

COLUMBINE LOGGING

Scale: 5" / 100'
Measured Depth Log

Well Name Rohn State LD09-65-1HN

Location SE NE SEC. 9, T9N, R58W

State COLORADO

County WELD

Country USA

Rig Number H&P 326

API Number 05-123-37527-00

AFE # 139470

Region DJ BASIN

Field WILDCAT

Spud Date 10/15/2013

Drilling Completed 10/21/2013

Surface Coordinates 1,763' FNL, 480' FEL

Bottom Hole Coordinates 2,310' FNL, 660' FWL

Ground Elevation 4716'

K.B. Elevation 4746

Logged Interval 1300 To 9710

Total Depth 9710

Formation NIOBRARA B

Type of Drilling Fluid LSND

Operator

Company NOBLE ENERGY INC.

Geologist

Name EVAN HOWELL

Company NOBLE ENERGY INC.

Address 1625 Broadway Suite 2200
Denver, CO 80202

Other

Ryan Sullivan
Ted Stockwell

Rock Types

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

Accessories

Fossils

ALGAE
AMPHIPORA
BELEMNITE
BIOCLASTIC
BRACHIOIPOD
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 PELLET

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

EARTHY
FENESTRAL
FRACTURE
INTERCRYSTALLINE
INTEROOLITIC

Moldic

ORGANIC
PINPOINT
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

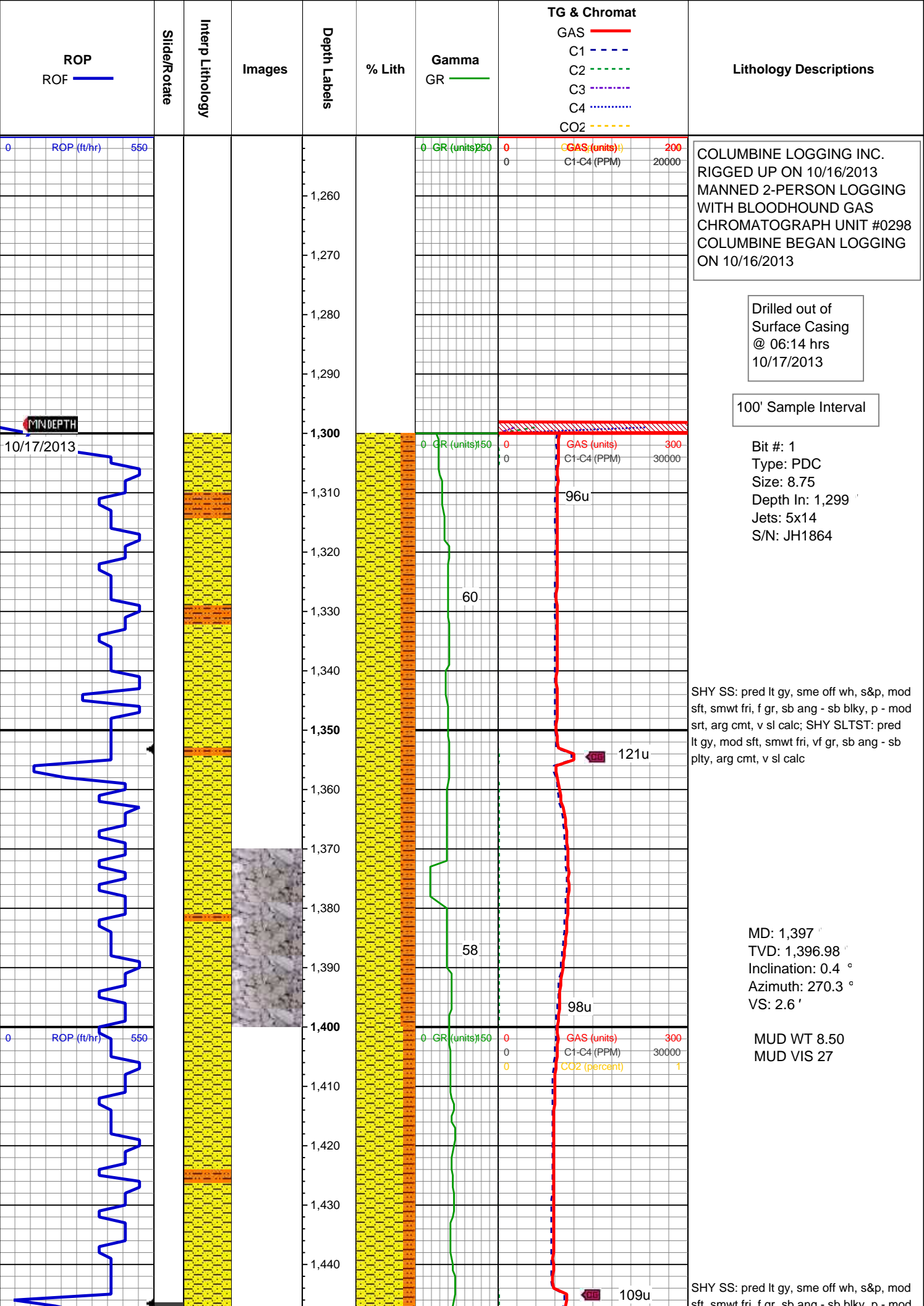
BOUNDSTONE
CHALKY
CRYPTOXLN

Earthy

FINELYXLN
GRAINSTONE
LITHOGRAPHIC
MICROXLN
MUDSTONE
PACKSTONE
WACKESTONE

Sorting

MODERATE
POOR
WELL



MINDEPTH
10/17/2013

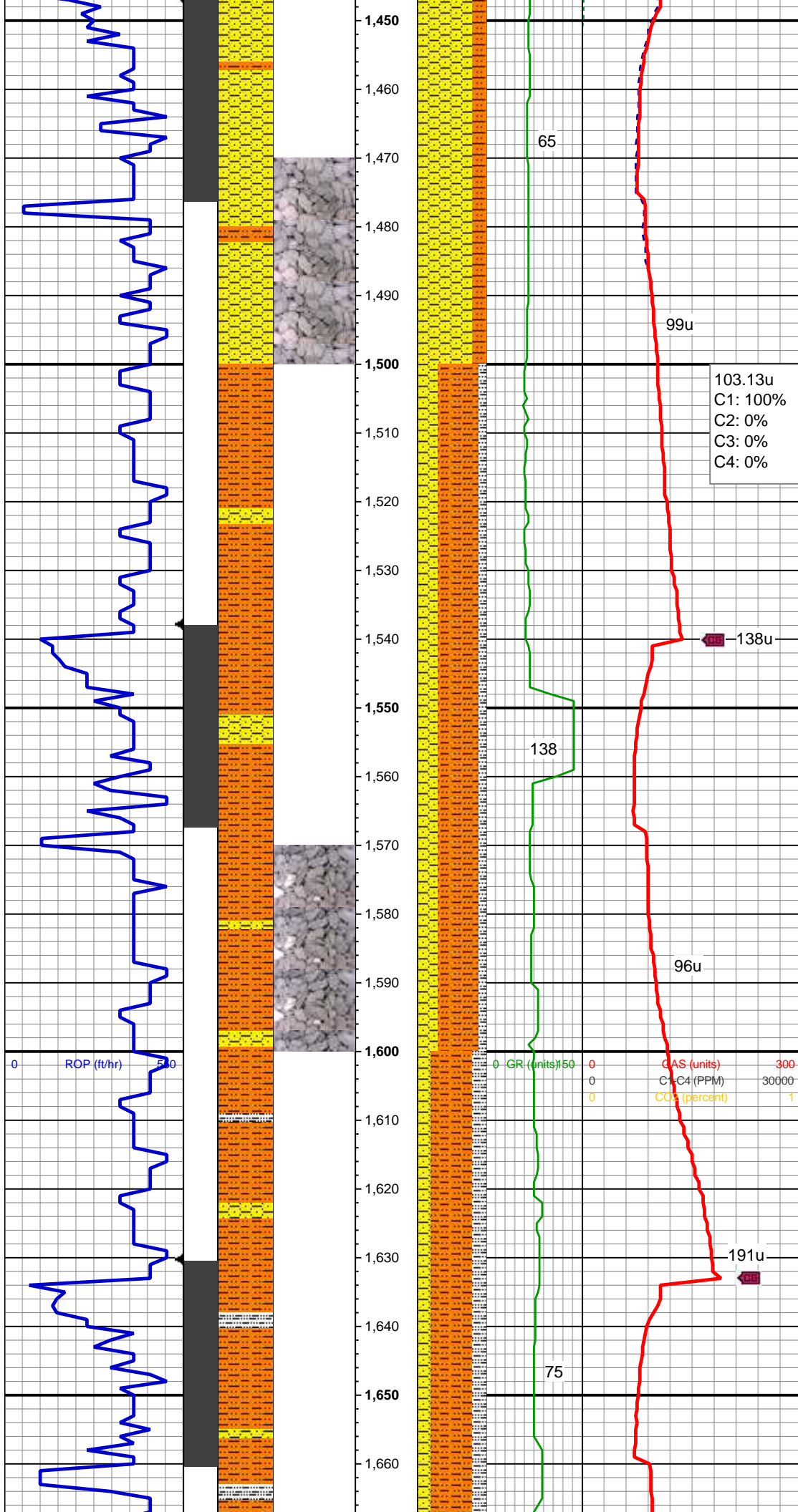


SHY SS: pred lt gy, sme off wh, s&p, mod
sft, smwt fri, f gr, sb ang - sb blk, p - mod
srt, arg cmt, v sl calc; SHY SLTST: pred
lt gy, mod sft, smwt fri, vf gr, sb ang - sb
