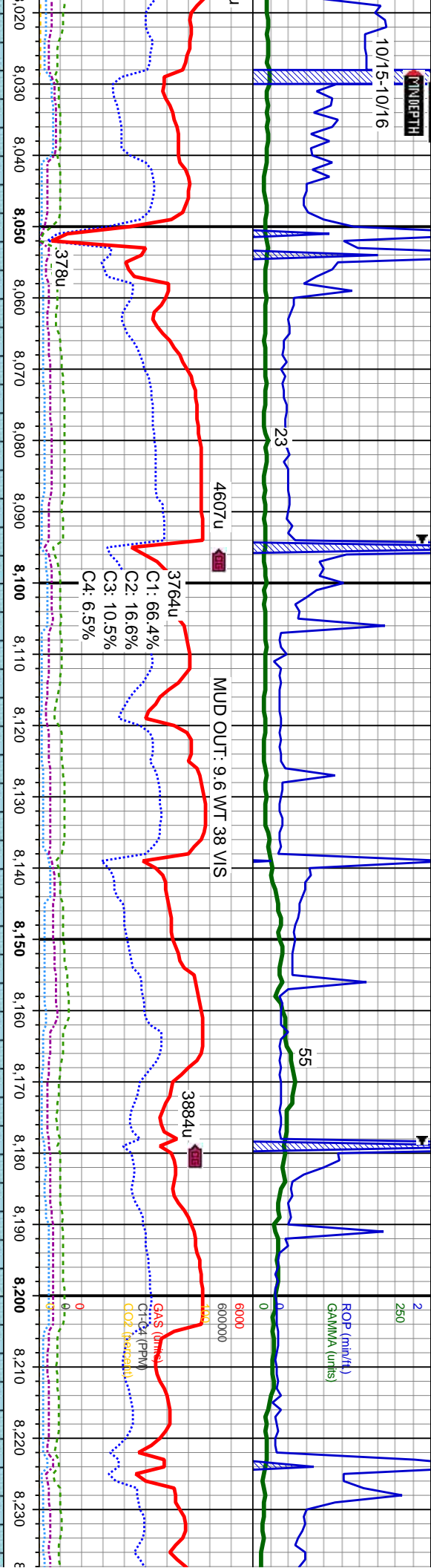
MD: 7,810' TVD: 7,547.44' Inclination: 73.17° Azimuth: 0.94° VS: 83.15'	MD: 7,853' TVD: 7,558.55' Inclination: 76.88° Azimuth: 359.64° VS: 124.68'	MD: 7,896' TVD: 7,567.07' Inclination: 80.24° Azimuth: 358.83° VS: 166.81'	MD: 7,977' TVD: 7,574.88' Inclination: 87.35° Azimuth: 357.06° VS: 247.30'
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MRLST: dk-med gy-gy brn, sb biky, med sft-frm, calc, stly tex; LS: wh-llgy, offwnt-crm, v sft-sft, sb pty-sb biky, calc, slow stmg milky bl cut, bl ring	LS: wh-llgy, offwnt-crm, v sft-sft, sb pty-sb biky, calc; MRLST: dk-med gy-gy brn, sb biky, med sft-frm, calc, stly tex, slow stmg milky bl cut, bl ring	LS: wh-llgy, offwnt-crm, v sft-sft, sb pty-sb biky, calc, tr mlst, slow stmg milky bl cut, bl ring	LS: wh-l sft-sft, st tr mlst, . cut, bl ri
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CONCEPT

10/15-10/16



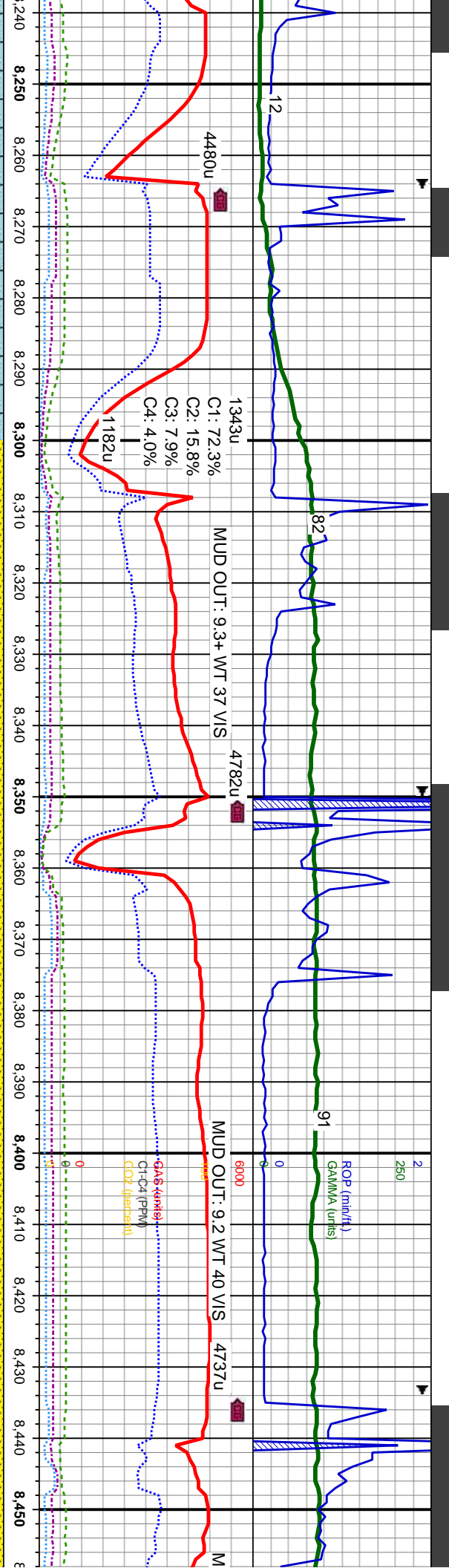
Curve Landing

MD: 8,028'	MD: 8,085'	MD: 8,125'
TVD: 7,576.71'	TVD: 7,576.44'	TVD: 7,576.08'
Inclination: 88.55 °	Inclination: 90.95 °	Inclination: 90.15 °
Azimuth: 357.66 °	Azimuth: 358.08 °	Azimuth: 357.22 °
VS: 298.20'	VS: 354.69'	VS: 395.11'

Began drilling Lateral @ 1023hrs 10/16/2013

LS: offwht-crm, v	LS: wh-llgy, offwht-crm, v	LS: wh-llgy, offwht-crm, v	LS: wh-llgy, offwht-crm, v
p pty-sb blk, calc,	sft-sft, sb pty-sb blk, calc,	sft-sft, sb pty-sb blk, calc,	sft-sft, sb pty-sb blk, calc,
slow stmg milky bl	tr mlst, slow stmg milky bl	slow stmg milky bl cut, bl	ring





CODELL
8,290 MD
7,581' TVD
MD: 8,295
TVD: 7,580.95
Inclination: 86.57 °
Azimuth: 359.16 °
VS: 564.9'

