



Scale: 10" / 100'
Measured Depth Log

Well Name Wells Ranch AA-26-63-IHN

Location SEC25 T6N R63W

State COLORADO

County WELD

Country USA

Rig Number H&P 322

API Number 05-123-37563

Region DJ BASIN

Field WATTENBERG

Spud Date 10/25/2013

Drilling Completed 11/4/2013

Surface Coordinates 1674' FSL
153' FWL
LAT 40.45474°N
LONG 104.39410°W

Bottom Hole Coordinates 990' FSL
150' FWL
LAT 40.45296°N
LONG 104.41315°W

Ground Elevation 4792'

K.B. Elevation 4816'

Logged Interval 1000' **To** 6060

Total Depth 6060'

Formation Niobrara C Chalk

Type of Drilling Fluid FW LSND

Operator

Company Noble Energy Inc

Address 1625 BROADWAY
DENVER, CO 80202
(303) 228-4000

Geologist

Name JOEY LUCE, MIKE GREENE

Company COLUMBINE LOGGING, INC.

Address 2385 S. LIPAN ST
DENVER, COLORADO 80223

Rock Types

UNKNOWN	COAL	METAMORPHIC	SHALY SILTSTONE
ANHYDRITE	CONGLOMERATE	NO SAMPLE	SILTSTONE
BENTONITE	DOLOMITE	SALT	SILTY SHALE
BRECCIA	GRANITE	SALT- PEPPER SAND	TILL
CEMENT	GYPSUM	SANDSTONE	TUFF
CHALK	IGNEOUS	SHALE	WELDED TUFF
CHERT	LIMESTONE	SHALE COLORED	
CLAY CHOKE SAND	SIDERITE or LIMONITE	SHALE GRAY	
CLAYSTONE	MARLSTONE	SHALY SANDSTONE	

Accessories

Fossils

ALGAE
AMPHIPORA
BELEMNITE
BIOCLASTIC
BRACHIOPOD
BRYOZOA
CEPHALOPOD
CORAL
CRINOID
ECHINOID
FISH
FORAMINIFERA

Fossil

GASTROPOD
INOCERAMUS
OOLITE
OSTRACOD
PELECYPOD
PELLET
PISOLITE
PLANT REMAINS
PLANT SPORES
SCAPHOPOD
STROMATOPOROID

Minerals

ANHYDRITIC

ARGILLACEOUS
ARGILLITE GRAIN
BENTONITE
BITUMENOUS SUBSTANCE
BRECCIA FRAGMENTS
CALCAREOUS
CARBONACEOUS FLAKES
CHTDK
CHTLT
COAL - THIN BEDS
DOLOMITIC
FELDSPAR
FERRUGINOUS PELLETT

FERRUGINOUS

GLAUCONITE
GYPSIFEROUS
HEAVY MINERAL
KAOLIN
MARLSTONE
MINERAL CRYSTALS
NODULES
PHOSPHATE PELLETS
PYRITE
SALT CAST
SANDY
SILICEOUS
SILTY

TUFFACEOUS

Stringer

ANHYDRITE STRINGER
BENTONITE STRINGER
COAL STRINGER
DOLOMITE STRINGER
GYPSUM STRINGER
LIMESTONE STRINGER
MARLSTONE (CALC) STRG
MARLSTONE (DOL) STRG
SANDSTONE STRINGER
SHALE STRINGER
SILTSTONE STRINGER

Other Symbols

Oil Show

DEAD
EVEN
QUESTIONABLE
SPOTTED STAINING

Porosity

E EARTHY
F FENESTRAL
F FRACTURE
X INTERCRYSTALLINE
Q INTEROOLITIC

MOLDIC

ORGANIC
P PINPOINT
V VUGGY

Engineering

BIT
CONNECTION (LEFT)
CONNECTION (RIGHT)
CONNECTION GAS
CORE - LOST
CORE - RECOVERED
DST INTERVAL

FAULT

FORMATION TOP
GAS SHOW
MN DEPTH
NORMAL FAULT
OIL SHOW
OVERTURNED STRATA
REVERSE FAULT
SIDEWALL CORE (LEFT)
SIDEWALL CORE (RIGHT)
SLIDE
SURVEY
TRIP GAS

WIRELINE TESTED - LEFT

WIRELINE TESTED - RT

Rounding

ANGULAR
ROUNDED
SUBANG
SUBRND

Textures

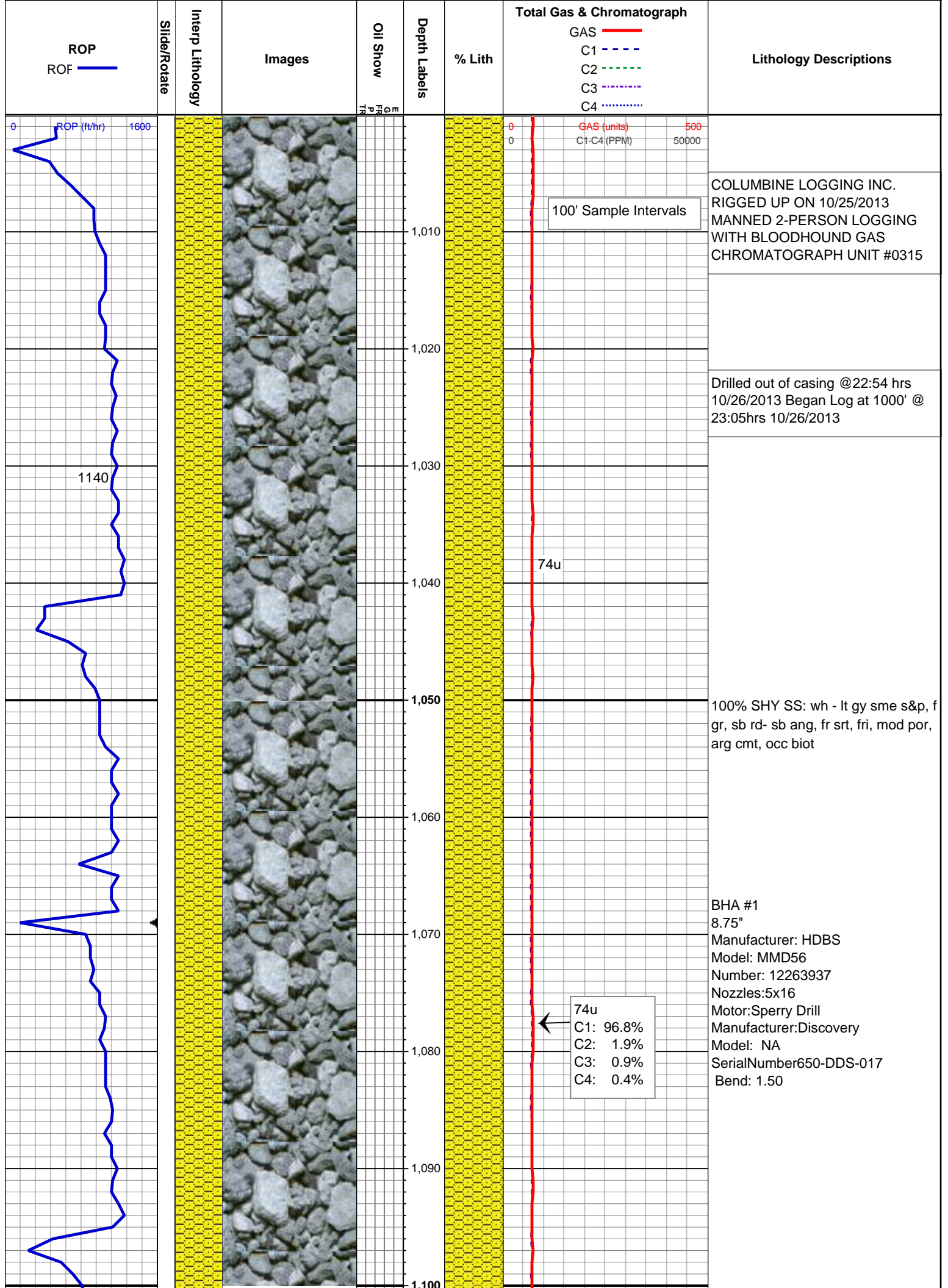
BOUNDSTONE
CHALKY
CRYPTOXLN

E EARTHY

FINELYXLN
GRAINSTONE
L LITHOGRAPHIC
MX MICROXLN
MS MUDSTONE
PS PACKSTONE
WS WACKESTONE

Sorting

M MODERATE
P POOR
W WELL

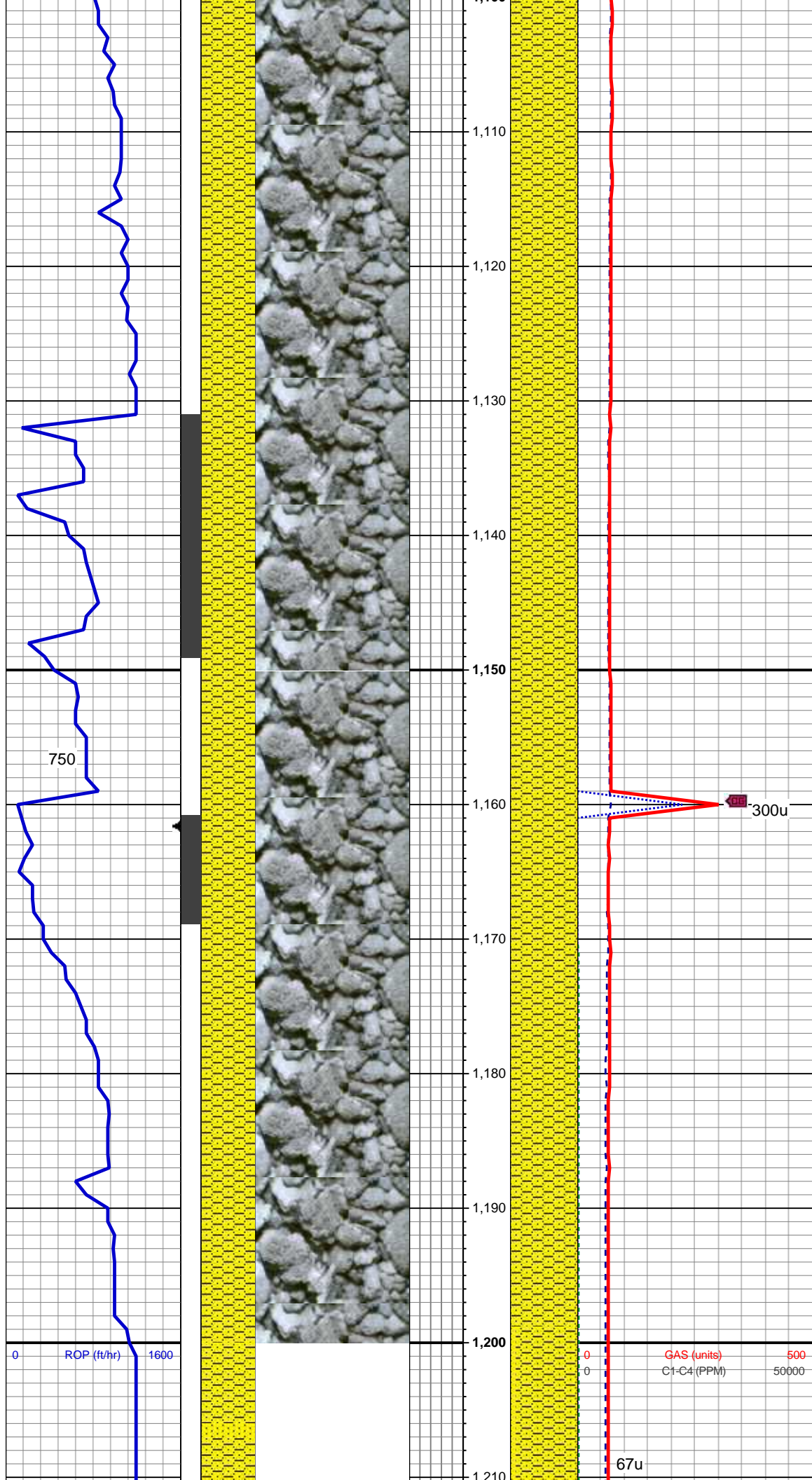


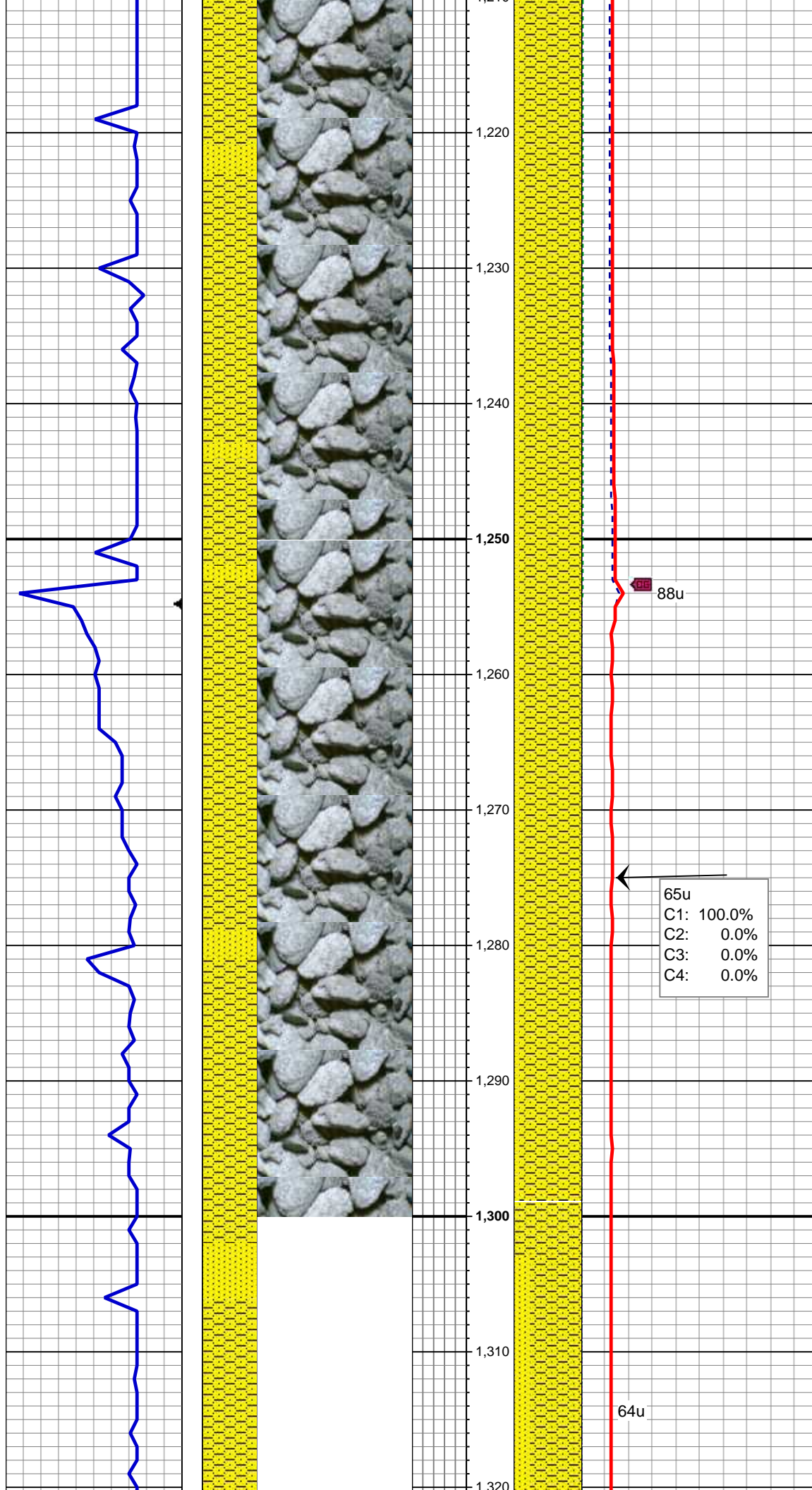
MD: 1,104 '
TVD: 1,103.89 '
Inclination: 1.33 °
Azimuth: 154 °
VS: -1.46 '

100% SHY SS: wh - lt gy sme s&p, f
gr, sb rd- sb ang, fr srt, fri, mod por,
arg cmt, occ biot

MD: 1,197 '
TVD: 1,196.88 '
Inclination: 0.43 °
Azimuth: 51.36 °
VS: -2.1 '

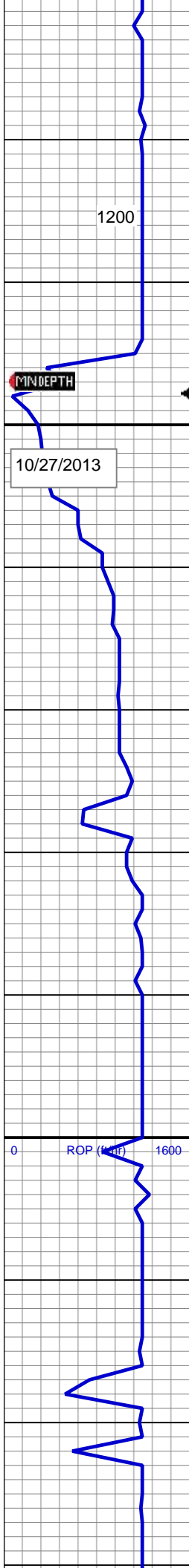
MUD WT 8.6 VIS 28





90% SHY SS: wh - lt gy sme s&p, f
gr, sb rd- sb ang, fr srt, fri, mod por,
arg cmt
10% SS: lt gy - wh, sme s&p, f gr,
sbrd-sbang, mod srt

MD: 1,290 '
TVD: 1,289.88 '
Inclination: 0.48 °
Azimuth: 55.28 °
VS: -2.75 '

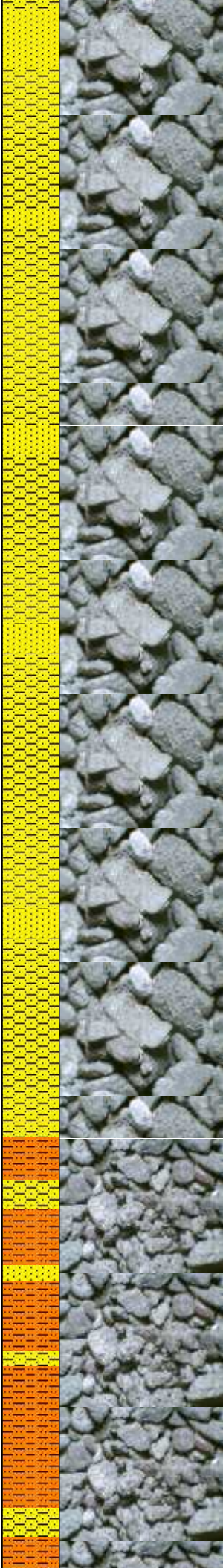


1200

MINDEPTH

10/27/2013

0 ROP (f/hr) 1600



1,320
1,330
1,340
1,350
1,360
1,370
1,380
1,390
1,400
1,410
1,420
1,430

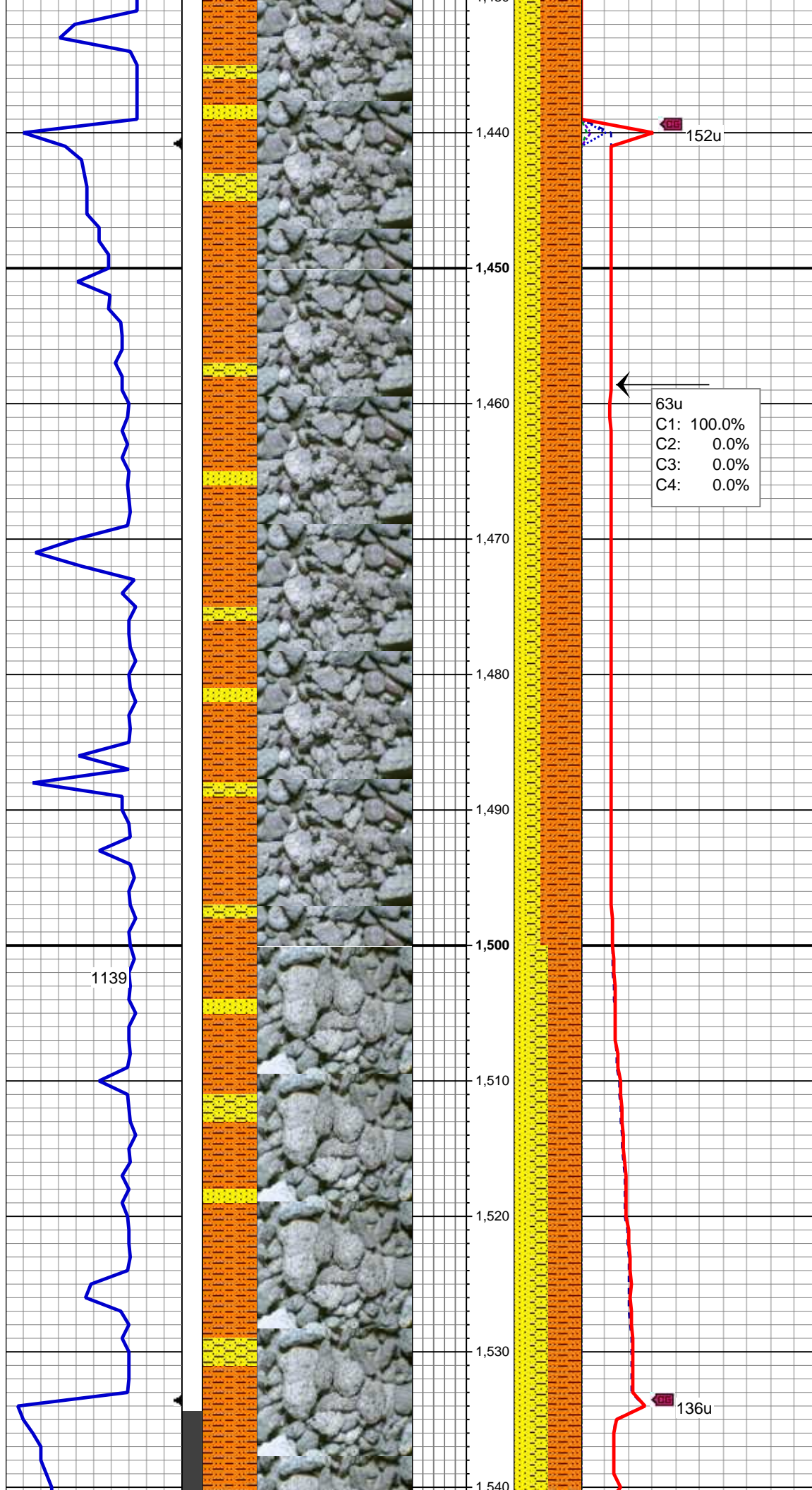
96u

Re-Boot
Blood
Hound

0 GAS (units) 500
0 C1-C4 (PPM) 50000

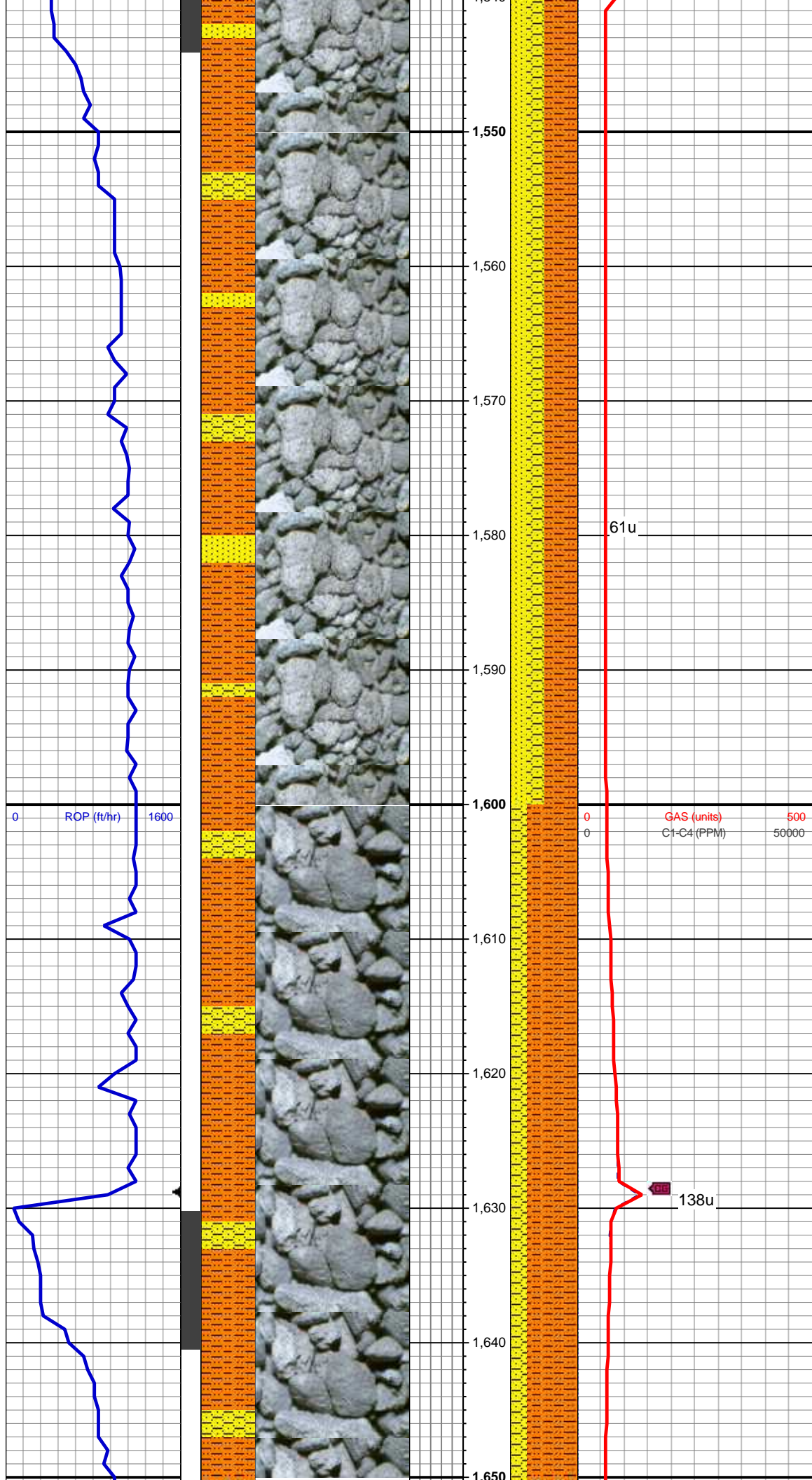
75% SHY SS: wh - lt gy sme s&p, f
gr, sb rd- sb ang, fr srt, fri, mod por,
arg cmt
25% SS: lt gy - wh, sme s&p, f gr,
sbrd-sbang, mod srt