pity, arg cmt, v sl calc

MD: 1,397
TVD: 1,396.98
Inclination: 0.4 °
Azimuth: 270.3 °
VS: 2.6'

MUD WT 8.50
MUD VIS 27

SHY SS: pred lt gy, sme off wh, s&p, mod
sft, smwt fri, f gr, sb ang - sb blk, p - mod



SHY SS: pred lt gy, mod sft, smwt fri, vf gr, sb ang - sb blkly, p - mod srt, arg cmt, v sl calc; SHY SLTST: pred lt gy, mod sft, smwt fri, vf gr, sb ang - sb blkly, p - mod srt, arg cmt, v sl calc

MUD WT 8.80
MUD VIS 28

MD: 1,488 '
TVD: 1,487.96 '
Inclination: 2.3 °
Azimuth: 56.1 °
VS: 1.43 '

103.13u
C1: 100%
C2: 0%
C3: 0%
C4: 0%

SHY SLTST: pred lt gy, mod sft, smwt fri, vf gr, sb ang - sb blkly, p - mod srt, arg cmt, v sl calc; SHY SS: pred lt gy, s&p, mod sft, smwt fri, f gr, sb ang - sb blkly, p - mod srt, arg cmt, tr glau, sl calc; occ slty sh, tr lse pyr