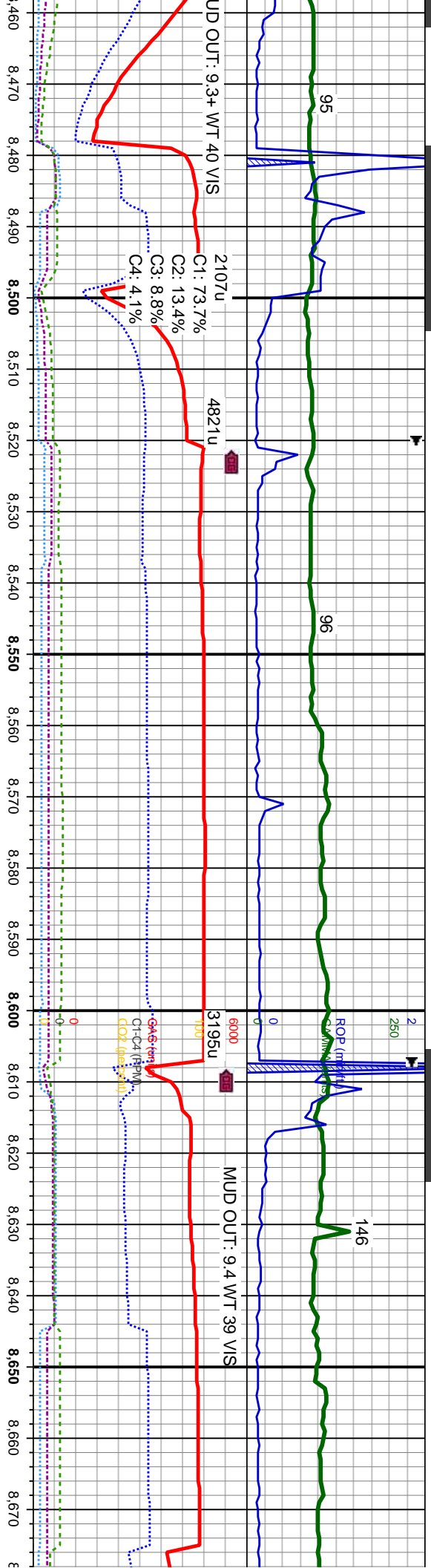
MD: 8,380
TVD: 7,585.64
Inclination: 87.1 °
Azimuth: 0.01 °
VS: 649.76'

wh-llgy, oflwht-crm, v
sft, sb plty-sb blk, calc,
v stmg milky bl cut, bl

SS: lt - med gy, clt - trns, hd, wrd,
med gr, non - sl calc; LS: wh-llgy,
offlwht-crm, v sft-sft, sb plty-sb blk,
calc, slow stmg milky bl cut, bri bl
ring

SS: lt - med gy, clt - trns
med gr, non - sl calc; LS
offlwht-crm, v sft-sft, sb p
calc, slow stmg milky bl
ring





MD: 8,465'
TVD: 7,588.98'
Inclination: 88.4 °
Azimuth: 0.24 °
VS: 734.69'

MD: 8,550'
TVD: 7,590.61'
Inclination: 89.32 °
Azimuth: 0.23 °
VS: 819.68'

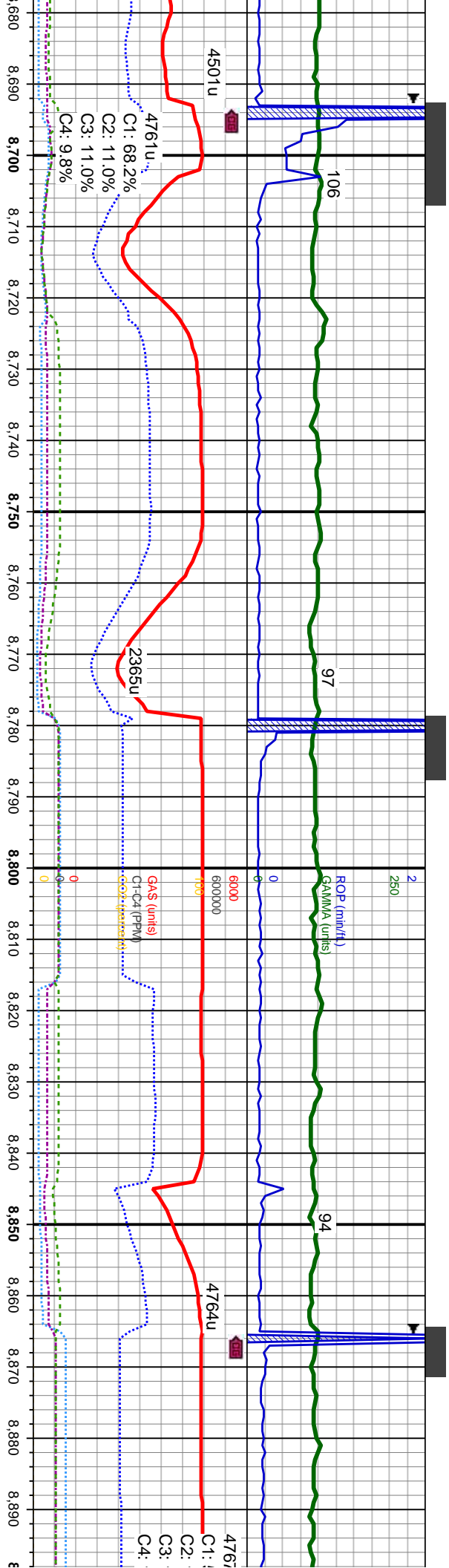
MD: 8,635'
TVD: 7,591.1'
Inclination: 90.03 °
Azimuth: 1.96 °
VS: 904.66'

l, hd, wrd,
: wh-ltgy,
lty-sb blkly,
cut, bri bl

SS: lt - med gy, clr - trns, hd, wrd,
med gr, non - sl calc; LS: wh-ltgy,
offwht-crm, v sft-sft, sb plty-sb blkly,
calc, slow string milky bl cut, bri bl
ring

SS: lt - med gy, clr - trns,
hd, wrd, med gr, non - sl
calc, slow string milky bl
cut, bri bl ring





MD: 8,720 '
TVD: 7,590.62 '
Inclination: 90.61 °
Azimuth: 1.21 °
VS: 989.63 '

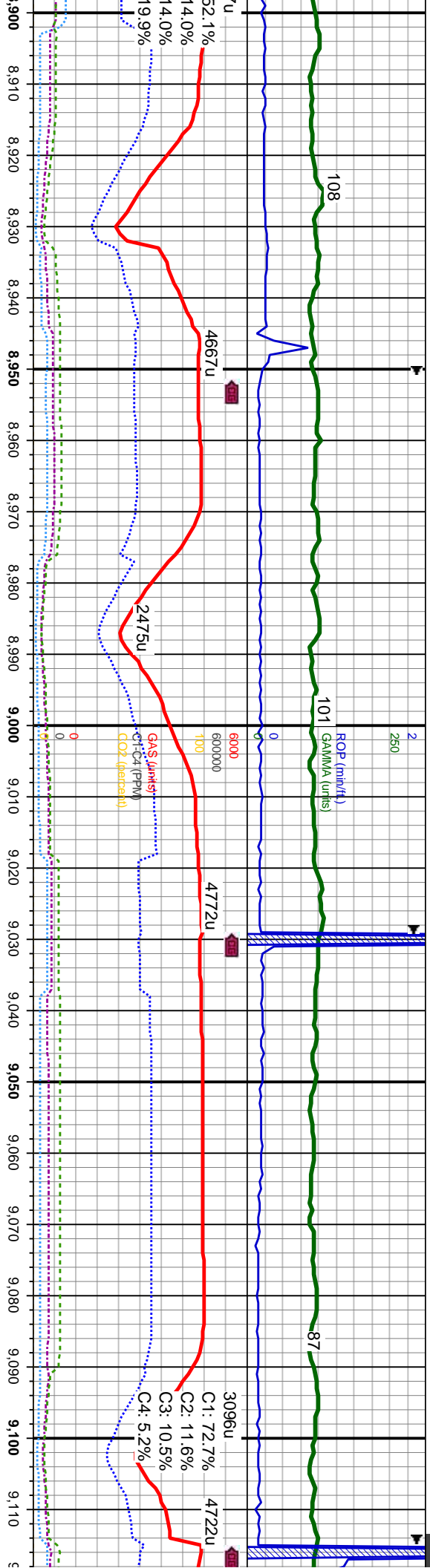
MD: 8,805 '
TVD: 7,589.67 '
Inclination: 90.67 °
Azimuth: 0.84 °
VS: 1,074.62 '