MD: 1,383 '
TVD: 1,382.87 '
Inclination: 0.84 °
Azimuth: 281.57 °
VS: -2.45 '



60% SHY SLTST: lt gy, sft-fri, sb
blky - blky, aren - slty tex
20% SHY SS: wh - lt gy sme s&p, f
gr, sb rd- sb ang, fr srt, fri, mod por,
arg cnt
20% SS: lt gy - wh, sme s&p, f gr,
sbrd-sbang, mod srt

MD: 1,476 '
TVD: 1,475.86 '
Inclination: 0.57 °
Azimuth: 289.46 °
VS: -1.4 '



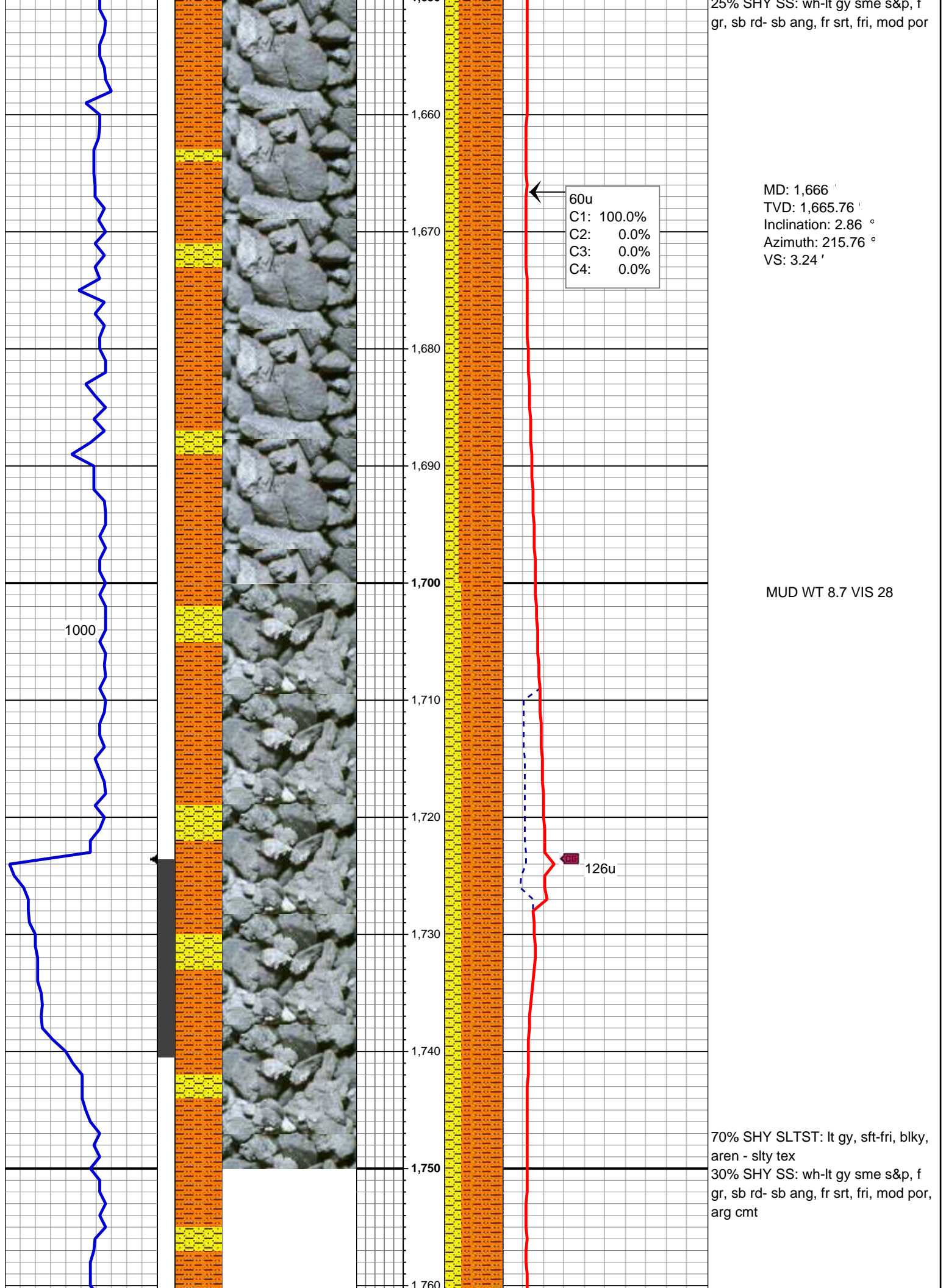
50% SHY SLTST: lt gy, sft-fri, sb
blky - blky, aren - slty tex
25% SHY SS: wh - lt gy sme s&p, f
gr, sb rd- sb ang, fr srt, fri, mod por,
arg cmt
25% SS: lt gy - wh, sme s&p, f gr,
sbrd-sbang, mod srt

MD: 1,571 '
TVD: 1,570.84 '
Inclination: 1.85 °
Azimuth: 229.72 °
VS: 0.32 '

61u

138u

75% SHY SLTST: lt gy, sft-fri, sb
blky - blky, aren - slty tex
25% SHY SS: wh - lt gy sme s&p, f
gr, sb rd- sb ang, fr srt, fri, mod por,
arg cmt
25% SS: lt gy - wh, sme s&p, f gr,
sbrd-sbang, mod srt

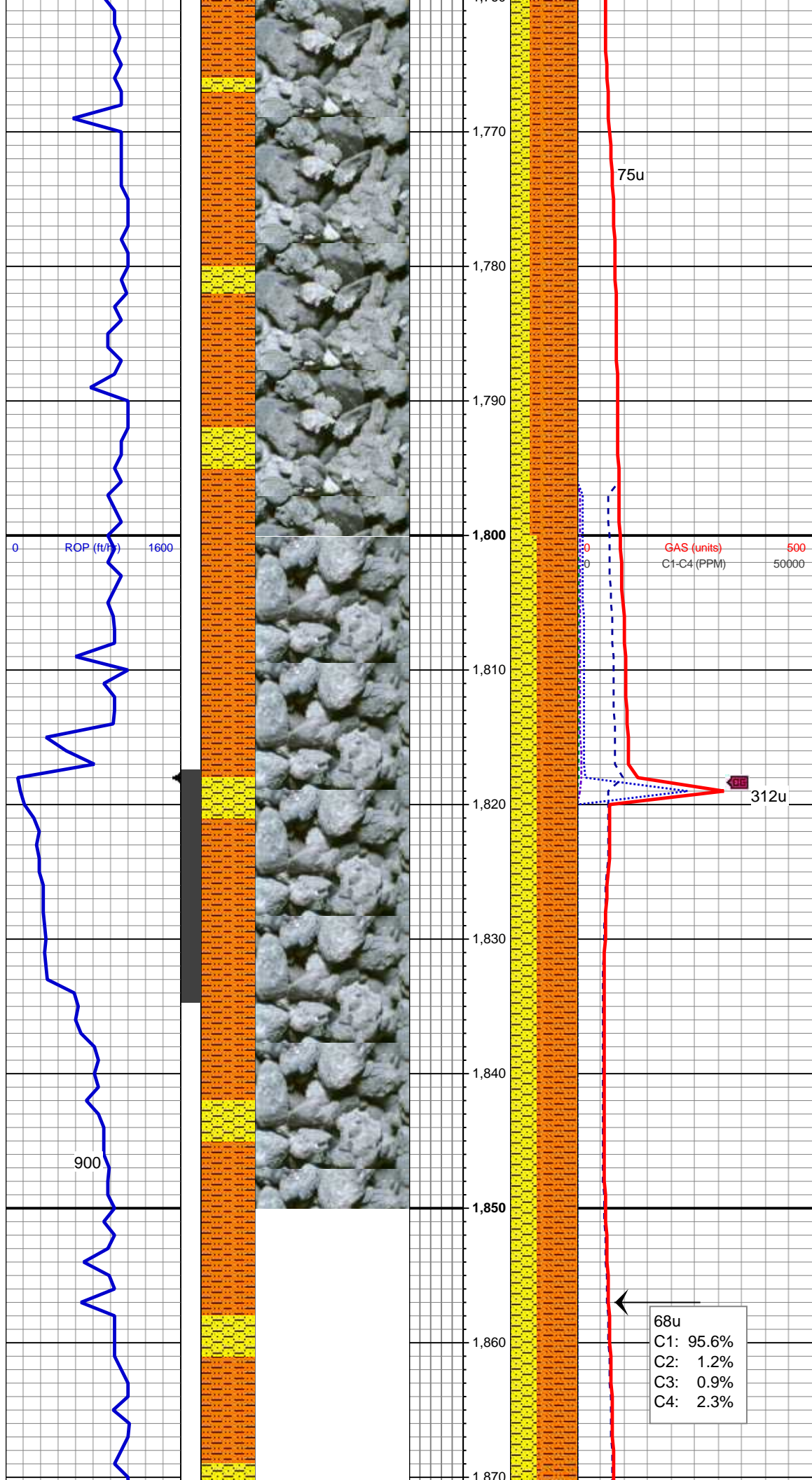


MD: 1,666 '
TVD: 1,665.76 '
Inclination: 2.86 °
Azimuth: 215.76 °
VS: 3.24 '

MUD WT 8.7 VIS 28

60u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%

126u



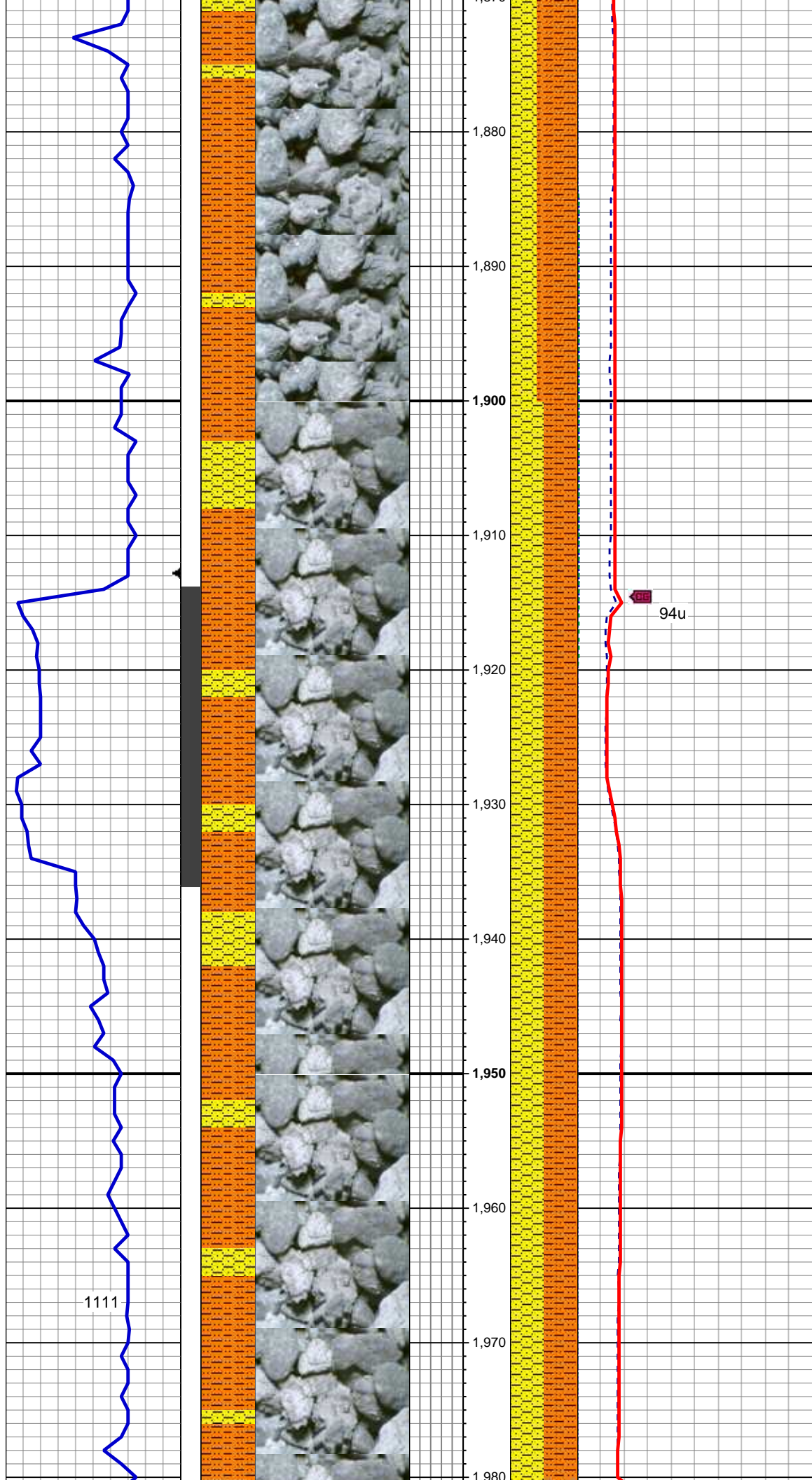
MD: 1,760 '
TVD: 1,759.59 '
Inclination: 4.13 °
Azimuth: 199.44 °
VS: 6.39 '

60% SHY SLTST: lt gy, sft-fri, blk, aren - slty tex
40% SHY SS: wh-lt gy sme s&p, f gr, sb rd- sb ang, fr srt, fri, mod por, arg cmt

68u
C1: 95.6%
C2: 1.2%
C3: 0.9%
C4: 2.3%

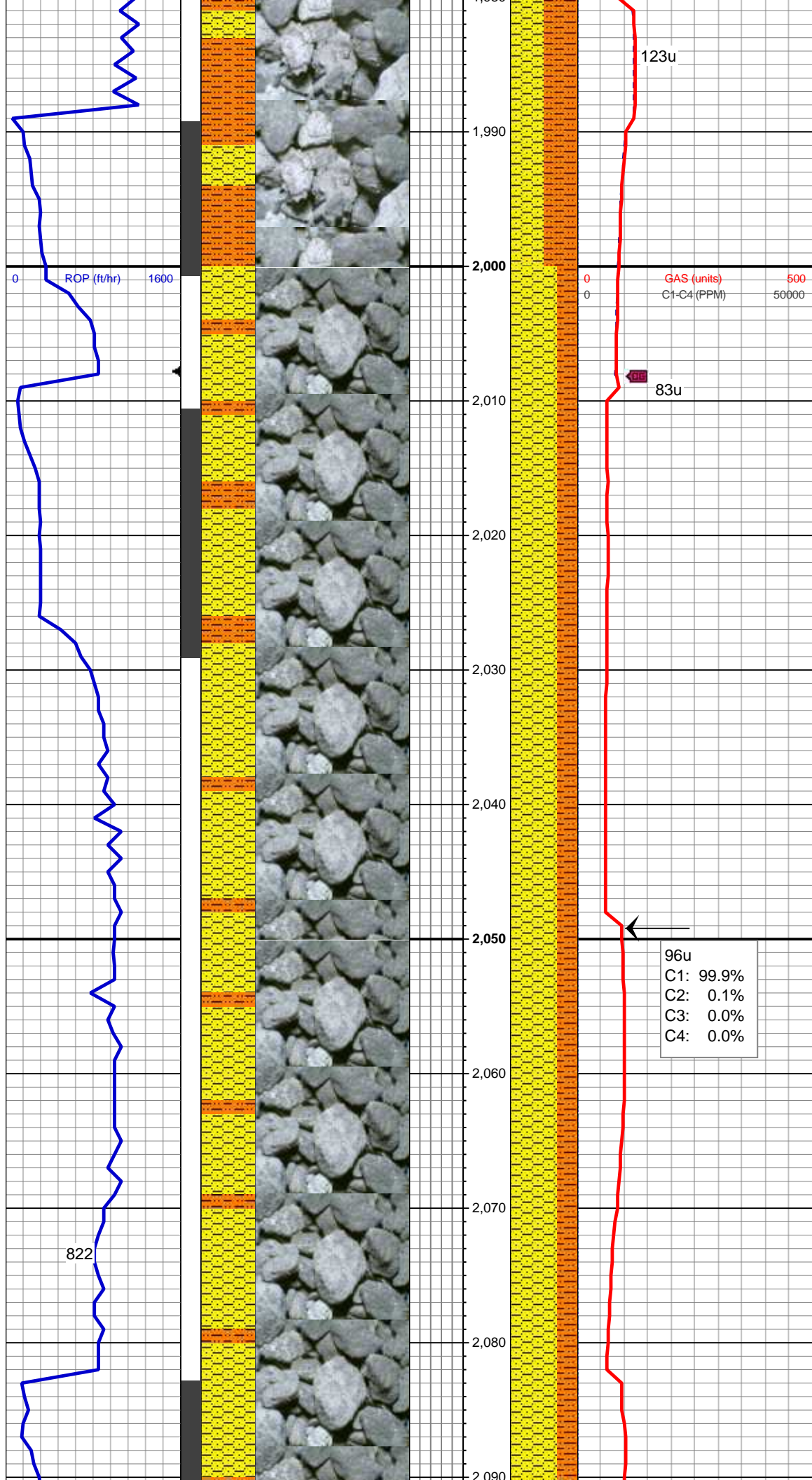
MD: 1,855 '
TVD: 1,854.25 '
Inclination: 5.59 °
Azimuth: 194.11 °
VS: 2.27 '

VS: 9.67'



50% SHY SLTST: lt gy, sft-fri, blk, y,
aren - slty tex
50% SHY SS: wh-lt gy sme s&p, f
gr, sb rd- sb ang, fr srt, fri, mod por,
arg cmt

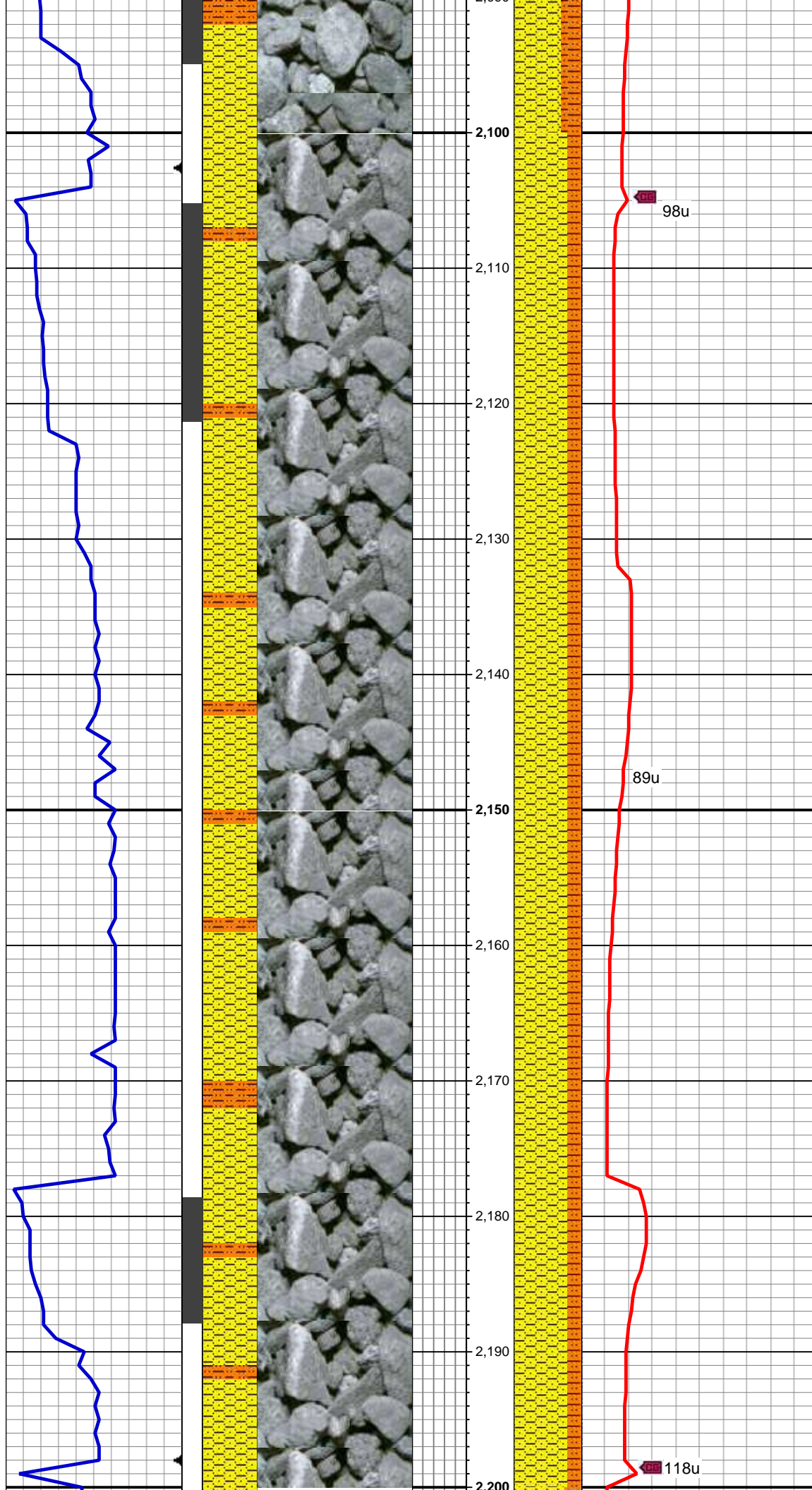
MD: 1,950 '
TVD: 1,948.6 '
Inclination: 7.75 °
Azimuth: 187.39 °
VS: 13.05 '



MD: 2,045 '
TVD: 2,042.48 '
Inclination: 9.93 °
Azimuth: 173.31 °
VS: 14.86 '