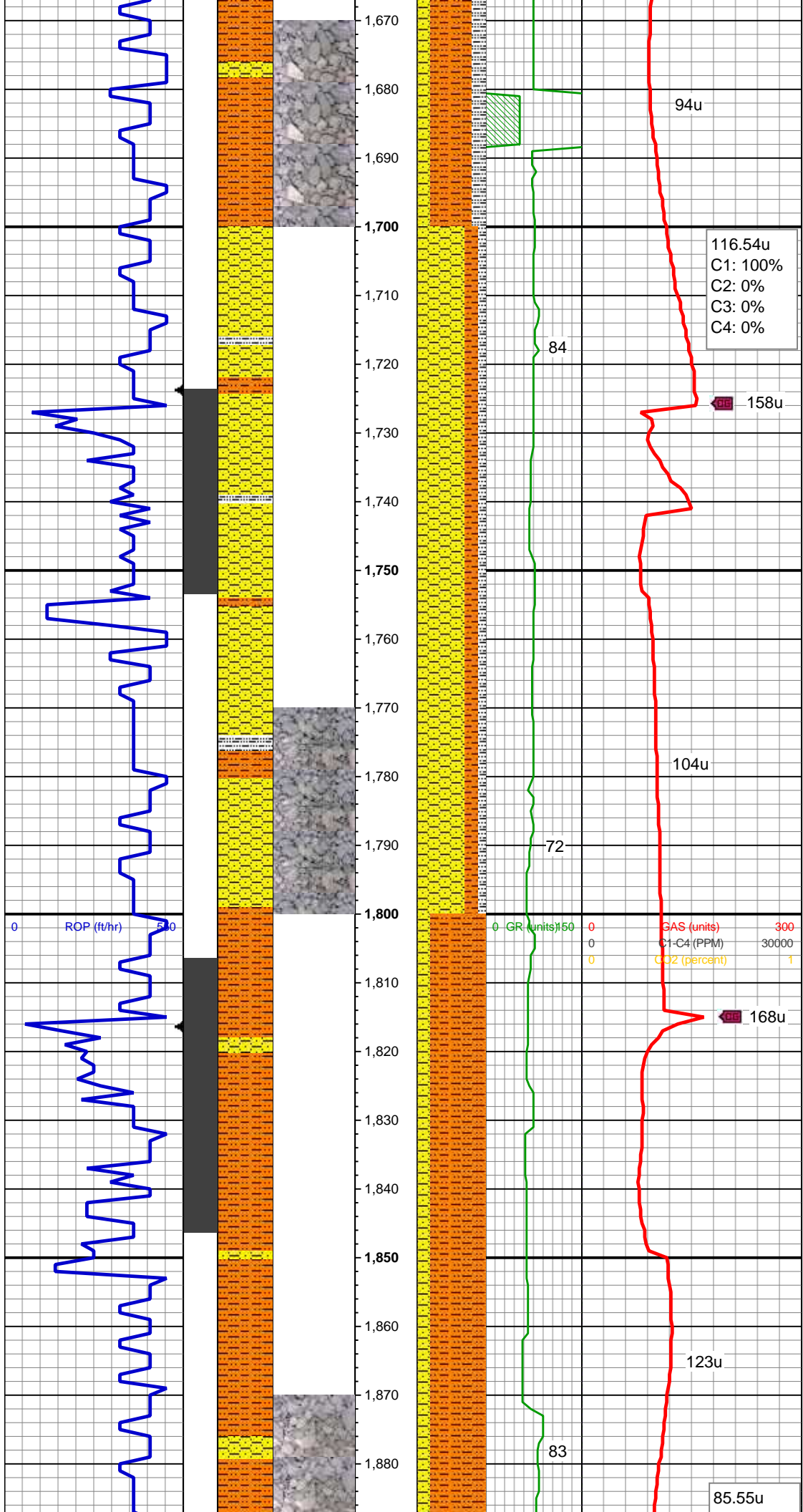
MD: 1,581 '
TVD: 1,580.8 '
Inclination: 4.4 °
Azimuth: 47.3 °
VS: -2.65 '

GR (units) 50
C1-C4 (PPM)
CO2 (percent)

CAS (units) 300
C1-C4 (PPM) 30000
CO2 (percent) 1

SHY SLTST: pred lt gy, mod sft, smwt fri, vf gr, sb ang - sb blkly, p - mod srt, arg cmt, v sl calc; SHY SS: pred lt gy, s&p, mod sft, smwt fri, f gr, sb ang - sb blkly, p - mod srt, arg cmt, tr glau, sl calc; SLTY SH: lt - med gy, mod sft, smwt fri, vf gr, sb ang - sb blkly, p - mod srt, arg cmt, v sl calc

MD: 1,674 '
TVD: 1,673.30 '
Inclination: 4.4 °
Azimuth: 47.3 °
VS: -2.65 '



TVD: 1,673.39
Inclination: 6.3 °
Azimuth: 40.8 °
VS: -8.43 '

SHY SS: lt gy - off wh, s&p, mod sft, brit - smwt fri, f gr, sb ang - sb blk, p srt, arg cmt, tr glau, sl calc; SHY SLTST: pred lt gy, mod sft, smwt fri, vf gr, sb ang - sb pty, arg cmt, sl calc; SLTY SH: lt - med gy, mod sft, smwt fri, vf gr, sb ang - sb pty, arg tex, tr lse pyr