MD: 8,891 '
TVD: 7,588.62 '
Inclination: 90.7 °
Azimuth: 1.4 °
VS: 1,160.6 '

SS: lt - med gy, clr - trns, hd, wrd, med gr, non - sl calc, LS: wh-ltgy, offwht-crm, v sft-sft, sb plty-sb blk, calc, slow stmg milky bl cut, bri bl ring

SS: lt - med gy, clr - trns, hd, wrd, med gr, non - sl calc, LS: wh-ltgy, offwht-crm, v sft-sft, sb plty-sb blk, calc, slow stmg milky bl cut, bri bl ring





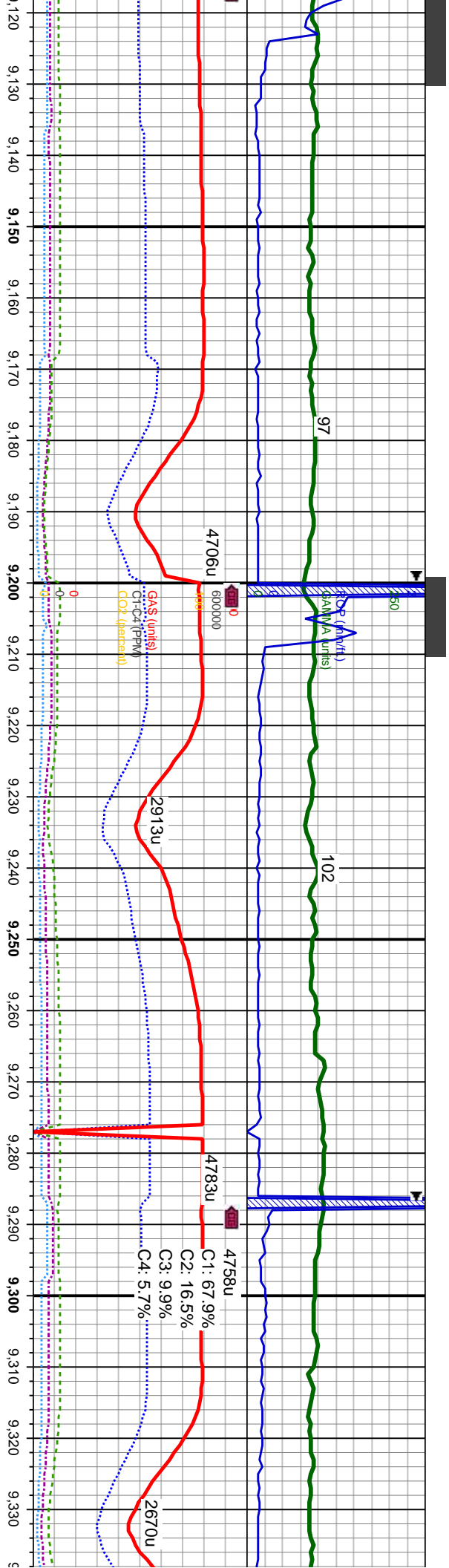
MD: 8,976 '
TVD: 7,587.59 '
Inclination: 90.7 °
Azimuth: 1.05 °
VS: 1,245.59 '

MD: 9,061 '
TVD: 7,586.3 '
Inclination: 91.04 °
Azimuth: 1.37 °
VS: 1,330.56 '

SS: lt - med gy, clr - trnsl,
hd, wrd, med gr, non - sl
calc, slow stmg milky bl
cut, bri bl ring

SS: lt - med gy, clr - trnsl,
hd, wrd, med gr, non - sl
calc, slow stmg milky bl
cut, bri bl ring





MD: 9,146'
TVD: 7,585.21'
Inclination: 90.43°
Azimuth: 0.28°
VS: 1,415.55'

MD: 9,232'
TVD: 7,585.16'
Inclination: 89.63°
Azimuth: 0.02°
VS: 1,501.55'

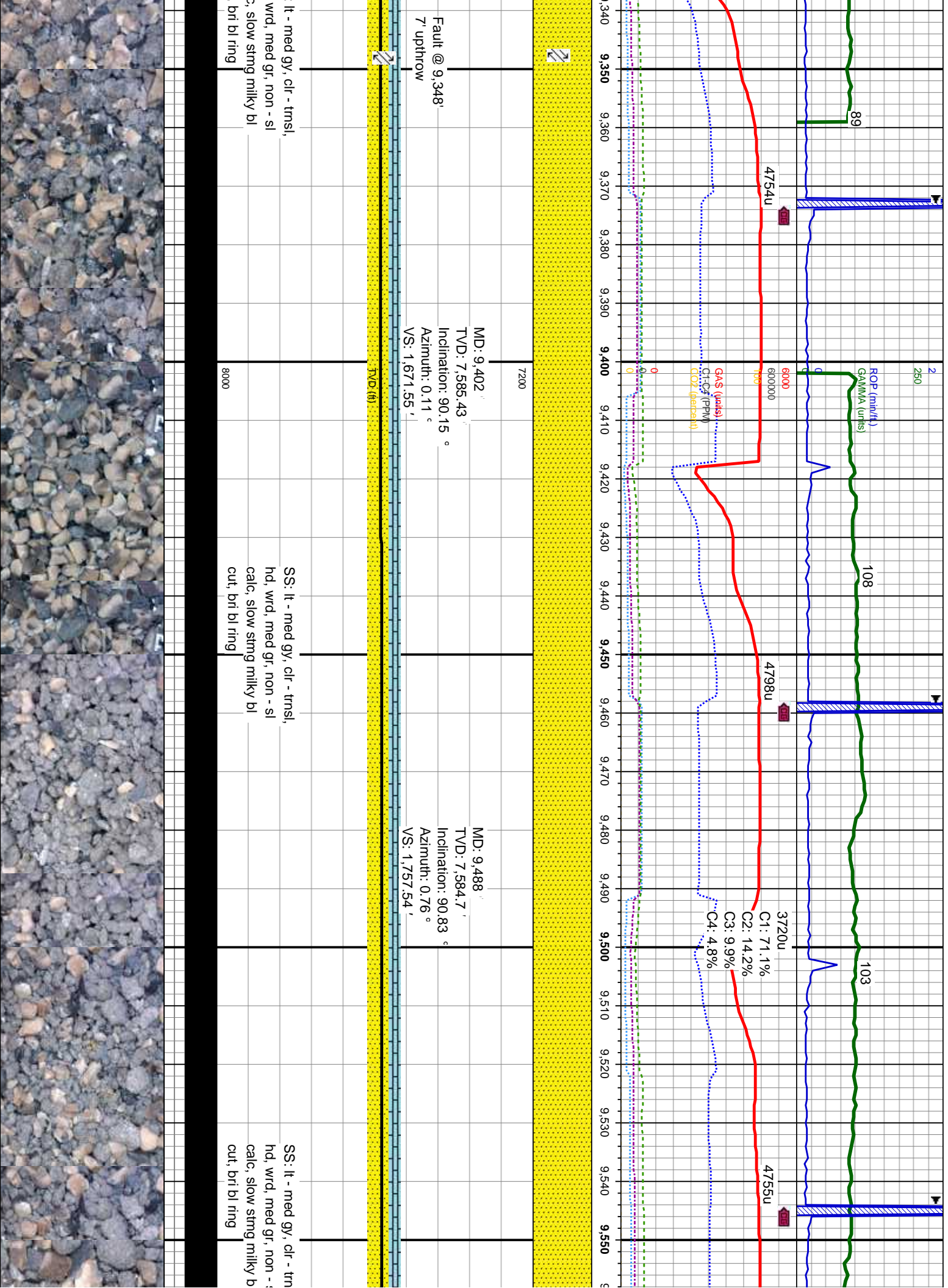
MD: 9,317'
TVD: 7,585.49'
Inclination: 89.93°
Azimuth: 0.07°
VS: 1,586.55'

