

COLUMBINE LOGGING

Scale: 5" / 100'
Measured Depth Log

Well Name Wells Ranch State AA21-62-1HN(VERT)

Location SEC 21-T6N-R63W

State COLORADO

County WELD

Country USA

Rig Number H&P 322

API Number 05-123-37598-0000

Region DJ BASIN

Field WATTENBERG

Spud Date 1/6/2014

Drilling Completed 1/13/2014

Surface Coordinates LAT: 40.46748°N
LONG: 104.43414°W
951' FSL
528' FEL

Bottom Hole Coordinates LAT: 40.46573°N
LONG: 104.44889°W
330' FSL
535' FWL

Ground Elevation 4731'

K.B. Elevation 4755'

Logged Interval 1000' **To** 6050'

Total Depth 11049'

Formation NIOBRARA "C" CHALK

Type of Drilling Fluid WATER;MUD;POLY

Operator

Company Noble Energy Inc

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

Geologist

Name MIKE GREENE;JEREMY LOFTNESS

Company COLUMBINE LOGGING, INC.

Address 2385 S. LIPAN ST
DENVER, COLORADO 80223
(303) 289-7764

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

Fossils

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

Minerals

Minerals

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

Minerals

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

Minerals

Minerals

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
FENESTRAL
FRACTURE
INTERCRYSTALLINE
INTEROOLITIC

Oil Show

MOLDIC
ORGANIC
PINPOINT
VUGGY

Engineering

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

Other Symbols

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

Other Symbols

WIRELINE TESTED - LEFT
WIRELINE TESTED - RT

Rounding

ANGULAR
ROUNDED
SUBANG
SUBRND

Textures

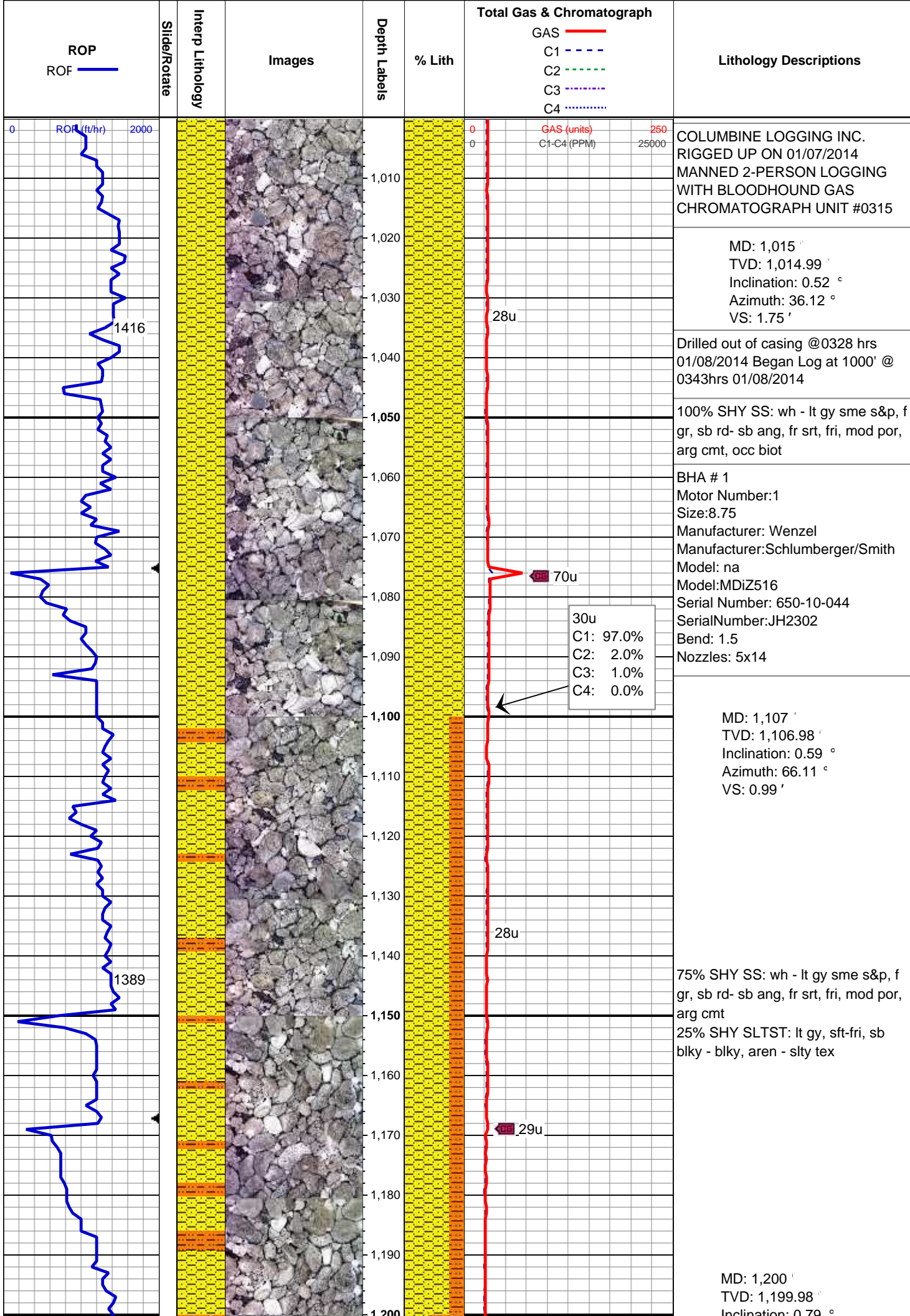
BOUNDSTONE
CHALKY
CRYPTOXLN

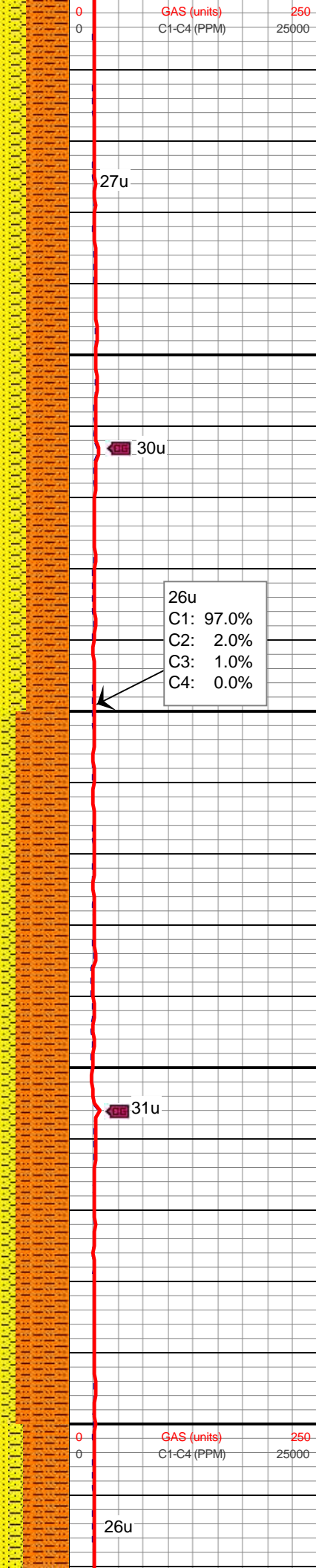
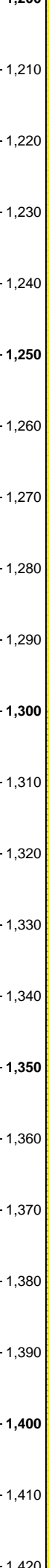
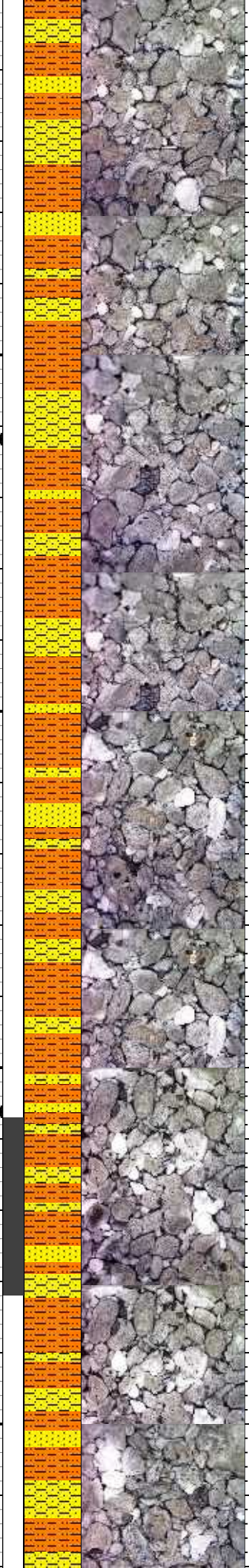
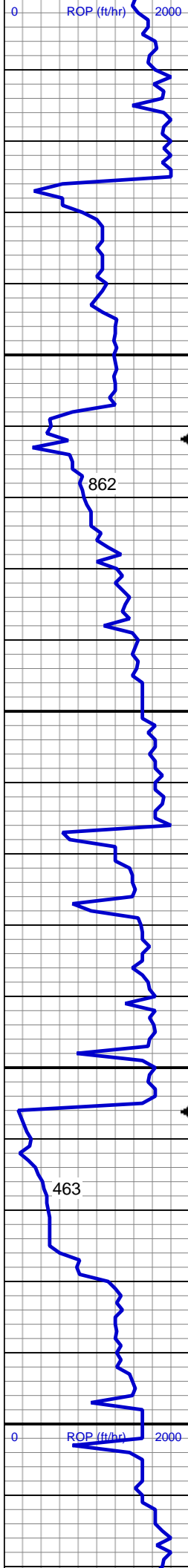
Other Symbols

E EARTHY
FX FINELYXLN
GS GRAINSTONE
L LITHOGRAPHIC
MX MICROXLN
MS MUDSTONE
PS PACKSTONE
WS WACKESTONE

Sorting

M MODERATE
P POOR
W WELL





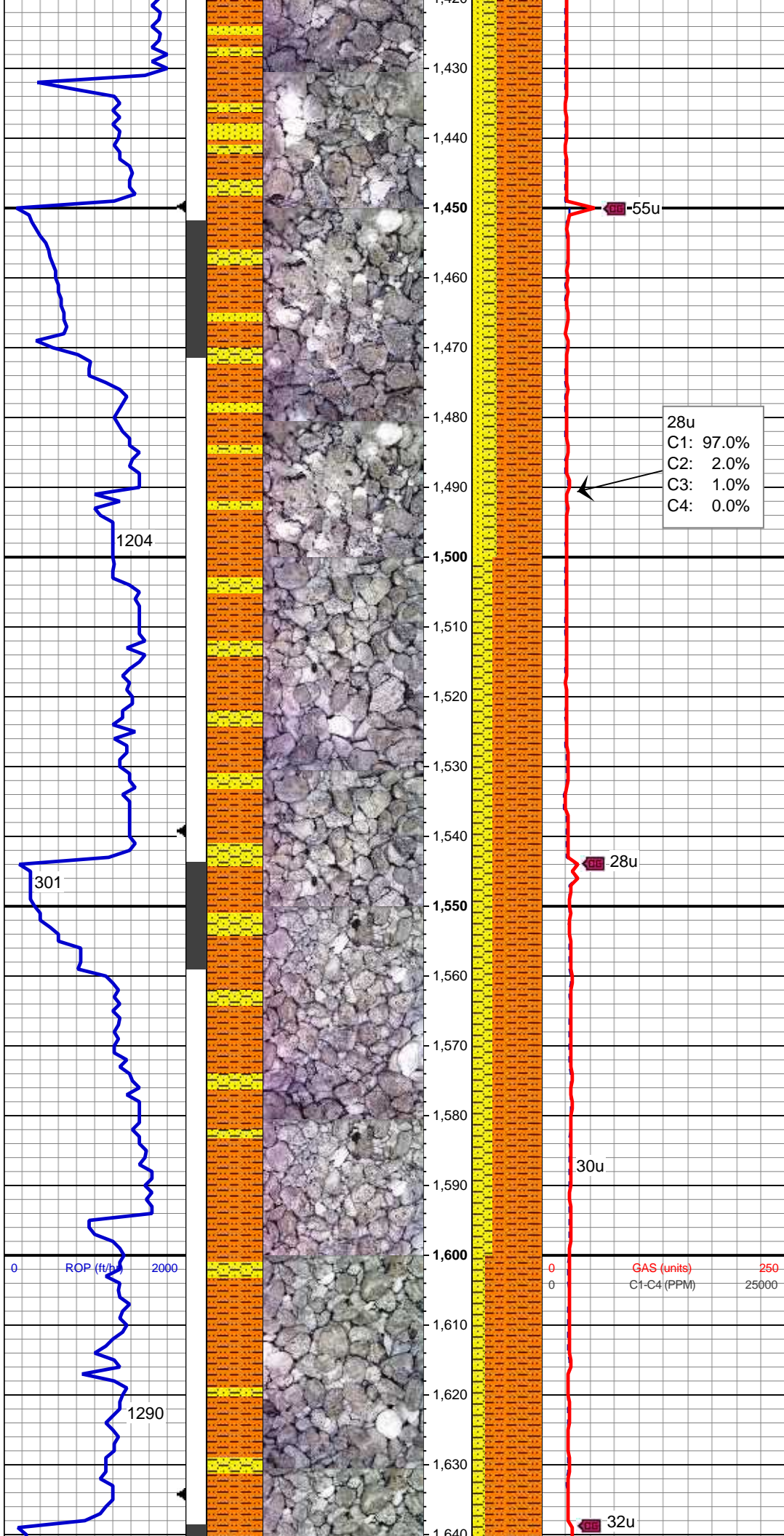
Inclination: 0.73 °
Azimuth: 26.93 °
VS: 0.15 '

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 cmt
20% SS: lt gy - wh, sme s&p, f gr,
sbrd-sbang, mod srt

MD: 1,293 '
TVD: 1,292.97 '
Inclination: 0.57 °
Azimuth: 339.15 °
VS: -0.14 '

75% 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 cmt
5% SS: lt gy - wh, sme s&p, f gr,
sbrd-sbang, mod srt

MD: 1,386 '
TVD: 1,385.96 '
Inclination: 1.77 °
Azimuth: 128.71 °
VS: -1.01 '



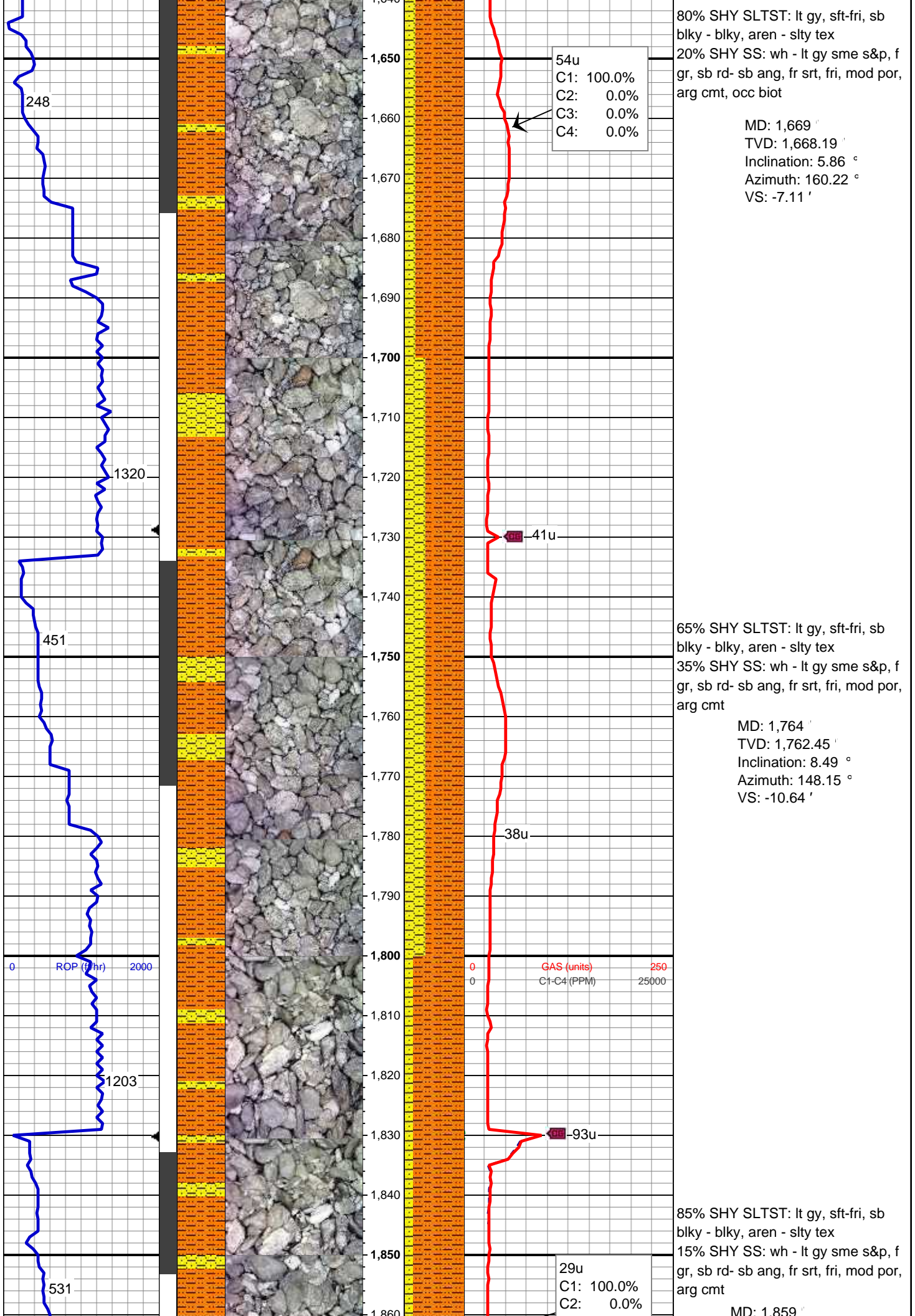
65% SHY SLTST: lt gy, sft-fri, sb
blky - blky, aren - slty tex
20% SHY SS: wh - lt gy sme s&p, f
gr, sb rd- sb ang, fr srt, fri, mod por,
arg cmt
15% SS: lt gy - wh, sme s&p, f gr,
sbrd-sbang, mod srt

MD: 1,479 '
TVD: 1,478.85 '
Inclination: 3.67 °
Azimuth: 154.49 °
VS: -2.79 '

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

MD: 1,574 '
TVD: 1,573.6 '
Inclination: 4.72 °
Azimuth: 150.89 °
VS: -4.94 '

MUD WT 8.4+ VIS 30



248

1320

451

1203

531

54u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%

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

MD: 1,669 '
TVD: 1,668.19 '
Inclination: 5.86 °
Azimuth: 160.22 °
VS: -7.11 '