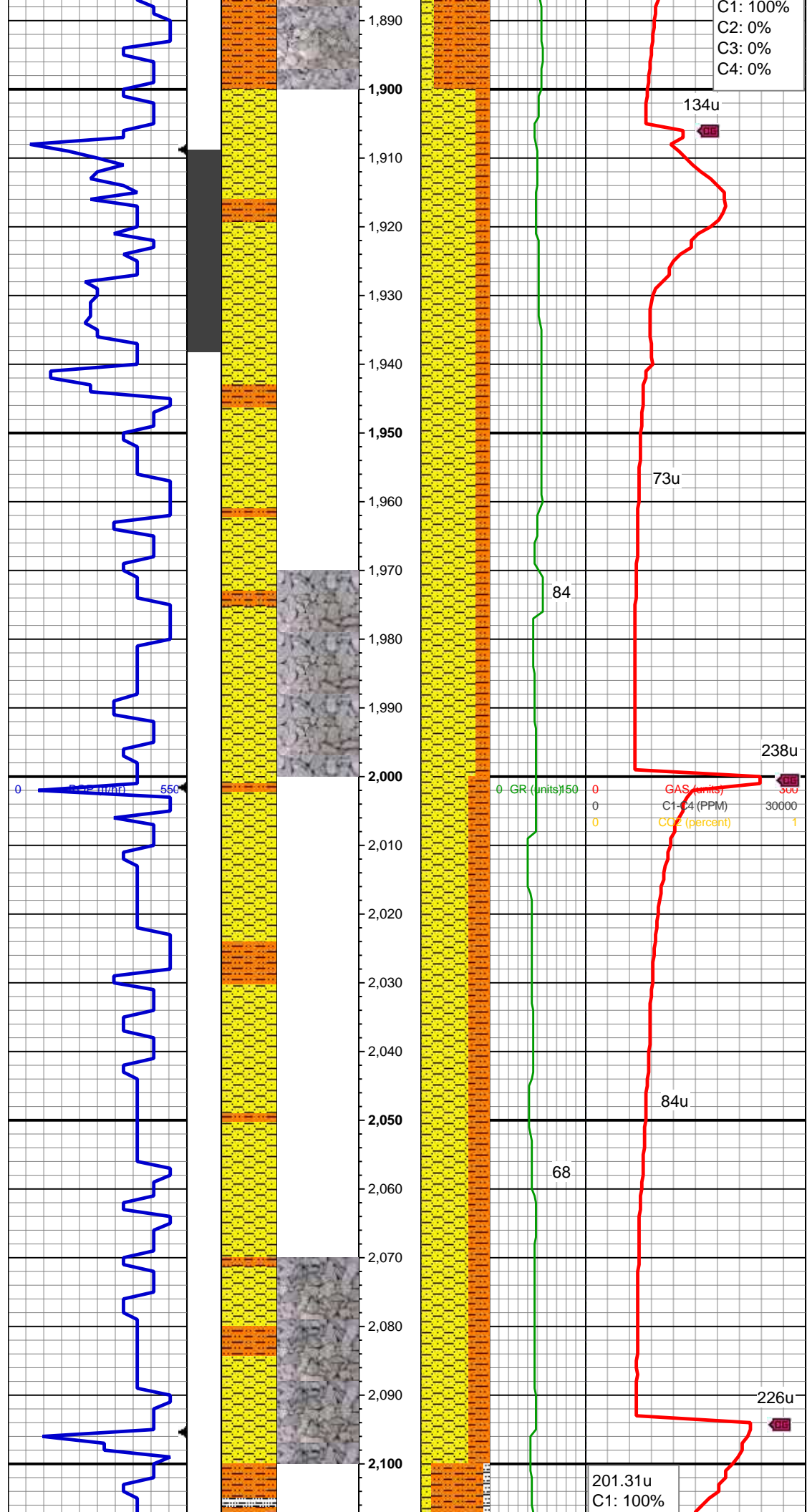
MUD WT 8.60
MUD VIS 27

MD: 1,767 '
TVD: 1,765.62 '
Inclination: 8.4 °
Azimuth: 43.2 °
VS: -16.17 '

MUD WT 8.60
MUD VIS 28

SHY SLTST: pred lt gy, mod sft, smwt fri, vf gr, sb ang - sb pty, arg cmt, sl calc; SHY SS: lt gy, s&p, mod sft, brit - smwt fri, f gr, sb ang - sb blk, p srt, arg cmt, sl calc; occ slty sh

MD: 1,859 '
TVD: 1,856.38 '
Inclination: 10.4 °
Azimuth: 42.2 °
VS: -26.04 '



SHY SS: lt gy - off wh, s&p, mod sft, brit - smwt fri, f gr, sb ang - sb blk, p - mod srt, arg cmt, v sl calc; SHY SLTST: pred lt gy, mod sft, smwt fri, vf gr, sb ang - sb plty, arg cmt, sl calc; occ slty sh