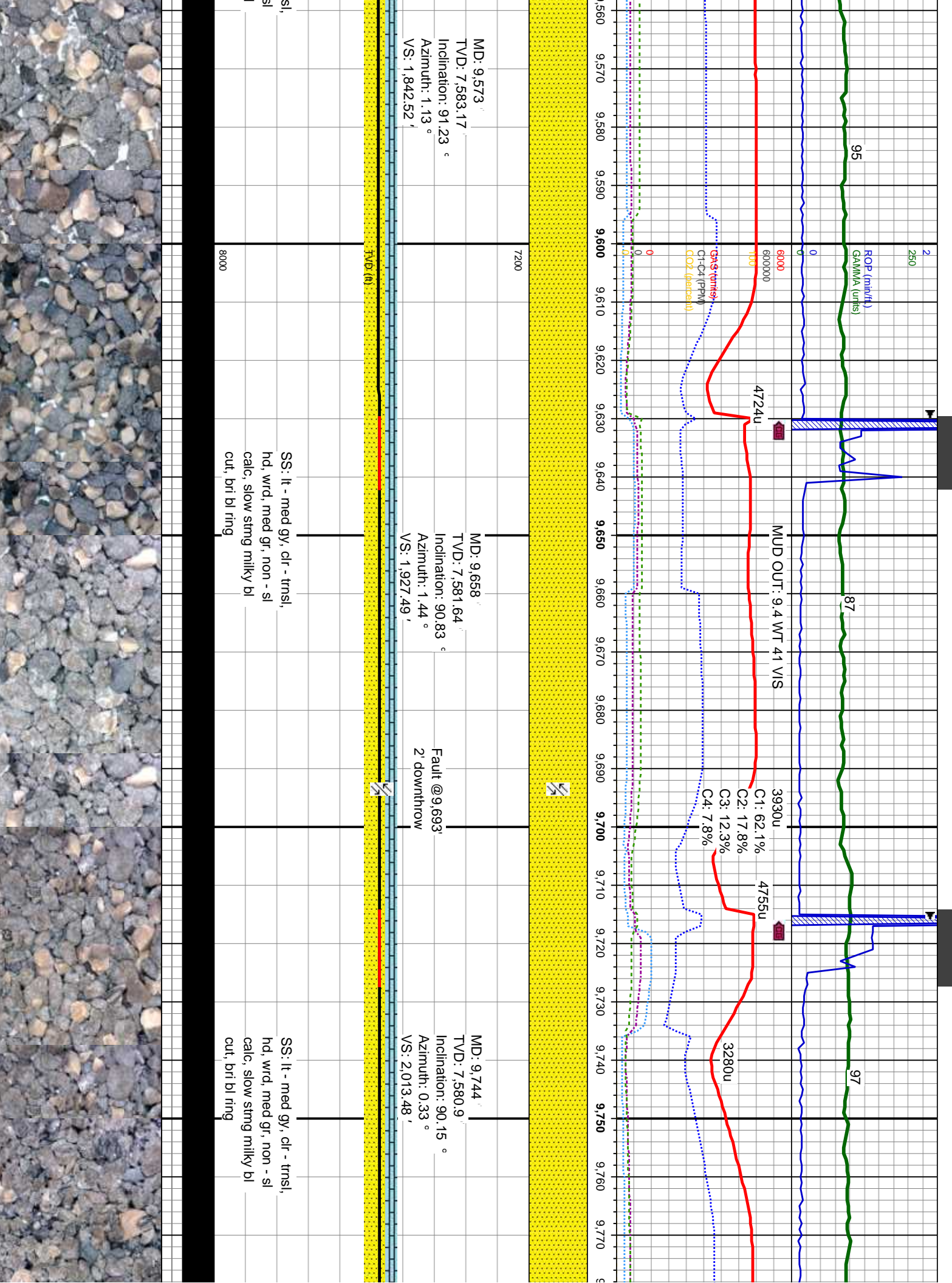
SS: lt - med gy, clr - trns, hd,
wrd, med gr, non - sl calc, LS:
wh-lgy, offwht-crm, v sft-sft, sb
pity-sb blk, calc, slow stmg
milky bl cut, bri bl ring

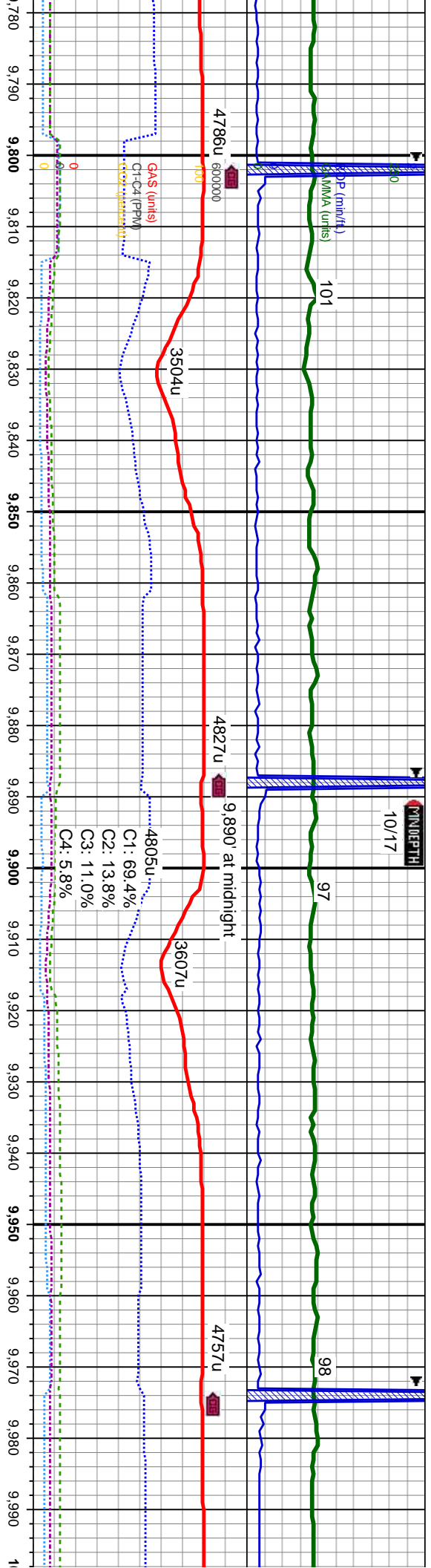
SS: lt - med gy, clr - trns,
hd, wrd, med gr, non - sl
calc, slow stmg milky bl
cut, bri bl ring

SS:
hd,
calc
cut









MD: 9,829
TVD: 7,580.32
Inclination: 90.64 °
Azimuth: 0.47 °
VS: 2,098.48'

MD: 9,914
TVD: 7,579.46
Inclination: 90.52 °
Azimuth: 359.76 °
VS: 2,183.48'