65% SHY SLTST: lt gy, sft-fri, sb
blkly - blkly, aren - slty tex
35% SHY SS: wh - lt gy sme s&p, f
gr, sb rd- sb ang, fr srt, fri, mod por,
arg cmt

MD: 1,764 '
TVD: 1,762.45 '
Inclination: 8.49 °
Azimuth: 148.15 °
VS: -10.64 '

41u

38u

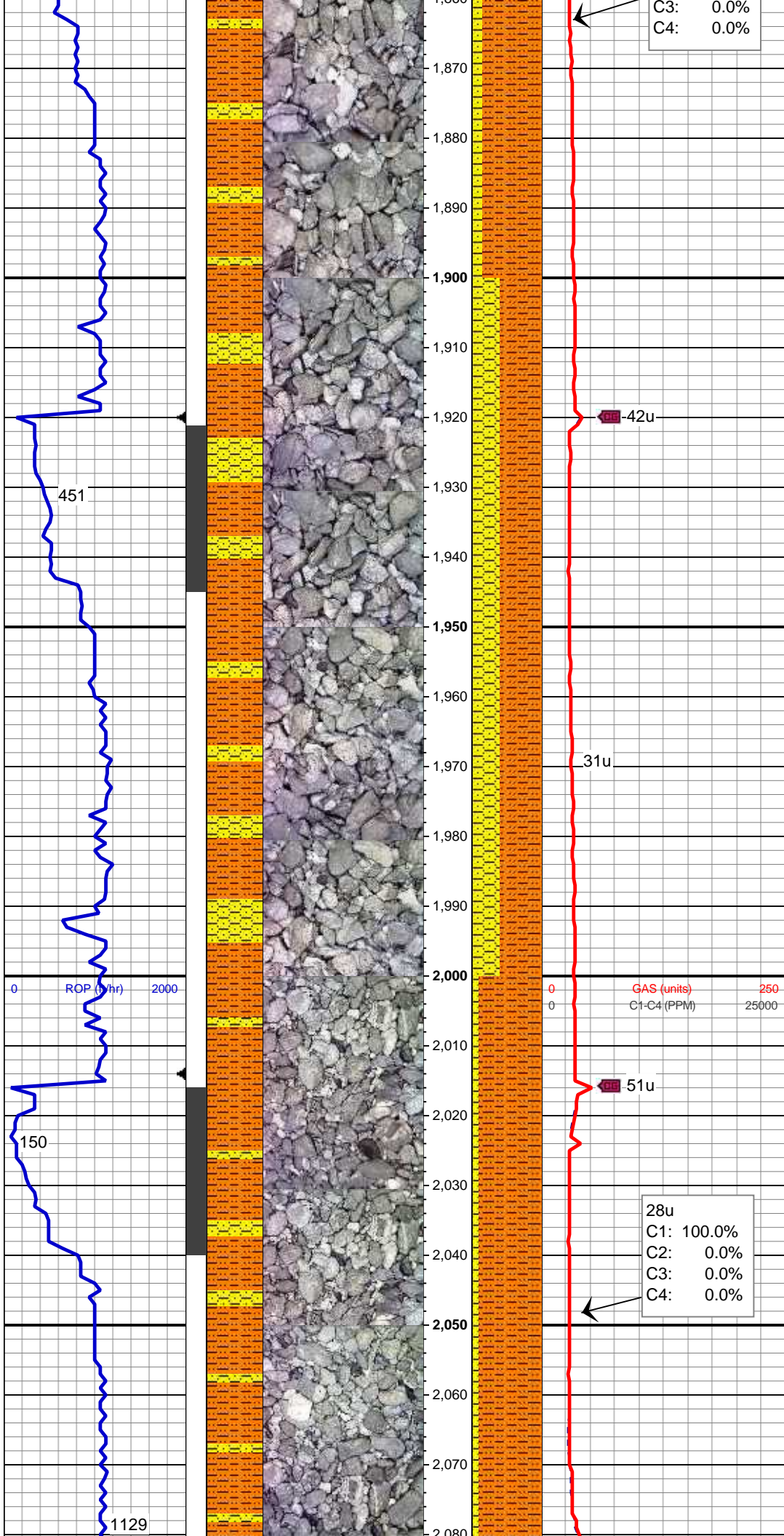
0 250
GAS (units)
0 25000
C1-C4 (PPM)

93u

29u
C1: 100.0%
C2: 0.0%

85% SHY SLTST: lt gy, sft-fri, sb
blkly - blkly, aren - slty tex
15% SHY SS: wh - lt gy sme s&p, f
gr, sb rd- sb ang, fr srt, fri, mod por,
arg cmt

MD: 1,859 '



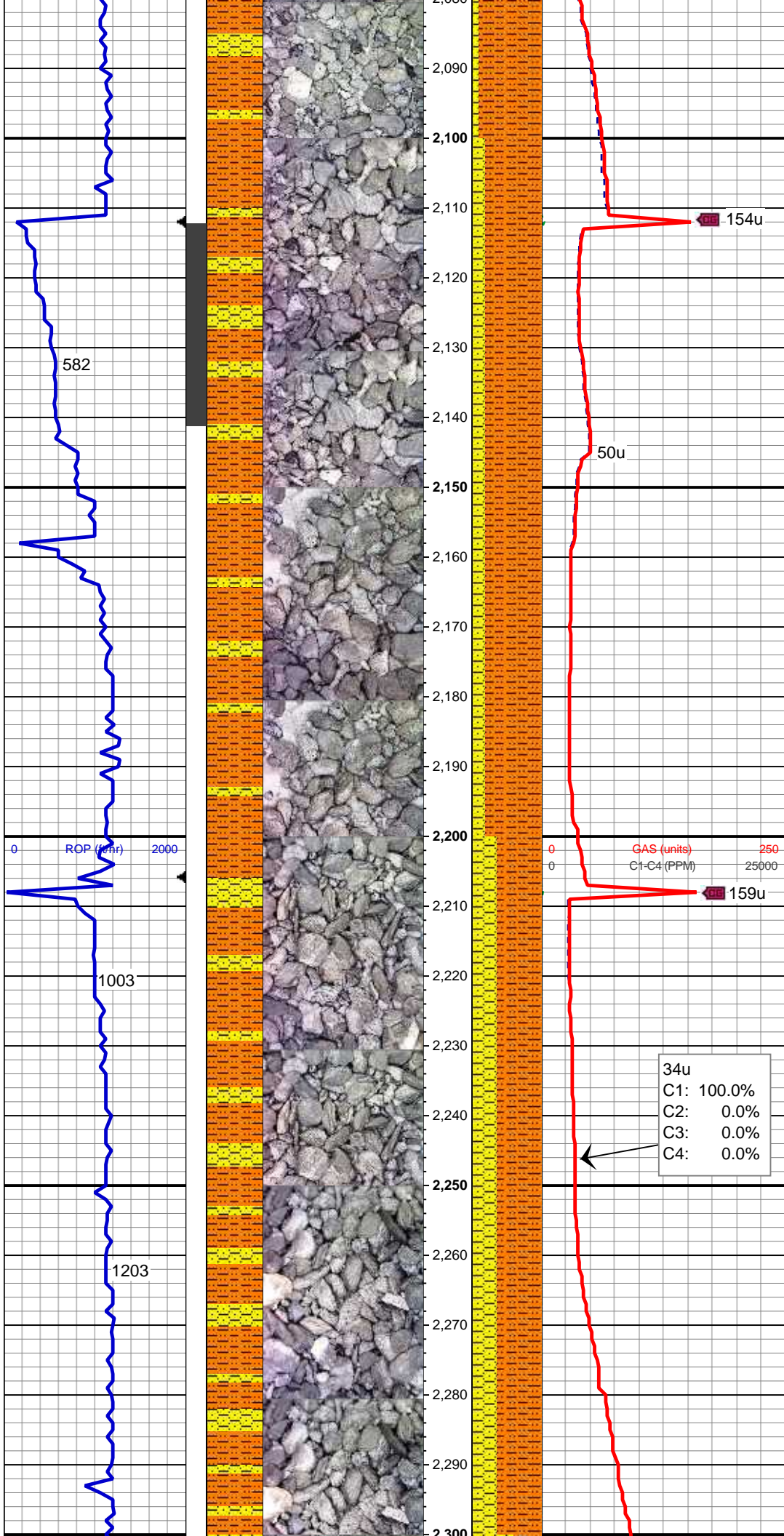
TVD: 1,856.09 '
Inclination: 10.93 °
Azimuth: 137.48 °
VS: -18.22 '

MD: 1,954 '
TVD: 1,949.13 '
Inclination: 12.37 °
Azimuth: 137.55 °
VS: -28.66 '

60% SHY SLTST: lt gy, sft-fri, sb
blky - blky, 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

MD: 2,048 '
TVD: 2,040.98 '
Inclination: 12.18 °
Azimuth: 133.72 °
VS: -40.07 '

90% SHY SLTST: lt gy, sft-fri, sb
blky - blky, aren - slty tex
10% SHY SS: wh - lt gy sme s&p, f
gr, sb rd- sb ang, fr srt, fri, mod por,
arg cmt

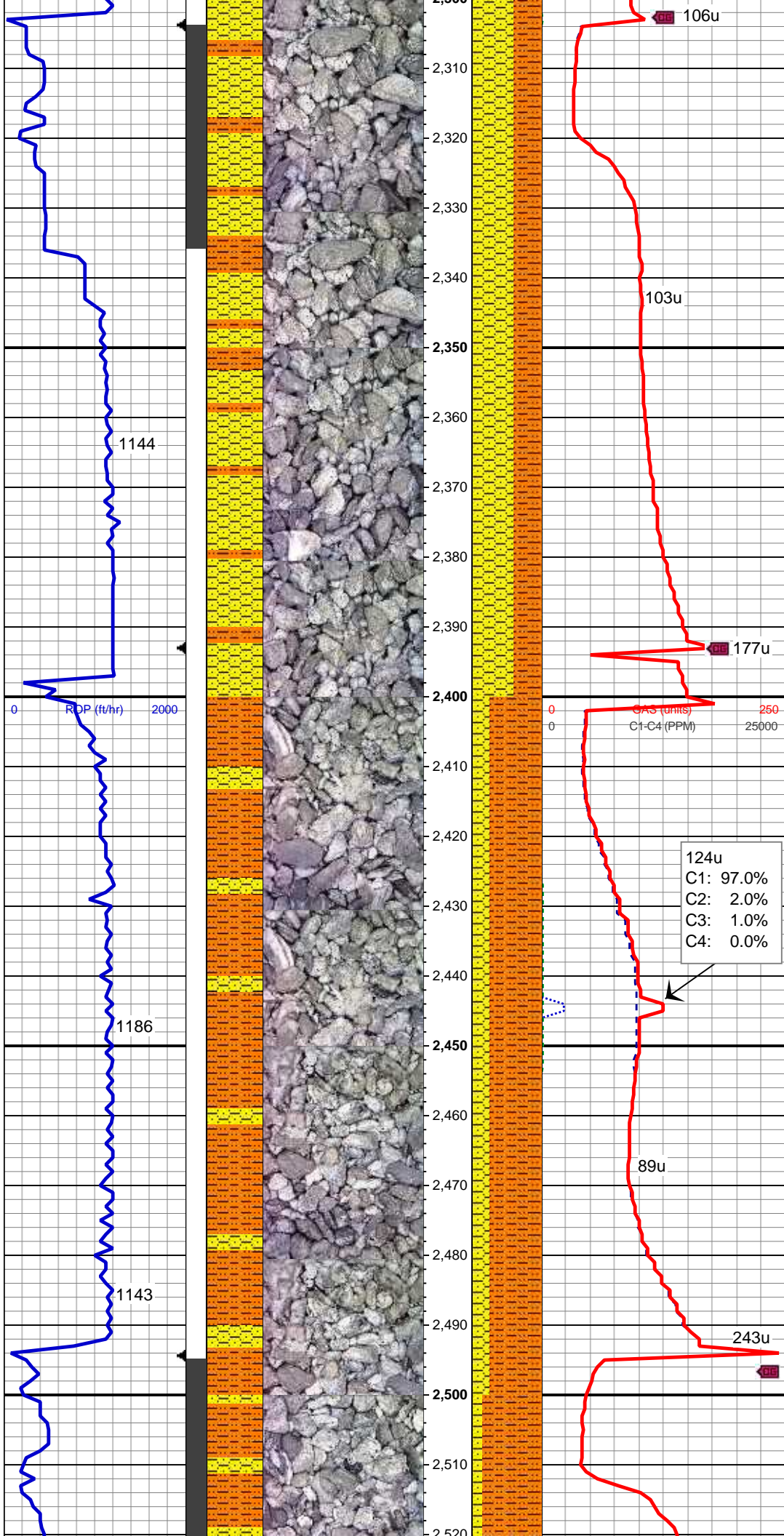


MD: 2,143 '
TVD: 2,133.51 '
Inclination: 14 °
Azimuth: 140.52 °
VS: -51.81 '

80% 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 cmt

MD: 2,238 '
TVD: 2,225.92 '
Inclination: 12.86 °
Azimuth: 135.27 °
VS: -63.65 '

65% SHY SLTST: lt gy, sft-fri, sb
blky - blky, aren - slty tex
35% SHY SS: wh - lt gy sme s&p, f
gr, sb rd- sb ang, fr srt, fri, mod por,
arg cmt



MUD WT 8.4 VIS 32

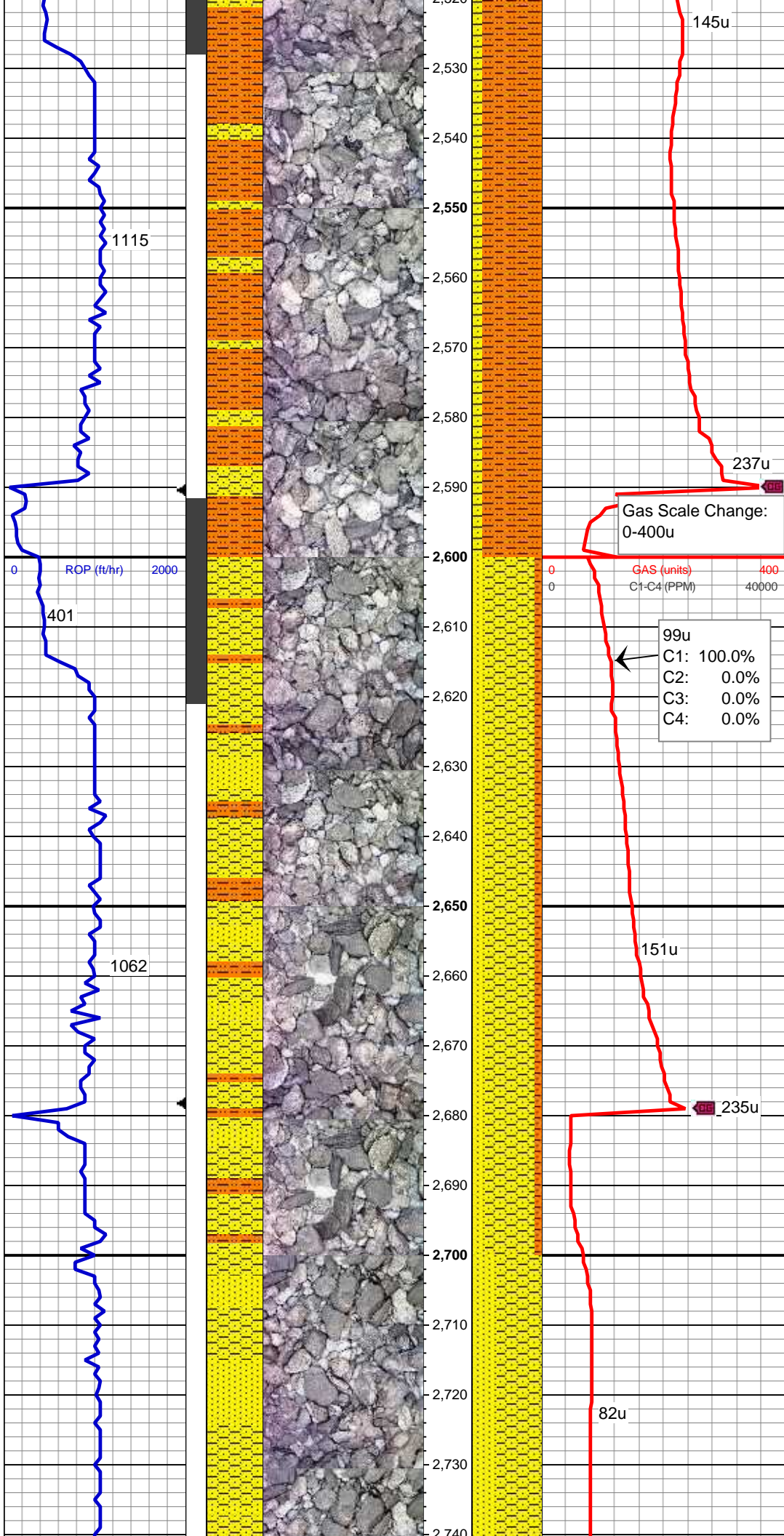
MD: 2,333 '
TVD: 2,318.31 '
Inclination: 14.02 °
Azimuth: 138.67 °
VS: -75.81 '

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

MD: 2,428 '
TVD: 2,410.7 '
Inclination: 12.91 °
Azimuth: 134.63 °
VS: -88.1 '

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

MD: 2,523 '