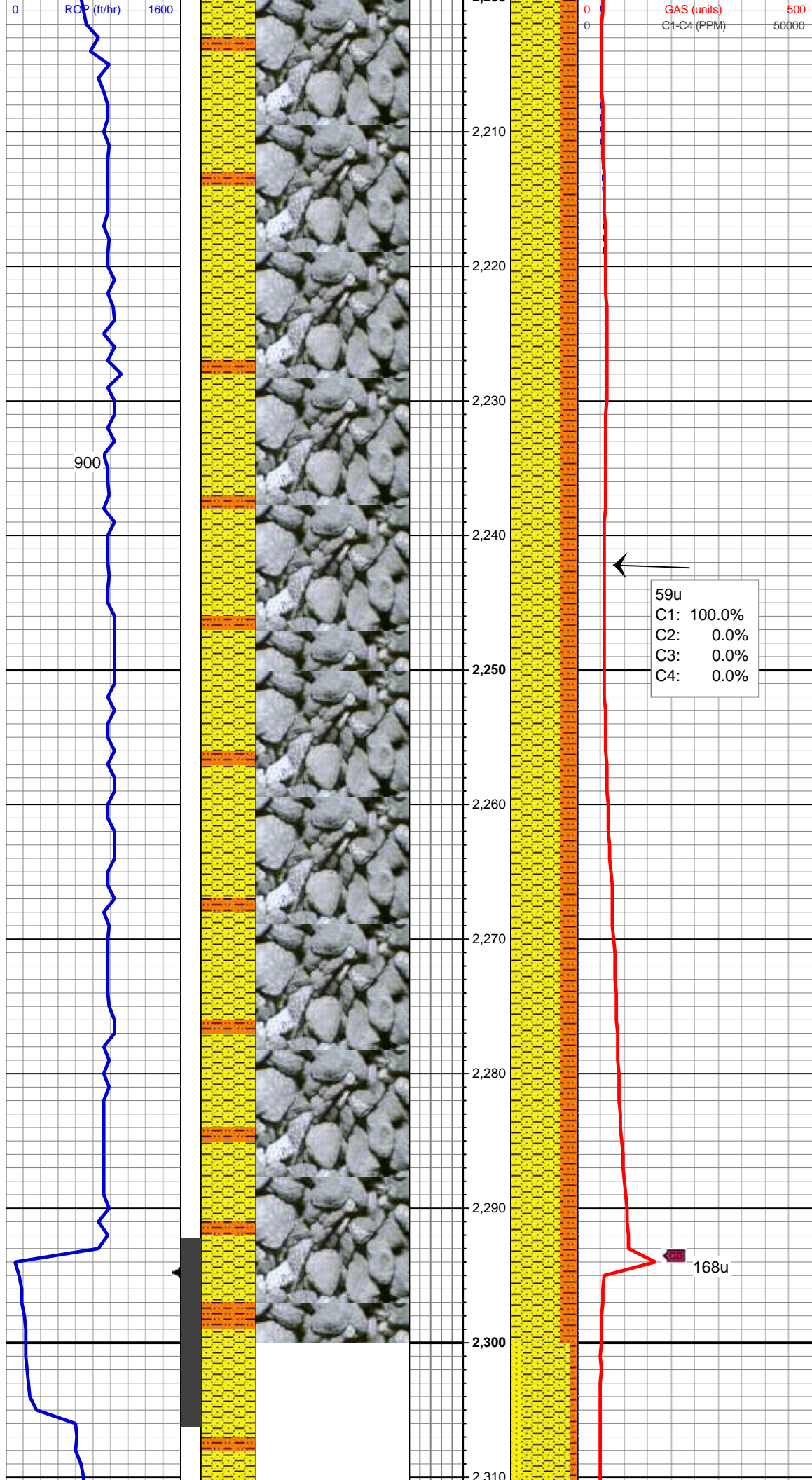
70% SHY SS: wh - lt gy sme s&p, f
gr, sb rd- sb ang, fr srt, fri, mod por,
arg cmt
30% SHY SLTST: lt gy, sft-fri, sb
blky - blky, aren - slty tex

96u
C1: 99.9%
C2: 0.1%
C3: 0.0%
C4: 0.0%



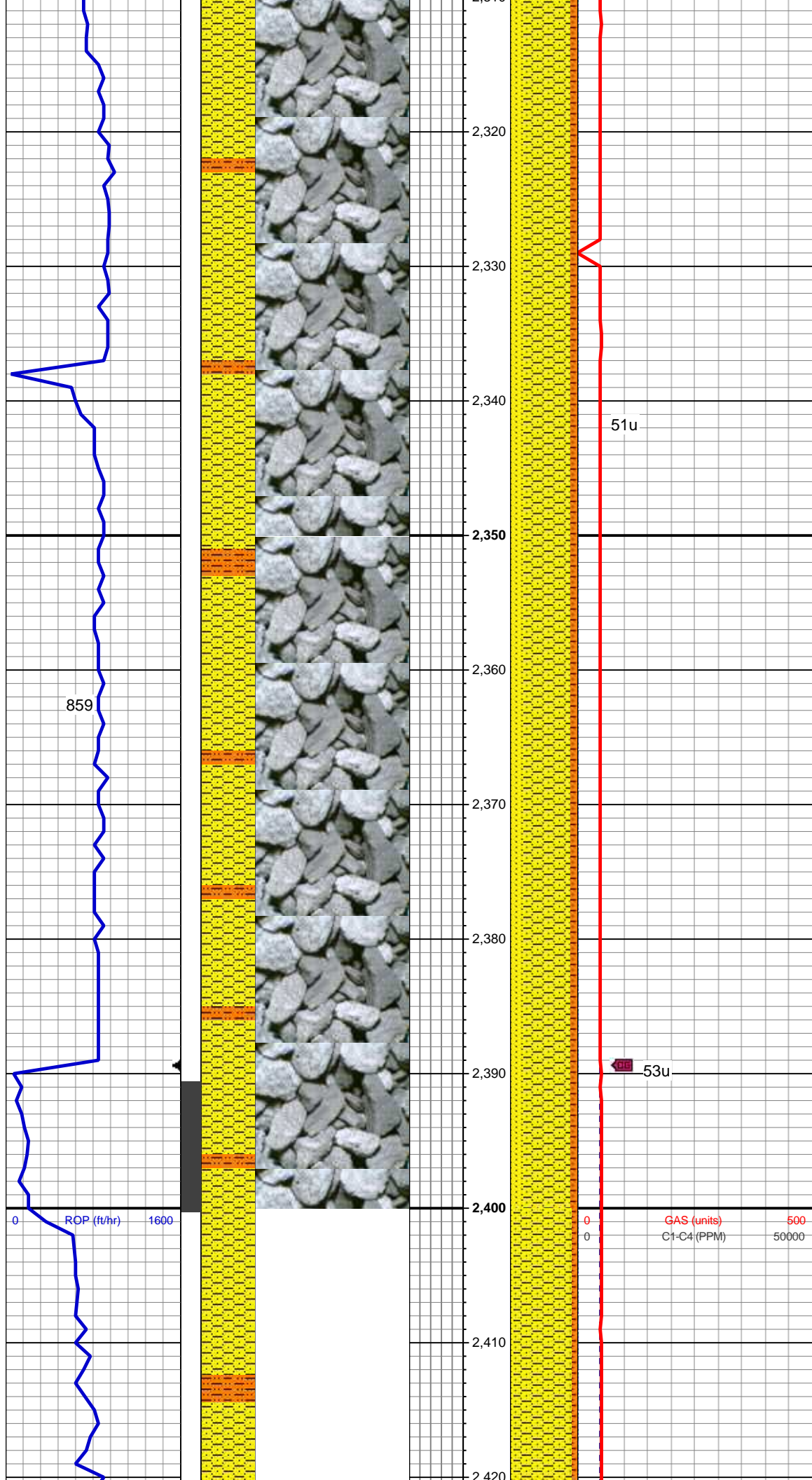
MD: 2,140 '
TVD: 2,135.7 '
Inclination: 12.27 °
Azimuth: 166.42 °
VS: 13.96 '

80% SHY SS: wh - lt gy sme s&p, f
gr, sb rd- sb ang, fr srt, fri, mod por,
arg cmt
20% SHY SLTST: lt gy, sft-fri, sb
blky - blk, aren - slty tex



MD: 2,235 '
TVD: 2,228.32 '
Inclination: 13.43 °
Azimuth: 163.18 °
VS: 11.17 '

75% SHY SS: wh - lt gy sme s&p, f
gr, sb rd- sb ang, fr srt, fri, mod por,
arg cmt
25% SHY SLTST: lt gy, sft-fri, sb
blky - blky, aren - slty tex



MD: 2,330 '
TVD: 2,320.87 '
Inclination: 12.64 °
Azimuth: 168.29 °
VS: 8.69 '

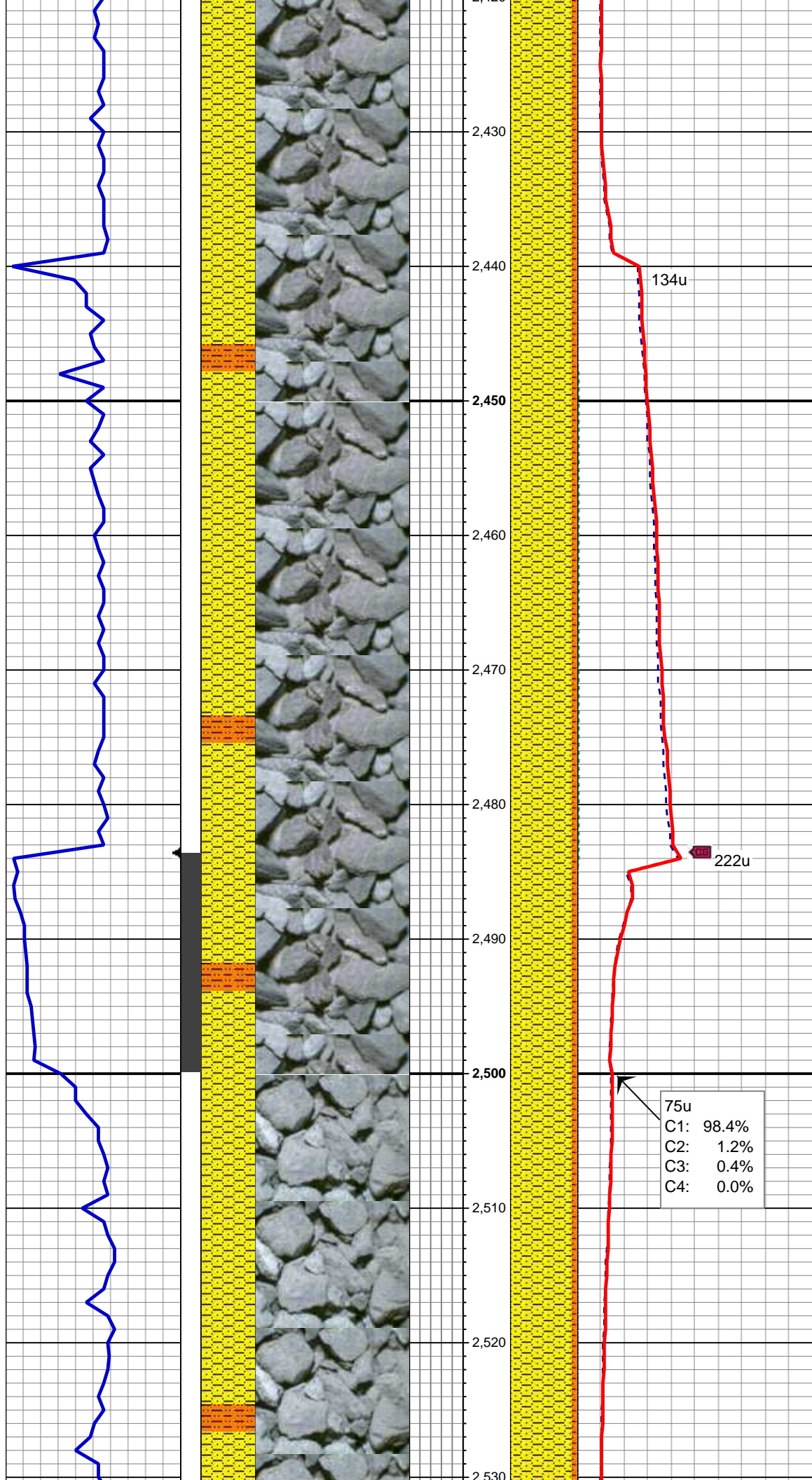
70% SHY SS: wh - lt gy sme s&p, f gr, sb rd- sb ang, fr srt, fri, mod por, arg cmt
20% SS: lt gy - wh, sme s&p, f gr, sbrd-sbang, mod srt, fri, p por, arg cmt
10% SHY SLTST: lt gy, sft-fri, sb blkly - blkly, aren - slty tex

51u

53u

GAS (units) 500
C1-C4 (PPM) 50000

MD: 2,425 '
TVD: 2,413.83 '



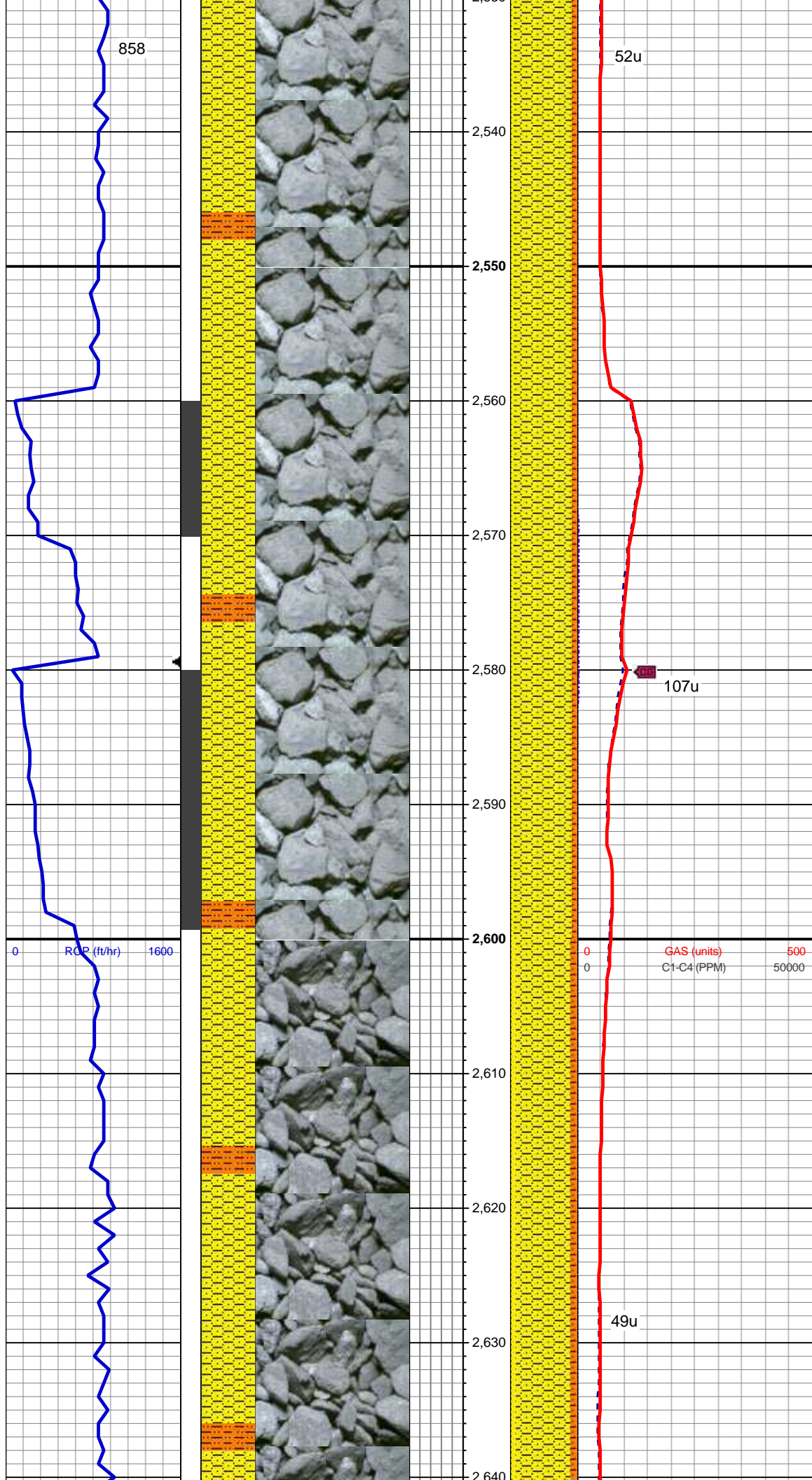
Inclination: 11.15 °
Azimuth: 171.98 °
VS: 7.91 '

134u

222u

85% SHY SS: wh - lt gy, s&p ip, v f-f
gr, sb rd- sb ang, mod srt, fri, mod
por, arg cmt
5% SS: lt gy - wh, s&p, f gr, sb rd-sb
ang, p-mod srt, fri, p por, arg cmt
10% SHY SLTST: lt gy, sft-fri, sb
blky-blky, aren-sltly tex

MD: 2,519 '
TVD: 2,505.97 '
Inclination: 11.71 °
Azimuth: 177.04 °
VS: 8.64 '



858

52u

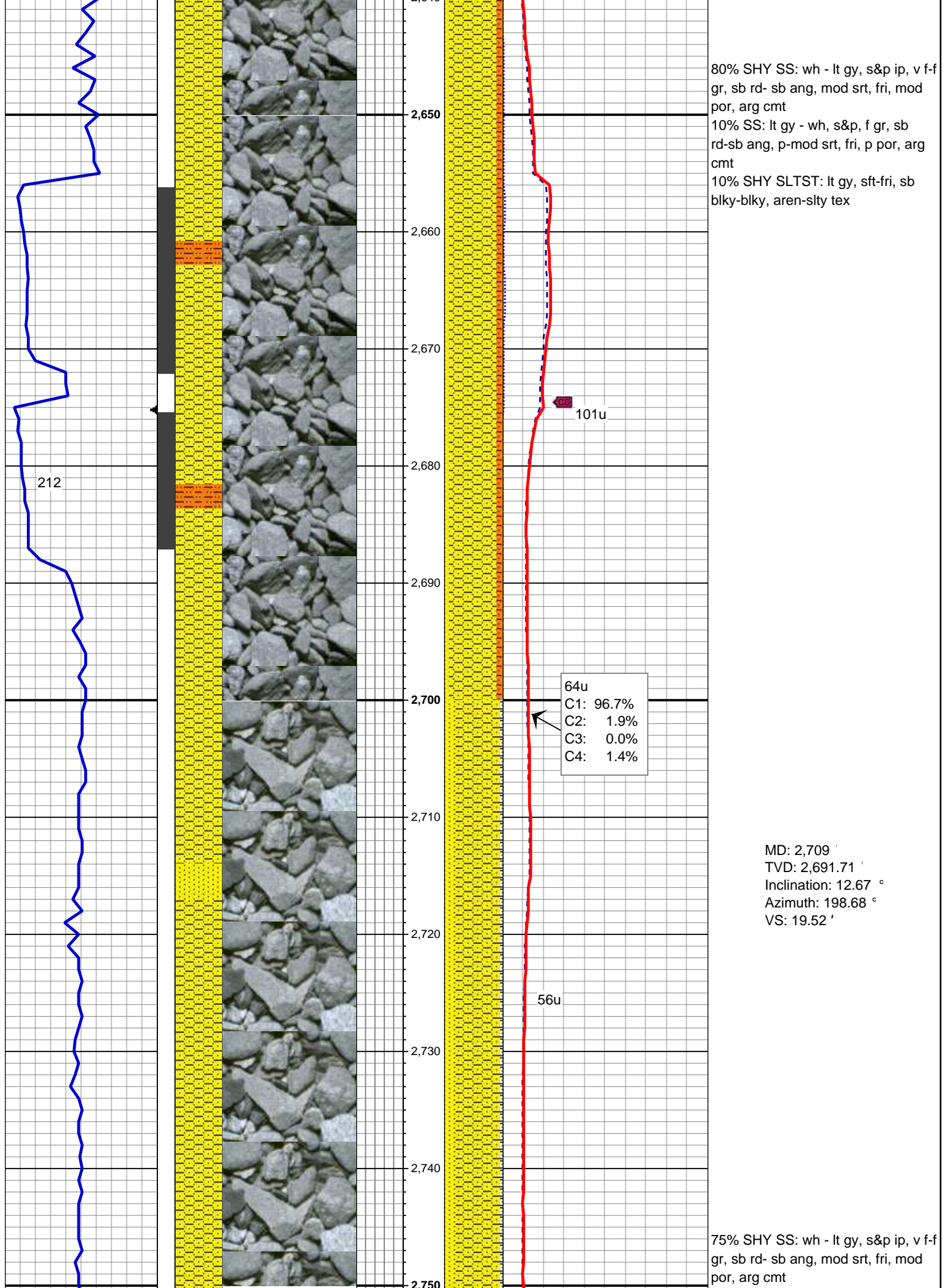
107u

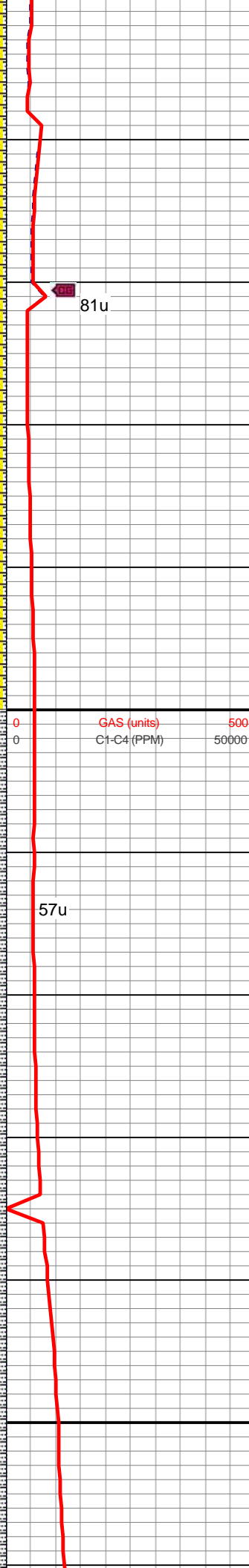
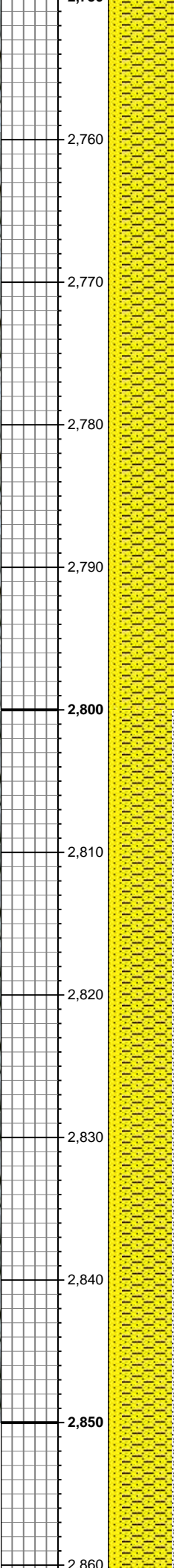
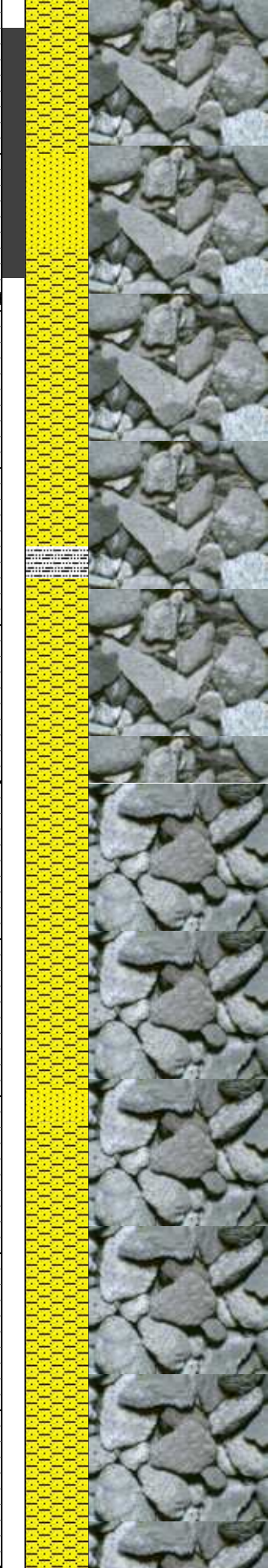
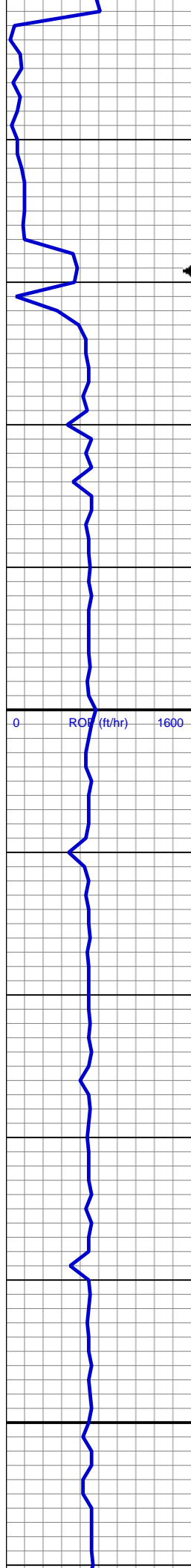
49u

85% SHY SS: wh - lt gy, s&p ip, v f-f
gr, sb rd- sb ang, mod srt, fri, mod
por, arg cmt
5% SS: lt gy - wh, s&p, f gr, sb rd-sb
ang, p-mod srt, fri, p por, arg cmt
10% SHY SLTST: lt gy, sft-fri, sb
blky-blky, aren-sltly tex