MD: 1
TVD:
Incline
Azimu
VS: 2

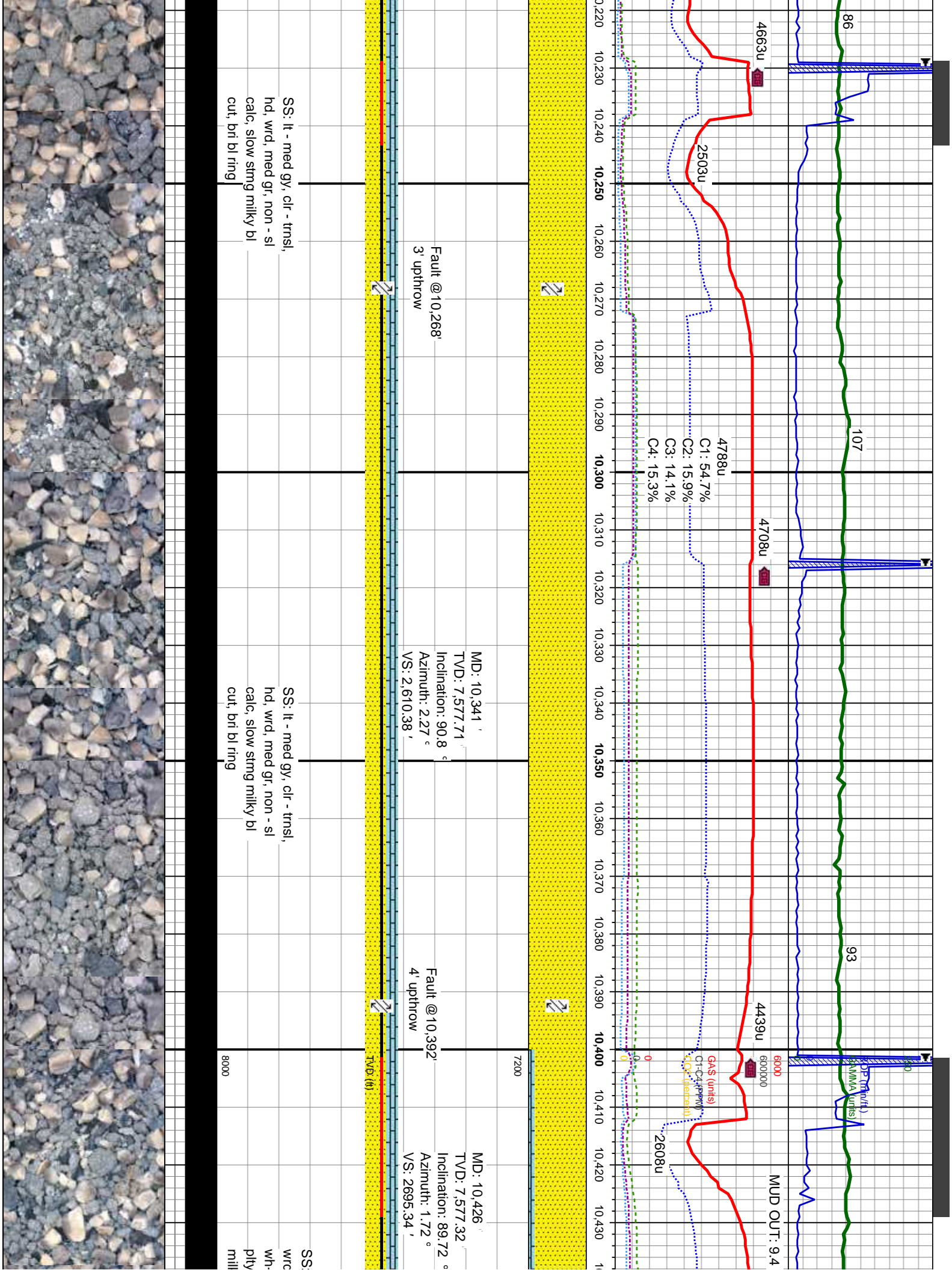
SS: lt - med gy, clr - trns,
hd, wrd, med gr, non - sl
calc, slow stmg milky bl
cut, bri bl ring

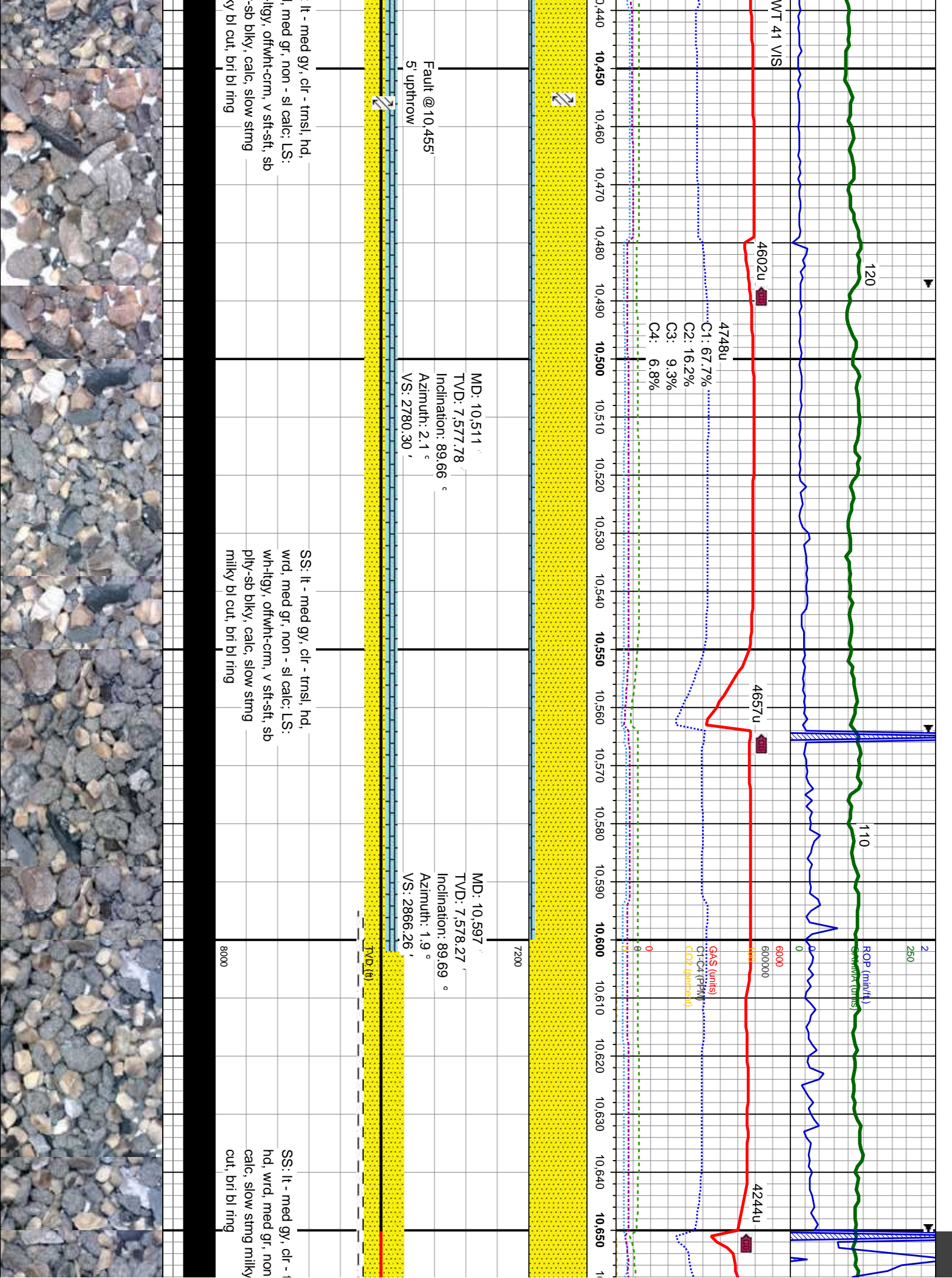
SS: lt - med gy, clr - trns,
hd, wrd, med gr, non - sl
calc, slow stmg milky bl
cut, bri bl ring