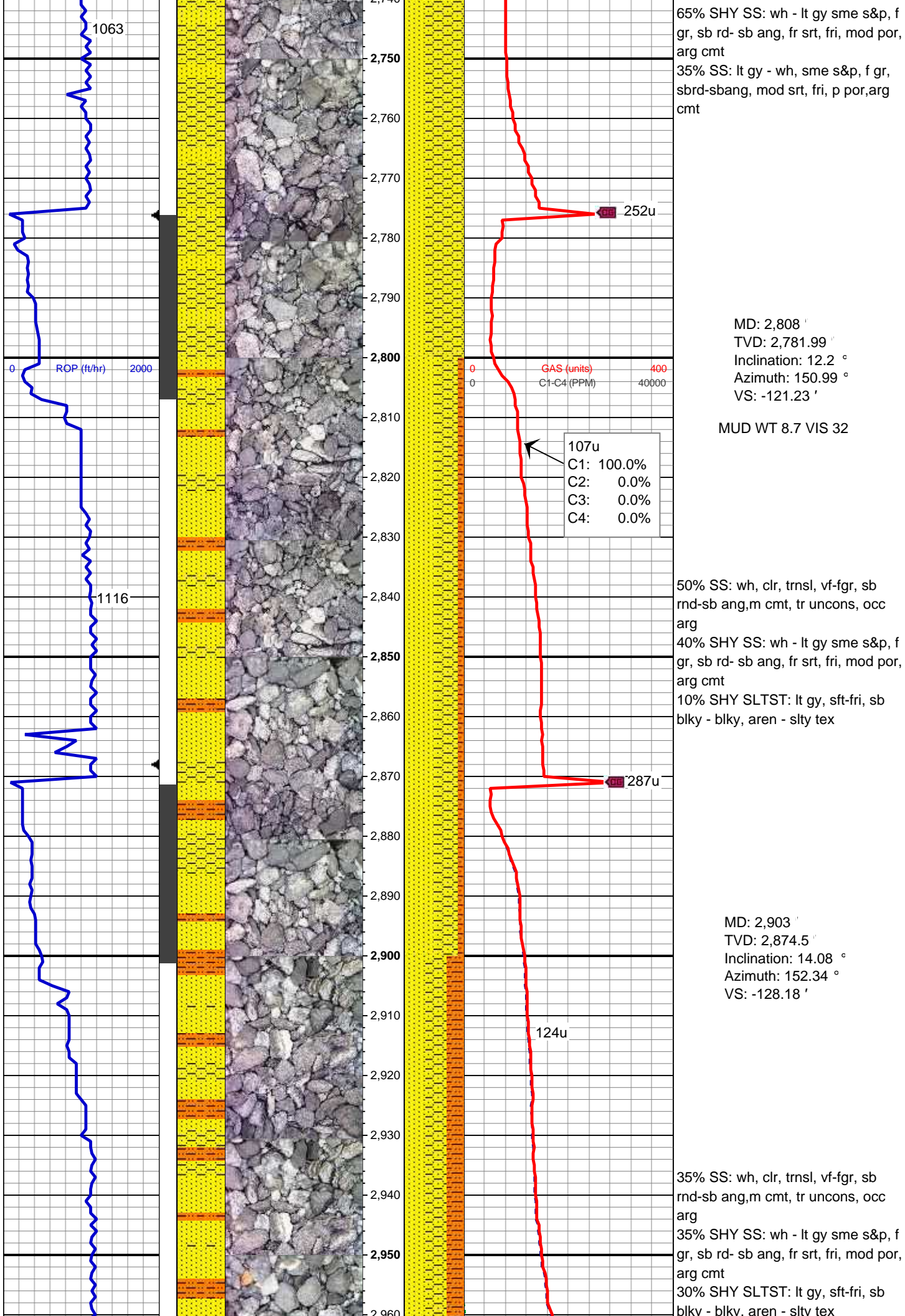
TVD: 2,503.3 '
Inclination: 12.95 °
Azimuth: 141.84 °
VS: -99.42 '

85% SHY SLTST: lt gy, sft-fri, sb
blky - blky, aren - slty tex
15% SHY SS: wh - lt gy sme s&p, f
gr, sb rd- sb ang, fr srt, fri, mod por,
arg cmt

MD: 2,618 '
TVD: 2,595.94 '
Inclination: 12.71 °
Azimuth: 151.7 °
VS: -107.89 '

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
blky - blky, aren - slty tex

MD: 2,713 '
TVD: 2,688.92 '
Inclination: 10.94 °
Azimuth: 148.94 °
VS: -114.57 '



65% SHY SS: wh - lt gy sme s&p, f gr, sb rd- sb ang, fr srt, fri, mod por, arg cmt

35% SS: lt gy - wh, sme s&p, f gr, sb rd- sb ang, mod srt, fri, p por, arg cmt

MD: 2,808 '
TVD: 2,781.99 '
Inclination: 12.2 °
Azimuth: 150.99 °
VS: -121.23 '

MUD WT 8.7 VIS 32

107u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%

50% SS: wh, clr, trns, vf-fgr, sb rnd- sb ang, m cmt, tr uncons, occ arg

40% SHY SS: wh - lt gy sme s&p, f gr, sb rd- sb ang, fr srt, fri, mod por, arg cmt

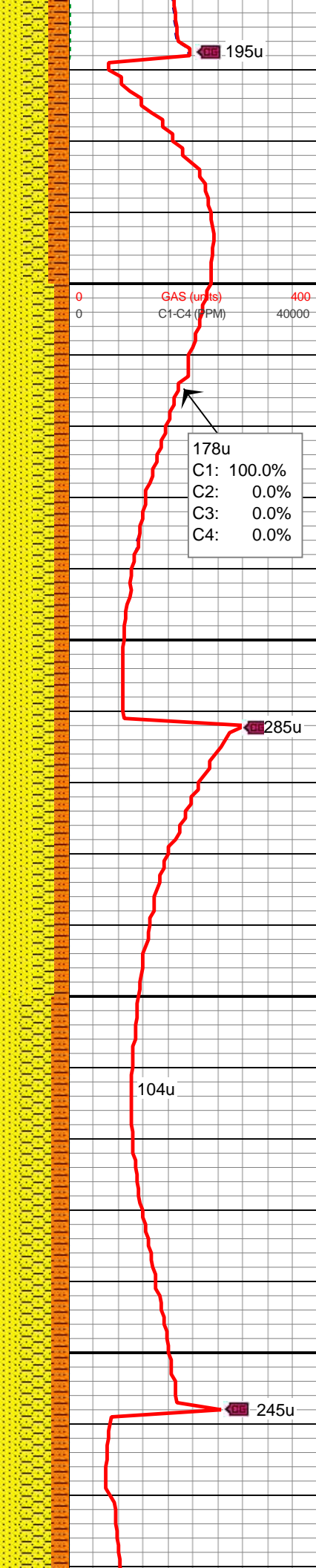
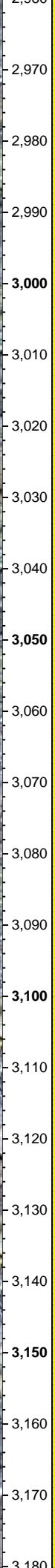
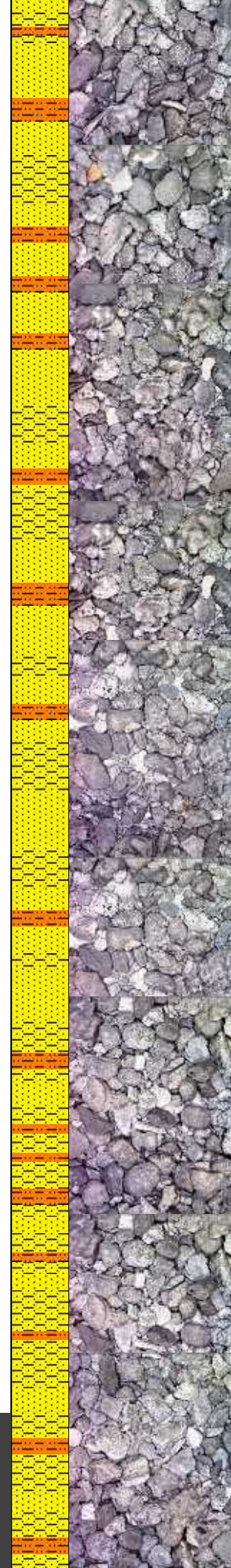
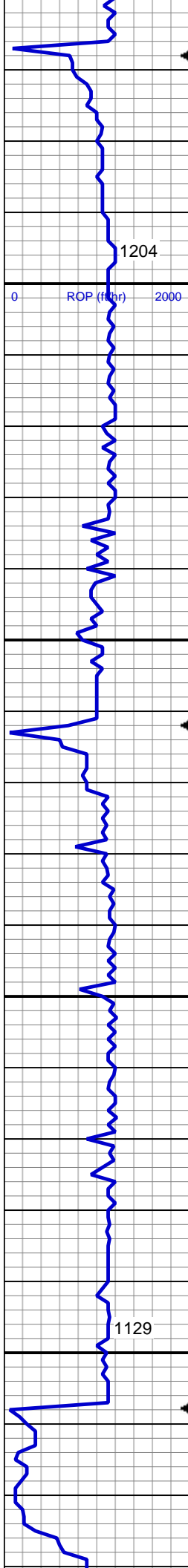
10% SHY SLTST: lt gy, sft-fri, sb blk - blk, aren - slty tex

MD: 2,903 '
TVD: 2,874.5 '
Inclination: 14.08 °
Azimuth: 152.34 °
VS: -128.18 '

35% SS: wh, clr, trns, vf-fgr, sb rnd- sb ang, m cmt, tr uncons, occ arg

35% 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 blk - blk, aren - slty tex



MD: 2,998 '
TVD: 2,966.55 '
Inclination: 14.56 °
Azimuth: 154.18 °
VS: -135.14 '

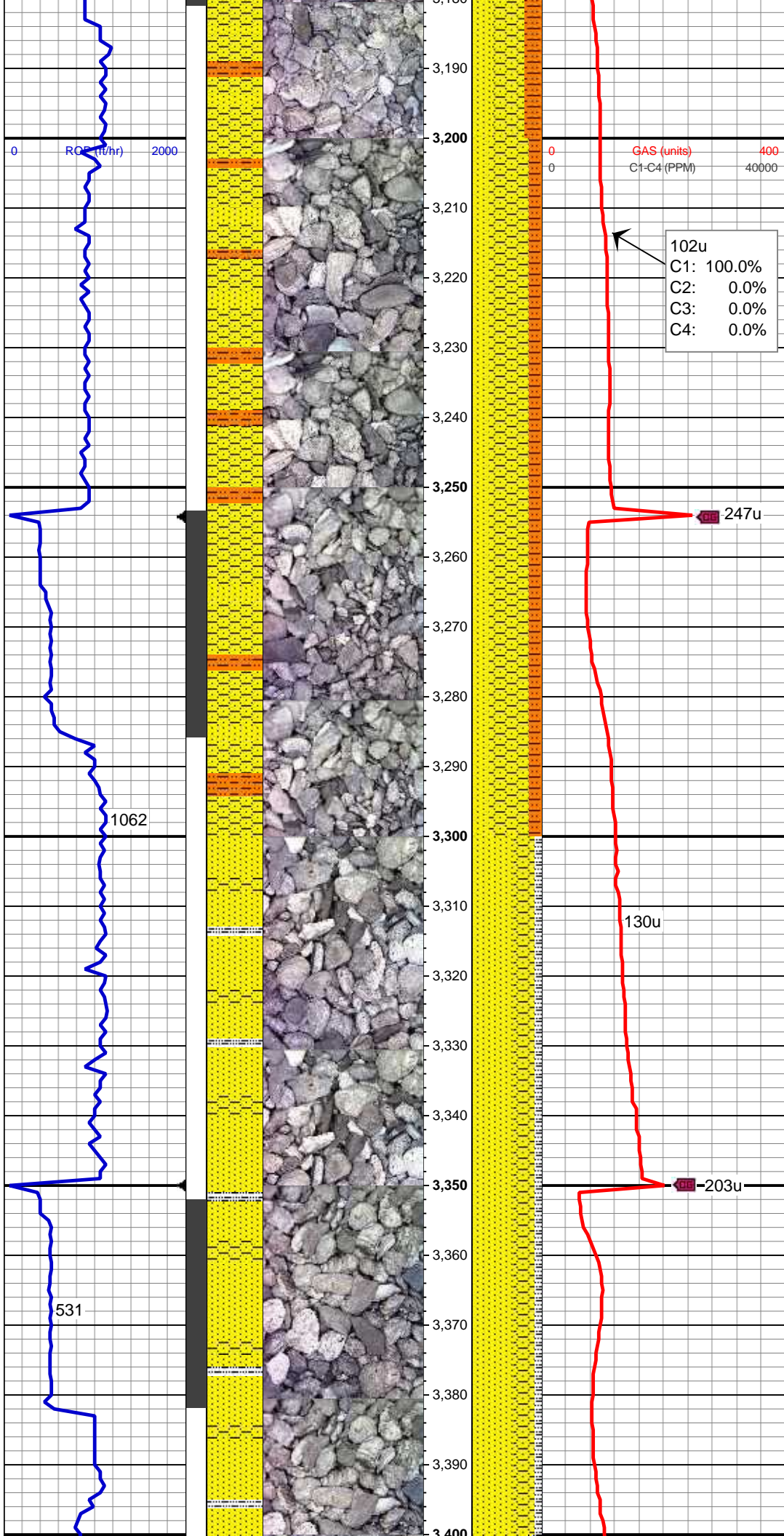
178u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%

50% SS: wh, clr, trnsl, vf-fgr, sb
rnd-sb ang,m cmt, tr uncon, occ
arg
30% 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 - blky, aren - slty tex

MUD WT 8.7 VIS 32
MD: 3,092 '
TVD: 3,057.79 '
Inclination: 13.24 °
Azimuth: 152.65 °
VS: -141.75 '

45% SHY SS: wh - lt gy sme s&p, f
gr, sb rd- sb ang, fr srt, fri, mod por,
arg cmt
30% SS: wh, clr, trnsl, vf-fgr, sb
rnd-sb ang,m cmt, tr uncon,
25% SHY SLTST: lt gy, sft-fri, sb
blky - blky, aren - slty tex

MD: 3,187 '
TVD: 3,150.38 '
Inclination: 13.24 °
Azimuth: 152.65 °
VS: -141.75 '



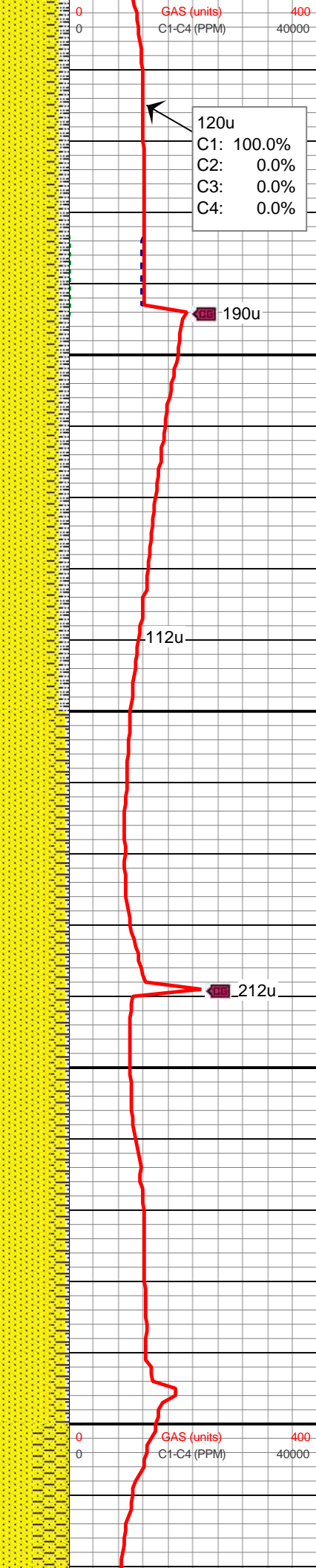
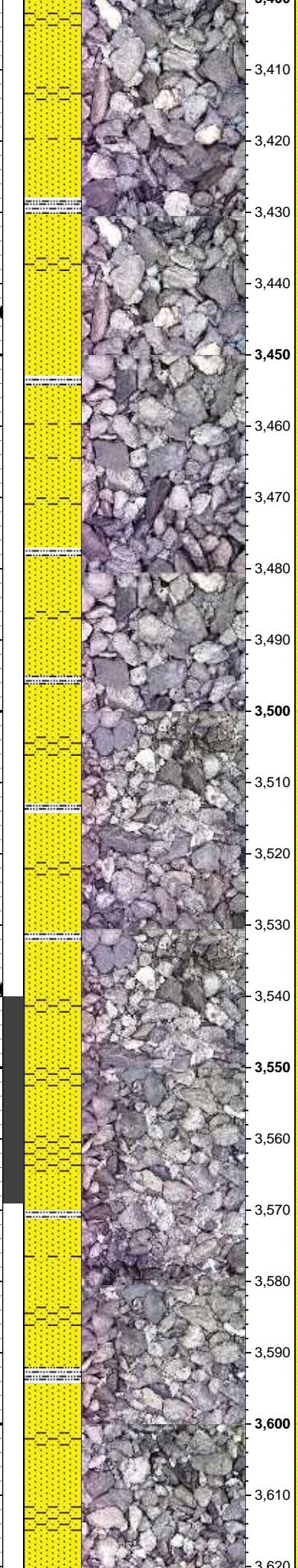
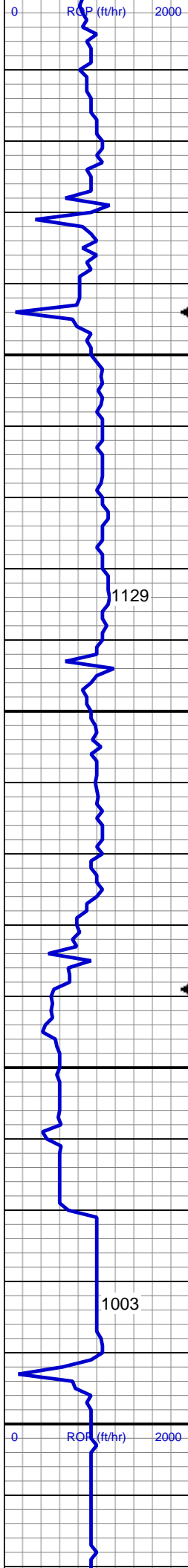
Inclination: 12.62 °
Azimuth: 151.24 °
VS: -148.51 '

55% SHY SS: wh - lt gy sme s&p, f
gr, sb rd- sb ang, fr srt, fri, mod por,
arg cmt
25% SS: wh, clr, trnsl, vf-fgr, sb
rnd-sb ang,m cmt, tr unconsl,
20% SHY SLTST: lt gy, sft-fri, sb
blky - blky, aren - slty tex

MD: 3,282 '
TVD: 3,243.02 '
Inclination: 12.98 °
Azimuth: 147.57 °
VS: -156.08 '

60% SS: lt gy - wh, sme s&p, f gr,
sbrd-sbang, mod srt, fri, p por,arg
cmt
30% SHY SS: wh - lt gy sme s&p, f
gr, sb rd- sb ang, fr srt, fri, mod por,
arg cmt
10% SILTY SH: m-dk gy occ gy brn,
firm-sl sft, rthy-sl slty

MD: 3,377 '
TVD: 3,335.54 '
Inclination: 13.28 °
Azimuth: 147.16 °
VS: -164.56 '