MUD WT 8.9 VIS 28

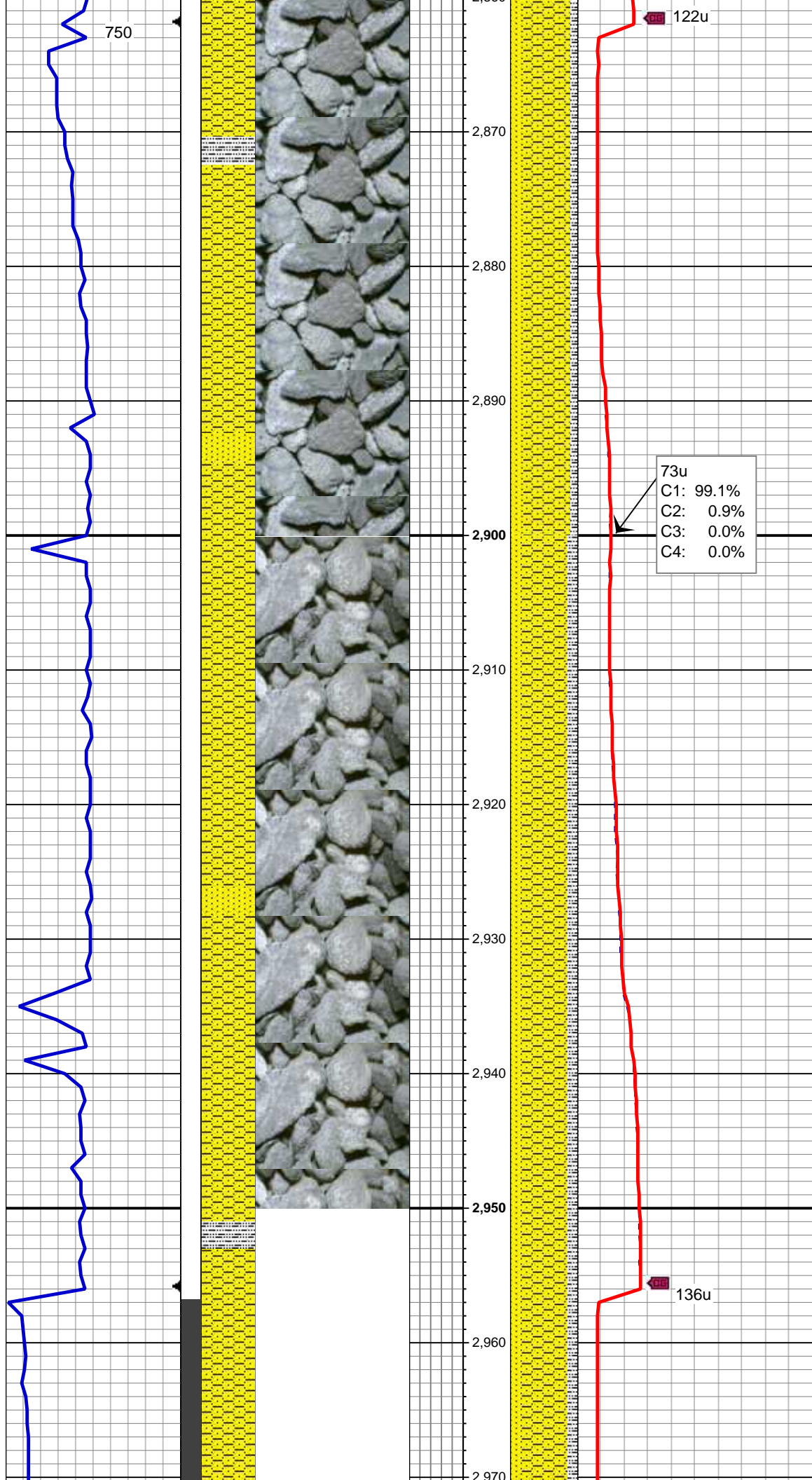
MD: 2,614 '
TVD: 2,598.92 '
Inclination: 12.17 °
Azimuth: 188.14 °
VS: 12.16 '





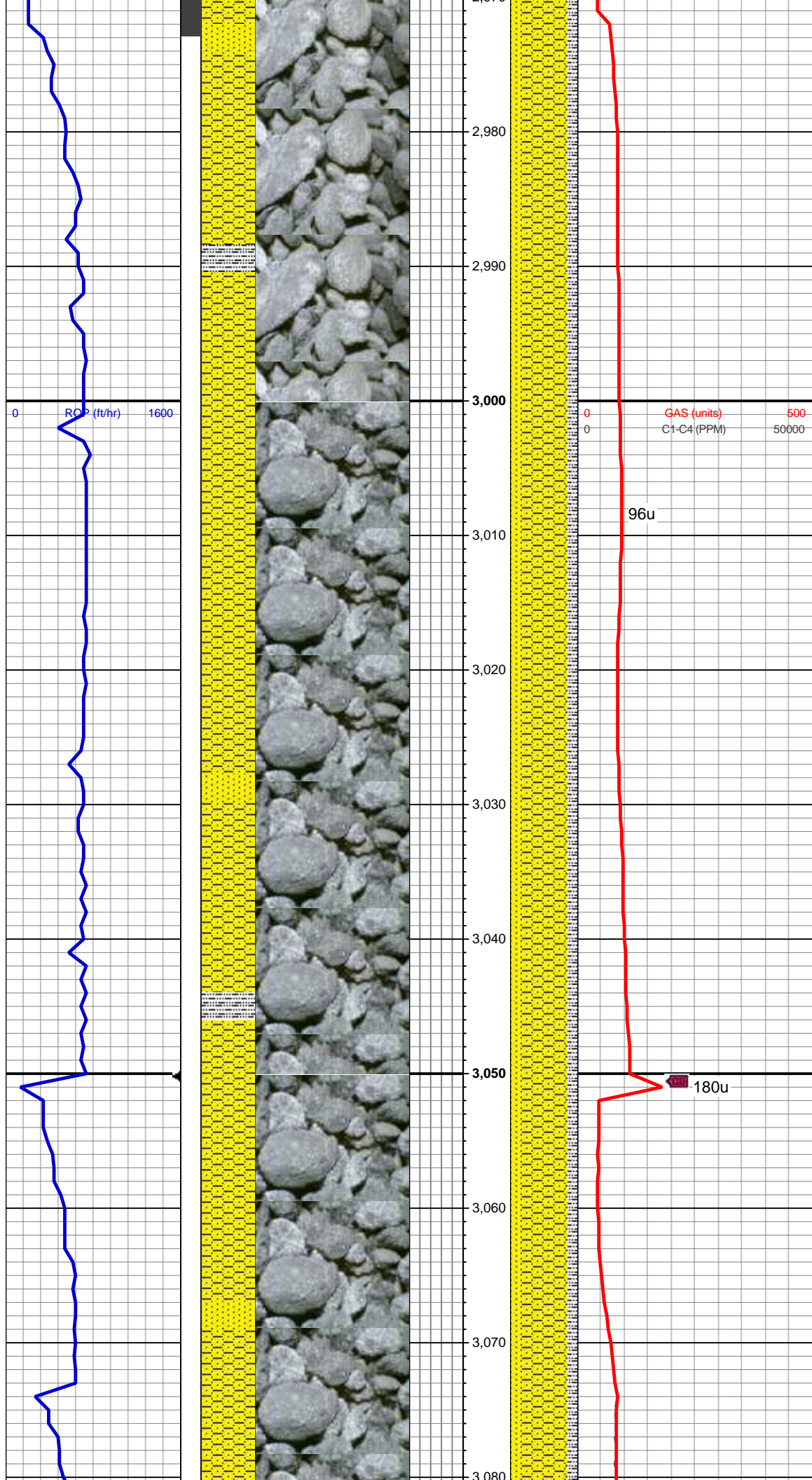
20% SS: lt gy - wh, s&p, f gr, sb
rd-sb ang, p-mod srt, fri, p por, arg
cmt
5% SLTY SH: med-dk gy, occ gy
brn, frm-sl sft, rthy-sl slty

70% SHY SS: wh - lt gy, s&p ip, v f-f
gr, sb rd- sb ang, mod srt, fri, mod
por, arg cmt
20% SS: lt gy - wh, s&p, f gr, sb
rd-sb ang, p-mod srt, fri, p por, arg
cmt
10% SLTY SH: med-dk gy, occ gy
brn, frm-sl sft, rthy-sl slty



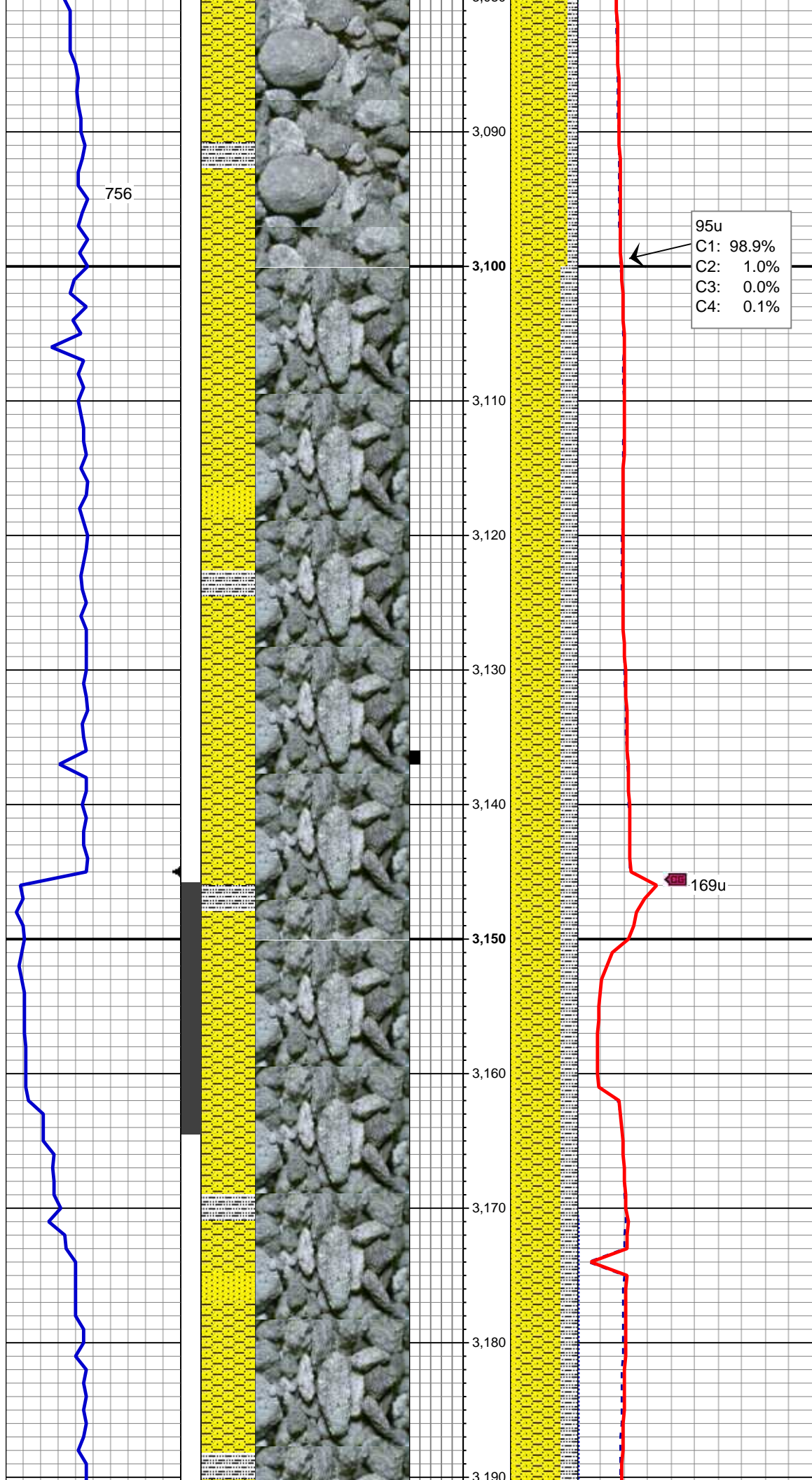
MD: 2,899 '
TVD: 2,877.42 '
Inclination: 11.53 °
Azimuth: 198.61 °
VS: 37.44 '

70% SHY SS: wh - lt gy, s&p ip, v f-f
gr, sb rd- sb ang, mod srt, fri, mod
por, arg cmt
15% SS: lt gy - wh, s&p, f gr, sb
rd-sb ang, p-mod srt, fri, p por, arg
cmt
15% SLTY SH: med-dk gy, occ gy
brn, frm-sl sft, rthy-sl slty



MD: 2,994 '
TVD: 2,970.25 '
Inclination: 13.02 °
Azimuth: 198.08 °
VS: 46.29 '

70% SHY SS: wh - lt gy, s&p ip, v f-f
gr, sb rd- sb ang, mod srt, fri, mod
por, arg cmt
15% SS: lt gy - wh, s&p, f gr, sb
rd-sb ang, p-mod srt, fri, p por, arg
cmt
15% SLTY SH: med-dk gy, occ gy
brn, frm-sl sft, rthy-sl slty

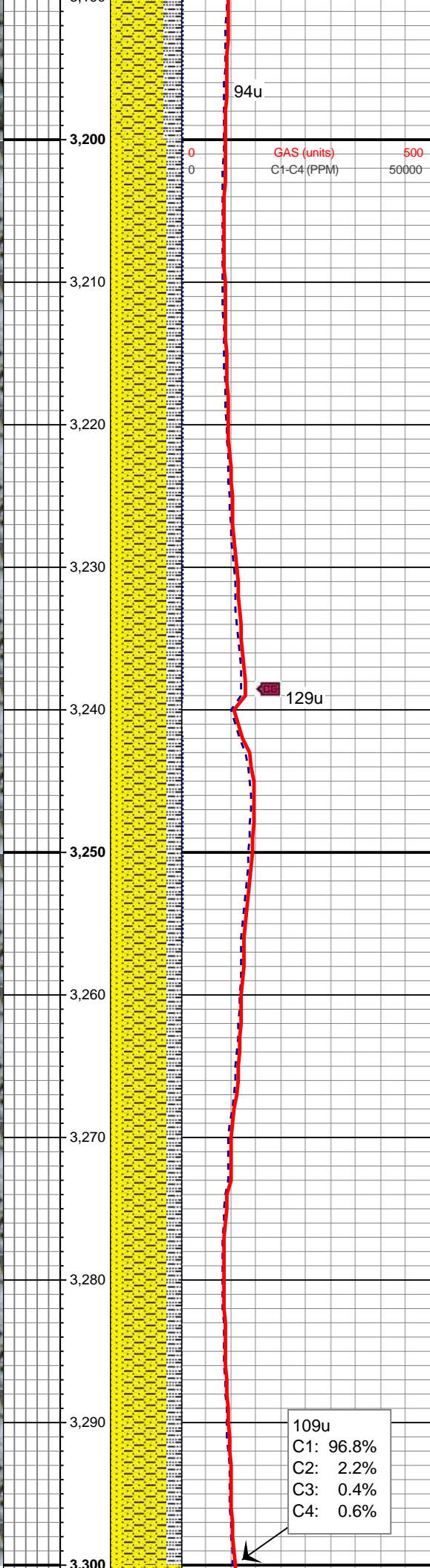
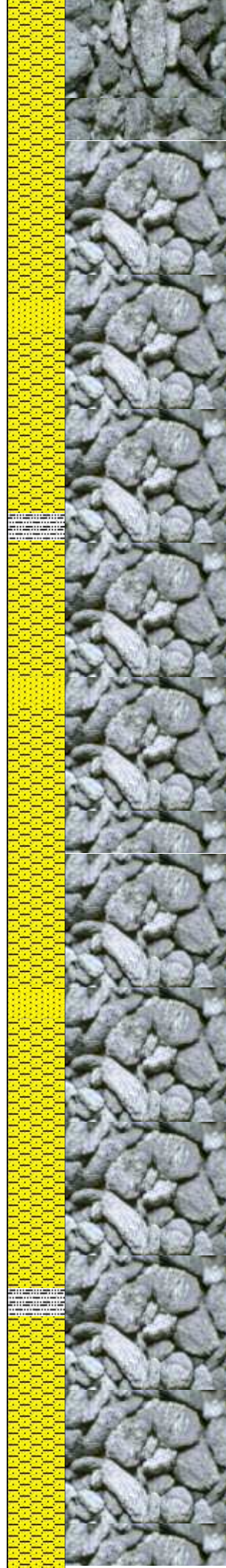
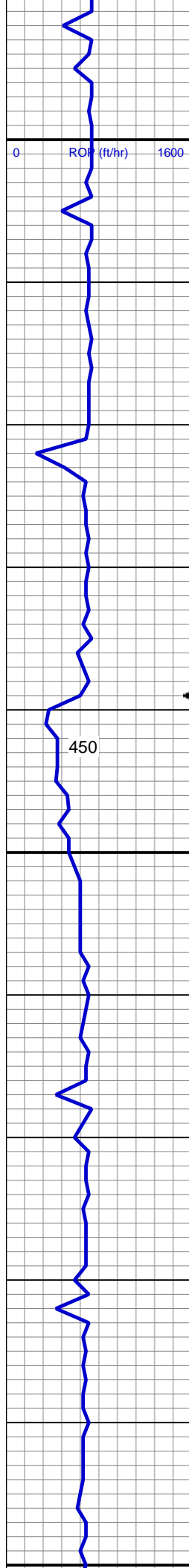


MD: 3,089 '
TVD: 3,062.98 '
Inclination: 12.06 °
Azimuth: 195.28 °
VS: 54.81 '

95u
C1: 98.9%
C2: 1.0%
C3: 0.0%
C4: 0.1%

65% SHY SS: wh - lt gy, s&p ip, v f-f
gr, sb rd- sb ang, mod srt, fri, mod
por, arg cmt
10% SS: lt gy - wh, s&p, f gr, sb
rd-sb ang, p-mod srt, fri, p por, arg
cmt
25% SLTY SH: med-dk gy, occ gy
brn, frm-sl sft, rthy-sl slty

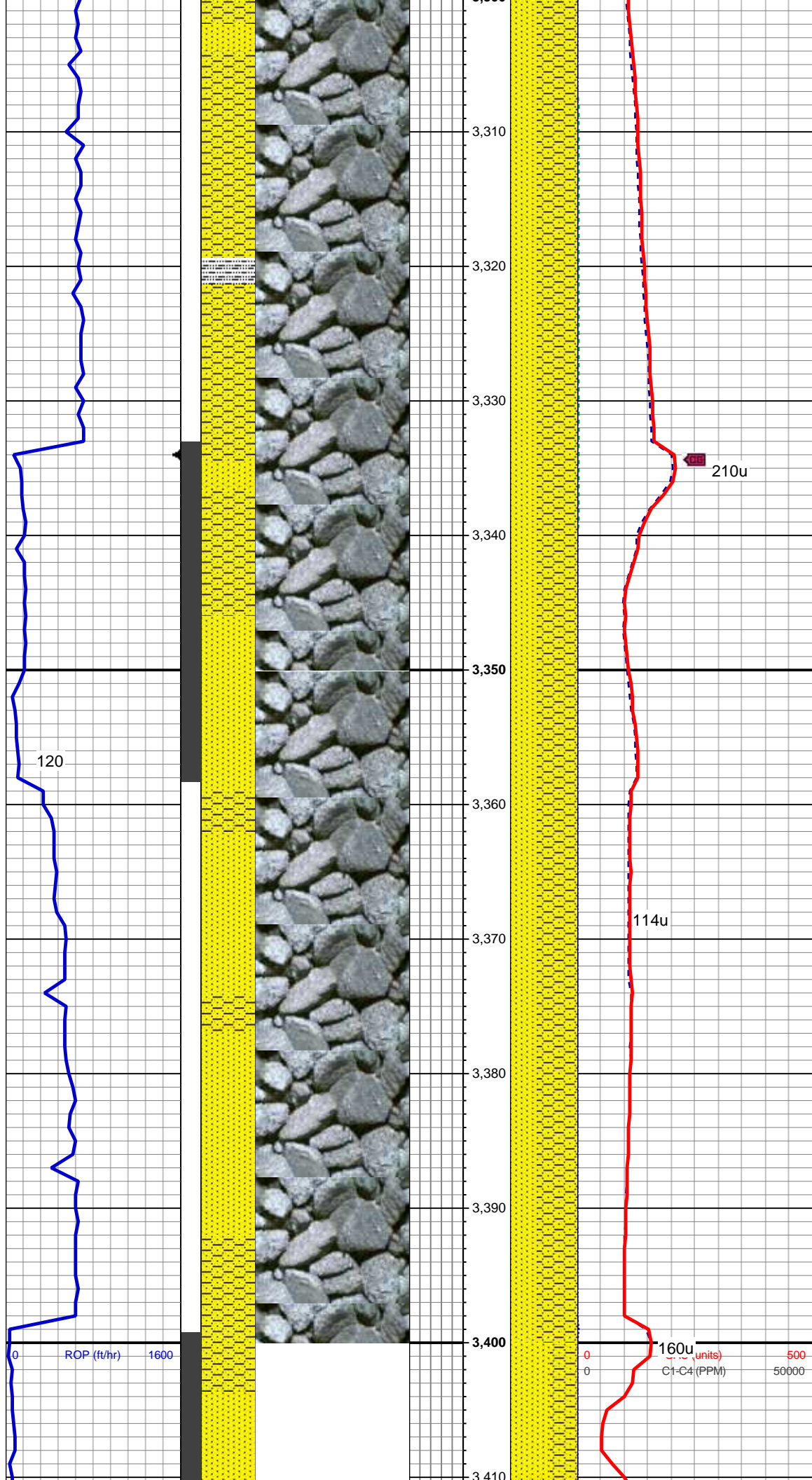
MD: 3,183 '
TVD: 3,154.79 '
Inclination: 12.74 °
Azimuth: 192.95 °
VS: 62.3 '



60% SHY SS: wh - lt gy, s&p ip, v f-f
gr, sb rd- sb ang, mod srt, fri, mod
por, arg cmt
20% SS: lt gy - wh, s&p, f gr, sb
rd-sb ang, p-mod srt, fri, p por, arg
cmt
20% SLTY SH: med-dk gy, occ gy
brn, frm-sl sft, rthy-sl slty

MD: 3,278 '
TVD: 3,247.7 '
Inclination: 11.3 °
Azimuth: 193.23 °
VS: 69.31 '

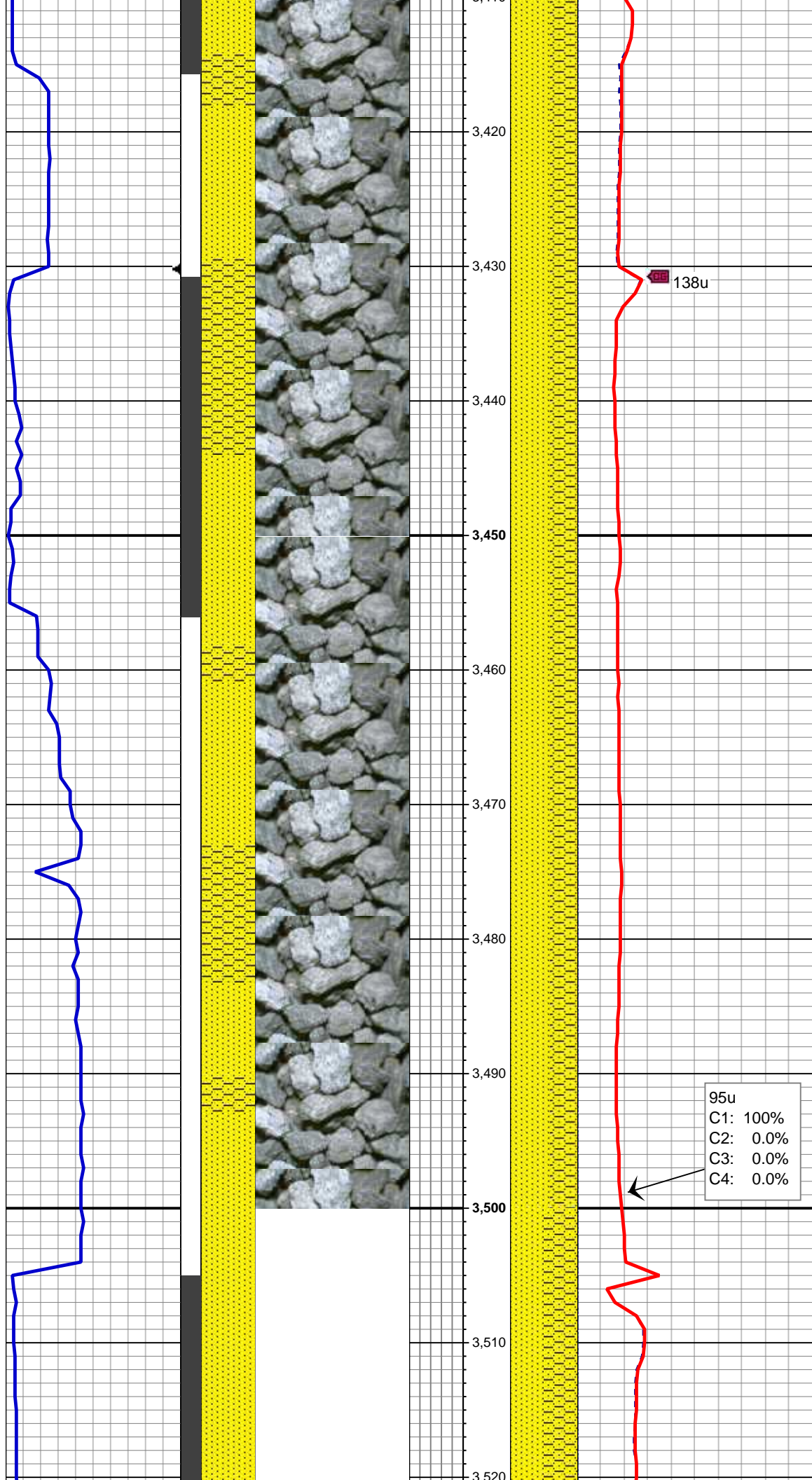
109u
C1: 96.8%
C2: 2.2%
C3: 0.4%
C4: 0.6%