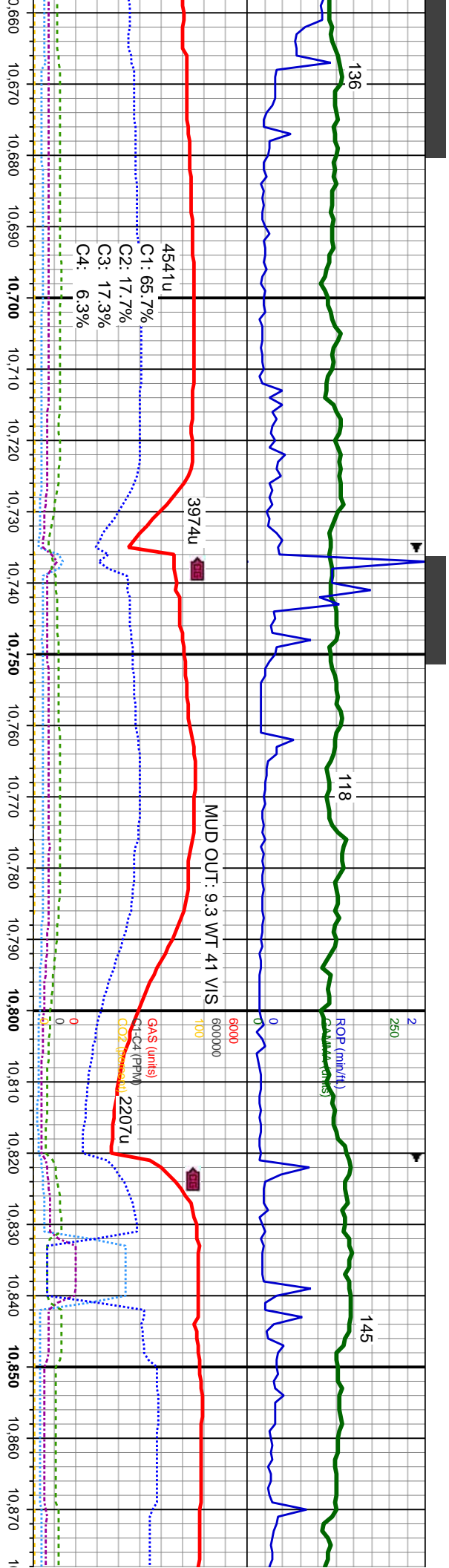
8000

7200

TVD (ft)







MD: 10,681'
TVD: 7,578.41'
Inclination: 90.12°
Azimuth: 0.97°
VS: 2950.24'

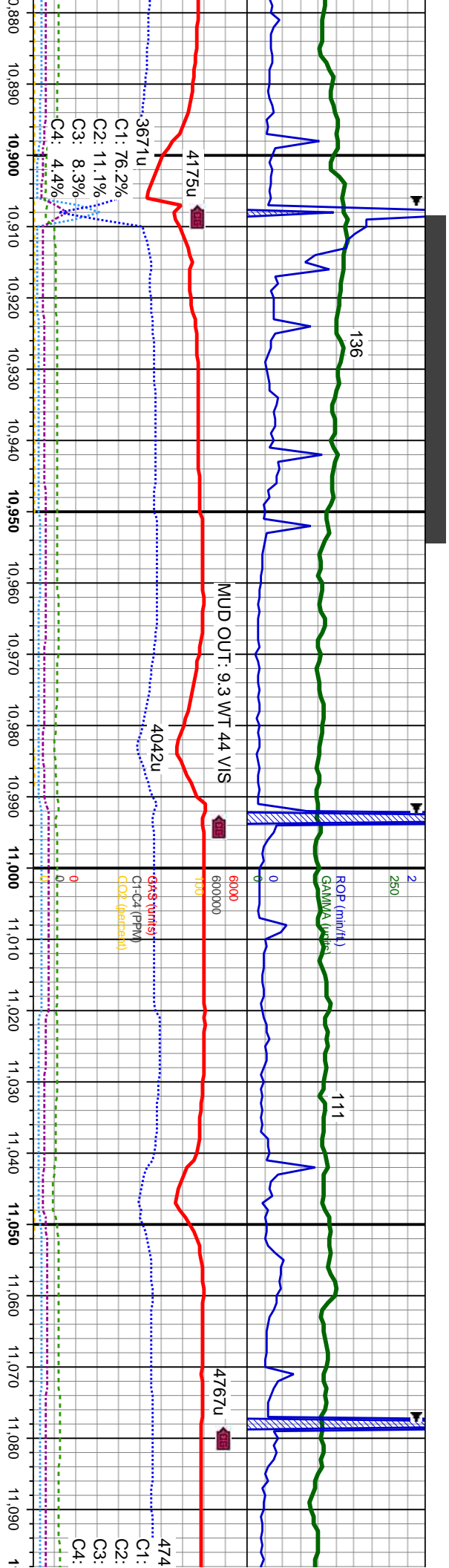
MD: 10,767'
TVD: 7,578.3'
Inclination: 90.03°
Azimuth: 1.56°
VS: 3036.23'

MD: 10,852'
TVD: 7,578.25'
Inclination: 90.03°
Azimuth: 1.31°
VS: 3121.21'

SS: lt - med gy, clr - trnsi,
hd, wrd, med gr, non - sl
calc; tr sh, slow stmg milky
bl cut, bri bl ring

SS: lt - med gy, clr - trnsi,
hd, wrd, med gr, non - sl
calc; tr sh, slow stmg milky
bl cut, bri bl ring





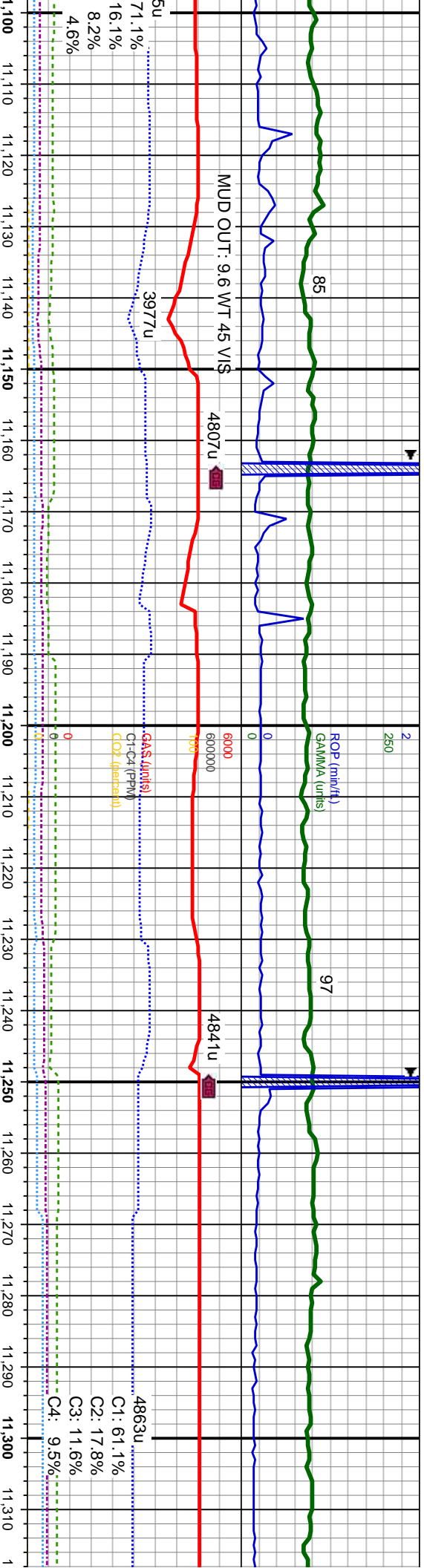
MD: 10,937'
TVD: 7,577.68'
Inclination: 90.74 °
Azimuth: 1.81 °
VS: 3206.19'

MD: 11,022'
TVD: 7,576.35'
Inclination: 91.05 °
Azimuth: 1.68 °
VS: 3291.15'