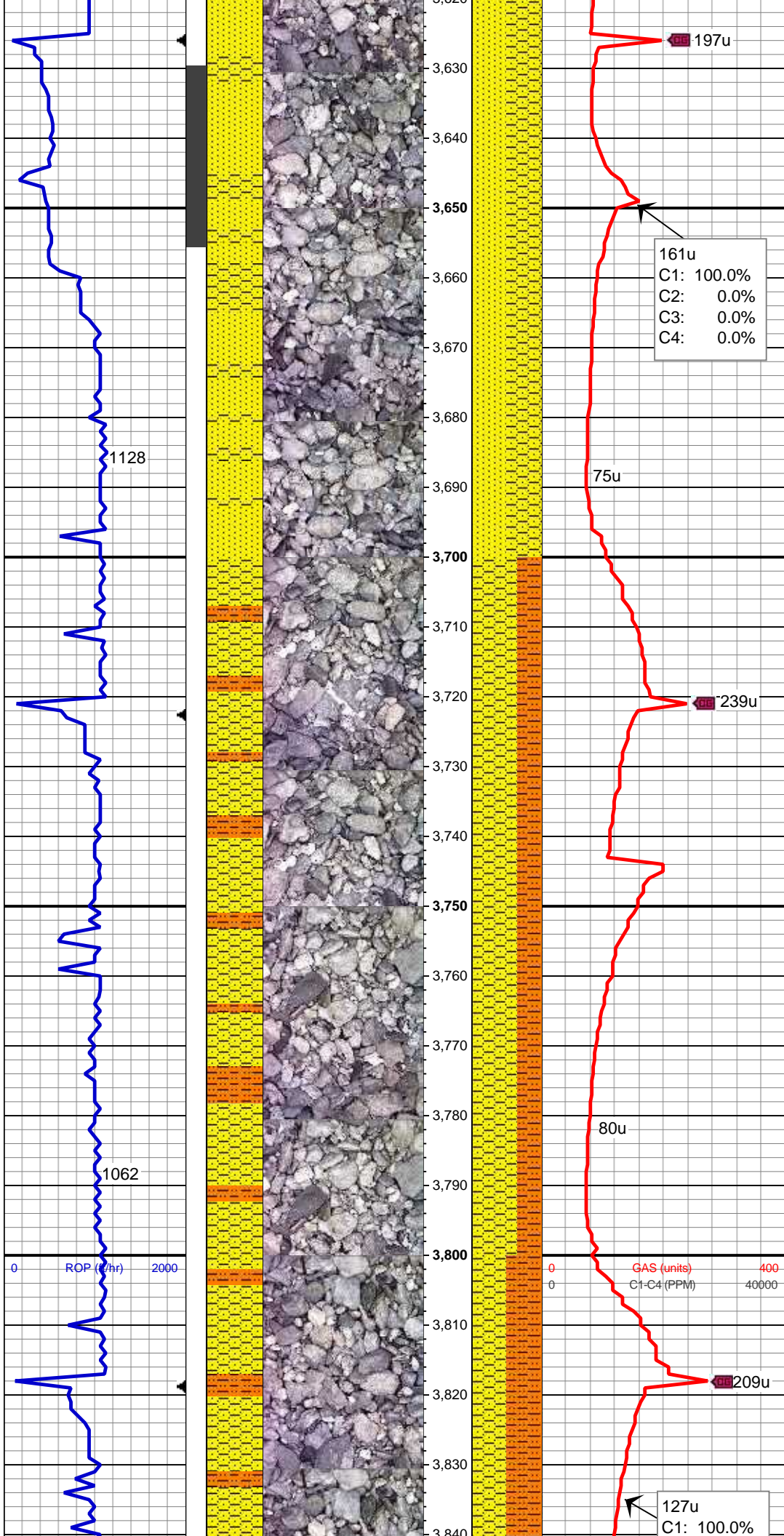
70% SS: lt gy - wh, sme s&p, f gr, sb rd- sb ang, fr srt, fri, p por, arg cmt
15% SHY SS: wh - lt gy sme s&p, f gr, sb rd- sb ang, fr srt, fri, mod por, arg cmt
15% SILTY SH: m-dk gy occ gy brn, firm-sl sft, rthy-sl slty

MD: 3,472 '
TVD: 3,428.37 '
Inclination: 11.25 °
Azimuth: 148.31 °
VS: -172.38 '

75% SS: lt gy - wh, sme s&p, f gr, sb rd- sb ang, mod srt, fri, p por, arg cmt
20% SHY SS: wh - lt gy sme s&p, f gr, sb rd- sb ang, fr srt, fri, mod por, arg cmt
5% SILTY SH: m-dk gy occ gy brn, firm-sl sft, rthy-sl slty

MD: 3,567 '
TVD: 3,521.72 '
Inclination: 10.13 °
Azimuth: 139.35 °
VS: -180.2 '

MUD WT 8.7 VIS 29

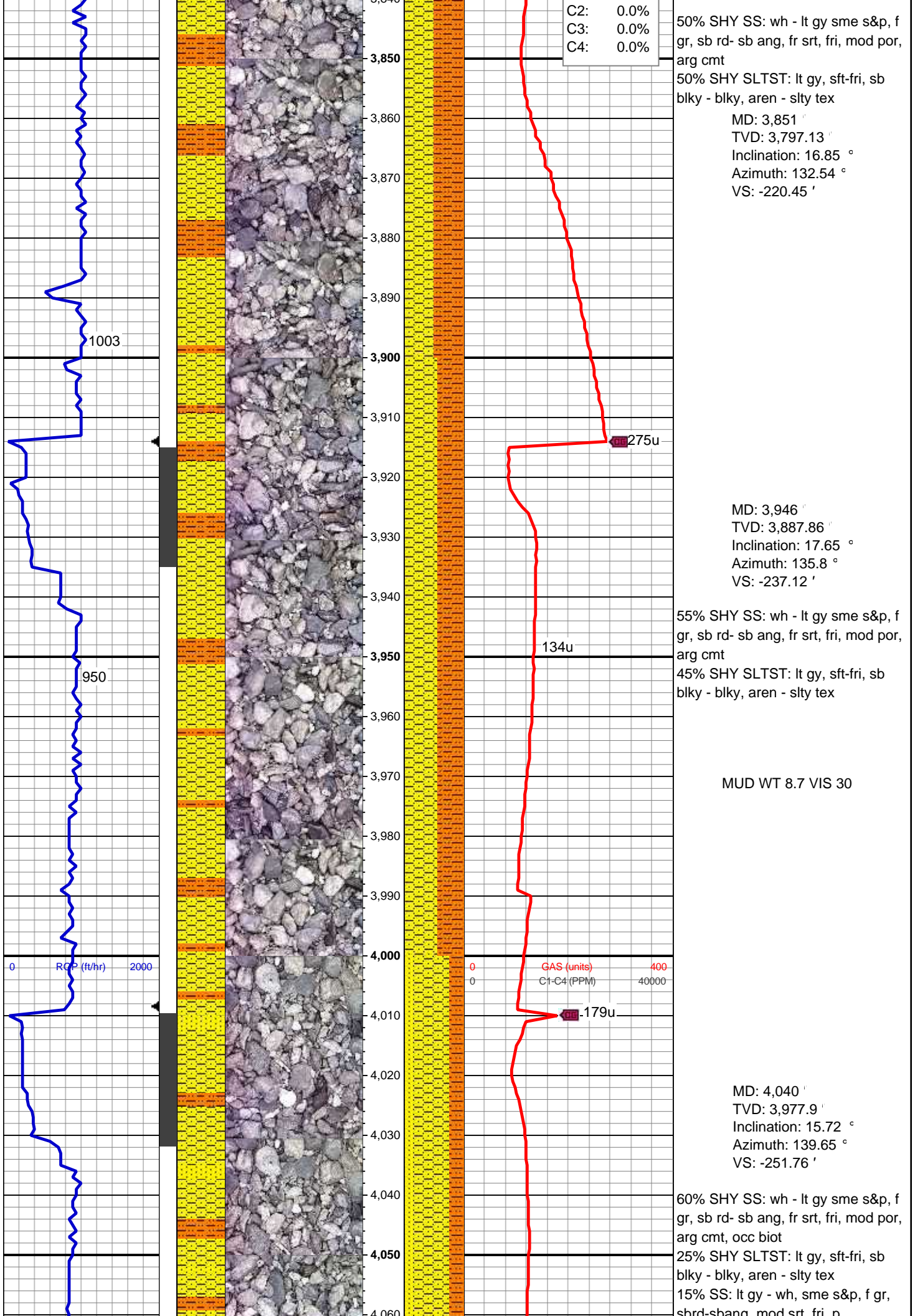


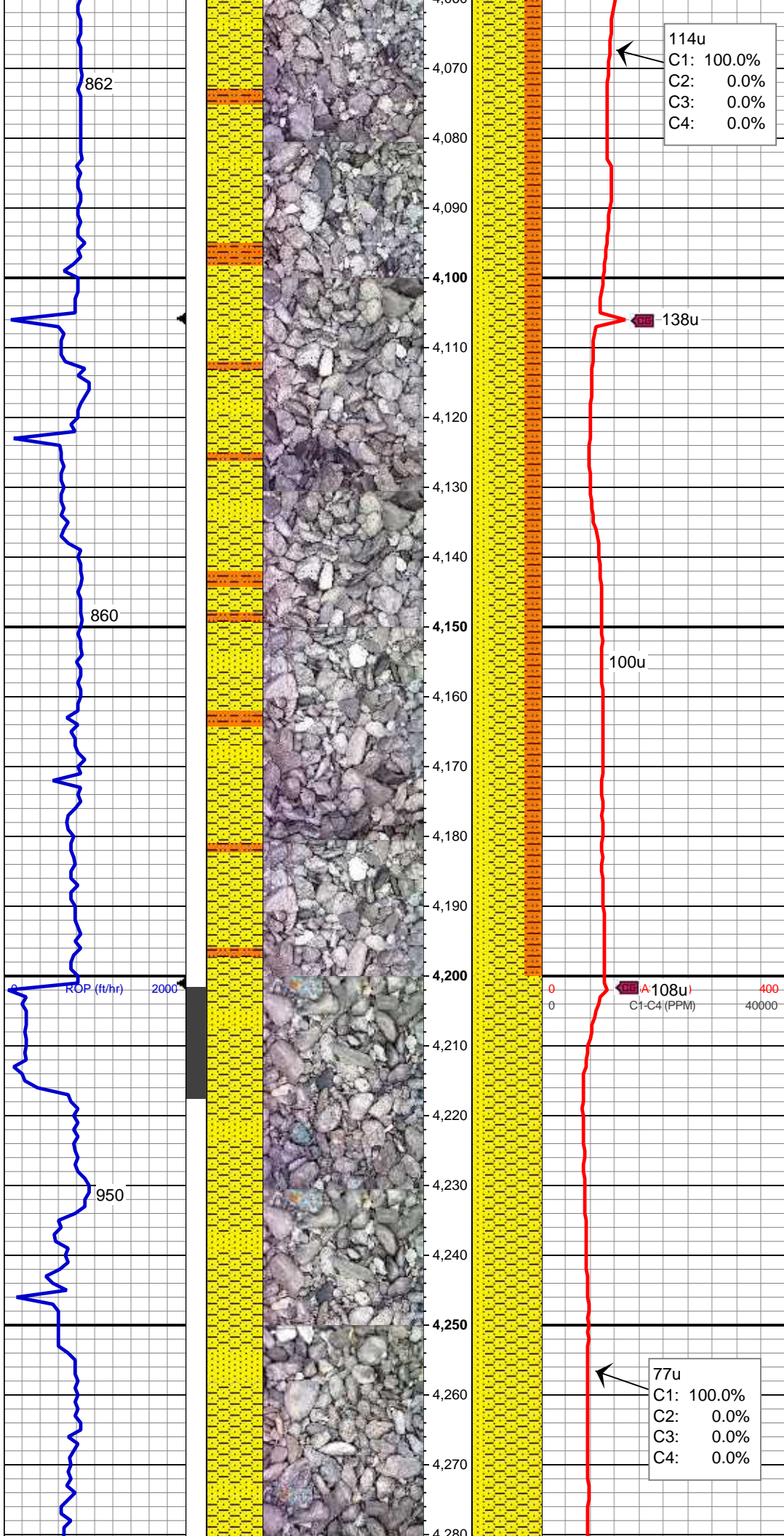
50% SS: lt gy - wh, sme s&p, f gr, sb rd-sb ang, mod srt, fri, p por, arg cmt
50% SHY SS: wh - lt gy sme s&p, f gr, sb rd- sb ang, fr srt, fri, mod por, arg cmt

MD: 3,662 '
TVD: 3,614.74 '
Inclination: 13.27 °
Azimuth: 134.59 °
VS: -190.92 '

65% SHY SS: wh - lt gy sme s&p, f gr, sb rd- sb ang, fr srt, fri, mod por, arg cmt
35% SHY SLTST: lt gy, sft-fri, sb blkly - blkly, aren - slty tex

MD: 3,756 '
TVD: 3,705.84 '
Inclination: 15.26 °
Azimuth: 134.14 °
VS: -204.57 '





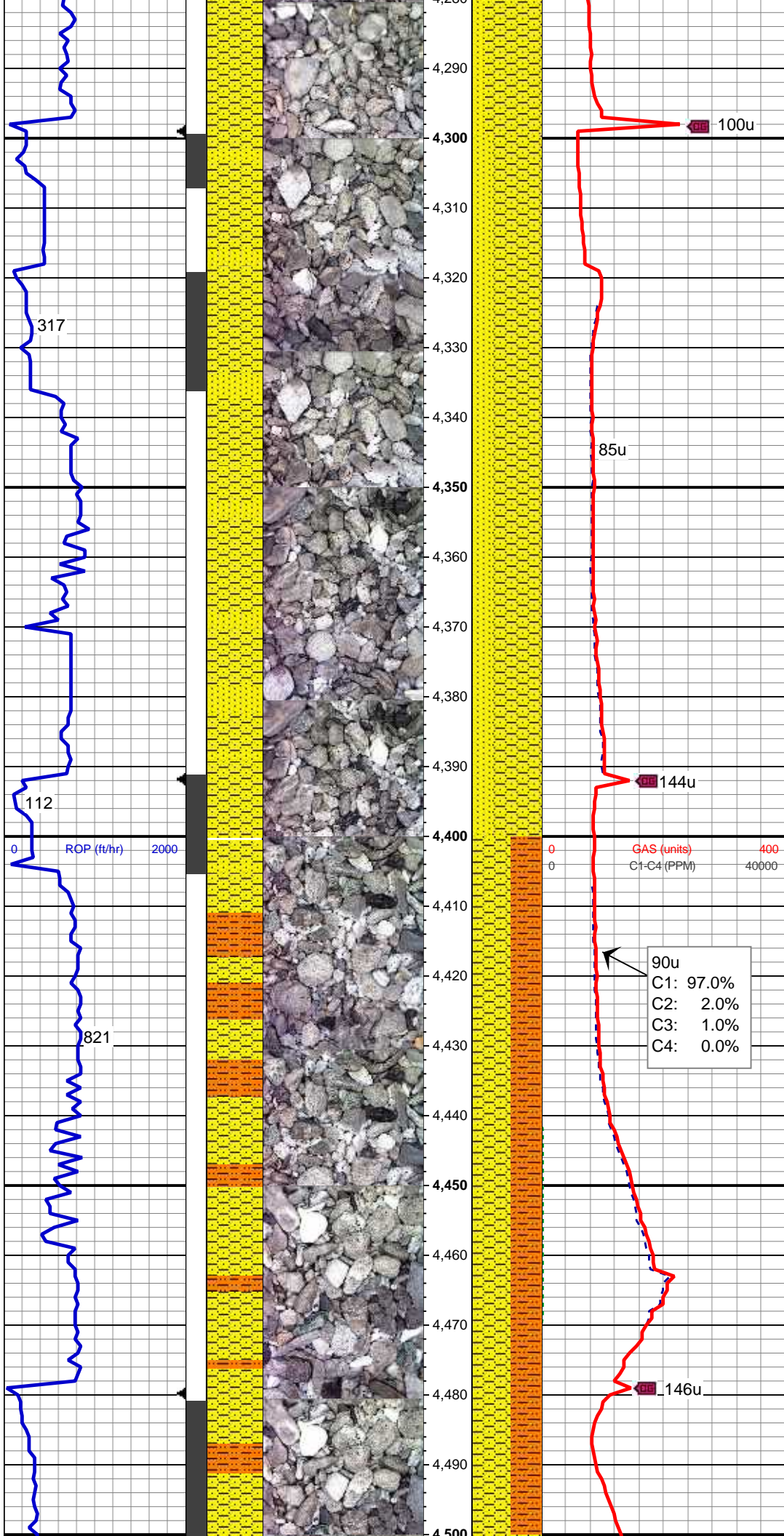
MUD WT 8.8 VIS 29

MD: 4,135 '
TVD: 4,069.64 '
Inclination: 14.37 °
Azimuth: 141.97 °
VS: -263.99 '

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

MD: 4,230 '
TVD: 4,161.96 '
Inclination: 12.93 °
Azimuth: 140.98 °
VS: -274.85 '

80% 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

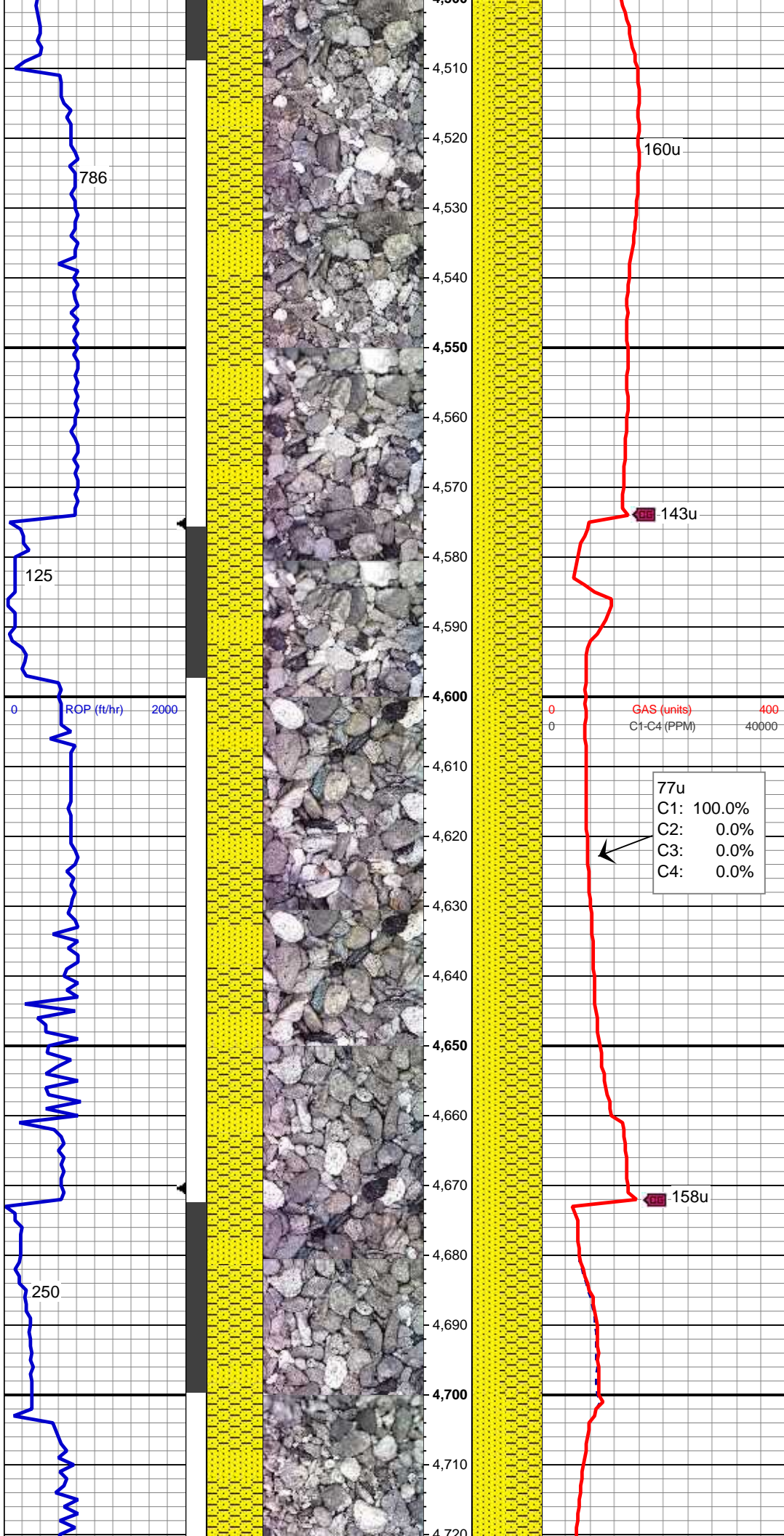


MD: 4,325 '
TVD: 4,254.79 '
Inclination: 11.59 °
Azimuth: 142.64 °
VS: -284.54 '