60% SHY SS: wh-lt gy, s&p ip, v f-f
gr, sb rd-sb ang, mod srt, fri, mod
por, arg cmt
40% SS: lt gy-wh, clr-trnsl, s&p, f gr,
sb rd-sb ang, p srt, fri, p por, arg
cmt

MD: 3,373 '
TVD: 3,341.04 '
Inclination: 10.17 °
Azimuth: 193.29 °
VS: 75.63 '

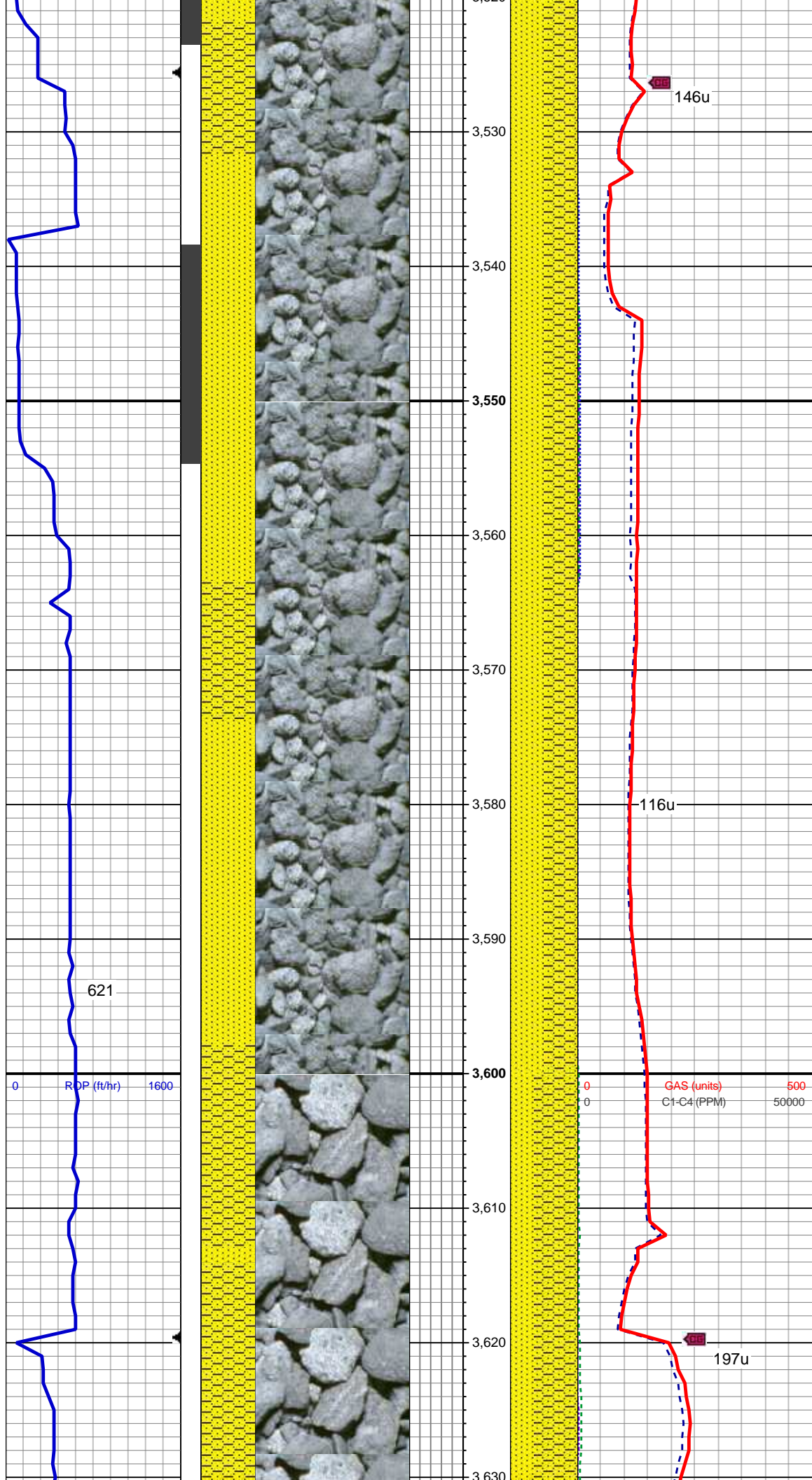
MUD WT 8.8 VIS 28



60% SS: lt gy-wh, clr-trnsl, s&p, f gr,
sb rd-sb ang, p srt, fri, p por, arg
cmt
40% SHY SS: wh-lt gy, s&p ip, v f-f
gr, sb rd-sb ang, mod srt, fri, mod
por, arg cmt

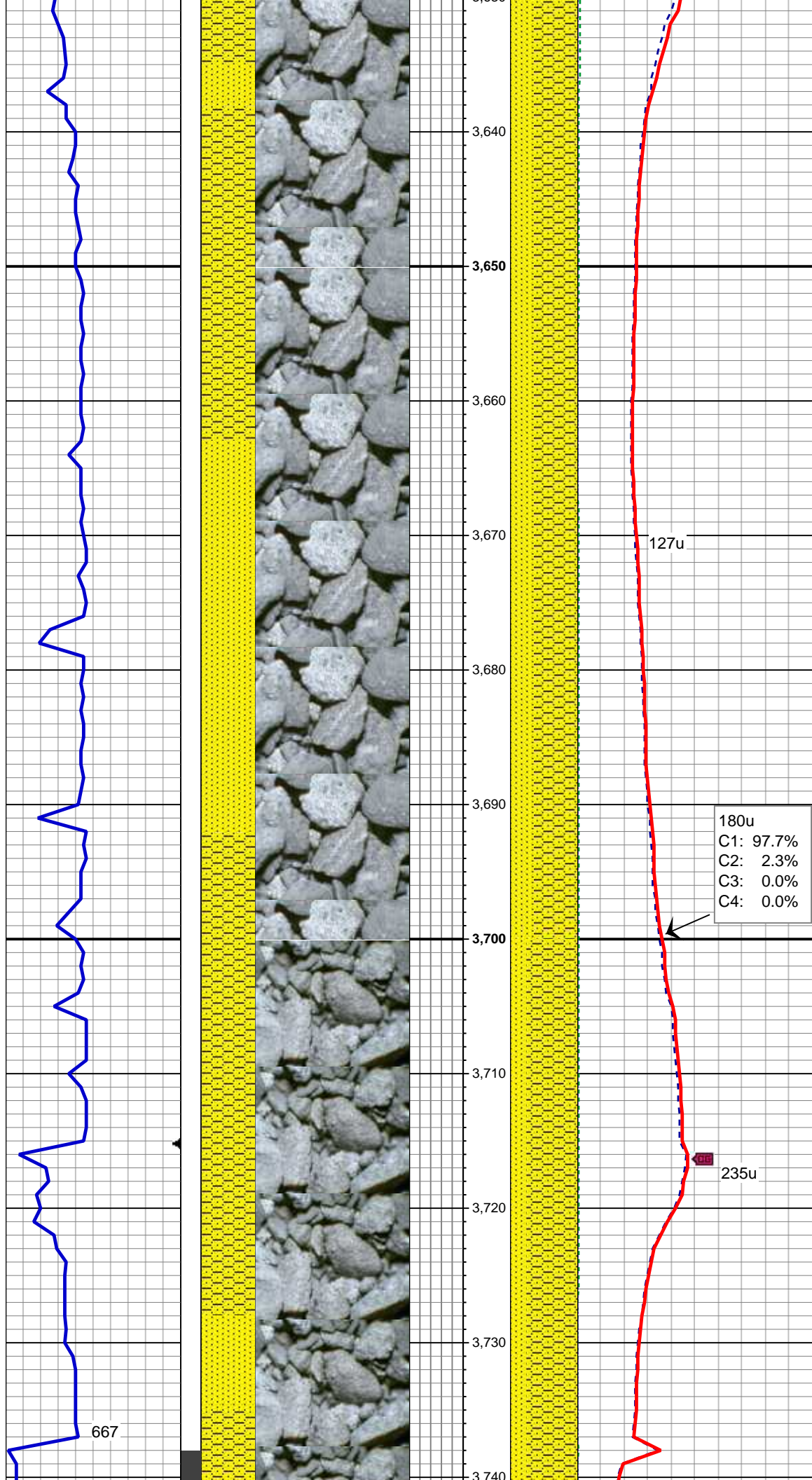
MD: 3,468 '
TVD: 3,434.33 '
Inclination: 11.63 °
Azimuth: 199.79 °
VS: 83.05 '

MUD WT 8.8 VIS 29



50% SS: lt gy-wh, clr-trnsl, s&p, f gr,
sb rd-sb ang, p srt, fri, p por, arg
cmt
50% SHY SS: wh-lt gy, s&p ip, v f-f
gr, sb rd-sb ang, mod srt, fri, mod
por, arg cmt

MD: 3,562 '
TVD: 3,526.03 '
Inclination: 13.79 °
Azimuth: 191.21 °
VS: 91.05 '



65% SHY SS: wh-lt gy, s&p ip, v f-f
gr, sb rd-sb ang, mod srt, fri, mod
por, arg cmt
35% SS: lt gy-wh, clr-trnsl, s&p, f gr,
sb rd-sb ang, p srt, fri, p por, arg
cmt

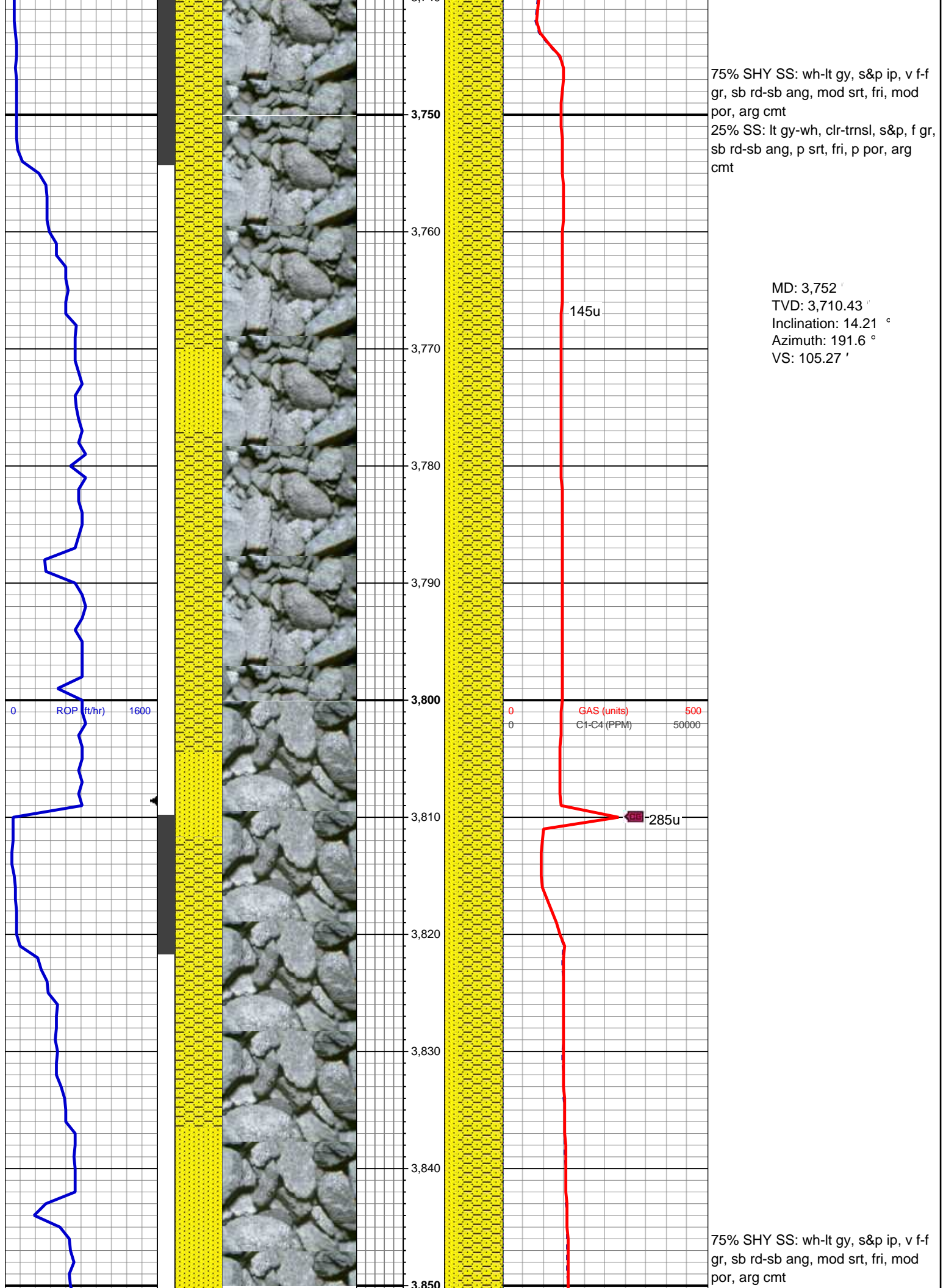
MD: 3,657 '
TVD: 3,618.27 '
Inclination: 13.88 °
Azimuth: 189.42 °
VS: 98.07 '

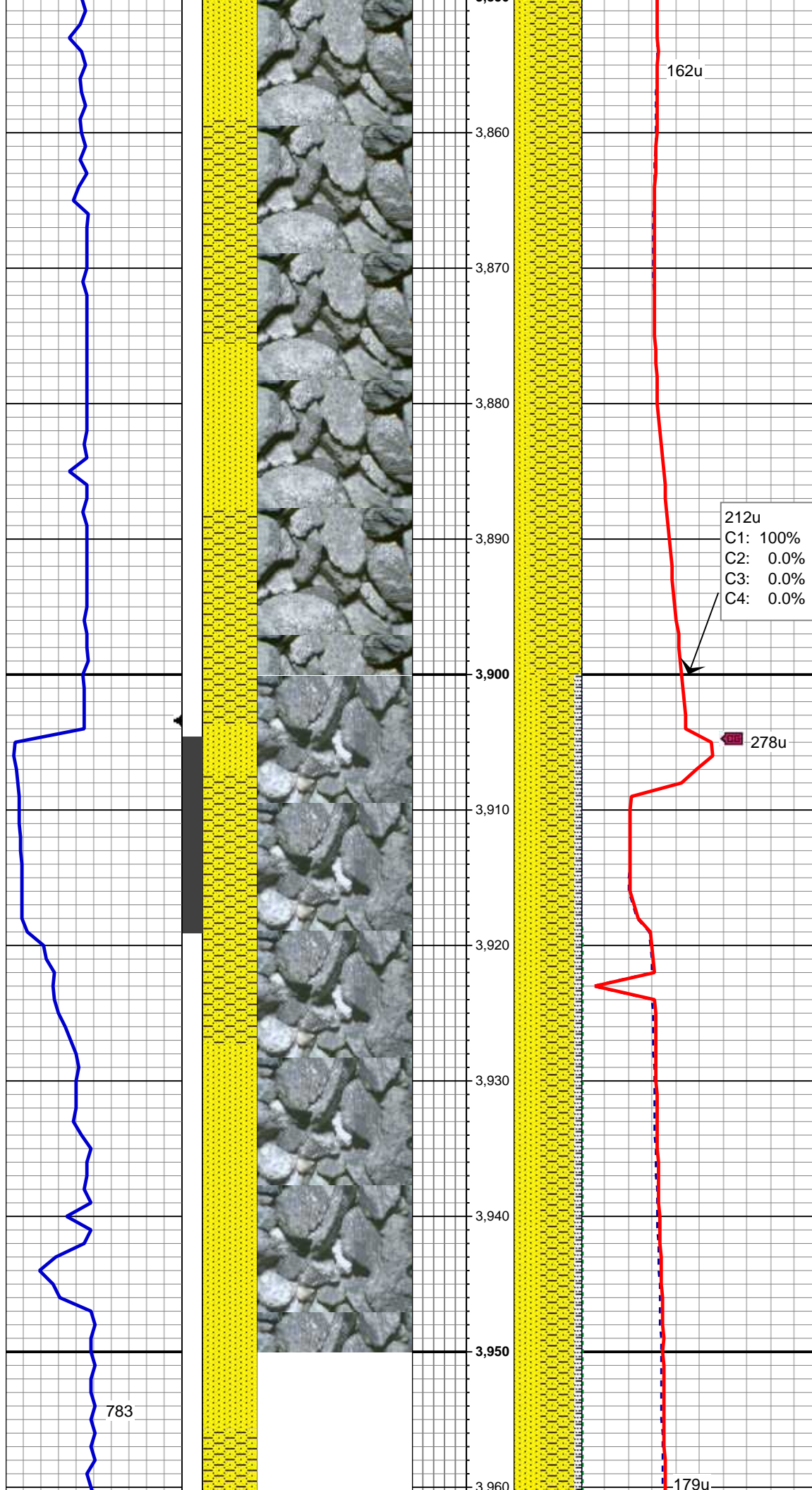
180u
C1: 97.7%
C2: 2.3%
C3: 0.0%
C4: 0.0%

MUD WT 8.8 VIS 29

235u

667



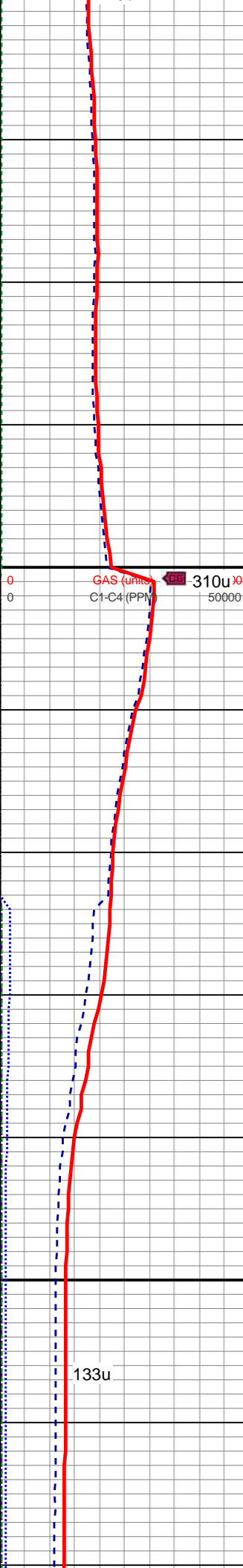
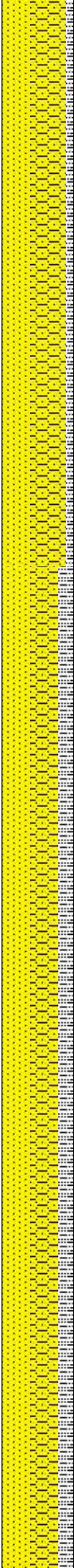
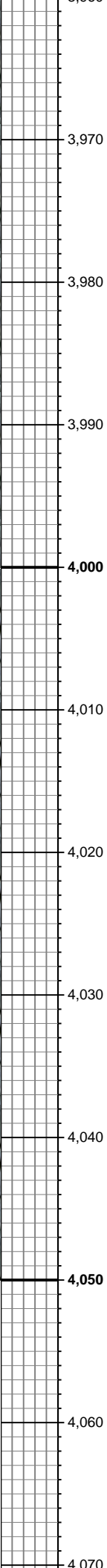
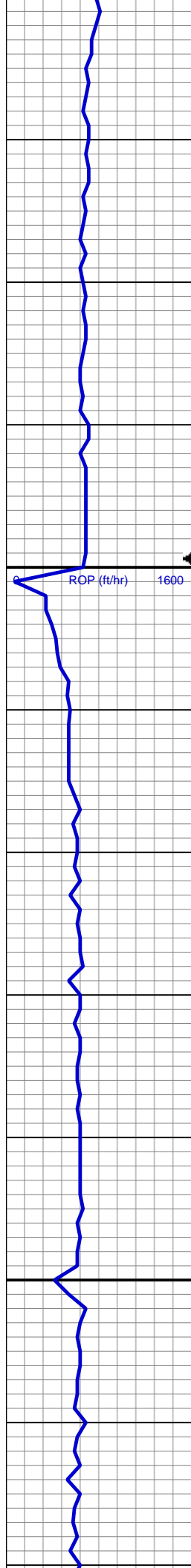


25% SS: lt gy-wh, clr-trnsl, s&p, f gr,
sb rd-sb ang, p srt, fri, p por, arg
cmt

MD: 3,847 '
TVD: 3,802.61 '
Inclination: 13.76 °
Azimuth: 194.08 °
VS: 113.31 '

212u
C1: 100%
C2: 0.0%
C3: 0.0%
C4: 0.0%

50% SHY SS: wh-lt gy, s&p ip, v f-f
gr, sb rd-sb ang, mod srt, fri, mod
por, arg cmt
40% SS: lt gy-wh, clr-trnsl, s&p, f gr,
sb rd-sb ang, p srt, fri, p por, arg
cmt
10% SLTY SH: med-dk gy, occ gy
brn, frm-sl sft, rthy-sl slty



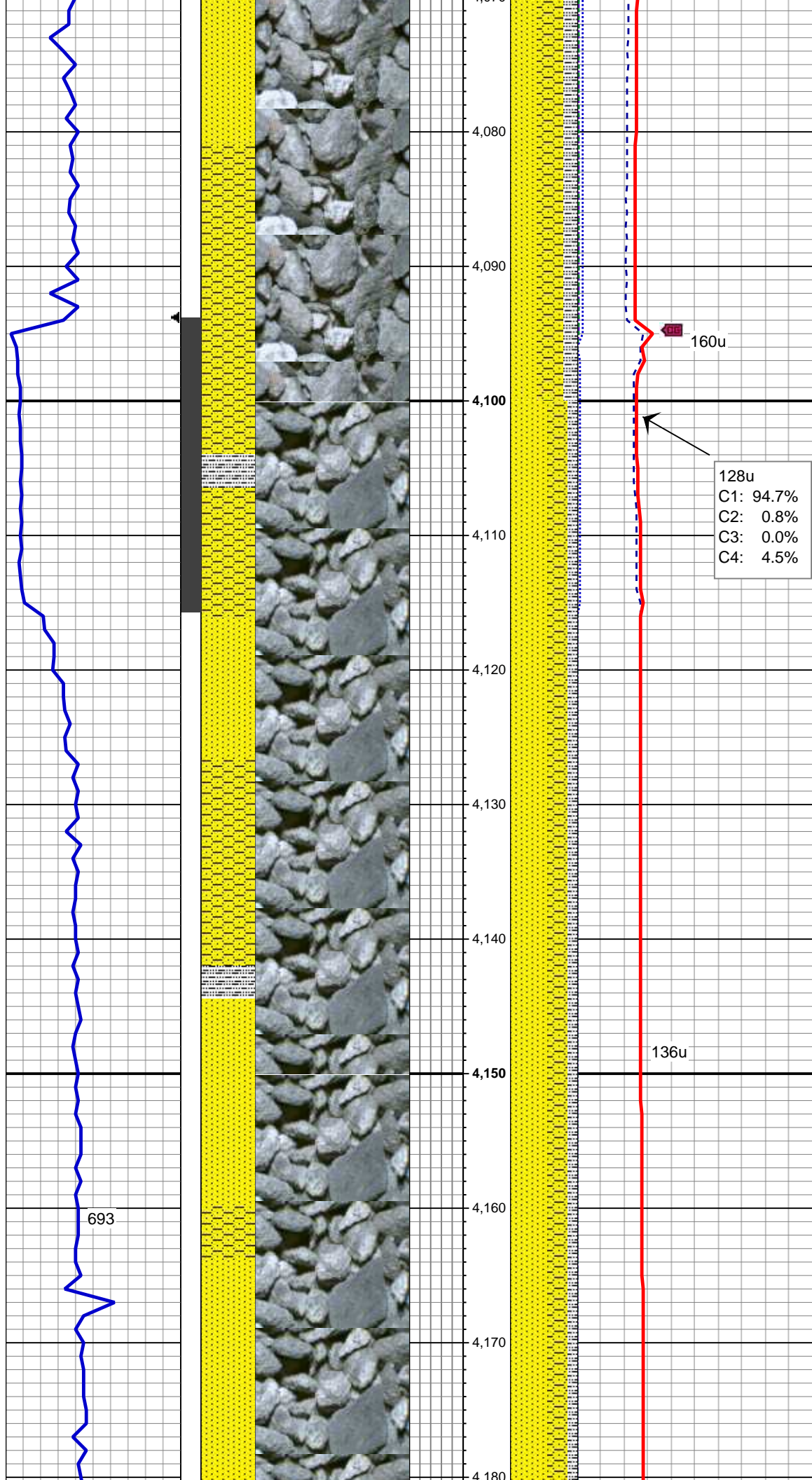
MD: 3,942 '
TVD: 3,894.98 '
Inclination: 13.3 °
Azimuth: 198.74 °
VS: 122.36 '