SS: lt - med gy, clr - trnsl, hd, wrd, med gr, non - sl calc, slow stmg milky bl cut, bri bl ring

SS: lt - med gy, clr - trnsl, hd, wrd, med gr, non - sl calc, slow stmg milky bl cut, bri bl ring





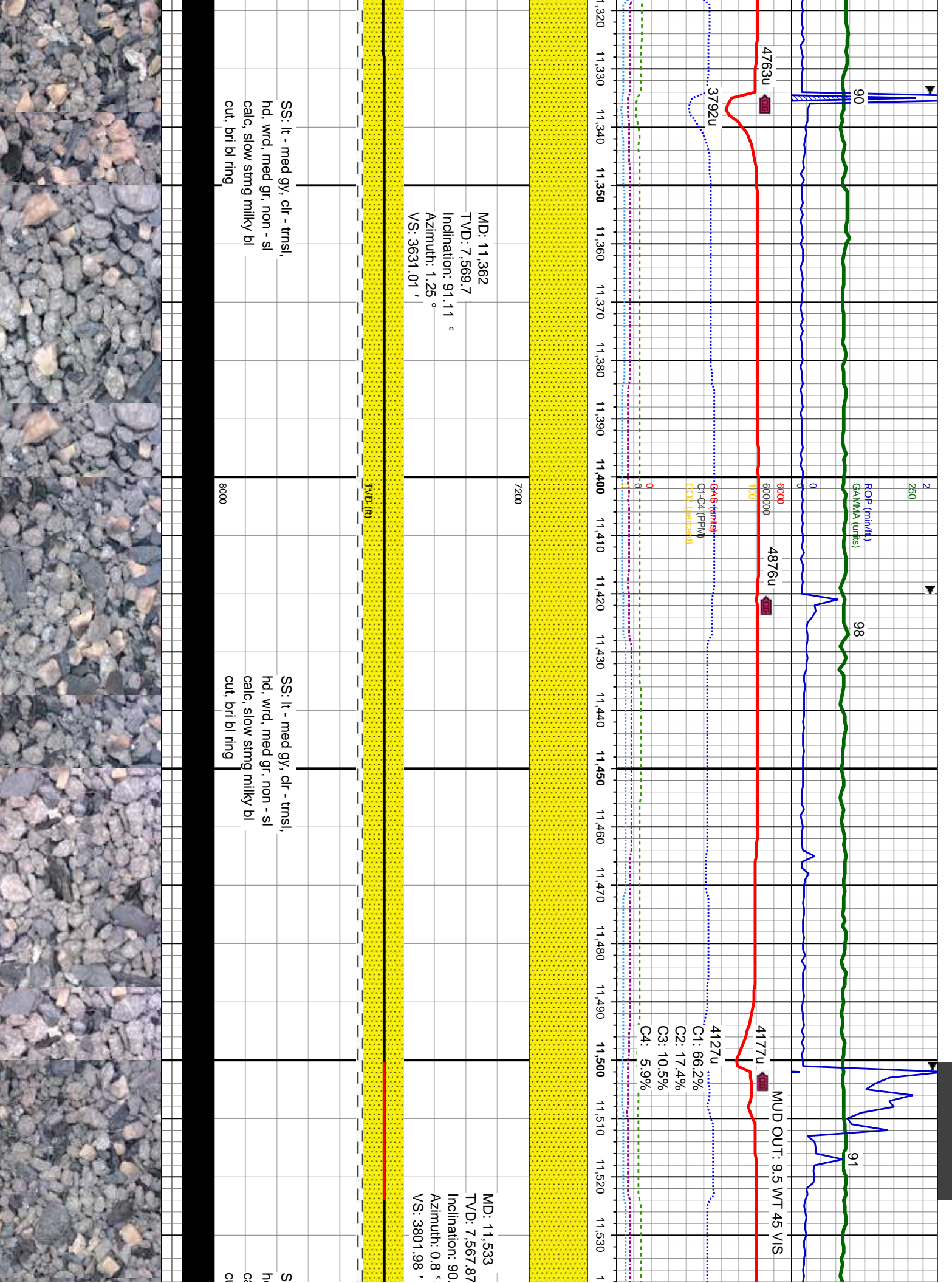
MD: 11,107' TVD: 7,574.73' Inclination: 91.14° Azimuth: 1.43° VS: 3376.11'

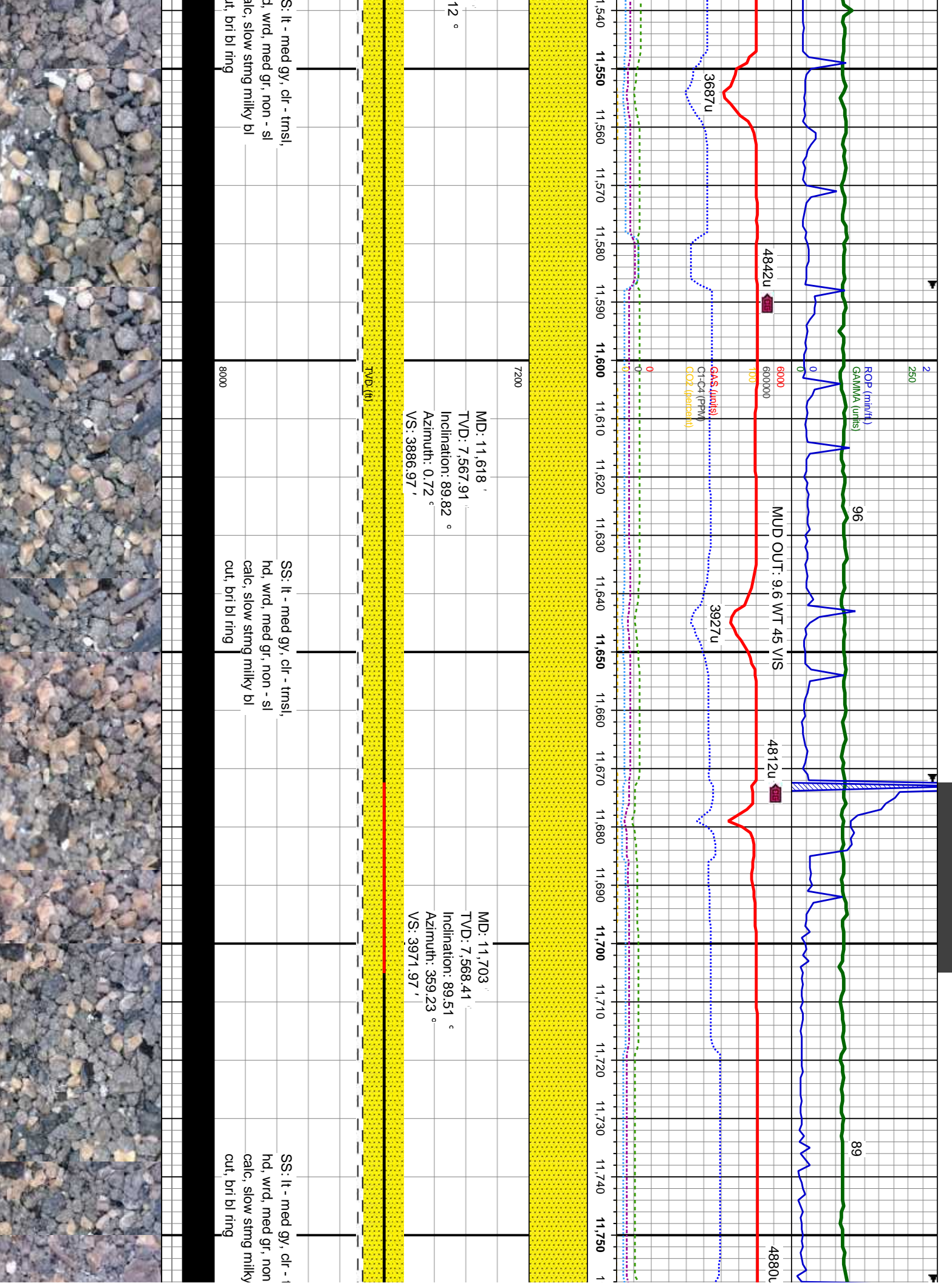
MD: 11,192' TVD: 7,573.04' Inclination: 91.14° Azimuth: 1.47° VS: 3461.07'