70% SHY SS: wh - lt gy sme s&p, f
gr, sb rd- sb ang, fr srt, fri, mod por,
arg cmt
30% SS: lt gy - wh, sme s&p, f gr,
sbrd-sbang, mod srt, fri, p por, arg
cmt

MD: 4,419 '
TVD: 4,347.02 '
Inclination: 10.66 °
Azimuth: 145.74 °
VS: -292.59 '

55% SHY SS: wh - lt gy sme s&p, f
gr, sb rd- sb ang, fr srt, fri, mod por,
arg cmt
45% SHY SLTST: lt gy, sft-fri, sb
blky - blky, aren - slty tex



MD: 4,515 '
TVD: 4,441.12 '
Inclination: 12.15 °
Azimuth: 146.73 °
VS: -300.38 '

70% SHY SS: wh - lt gy sme s&p, f
gr, sb rd- sb ang, fr srt, fri, mod por,
arg cmt
30% SS: lt gy - wh, sme s&p, f gr,
sbrd-sbang, mod srt, fri, p por,arg
cmt

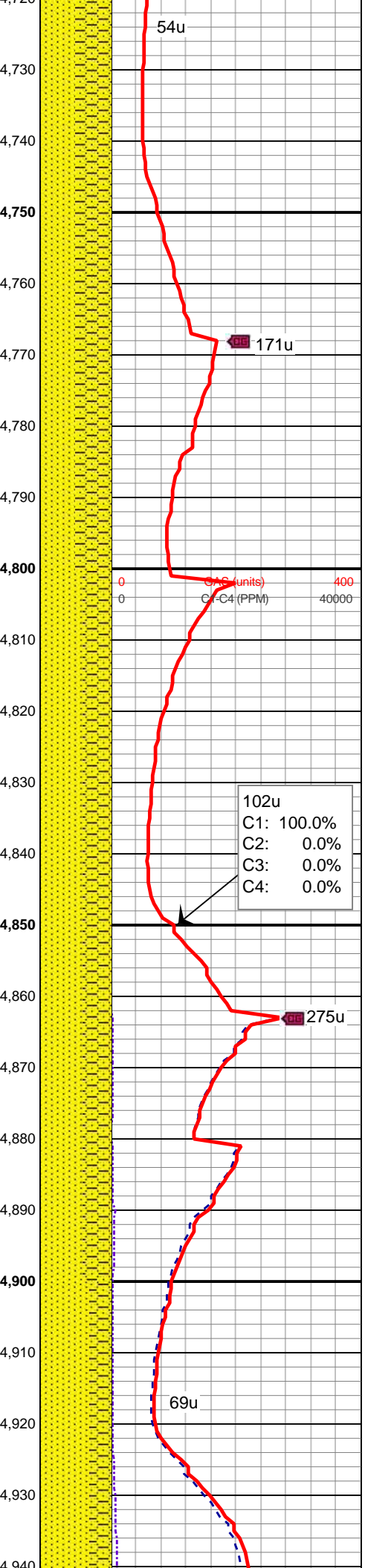
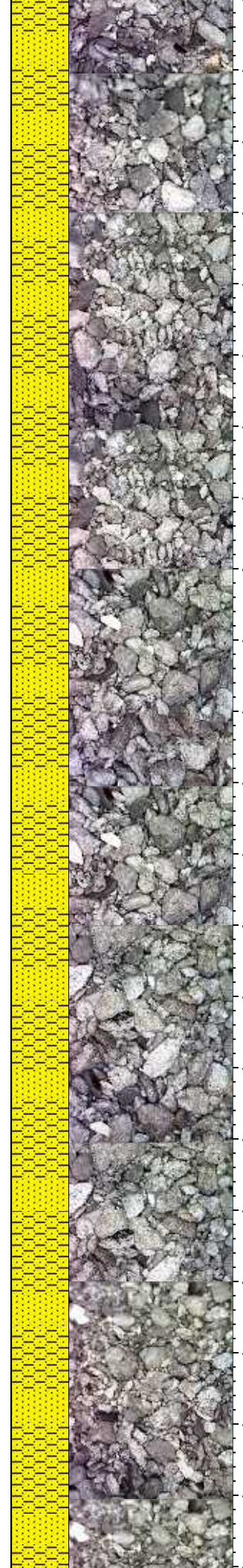
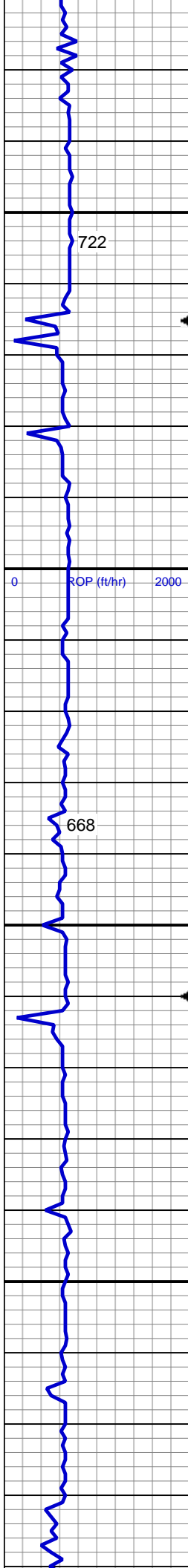
MUD WT 8.7 VIS 29

MD: 4,610 '
TVD: 4,534.2 '
Inclination: 10.96 °
Azimuth: 149.71 °
VS: -307.62 '

60% SHY SS: wh - lt gy sme s&p, f
gr, sb rd- sb ang, fr srt, fri, mod por,
arg cmt
40% SS: lt gy - wh, sme s&p, f gr,
sbrd-sbang, mod srt, fri, p por,arg
cmt

MD: 4,705 '
TVD: 4,627.26 '
Inclination: 12.22 °
Azimuth: 143.71 °
VS: -315.35 '

MUD WT 8.7 VIS 29



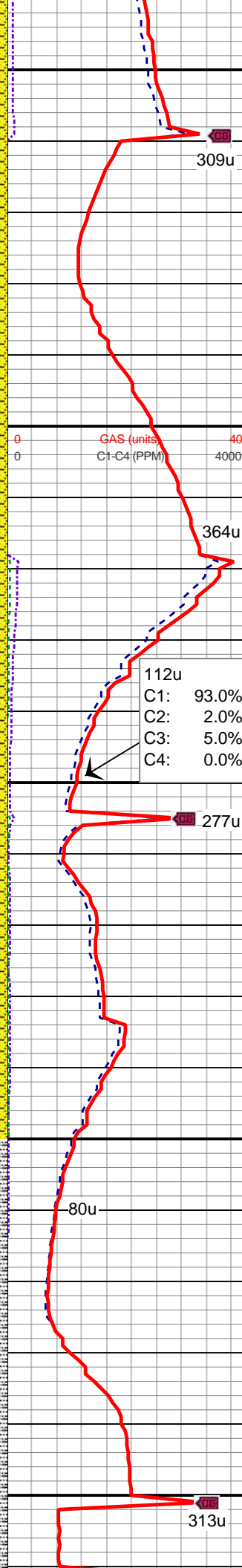
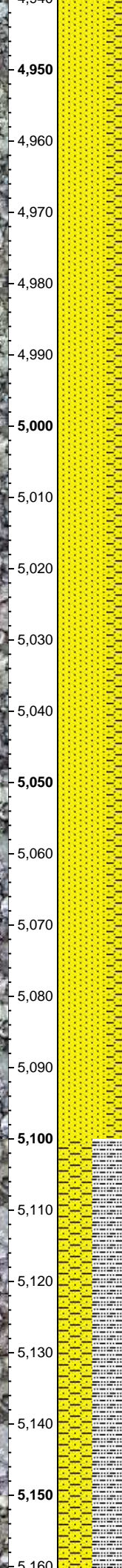
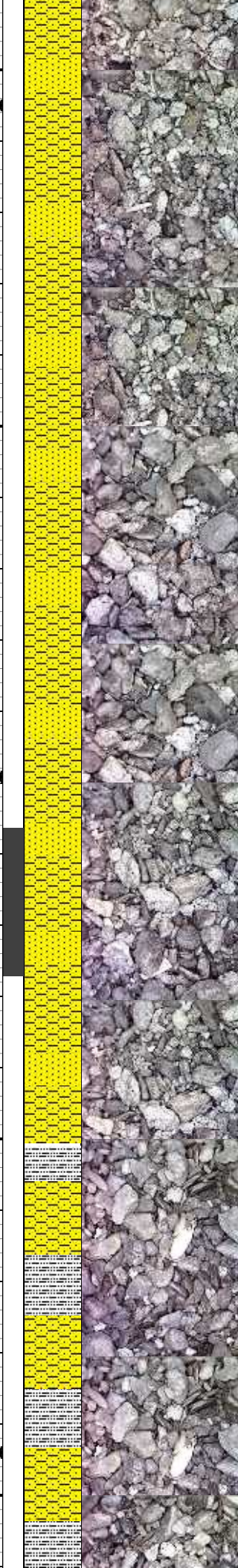
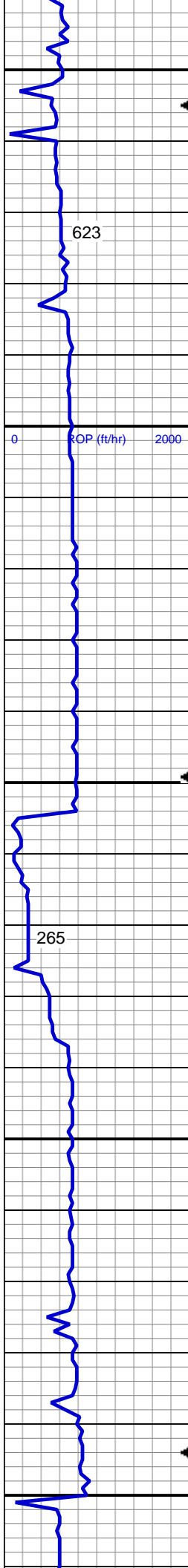
50% SHY SS: wh - lt gy sme s&p, f gr, sb rd- sb ang, fr srt, fri, mod por, arg cmt
50% SS: lt gy - wh, sme s&p, f gr, sb rd-sbang, mod srt, fri, p por, arg cmt

MD: 4,800 '
TVD: 4,720.4 '
Inclination: 10.5 °
Azimuth: 140.01 °
VS: -324.27 '

MUD WT 8.7 VIS 29

60% SS: lt gy - wh, sme s&p, f gr, sb rd-sbang, mod srt, fri, p por, arg cmt
40% SHY SS: wh - lt gy sme s&p, f gr, sb rd- sb ang, fr srt, fri, mod por, arg cmt

MD: 4,894 '
TVD: 4,813.04 '
Inclination: 8.97 °
Azimuth: 137.3 °
VS: -332.63 '



70% SS: lt gy - wh, sme s&p, f gr, sb rd- sbang, mod srt, fri, p por, arg cmt
30% SHY SS: wh - lt gy sme s&p, f gr, sb rd- sb ang, fr srt, fri, mod por, arg cmt

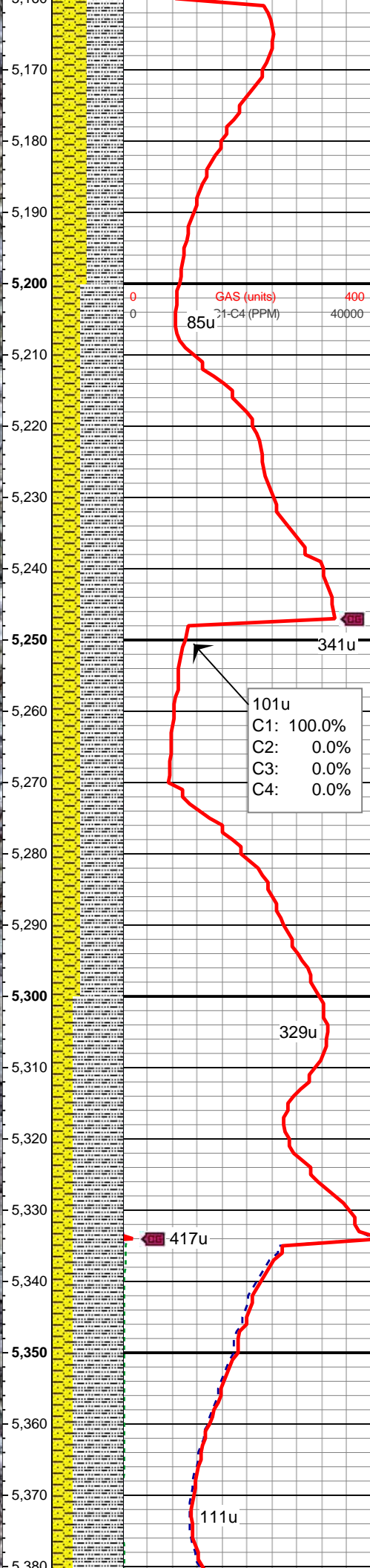
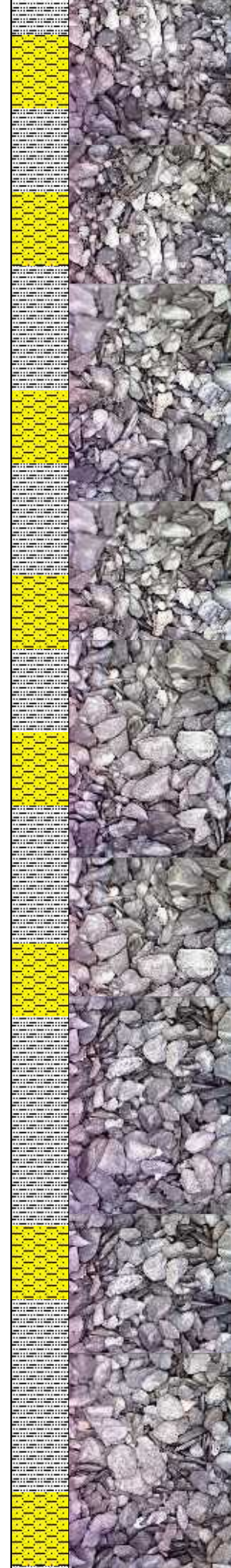
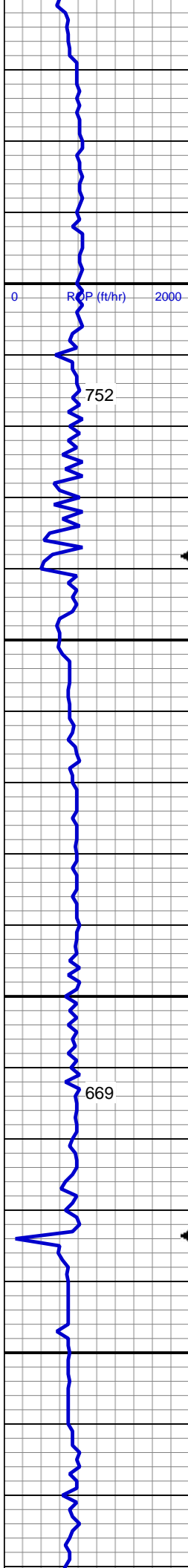
MD: 4,989 '
TVD: 4,906.87 '
Inclination: 9.02 °
Azimuth: 134.41 °
VS: -341.07 '

70% SS: lt gy - wh, sme s&p, f gr, sb rd- sbang, mod srt, fri, p por, arg cmt
30% SHY SS: wh - lt gy sme s&p, f gr, sb rd- sb ang, fr srt, fri, mod por, arg cmt

MD: 5,084 '
TVD: 5,000.9 '
Inclination: 7.37 °
Azimuth: 138.98 °
VS: -348.64 '

MUD WT 8.8 VIS 29

50% SS: SLTY SH: m-dk gy occ gy brn, plty - sb plty firm-sl sft, rthy-sl slty
50% SHY SS: wh - lt gy sme s&p, f gr, sb rd- sb ang, fr srt, fri, mod por, arg cmt



60% SLTY SH: m-dk gy occ gy brn,
ply - sb ply firm-sl sft, rthy-sl slty
40% SHY SS: wh - lt gy sme s&p, f
gr, sb rd- sb ang, fr srt, fri, mod por,
arg cmt

MD: 5,273'

TVD: 5,188.82'

Inclination: 4.49°

Azimuth: 142.35°

VS: -359.05'

MUD WT 8.8 VIS 29

70% SLTY SH: m-dk gy occ gy brn,
ply - sb ply firm-sl sft, rthy-sl slty
30% SHY SS: wh - lt gy sme s&p, f
gr, sb rd- sb ang, fr srt, fri, mod por,
arg cmt