MD: 4,036 '
TVD: 3,986.65 '
Inclination: 12.29 °
Azimuth: 199.31 °
VS: 131.71 '

40% SHY SS: wh-lt gy, s&p ip, v f-f
gr, sb rd-sb ang, mod srt, fri, mod
por, arg cmt
40% SS: lt gy-wh, clr-trnsl, s&p, f gr,
sb rd-sb ang, p srt, fri, p por, arg
cmt
20% SLTY SH: med-dk gy, occ gy
brn, frm-sl sft, rthy-sl slty, intbd ip wi
ss

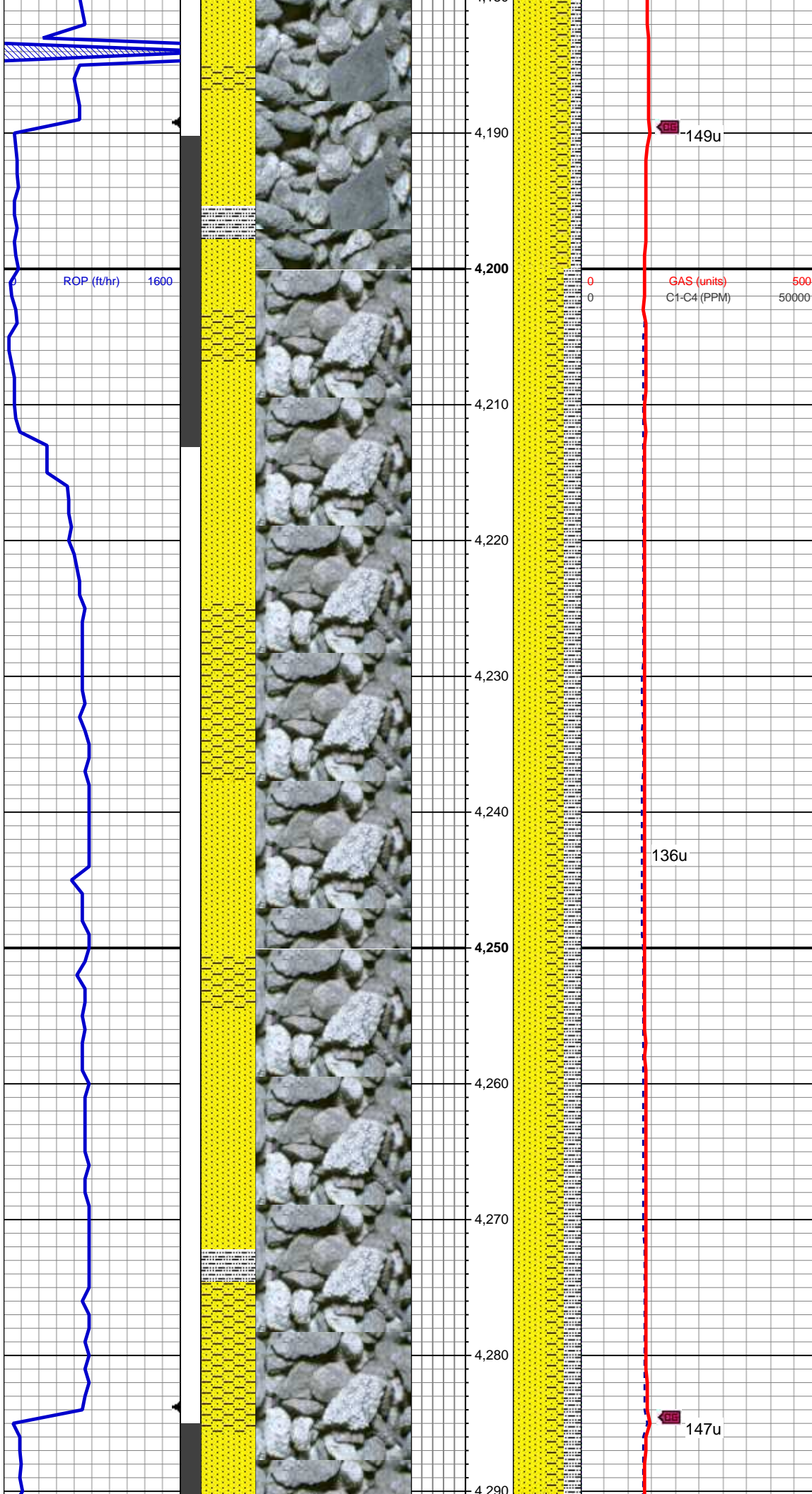
GAS (units)
C1-C4 (PPV)
310u
50000

133u



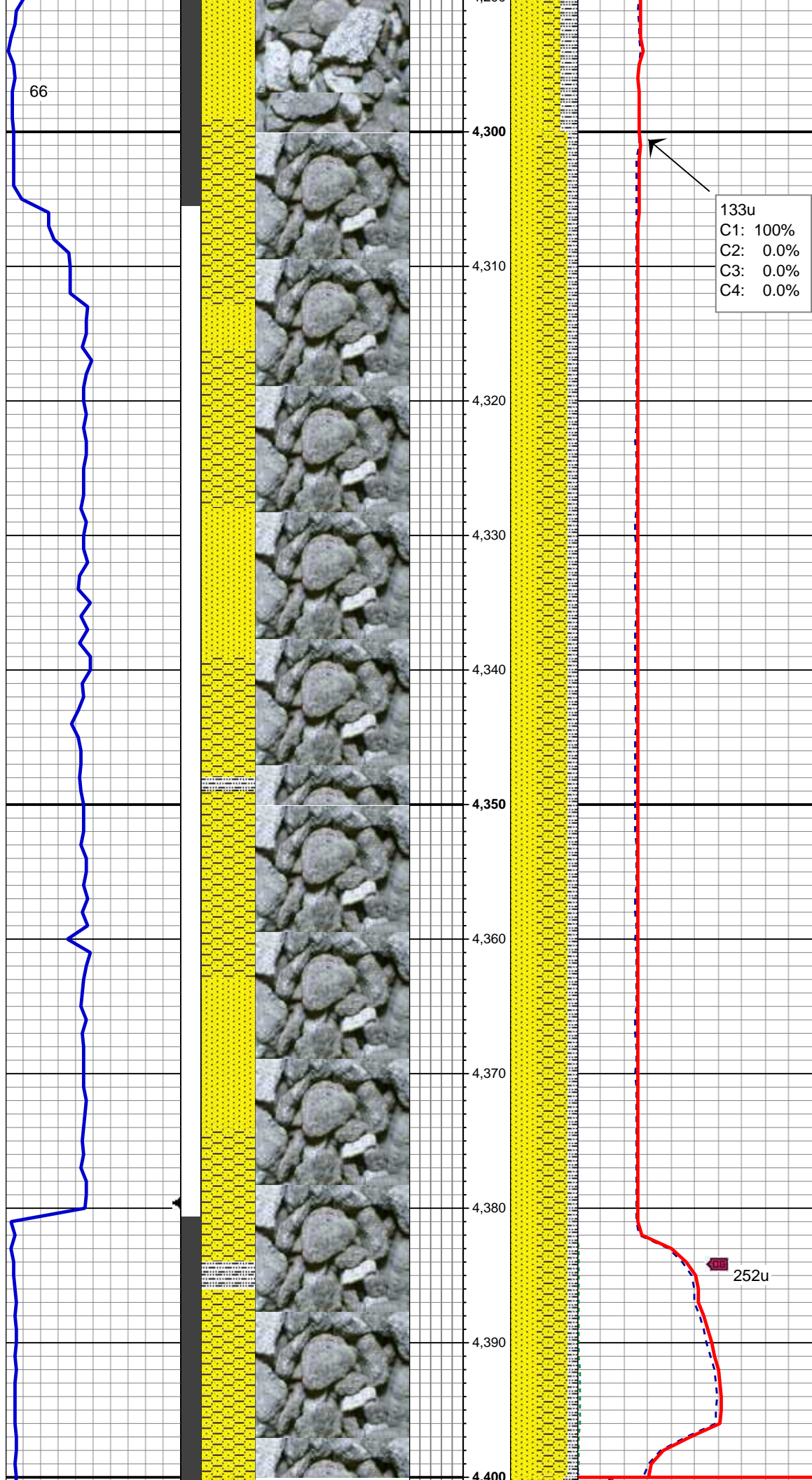
MD: 4,131 '
TVD: 4,079.36 '
Inclination: 12.9 °
Azimuth: 195.69 °
VS: 140.5 '

55% SS: lt gy-wh, clr-trnsl, s&p, f gr,
sb rd-sb ang, p srt, fri, p por, arg
cmt
30% SHY SS: wh-lt gy, s&p ip, v f-f
gr, sb rd-sb ang, mod srt, fri, mod
por, arg cmt
15% SLTY SH: med-dk gy, occ gy
brn, frm-sl sft, rthy-sl slty, intbd ip wi
ss



MD: 4,226 '
TVD: 4,172.09 '
Inclination: 12.19 °
Azimuth: 195.13 °
VS: 148.6 '

50% SS: lt gy-wh, clr-trnsl, s&p, f gr, sb rd-sb ang, p srt, fri, p por, arg cmt
25% SHY SS: wh-lt gy, s&p ip, v f-f gr, sb rd-sb ang, mod srt, fri, mod por, arg cmt
25% SLTY SH: med-dk gy, occ gy brn, frm-sl sft, rthy-sl slty, intbd ip wi ss



MD: 4,321 '
TVD: 4,265.13 '
Inclination: 11.11 °
Azimuth: 196.79 °
VS: 156.28 '

45% SHY SS: wh-lt gy, s&p ip, v f-f
gr, sb rd-sb ang, mod srt, fri, mod
por, arg cmt
40% SS: lt gy-wh, clr-trnsl, s&p, f gr,
sb rd-sb ang, p srt, fri, p por, arg
cmt
15% SLTY SH: med-dk gy, occ gy
brn, frm-sl sft, rthy-sl slty, intbd ip wi
ss

MUD WT 8.9 VIS 29

ROP (ft/hr) 1600

Scale Change:
Gas 0 -1000u

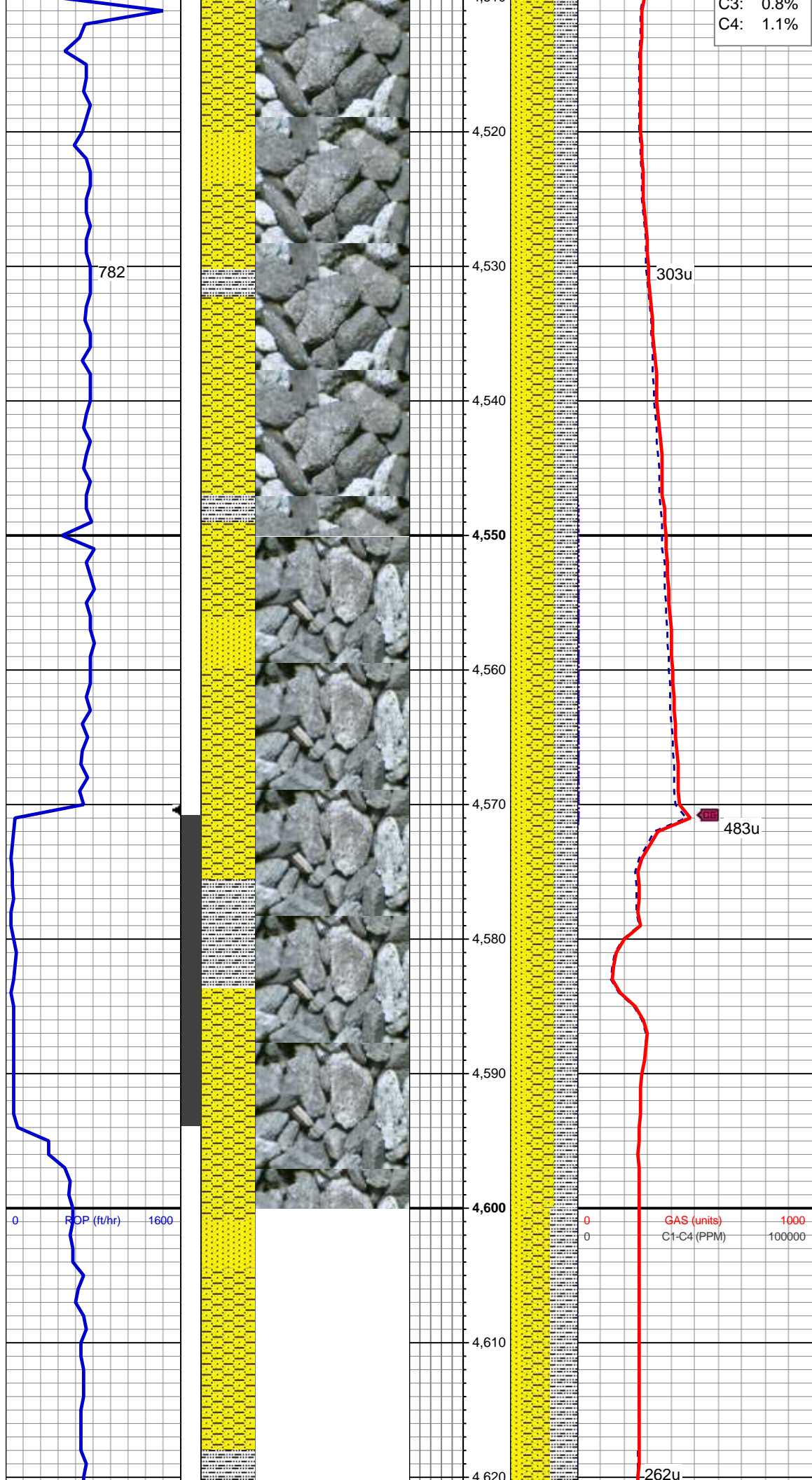
MD: 4,416 '
TVD: 4,358.15 '
Inclination: 12.36 °
Azimuth: 194.41 °
VS: 163.89 '

60% SHY SS: wh-lt gy, s&p ip, v f-f
gr, sb rd-sb ang, mod srt, fri, mod
por, arg cmt
20% SS: lt gy-wh, clr-trnsl, s&p, f gr,
sb rd-sb ang, p srt, fri, p por, arg
cmt
20% SLTY SH: med-dk gy, occ gy
brn, frm-sl sft, rthy-sl slty, intbd ip wi
ss

MUD WT 9.0 VIS 28

295u
C1: 97.8%
C2: 0.3%
C3: 0.3%

MD: 4,510 '
TVD: 4,449.98 '

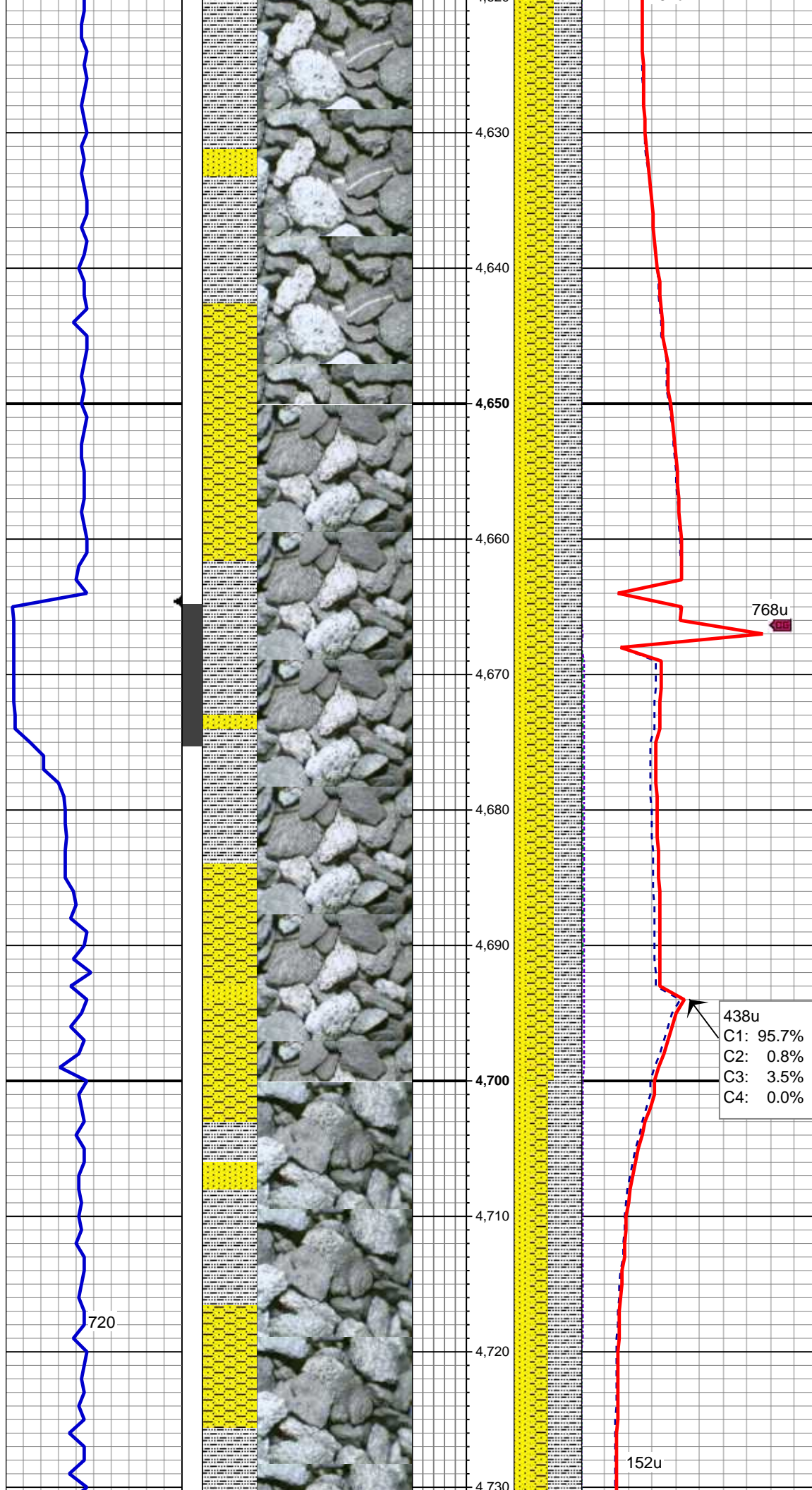


C3: 0.8%
C4: 1.1%

TVD: 4,443.90
Inclination: 12.3 °
Azimuth: 191.6 °
VS: 170.98 '

40% SHY SS: wh-lt gy, s&p ip, v f-f
gr, sb rd-sb ang, mod srt, fri, mod
por, arg cmt
25% SS: lt gy-wh, clr-trnsl, s&p, f gr,
sb rd-sb ang, p srt, fri, p por, arg
cmt
35% SLTY SH: med-dk gy, occ gy
brn, frm-sl sft, rthy-sl slty, intbd ip wi
ss

MD: 4,605 "
TVD: 4,542.79 "
Inclination: 12.33 °
Azimuth: 193.16 °
VS: 177.93 '



40% SHY SS: wh-lt gy, s&p ip, v f-f
gr, sb rd-sb ang, mod srt, fri, mod
por, arg cmt
40% SLTY SH: med-dk gy, gy
brn-blk ip, frm-sl sft, rthy-sl slty tex,
rr pyr
20% SS: lt gy-wh, clr-trnsl, s&p, f gr,
sb rd-sb ang, p srt, fri, p por, arg
cmt

768u

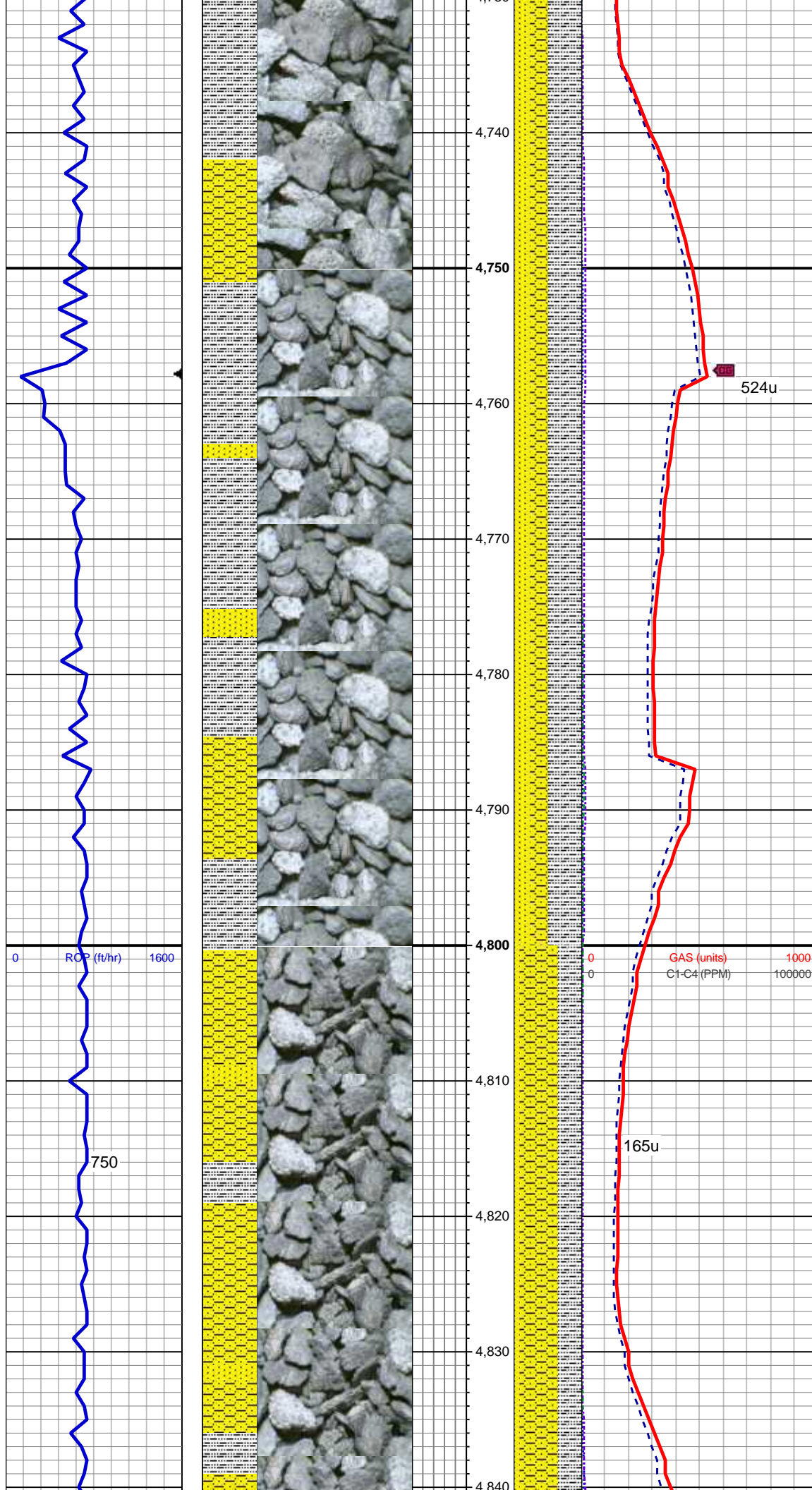
438u
C1: 95.7%
C2: 0.8%
C3: 3.5%
C4: 0.0%

MUD WT 9.0 VIS 28

MD: 4,700 '
TVD: 4,635.8 '
Inclination: 11.21 °
Azimuth: 188.18 °
VS: 184.07 '