SS: lt - med gy, clr - trns, hd, wrd, med gr, non - sl calc, slow strng milky bl cut, bri bl ring

SS: lt - med gy, clr - trns, hd, wrd, med gr, non - sl calc, slow strng milky bl cut, bri bl ring

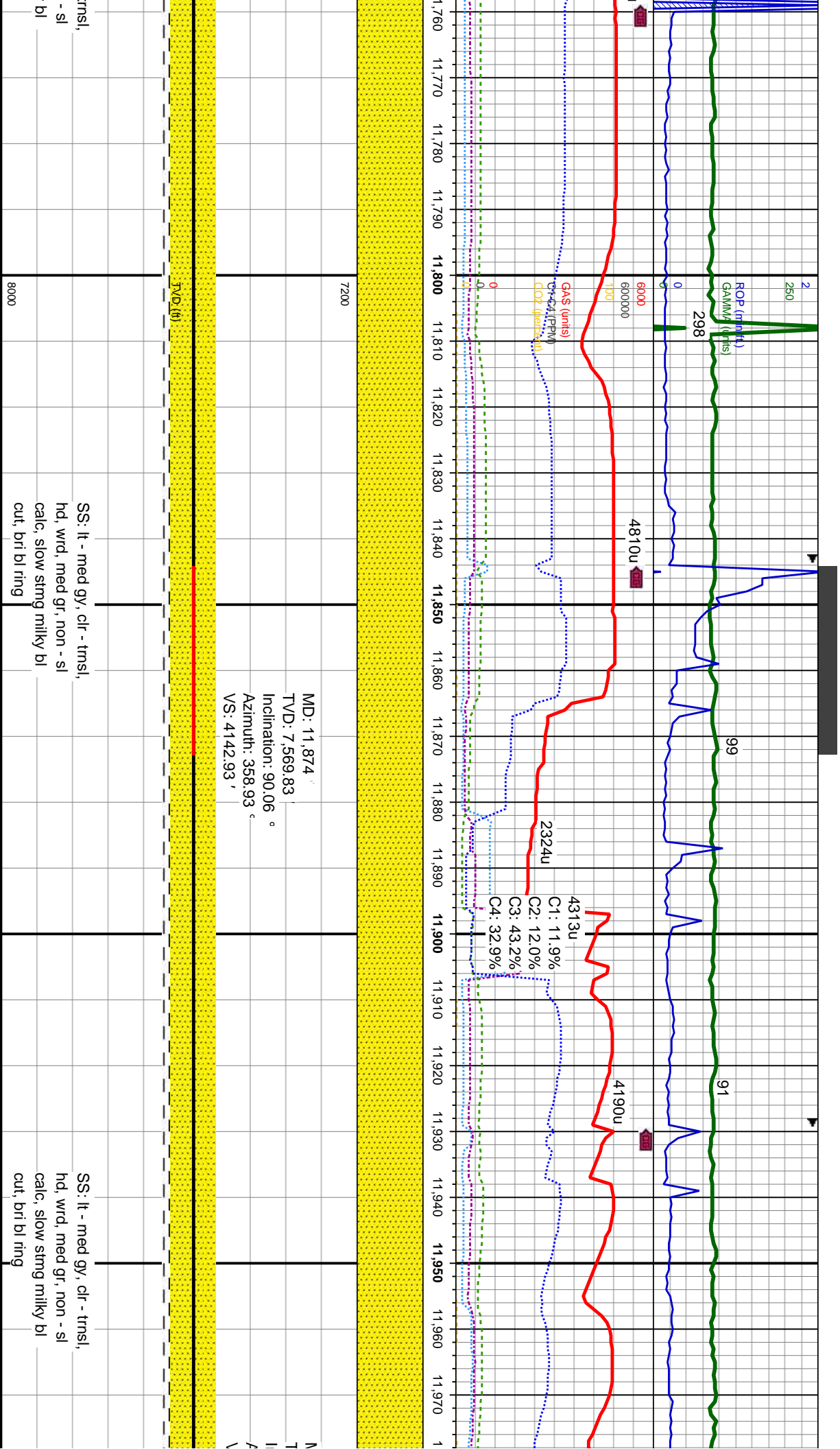


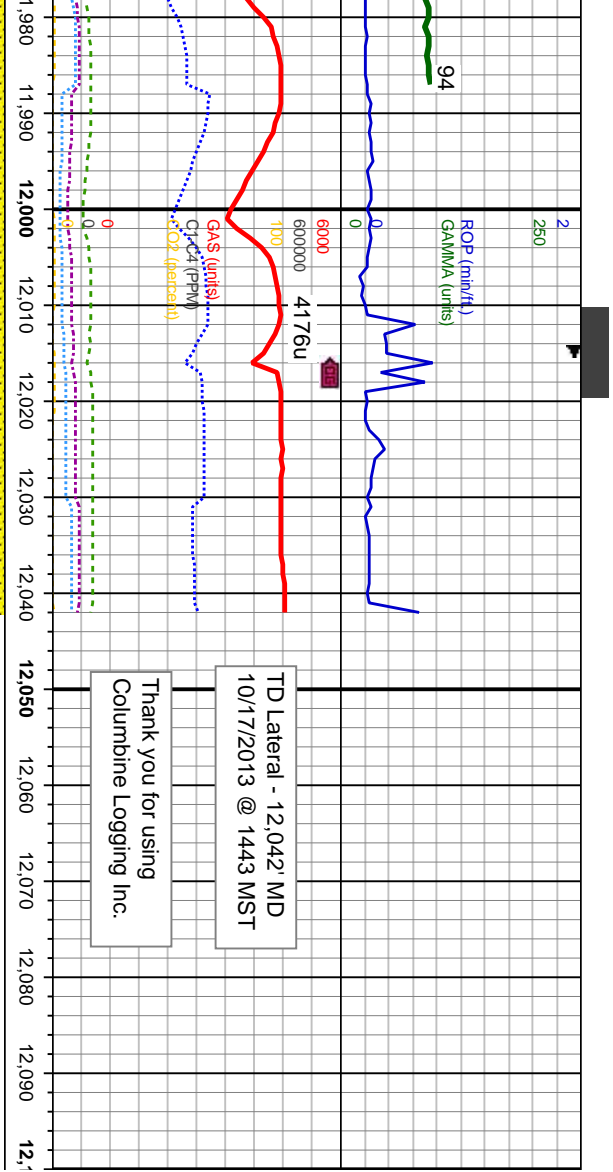




MD: 11,618 '
TVD: 7,567.91 '
Inclination: 89.82 °
Azimuth: 0.72 °
VS: 3886.97 '

MD: 11,703 '
TVD: 7,568.41 '
Inclination: 89.51 °
Azimuth: 359.23 °
VS: 3971.97 '





TD Lateral - 12,042' MD
10/17/2013 @ 1443 MST

Thank you for using
Columbine Logging Inc.

MD: 11,987'	PTB: MD: 12,042'
VD: 7,570.23'	TVD: 7,570.67'
Inclination: 89.54°	Inclination: 89.54°
azimuth: 358.44°	Azimuth: 358.44°
VS: 4,255.88'	VS: 4,310.85'
TVD (ft)	
8000	