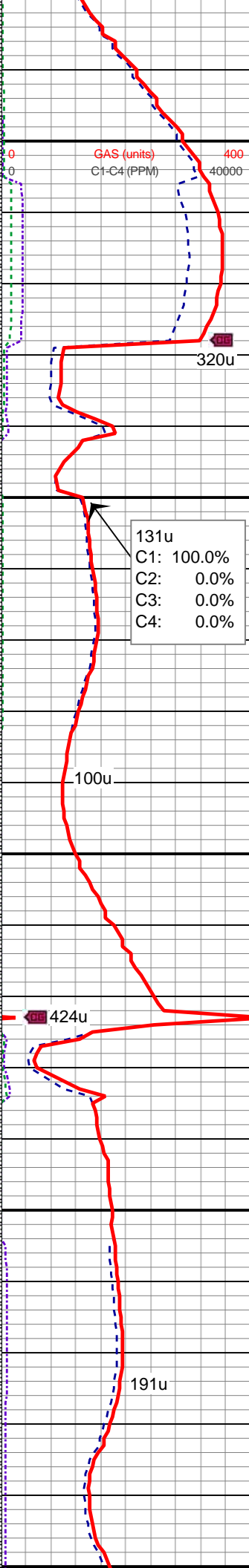
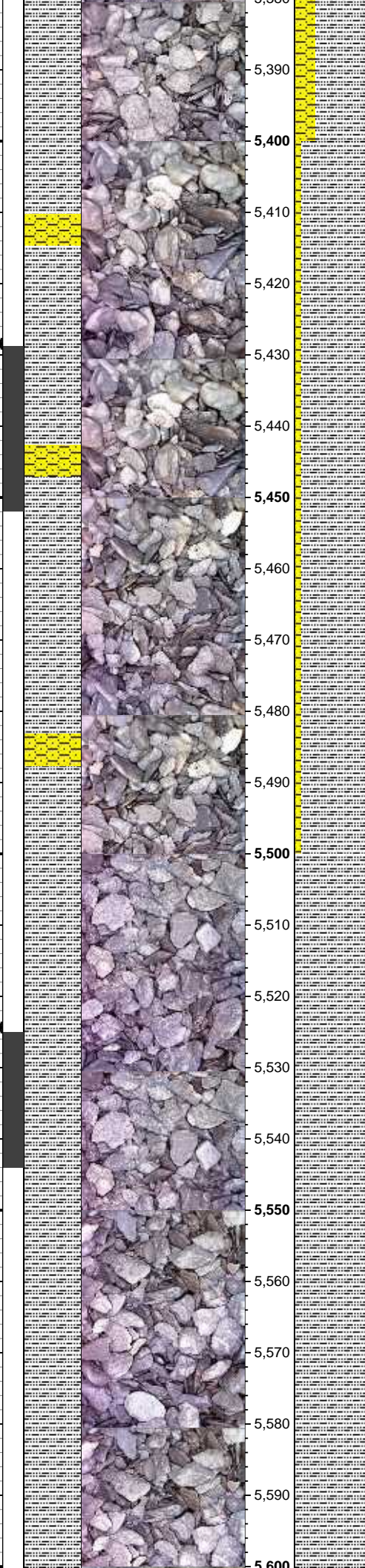
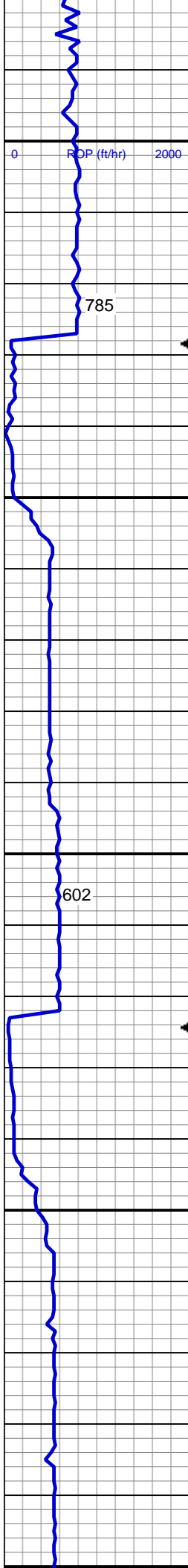
MD: 5,368'

TVD: 5,283.51'

Inclination: 4.68°

Azimuth: 139.38°

VS: -362.81'



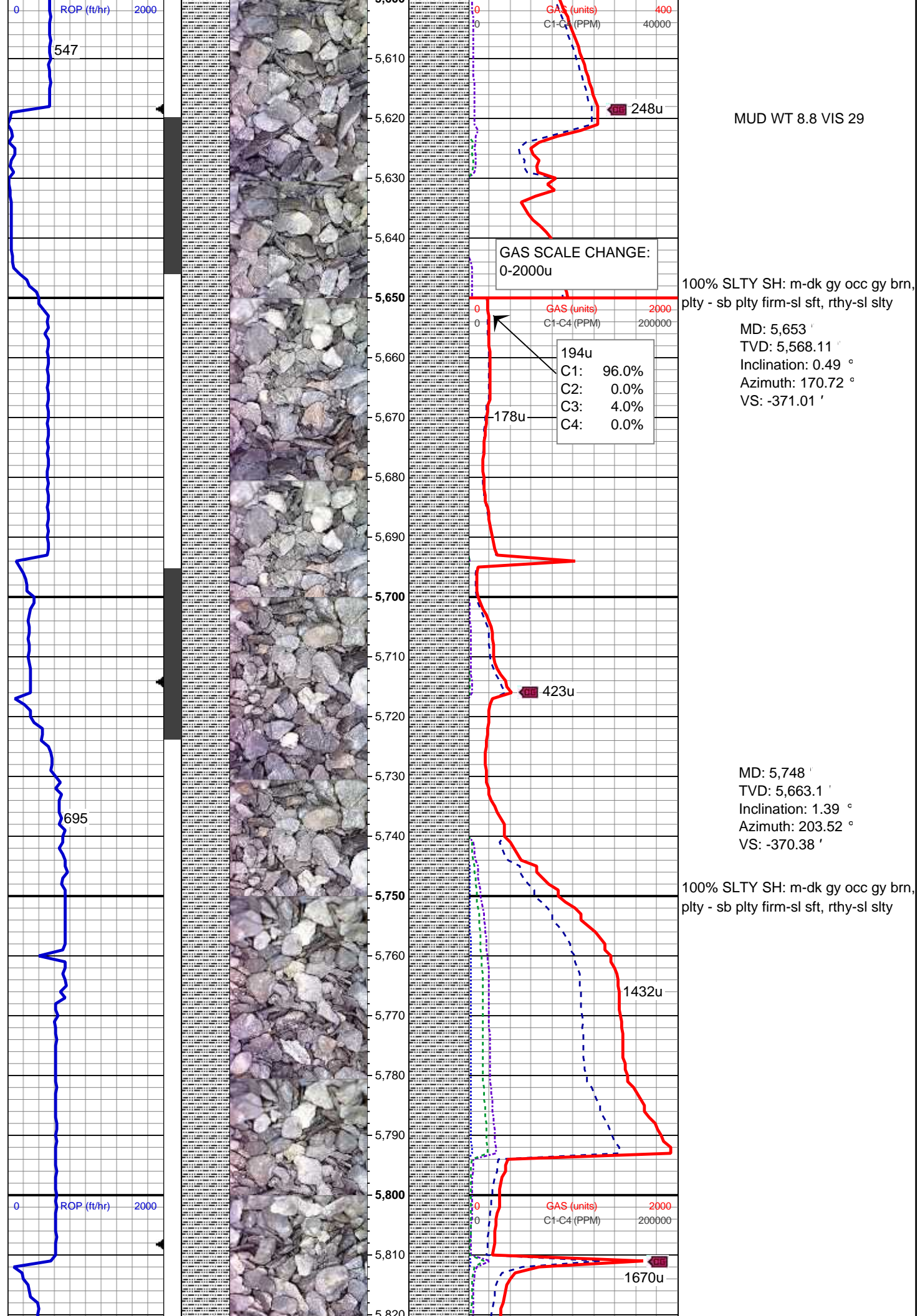
90% SLTY SH: m-dk gy occ gy brn,
plty - sb plty firm-sl sft, rthy-sl slty
10% SHY SS: wh - lt gy sme s&p, f
gr, sb rd- sb ang, fr srt, fri, mod por,
arg cmt

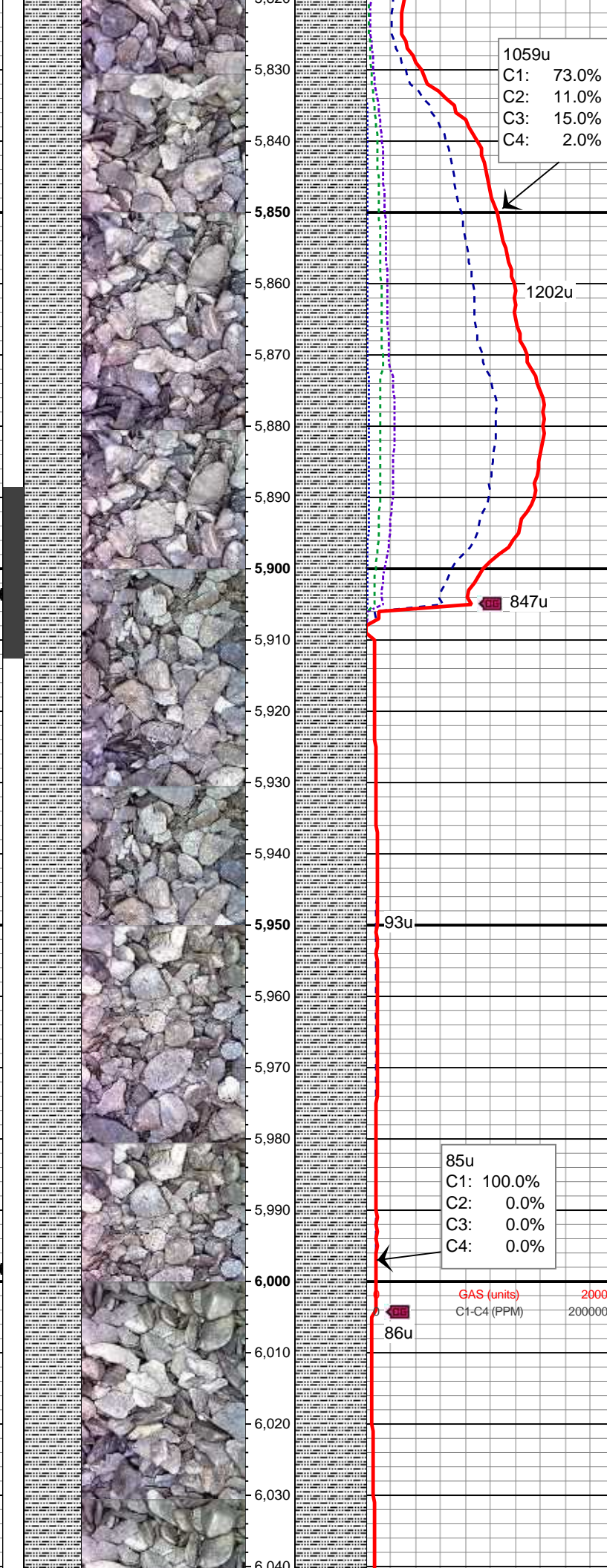
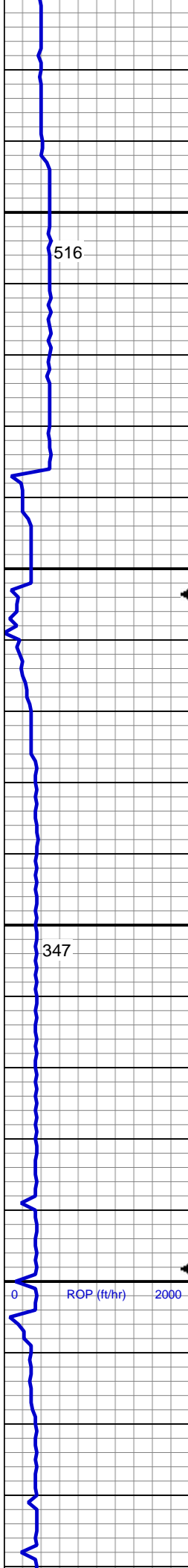
MD: 5,463 '
TVD: 5,378.25 '
Inclination: 3.83 °
Azimuth: 130.22 °
VS: -366.86 '

MUD WT 8.8 VIS 28

100% SLTY SH: m-dk gy occ gy brn,
plty - sb plty firm-sl sft, rthy-sl slty

MD: 5,558 '
TVD: 5,473.13 '
Inclination: 1.74 °
Azimuth: 123.9 °
VS: -369.96 '





1059u
C1: 73.0%
C2: 11.0%
C3: 15.0%
C4: 2.0%

MD: 5,843 '
TVD: 5,758.08 '
Inclination: 1.02 °
Azimuth: 183.79 °
VS: -369.56 '

100% SLTY SH: m-dk gy occ gy brn,
pty - sb pty firm-sl sft, rthy-sl slty

1202u

MUD WT 8.8 VIS 29

847u

MD: 5,938 '
TVD: 5,853.06 '
Inclination: 1.47 °
Azimuth: 194.59 °
VS: -368.86 '

100% SLTY SH: m-dk gy occ gy brn,
pty - sb pty firm-sl sft, rthy-sl slty

93u

MD: 5,990 '
TVD: 5,905.04 '
Inclination: 1.32 °
Azimuth: 213.97 °
VS: -368.18 '

85u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%

MUD WT 9.0 VIS 29

86u

GAS (units)
C1-C4 (PPM)

100% SLTY SH: m-dk gy occ gy brn,
pty - sb pty firm-sl sft, rthy-sl slty

TD Vertical @ 6050' MD
2158 hrs 1/08/2014

TOOH For Directional BHA

MINDEPTH

01/09/2014

0

ROP (ft/hr)

2000

6,050

6,060

6,070

6,080

6,090

6,100

6,110

6,120

6,130

6,140

6,150

6,160

6,170

6,180

6,190

6,200

6,210

6,220

6,230

6,240

6,250

6,260

0

GAS (units)

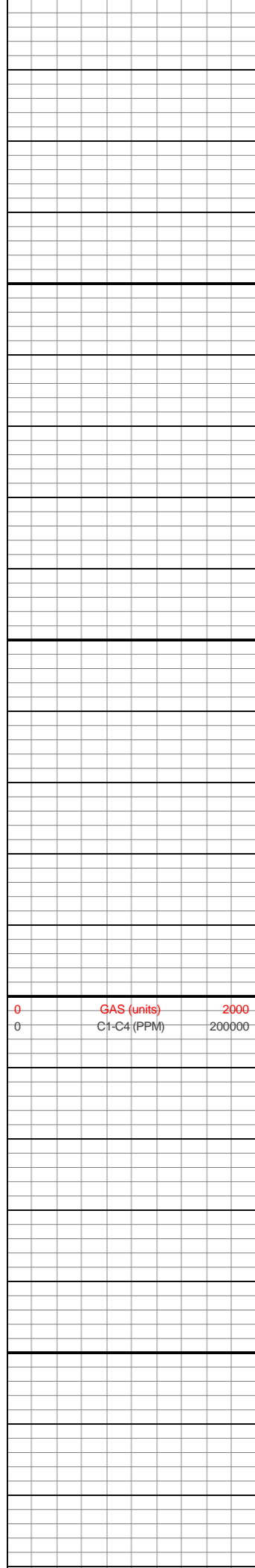
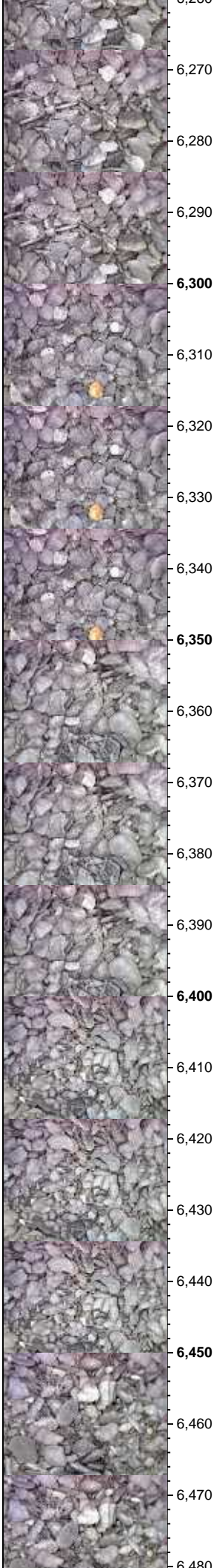
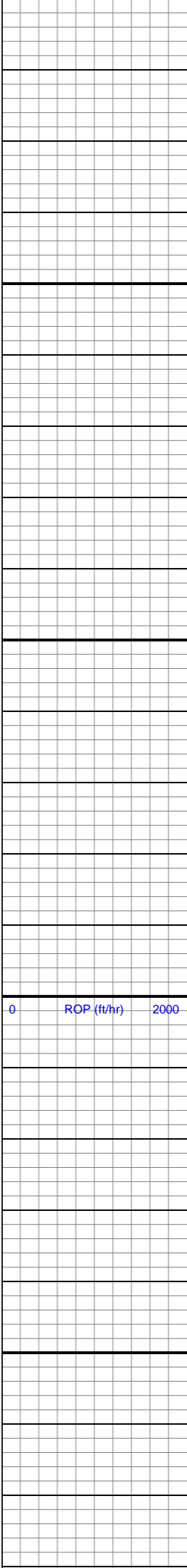
2000

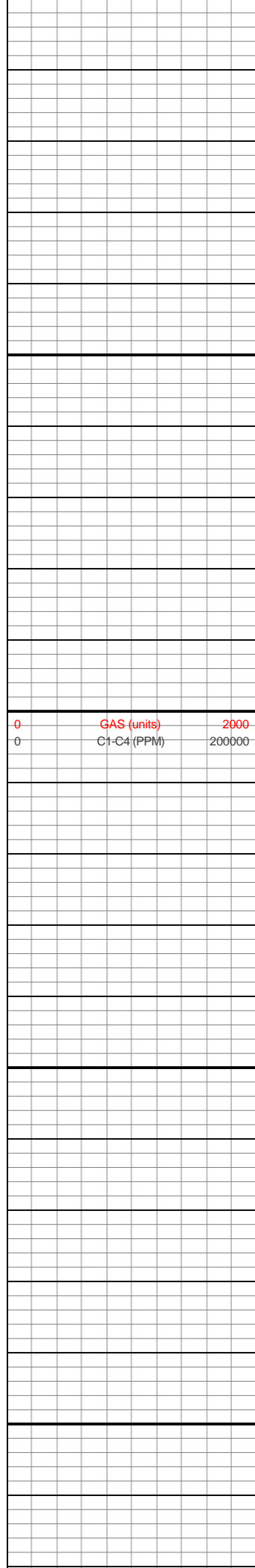
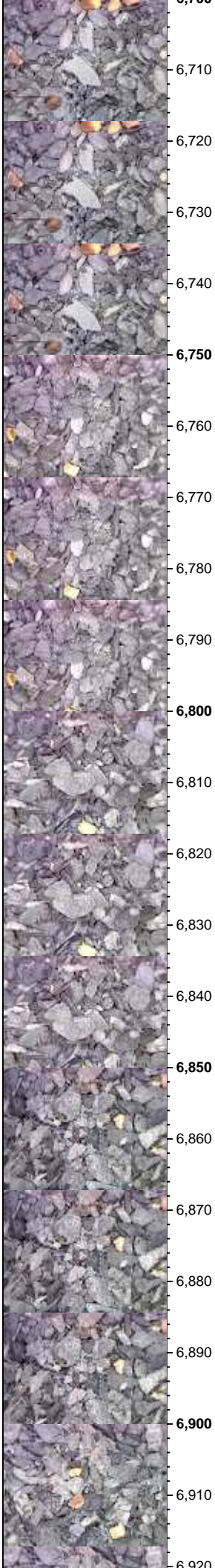
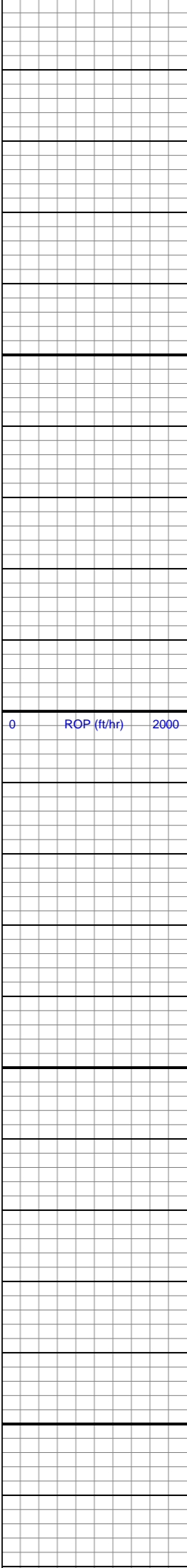
0