720

152u

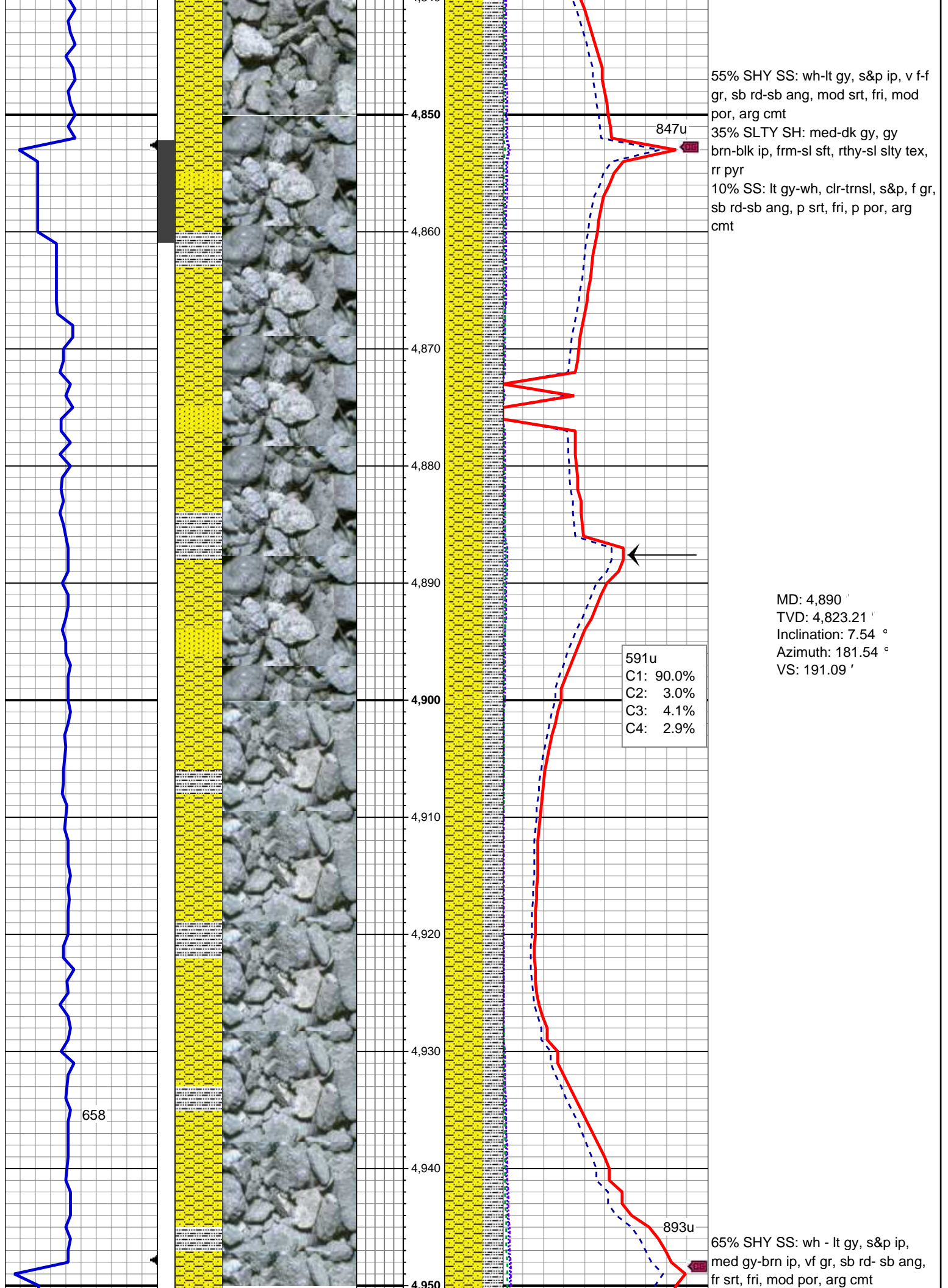


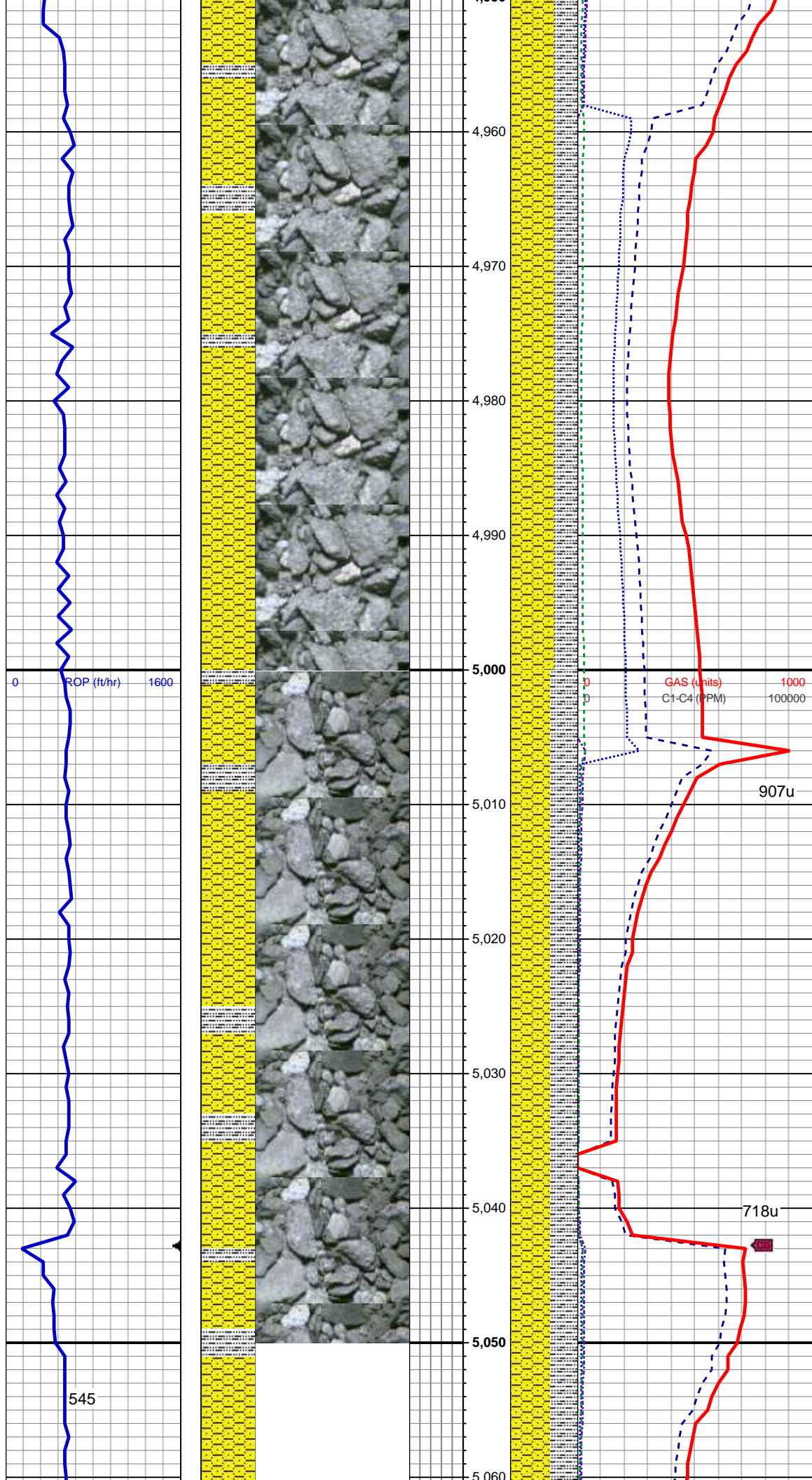
40% SHY SS: wh-lt gy, s&p ip, v f-f
gr, sb rd-sb ang, mod srt, fri, mod
por, arg cmt
25% SLTY SH: med-dk gy, gy
brn-blk ip, frm-sl sft, rthy-sl slty tex,
rr pyr
25% SS: lt gy-wh, clr-trnsl, s&p, f gr,
sb rd-sb ang, p srt, fri, p por, arg
cmt

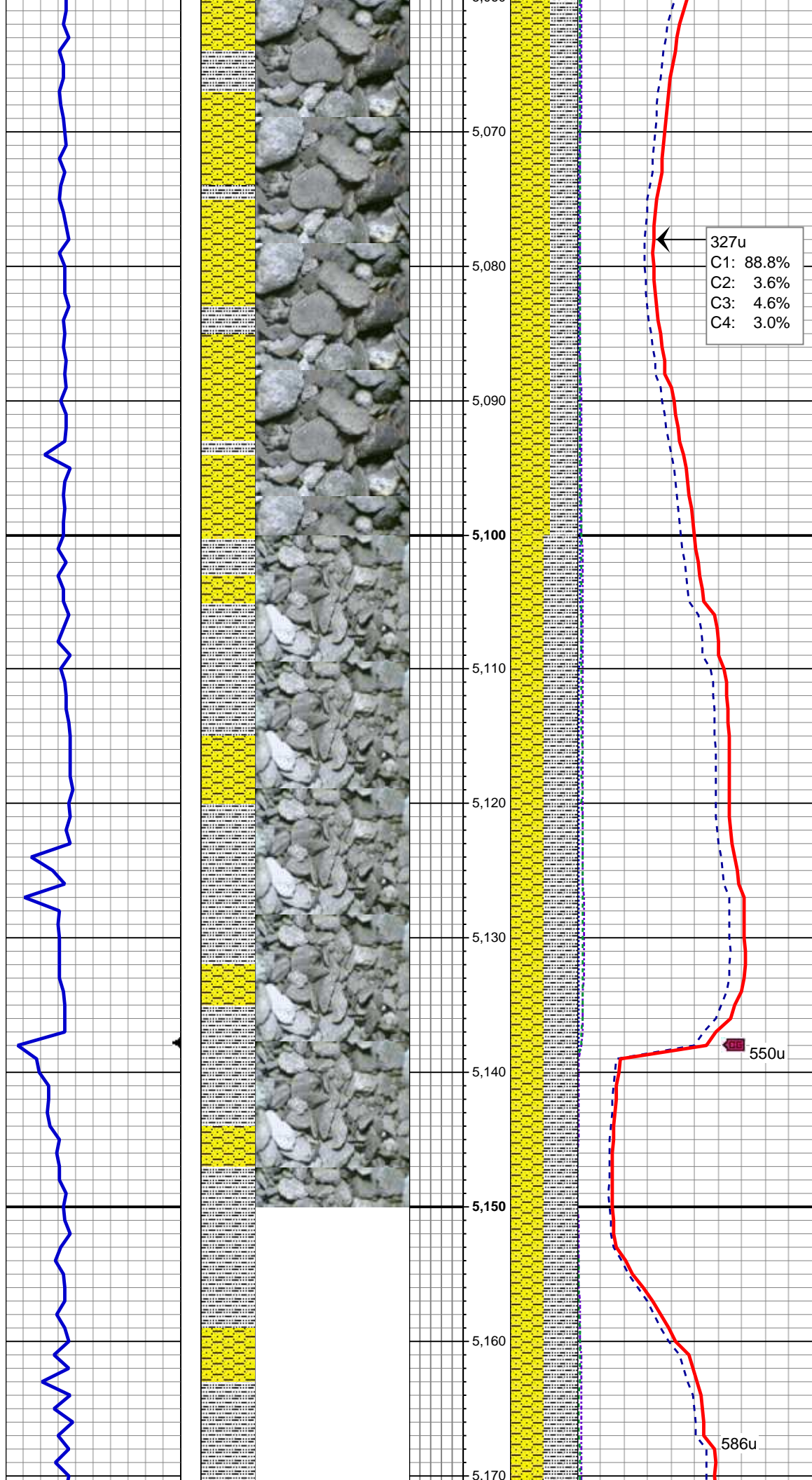
MD: 4,795 '
TVD: 4,729.26 '
Inclination: 9.43 °
Azimuth: 185.33 °
VS: 188.34 '

GAS (units)
C1-C4 (PPM)

1000
100000







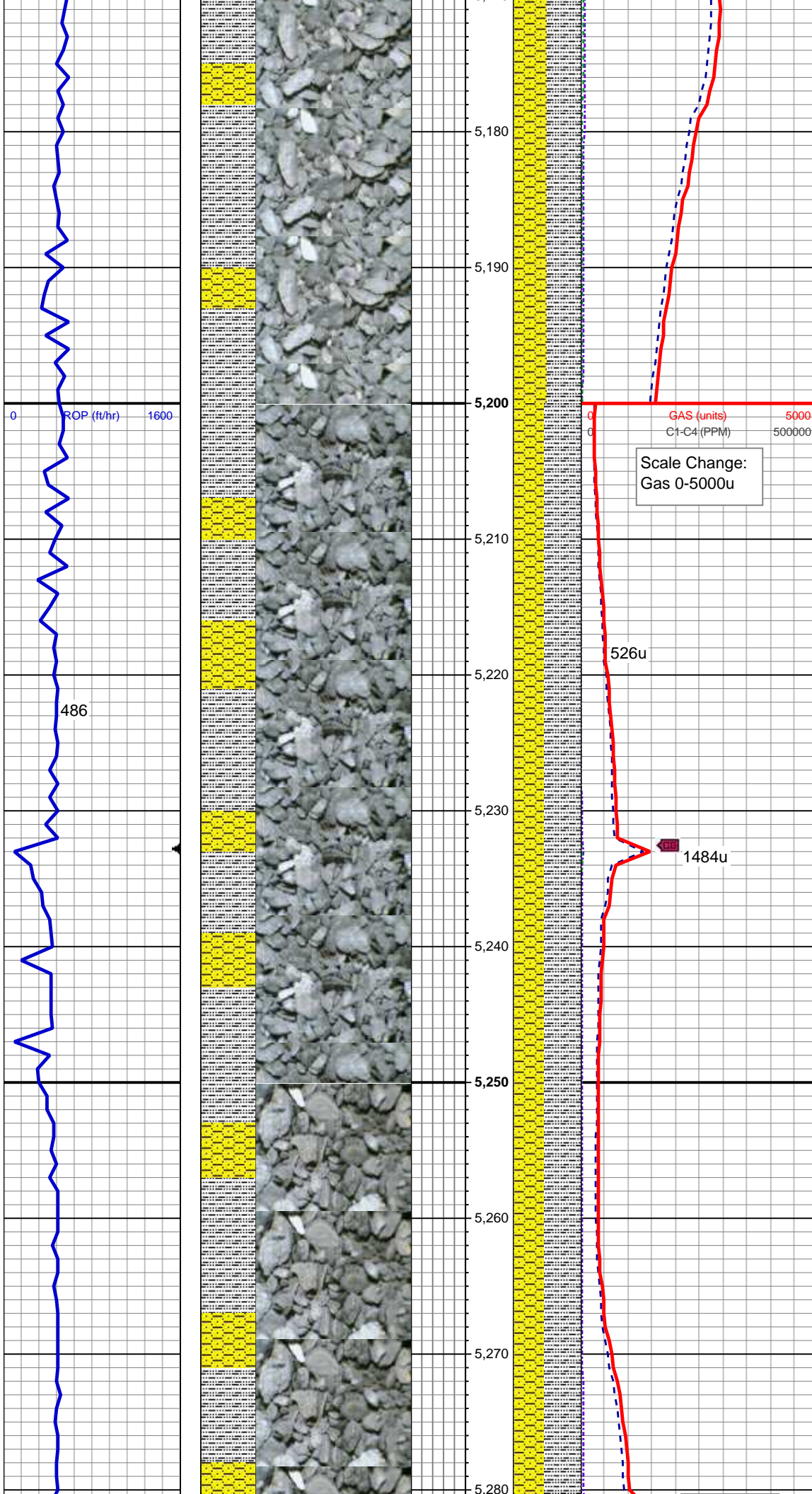
MD: 5,080 '
TVD: 5,012.07 '
Inclination: 5.65 °
Azimuth: 184.37 °
VS: 194.48 '

MUD WT 9.0 VIS 29

50% SHY SS: wh - lt gy, s&p ip,
med gy-brn ip, vf gr, sb rd- sb ang,
fr srt, fri, mod por, arg cmt
50% SLTY SH: med-dk gy, occ gy
brn, frm-sl sft, rthy-sl slty, plty-sb
blky

MD: 5,175 '

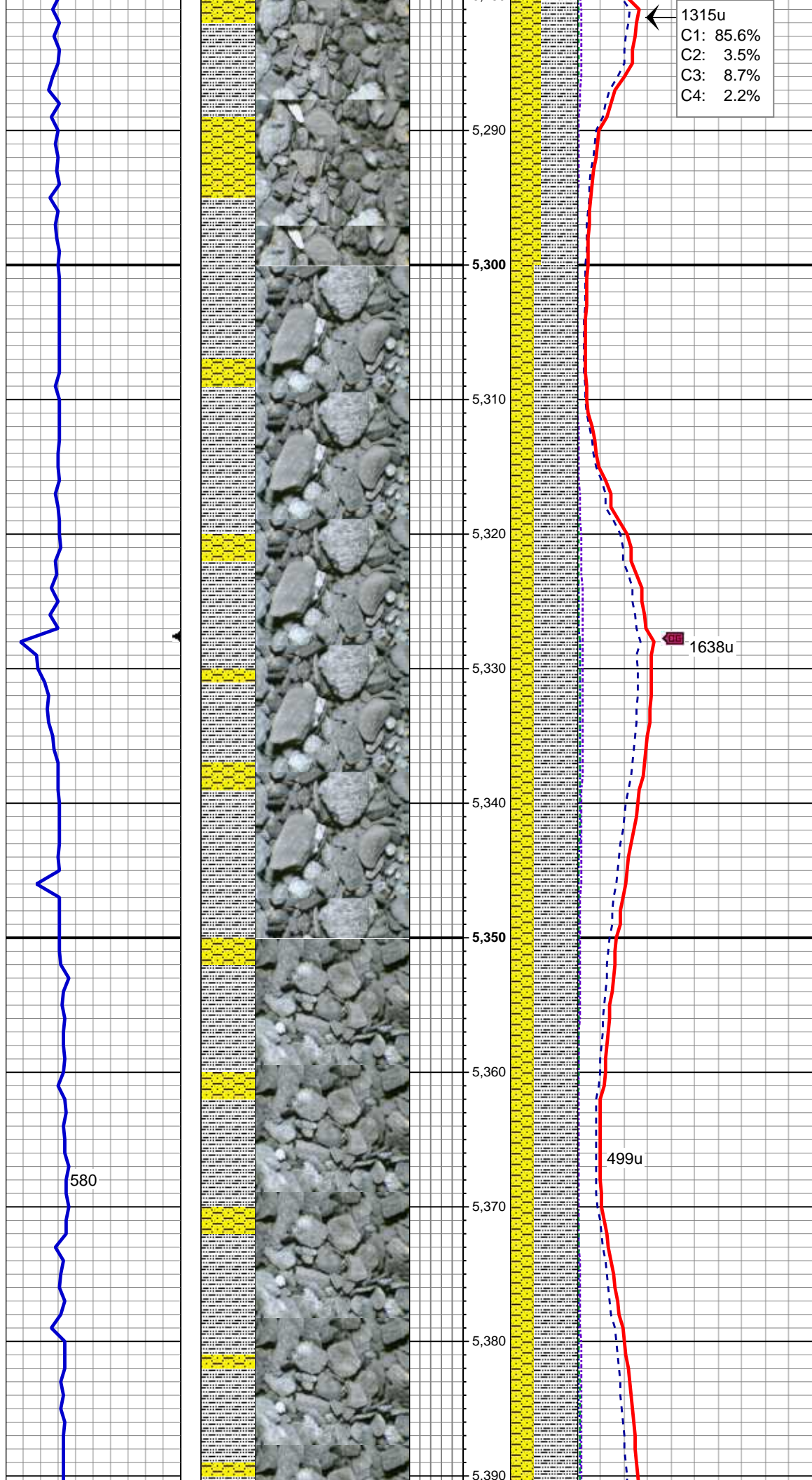
TVD: 5,106.7 '
Inclination: 4.39 °
Azimuth: 178.08 °
VS: 195.82 '



55% SLTY SH: med-dk gy, occ gy
brn, frm-sl sft, rthy-sl slty, plty-sb
blk;
45% SHY SS: wh - lt gy, s&p ip,
med gy-brn ip, vf gr, sb rd- sb ang,
fr srt, fri, mod por, arg cmt

MUD WT 9.0 VIS 29

MD: 5,270 '
TVD: 5,201.49 '
Inclination: 3.29 °
Azimuth: 169.29 °
VS: 196.04 '



1315u
C1: 85.6%
C2: 3.5%
C3: 8.7%
C4: 2.2%

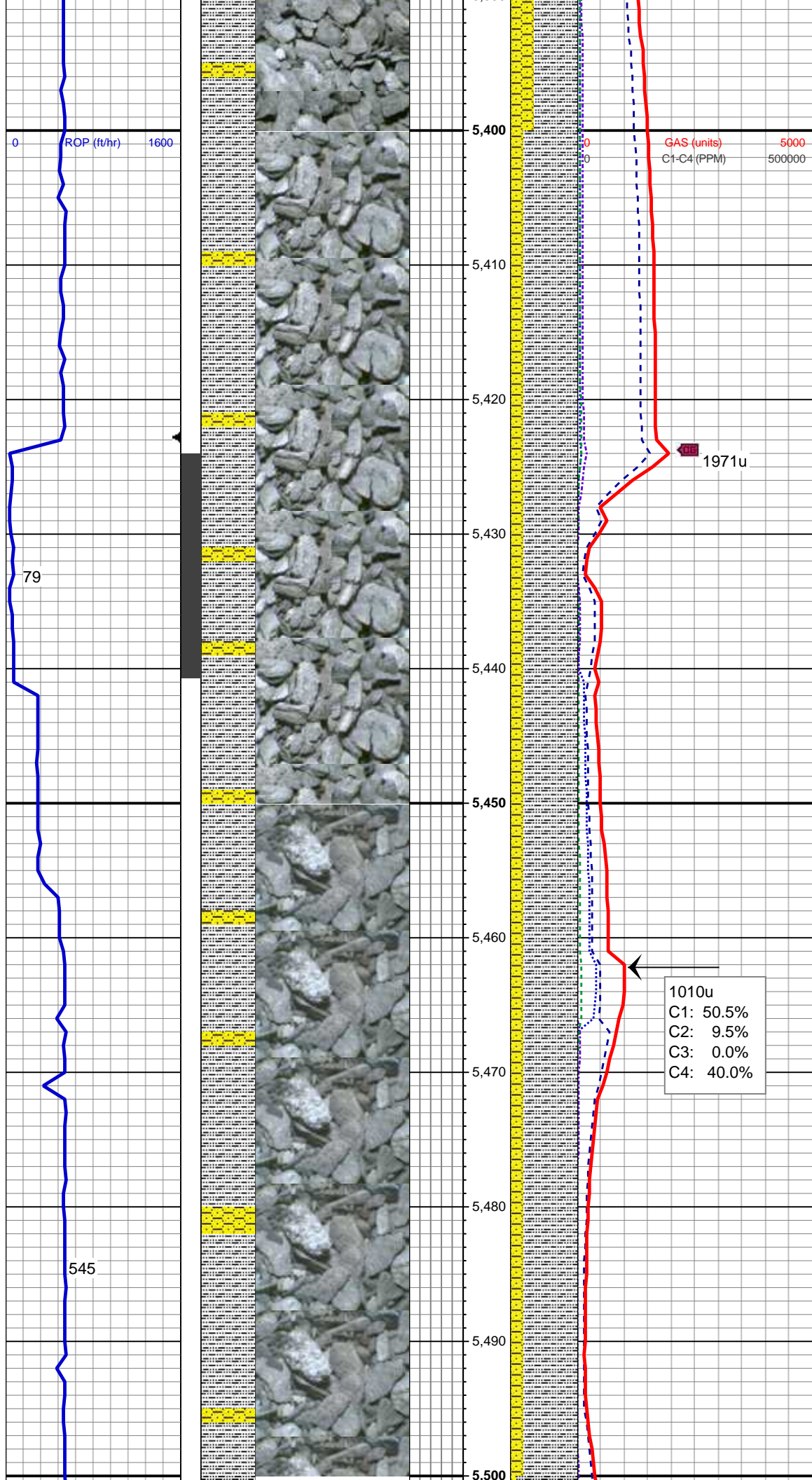
1638u

499u

580

65% SLTY SH: med-dk gy, occ gy
brn, frm-sl sft, rthy-sl slty, plty-sb
blky
35% SHY SS: wh - lt gy, s&p ip,
med gy-brn ip, vf gr, sb rd- sb ang,
fr srt, fri, mod por, arg cmt

MD: 5,365 '
TVD: 5,296.35 '
Inclination: 2.8 °
Azimuth: 165.99 °
VS: 195.64 '

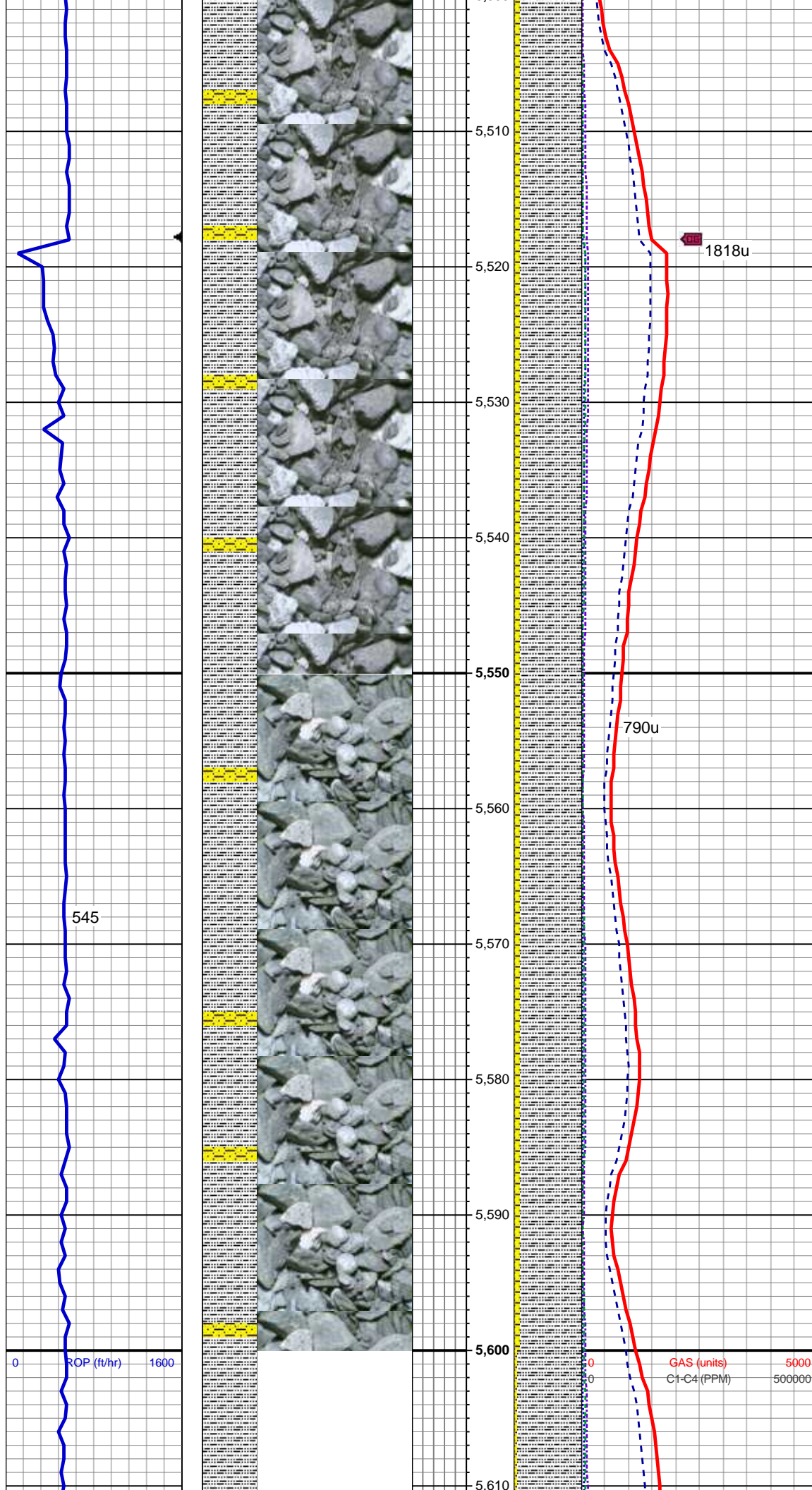


80% SLTY SH: med-dk gy, occ gy
brn, frm-sl sft, rhy-sl slty, plty-sb
blky
20% SHY SS: wh - lt gy, s&p ip,
med gy-brn ip, vf gr, sb rd- sb ang,
fr srt, fri, mod por, arg cmt

MUD WT 9.0 VIS 28

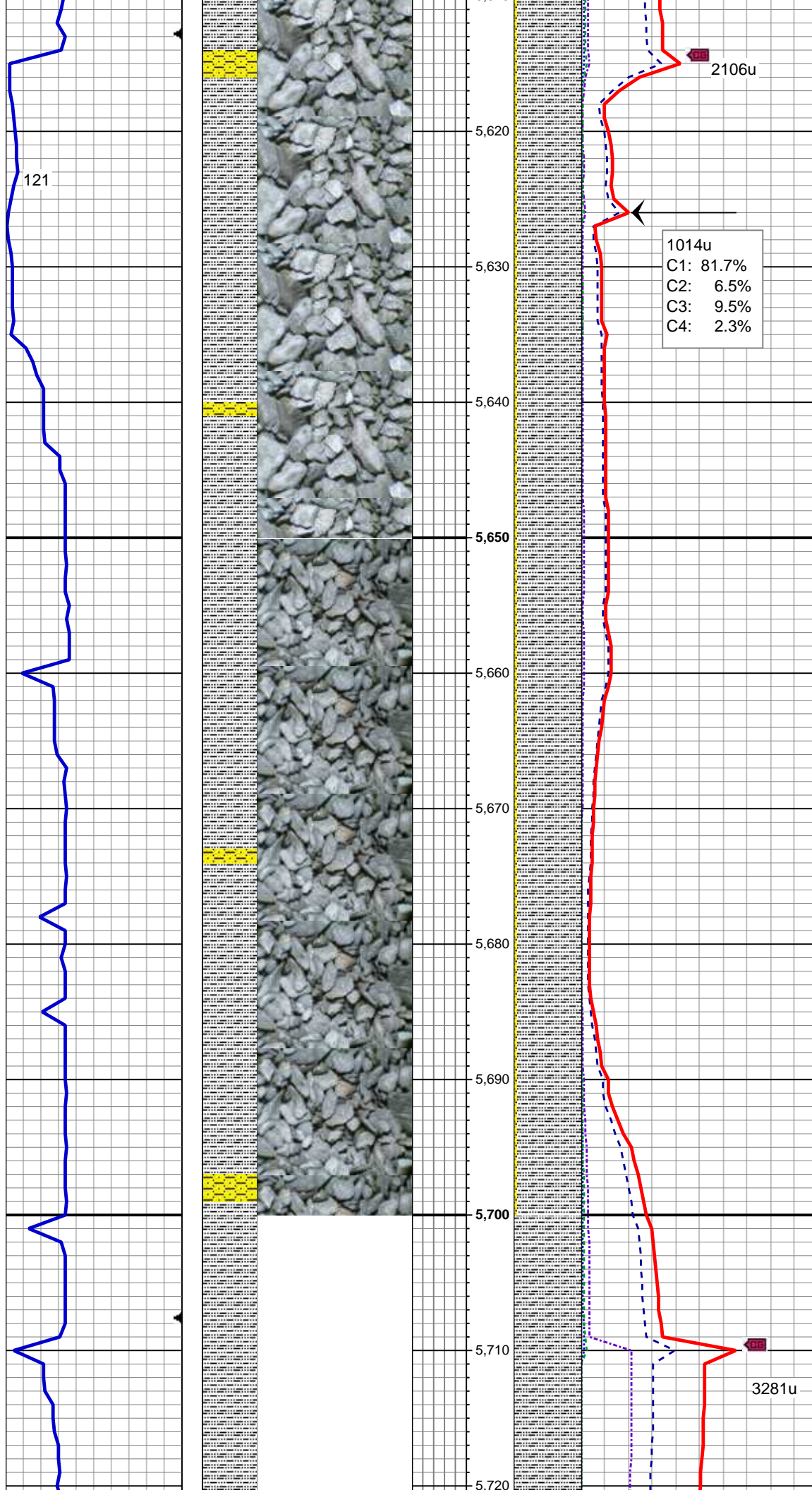
MD: 5,460 '
TVD: 5,391.27 '
Inclination: 1.8 °
Azimuth: 167.75 °
VS: 195.26 '

MUD WT 9.0 VIS 28



90% SLTY SH: med-dk gy, occ gy
brn, frm-sl sft, rthy-sl slty, plty-sb
blky
10% SHY SS: wh - lt gy, s&p ip,
med gy-brn ip, vf gr, sb rd- sb ang,
fr srt, fri, mod por, arg cmt

MD: 5,555 '
TVD: 5,486.23 '
Inclination: 1.86 °
Azimuth: 159.89 °
VS: 194.81 '



95% SLTY SH: med-dk gy, occ gy
brn, frm-sl sft, rthy-sl slty, plty-sb
blky
5% SHY SS: wh - lt gy, s&p ip, med
gy-brn ip, vf gr, sb rd- sb ang, fr srt,
fri, mod por, arg cmt

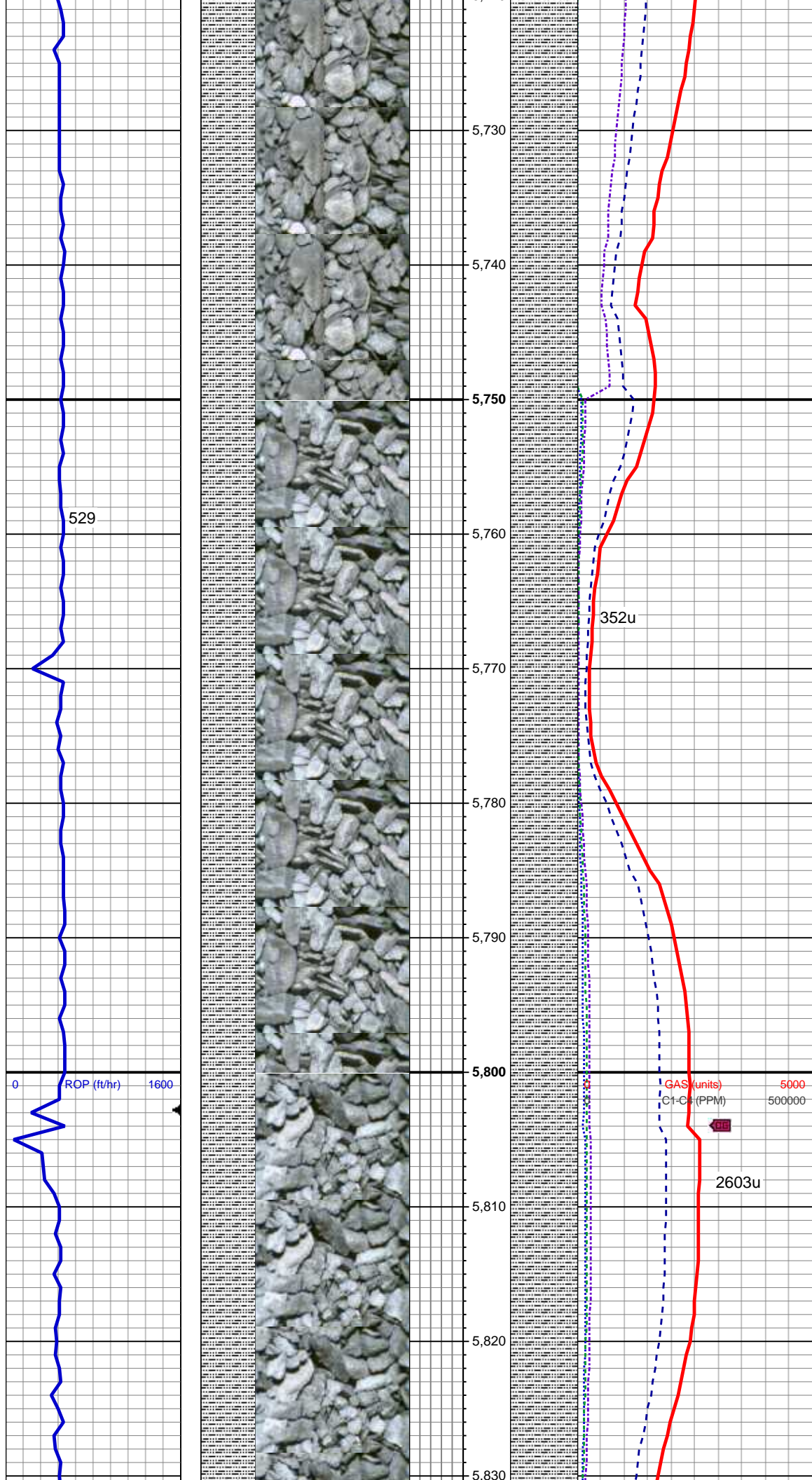
MD: 5,650 '
TVD: 5,581.16 '
Inclination: 2.55 °
Azimuth: 181.37 °
VS: 194.81 '

1014u
C1: 81.7%
C2: 6.5%
C3: 9.5%
C4: 2.3%

2106u

3281u

121



100% SLTY SH: med-dk gy, occ gy
brn, frm-sl sft, rthy-sl slty, plty-sb
blky

MD: 5,745 '
TVD: 5,676.09 '
Inclination: 1.79 °
Azimuth: 171.3 °
VS: 195.12 '

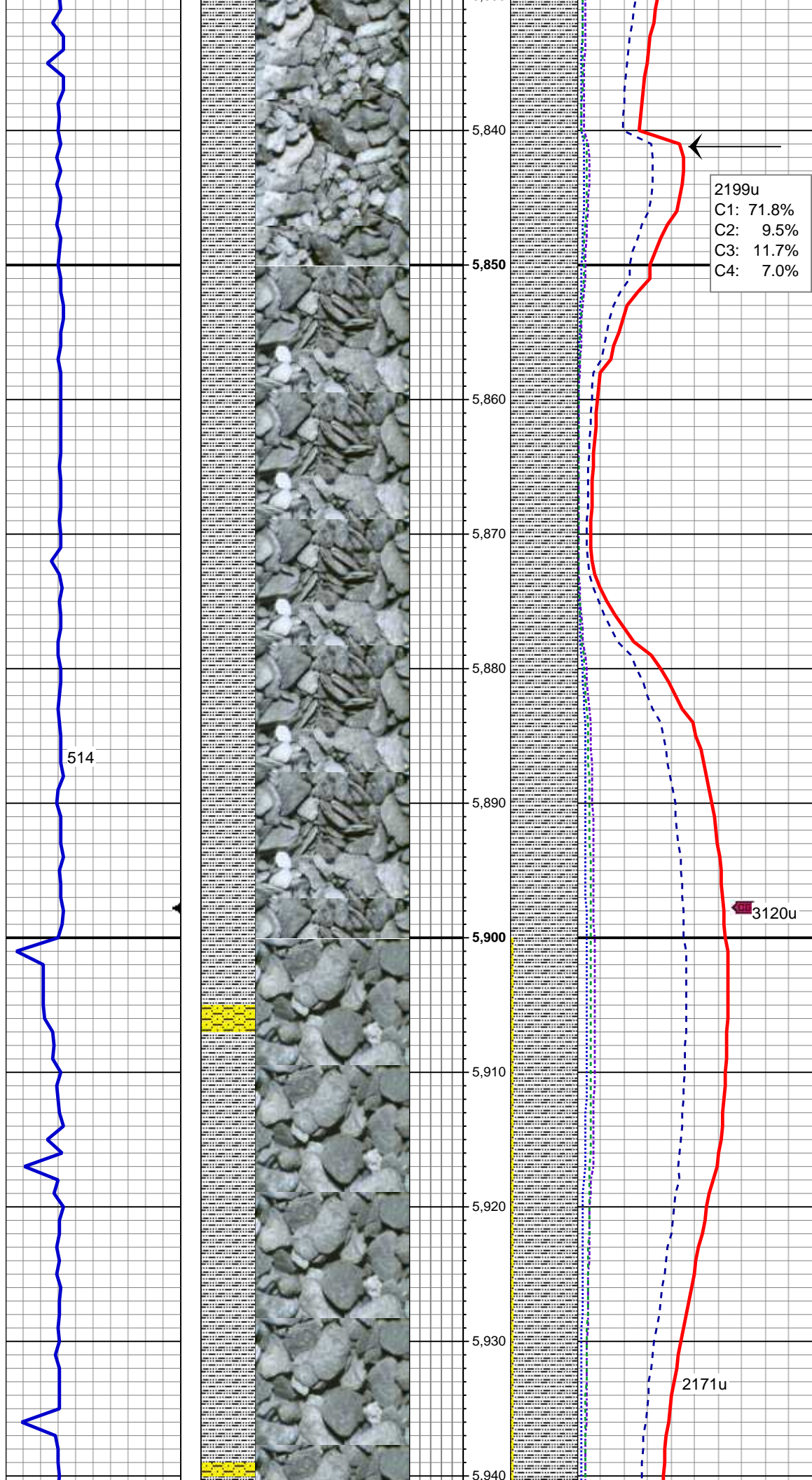
MUD WT 8.9 VIS 28

352u

GAS(units)
C1-C4 (PPM)

0.05

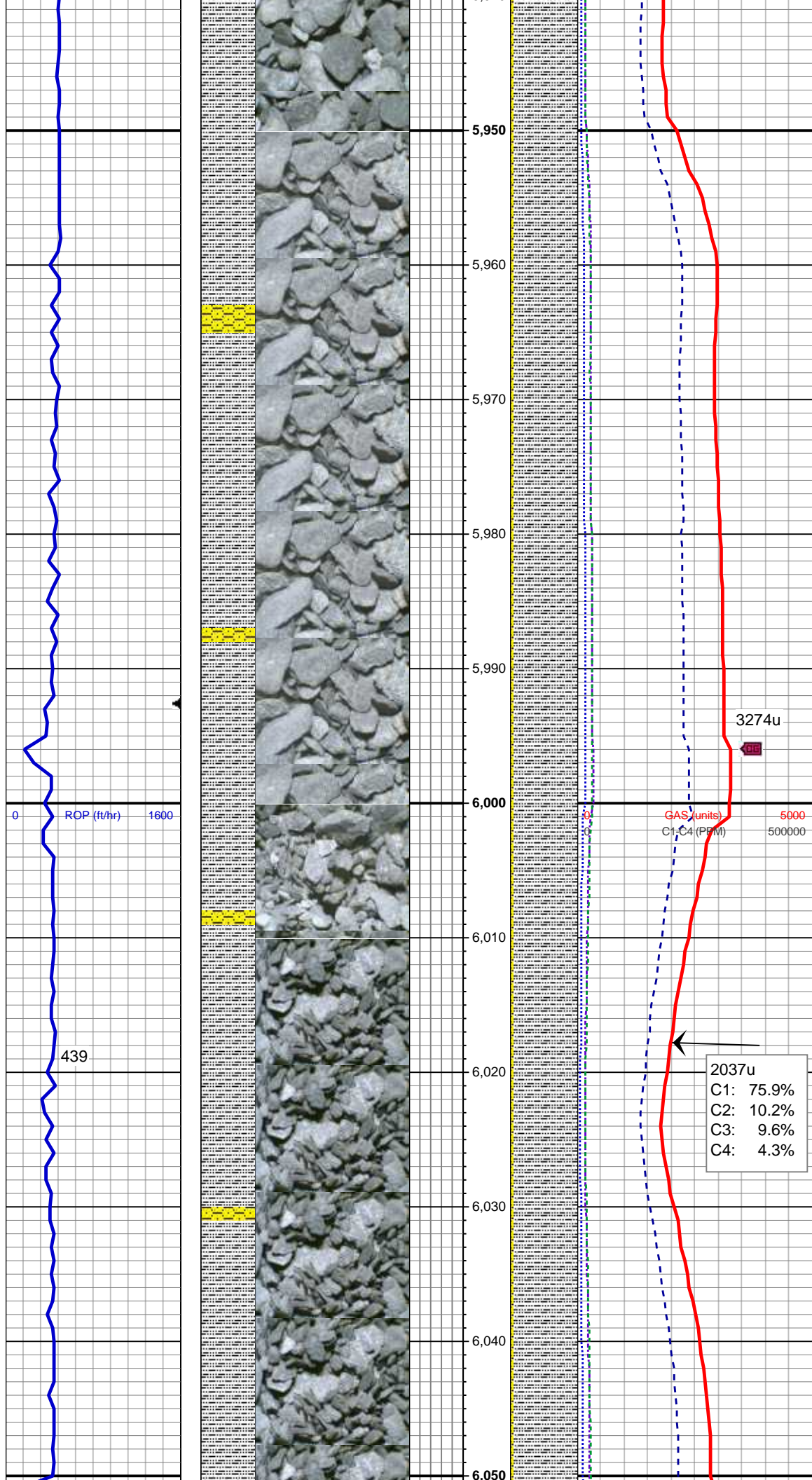
2603u



100% SLTY SH: med-dk gy, occ gy
brn, frm-sl sft, rthy-sl slty, plty-sb
blky

MD: 5,840 '
TVD: 5,771.05 '
Inclination: 1.32 °
Azimuth: 162.8 °
VS: 194.91 '

MD: 5,935 '
TVD: 5,866.03 '
Inclination: 1.14 °
Azimuth: 138.94 °
VS: 194.21 '



95% SLTY SH: med-dk gy, occ gy
brn, frm-sl sft, rthy-sl slty, plty-sb
blk
5% SHY SS: wh - lt gy, s&p ip, med
gy-brn ip, vf gr, sb rd- sb ang, fr srt,
fri, mod por, arg cmt

MD: 6,002 '
TVD: 5,933.02 '
Inclination: 1.13 °
Azimuth: 112.45 °
VS: 193.27 '

3274u

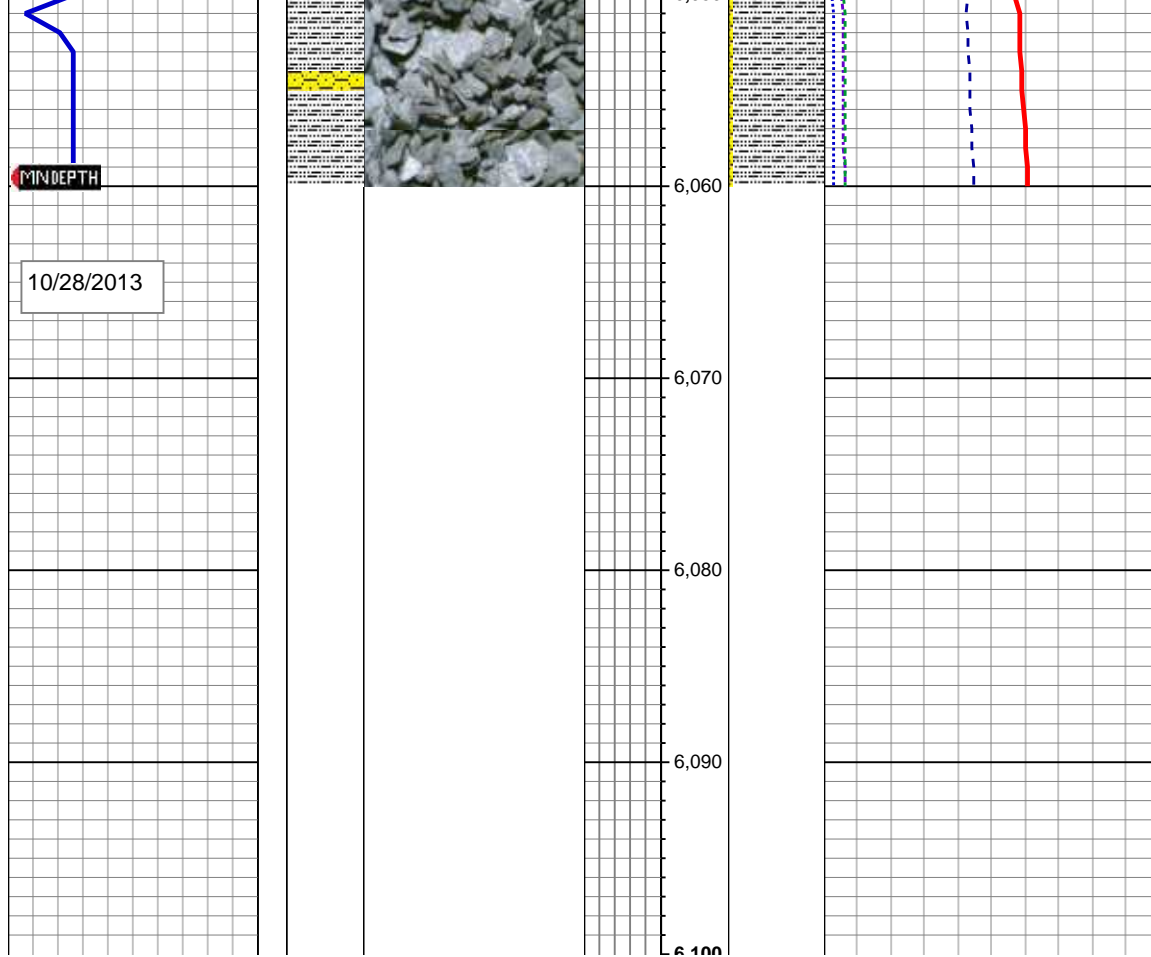
GAS (units)
C1-C4 (PPM)

2037u
C1: 75.9%
C2: 10.2%
C3: 9.6%
C4: 4.3%

MD: 6,023 '
TVD: 5,954.02 '
Inclination: 0.94 °
Azimuth: 108.35 °
VS: 192.94 '

MUD WT 9.1+ VIS 32

95% SLTY SH: med-dk gy, occ gy
brn, frm-sl sft, rthy-sl slty, plty-sb



blky
5% SHY SS: wh - lt gy, s&p ip, med
gy-brn ip, vf gr, sb rd- sb ang, fr srt,
fri, mod por, arg cmt

TD Vertical @ 6060' MD
20:40 hrs 10/27/2013 TOOH
for Directional BHA

Thank You For Choosing
Columbine Logging Inc.