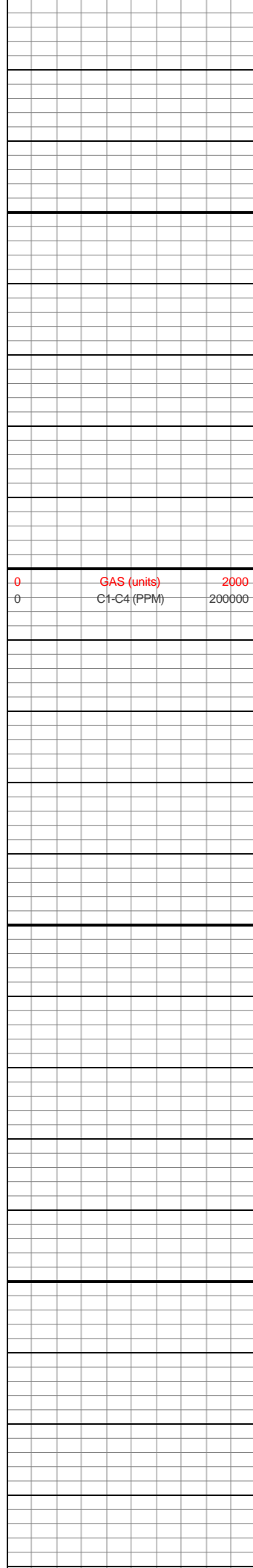
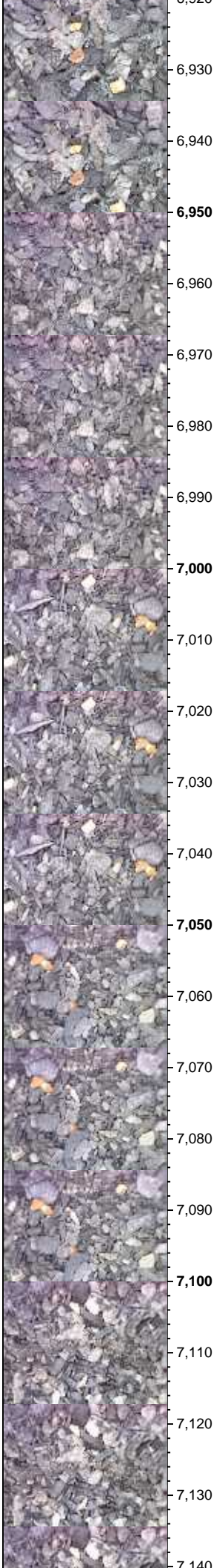
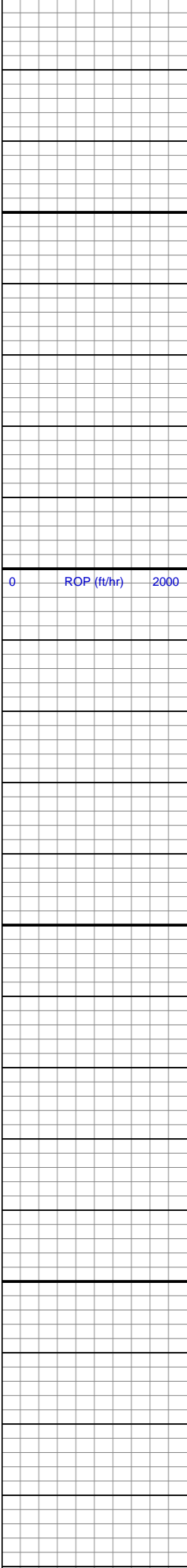
C1-C4 (PPM)

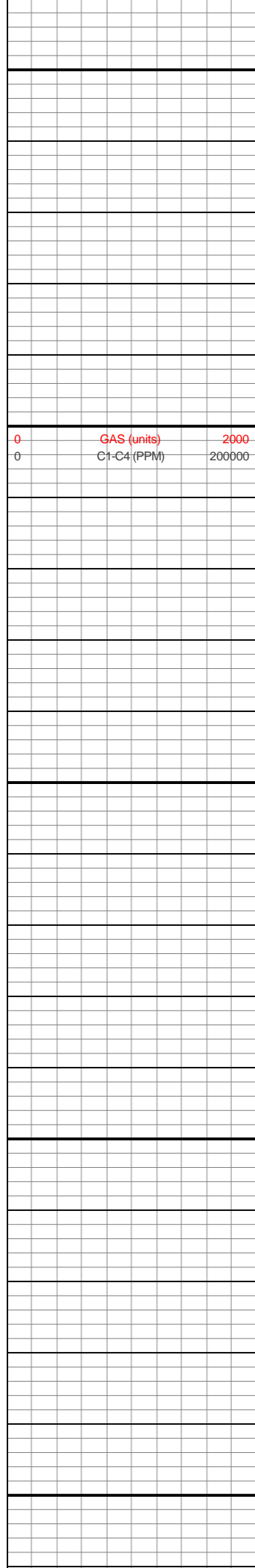
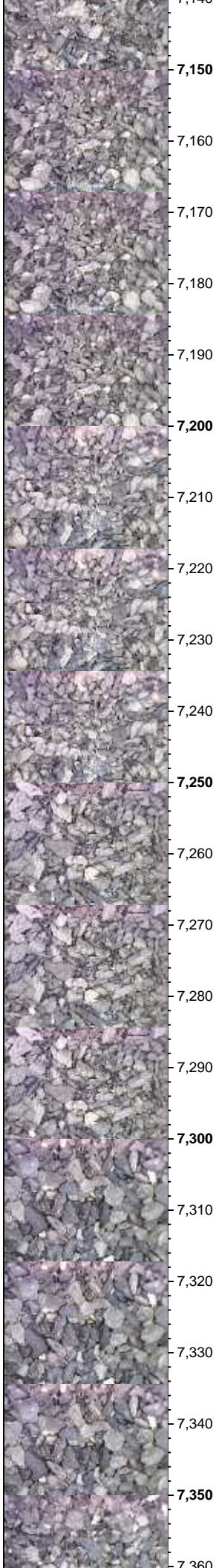
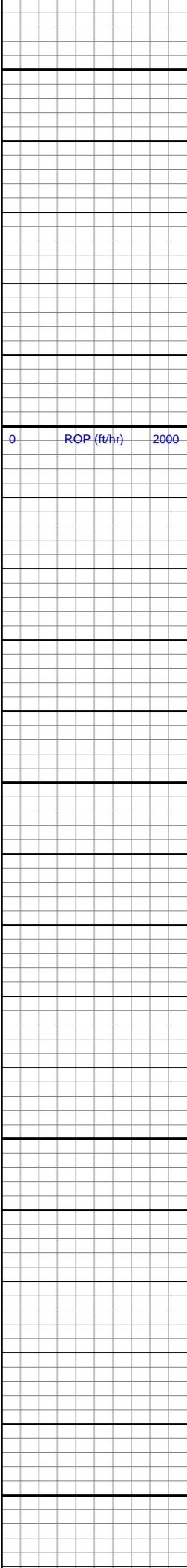
200000

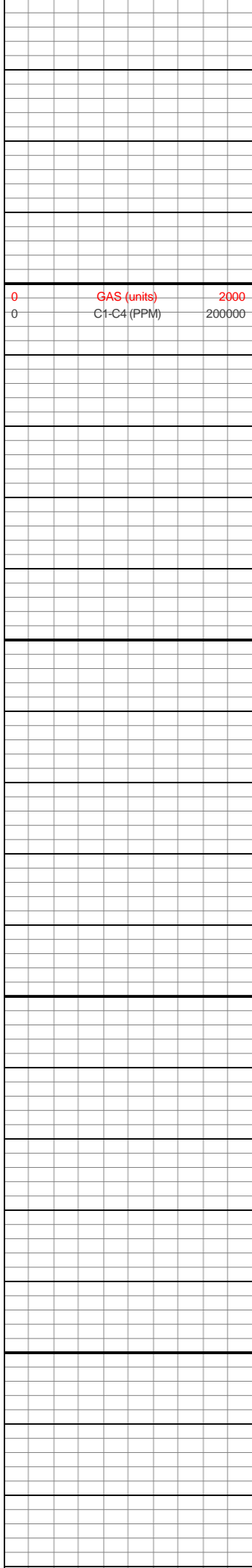
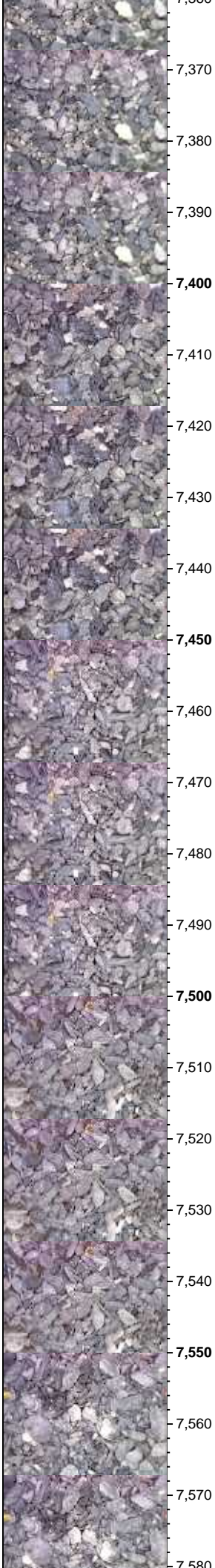
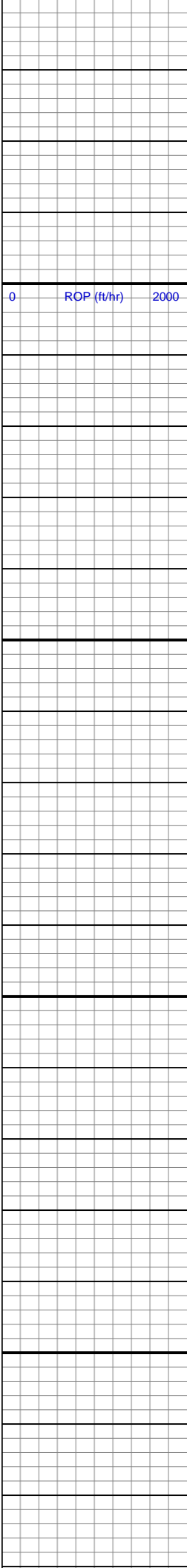
Thank You For Choosing
Columbine Logging Inc.

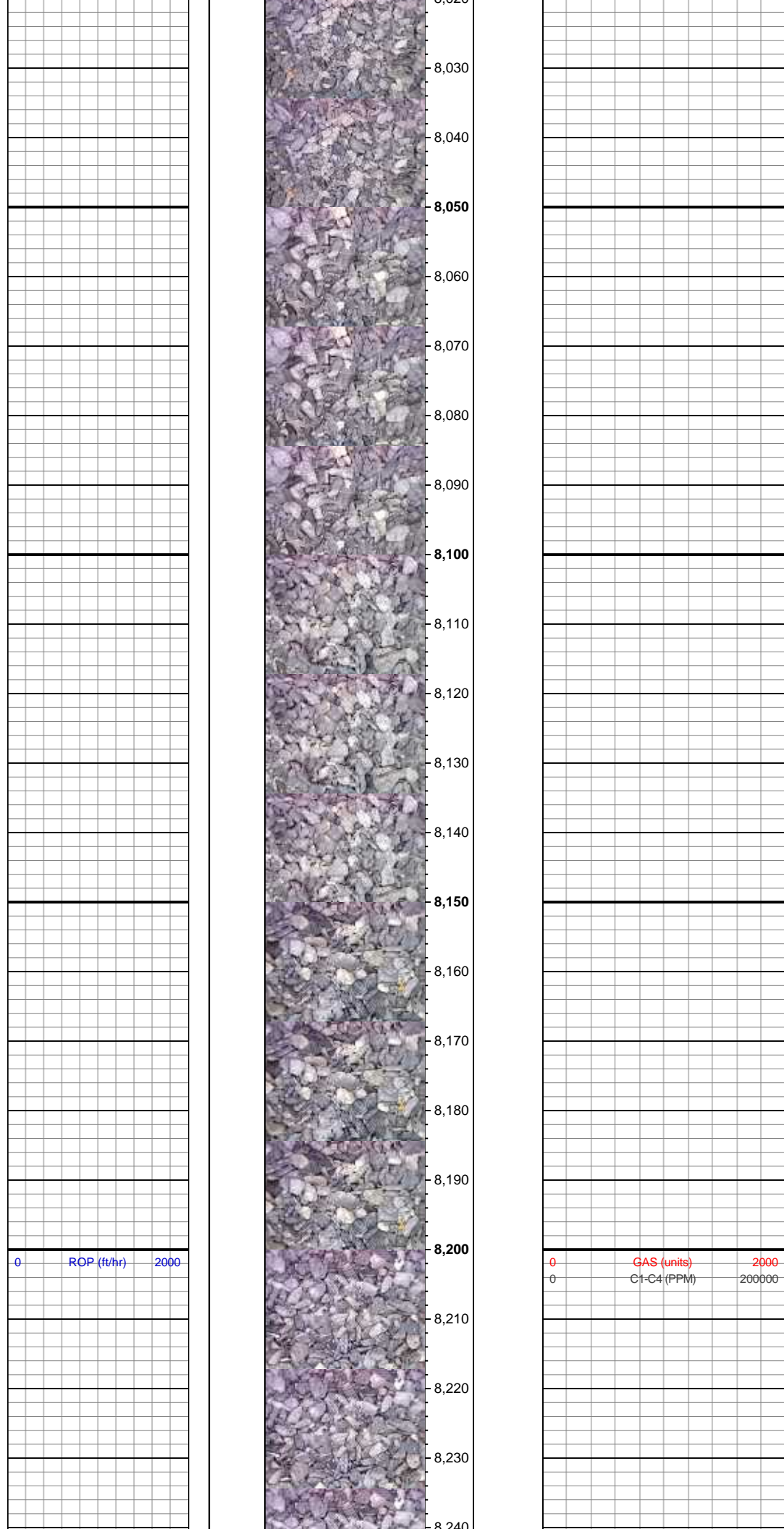


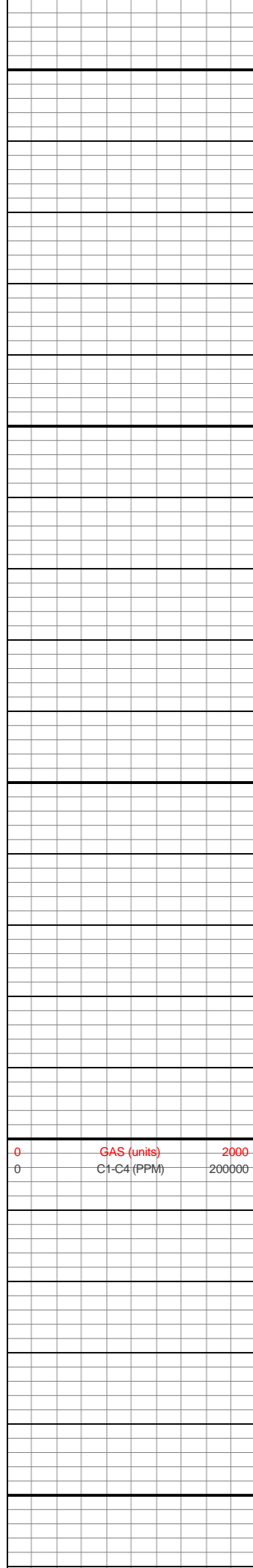
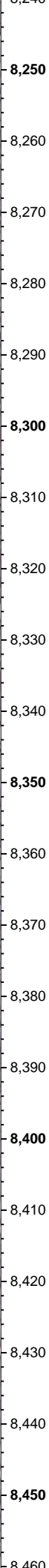
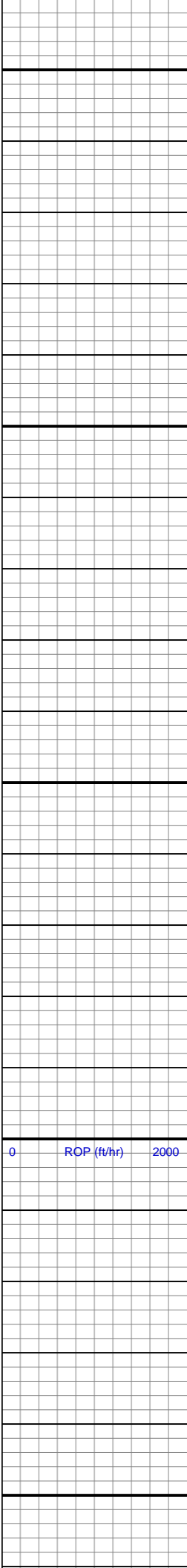


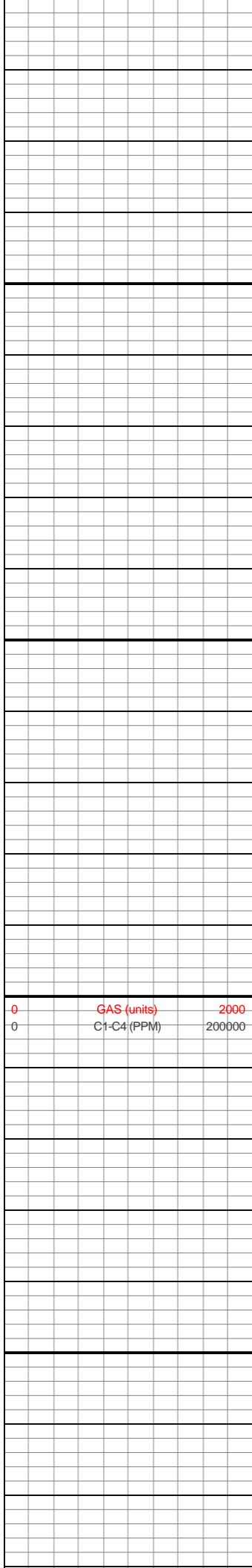
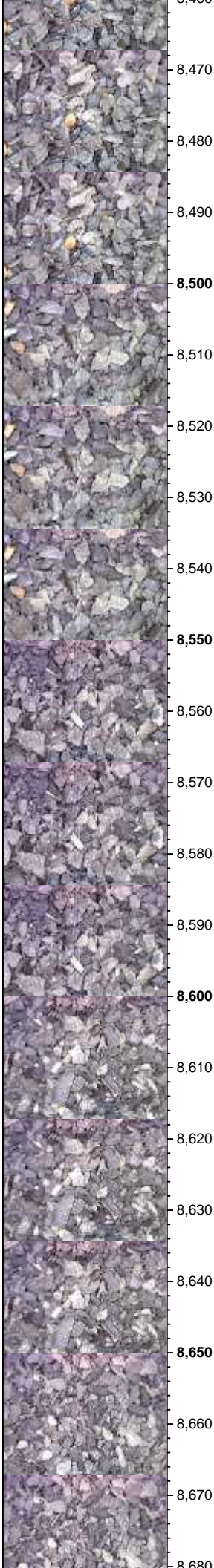
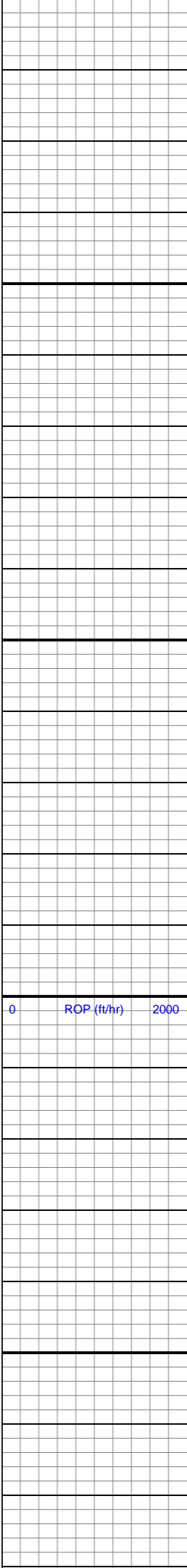


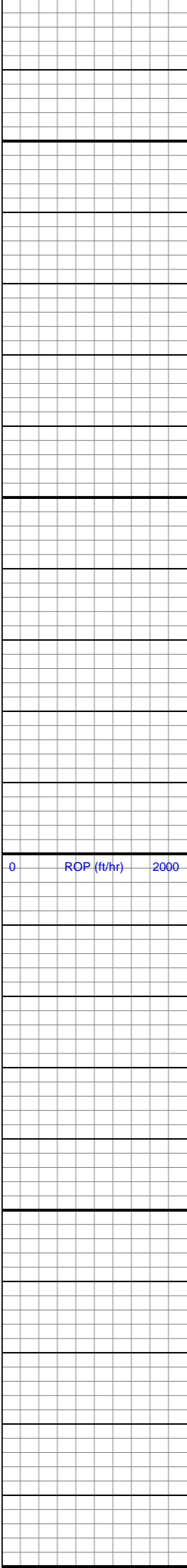




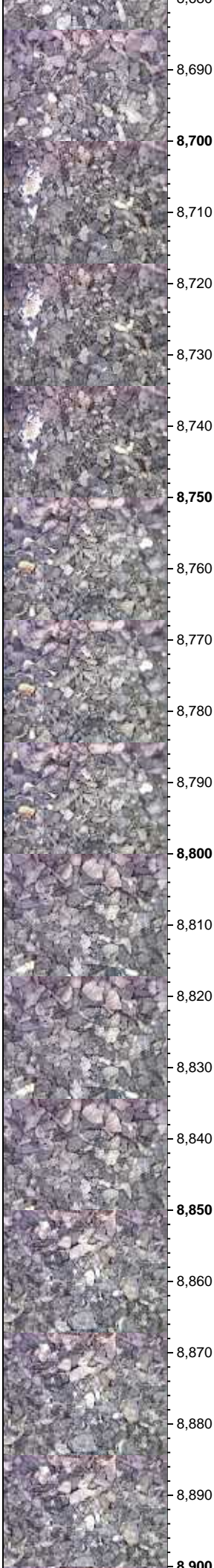




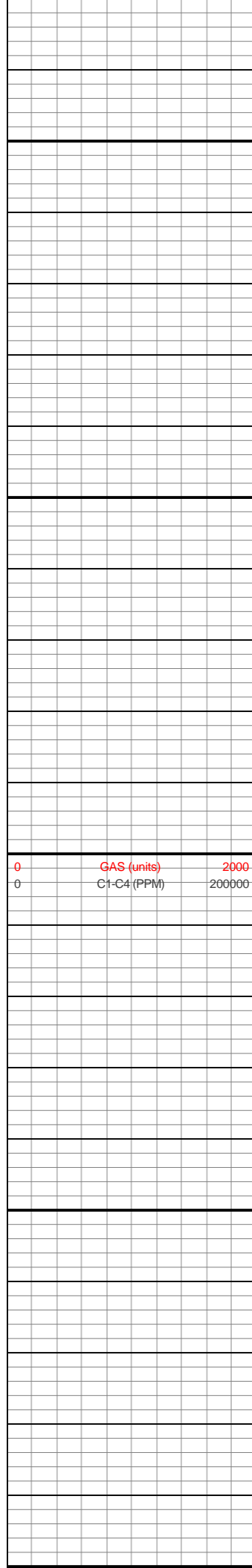




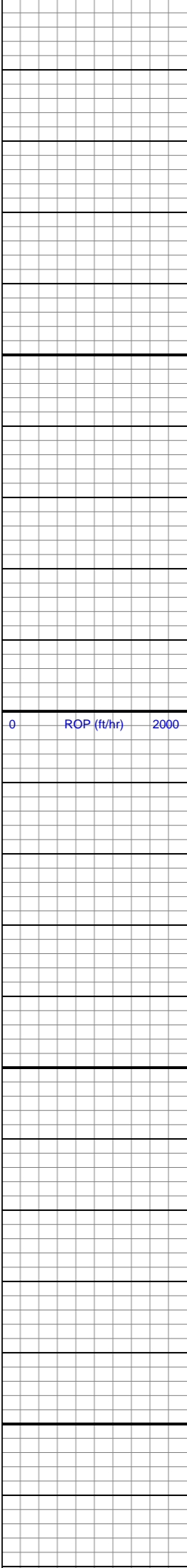
0 ROP (ft/hr) 2000



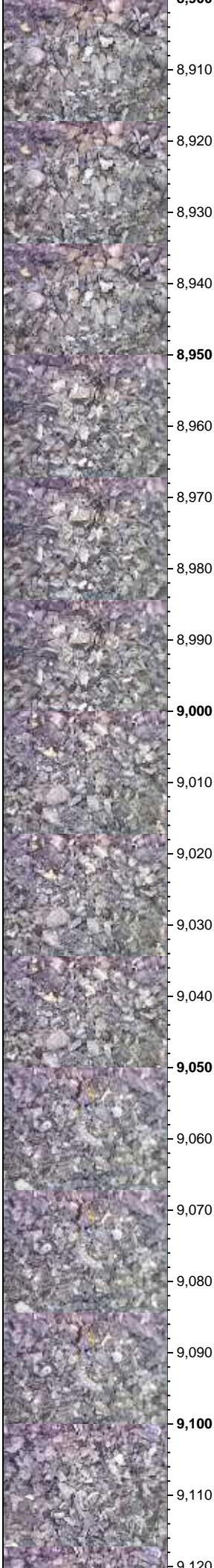
8,690
8,700
8,710
8,720
8,730
8,740
8,750
8,760
8,770
8,780
8,790
8,800
8,810
8,820
8,830
8,840
8,850
8,860
8,870
8,880
8,890
8,900



0 GAS (units) 2000
0 C1-C4 (PPM) 200000



0 ROP (ft/hr) 2000



8,910

8,920

8,930

8,940

8,950

8,960

8,970

8,980

8,990

9,000

9,010

9,020

9,030

9,040

9,050

9,060

9,070

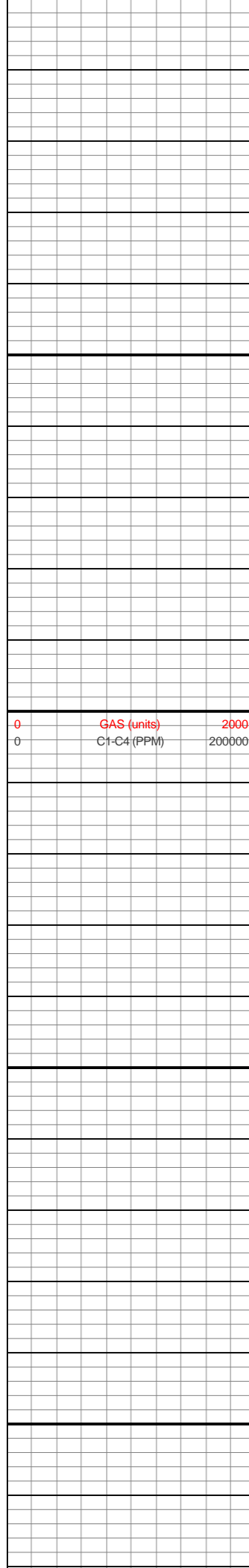
9,080

9,090

9,100

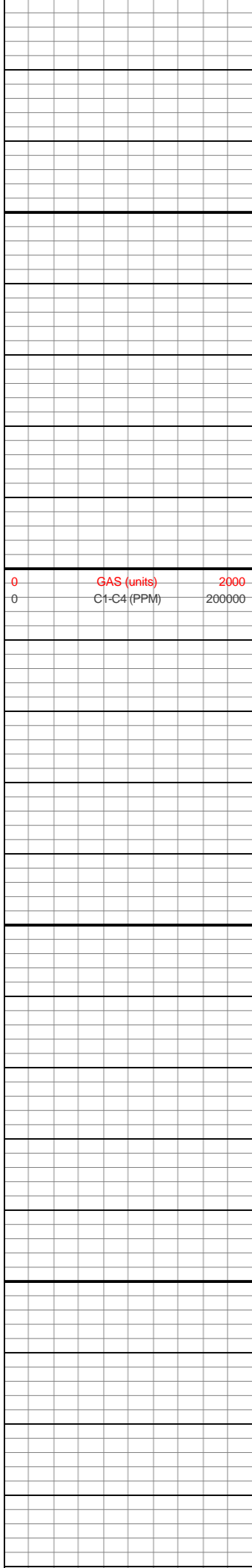
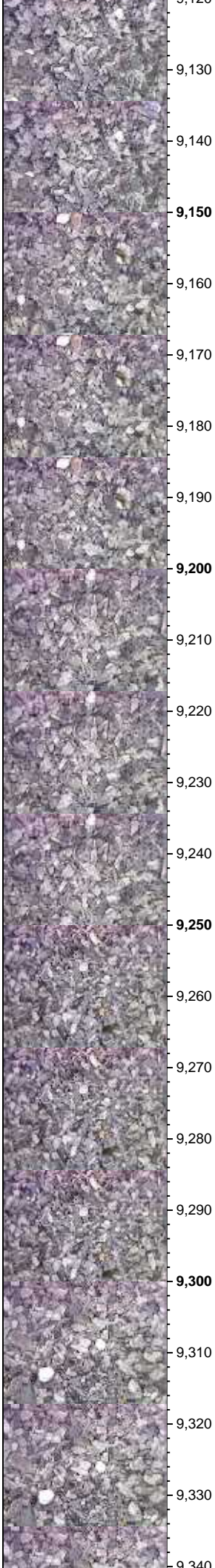
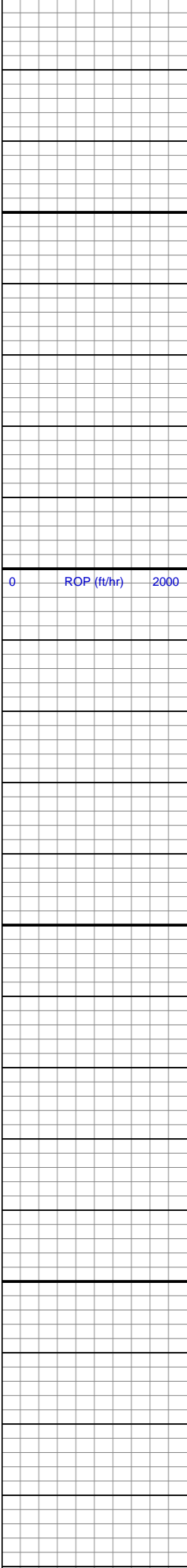
9,110

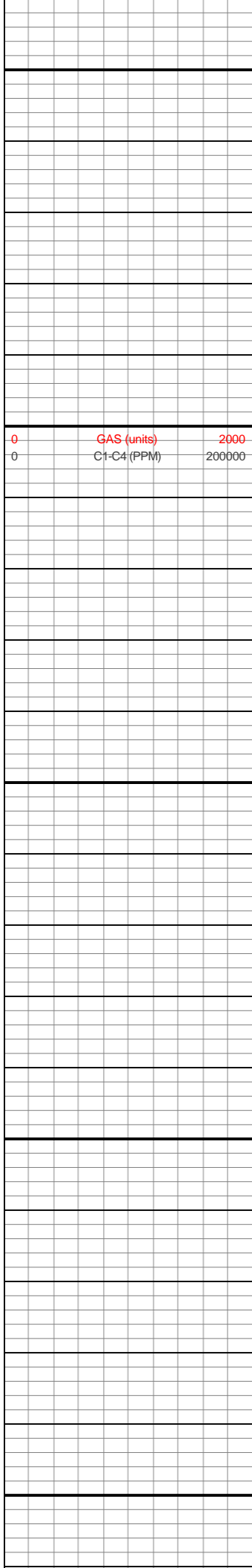
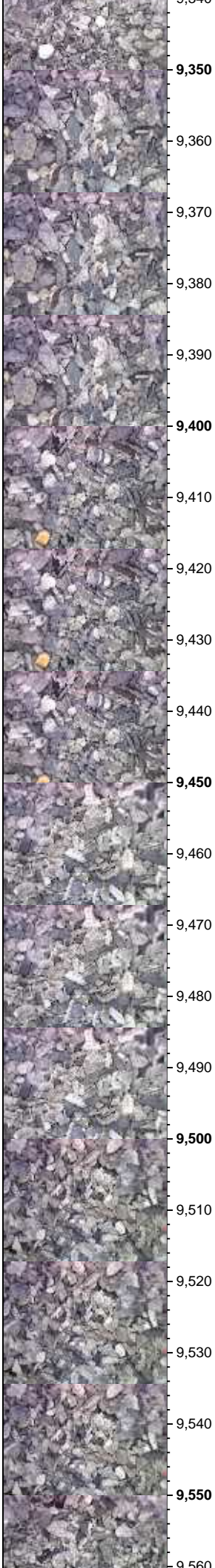
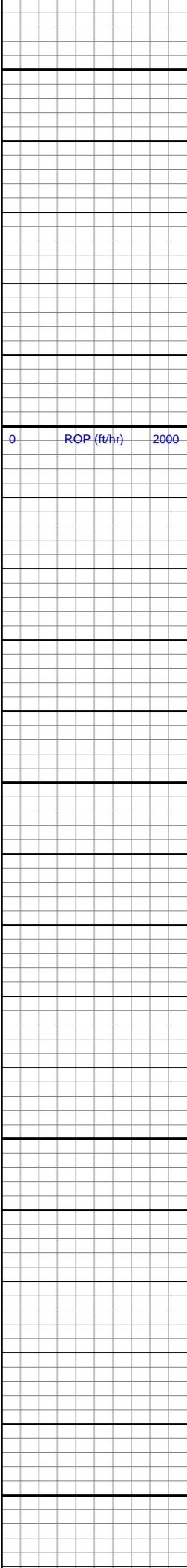
9,120



0 GAS (units) 2000

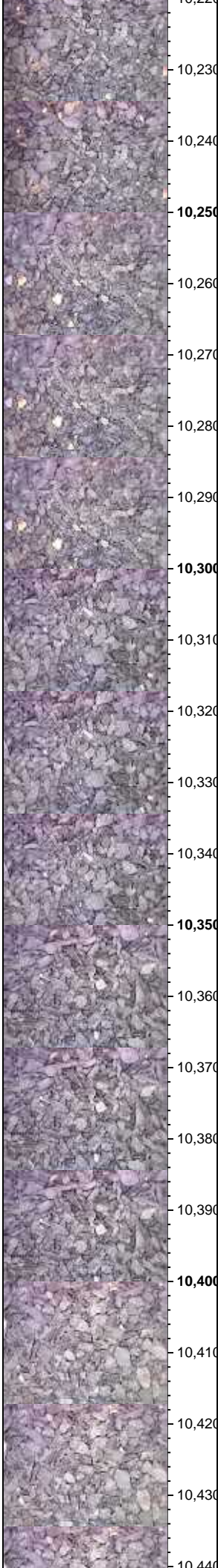
0 C1-C4 (PPM) 200000



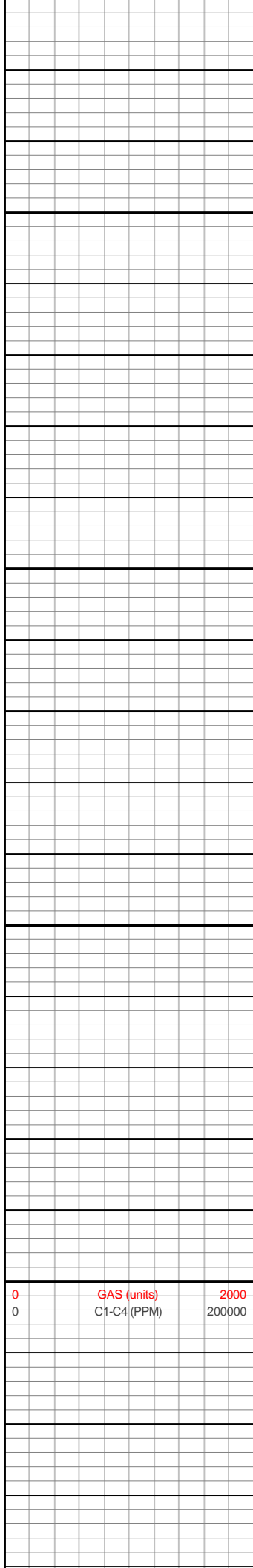




0 ROP (ft/hr) 2000



10,230
10,240
10,250
10,260
10,270
10,280
10,290
10,300
10,310
10,320
10,330
10,340
10,350
10,360
10,370
10,380
10,390
10,400
10,410
10,420
10,430
10,440



0 GAS (units) 2000
0 C1-C4 (PPM) 200000