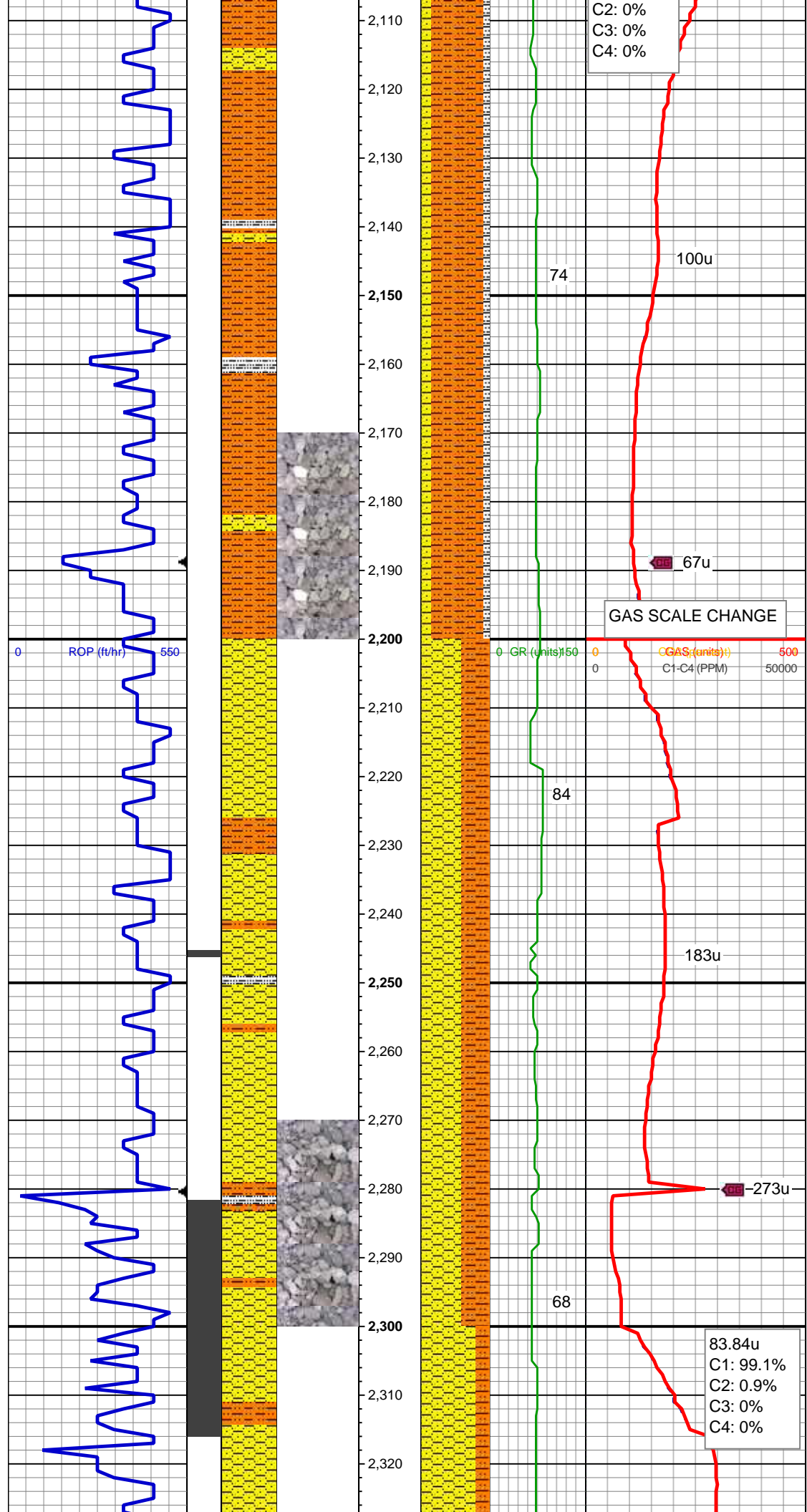
MD: 1,953 '
TVD: 1,948.55 '
Inclination: 12.2 °
Azimuth: 41.7 °
VS: -37.96 '

MUD WT 8.60
MUD VIS 28

MUD WT 8.75
MUD VIS 29

MD: 2,046 '
TVD: 2,039.44 '
Inclination: 12.3 °
Azimuth: 39.4 °
VS: -50.37 '

SHY SS: lt gy - off wh, s&p, mod sft - frm, brit - smwt fri, f gr, sb ang - sb blk, p - mod srt, arg cmt, v sl calc; SHY SLTST: pred lt gy, mod sft, smwt fri, vf gr, sb ang - sb plty, arg cmt, sl calc; occ slty sh



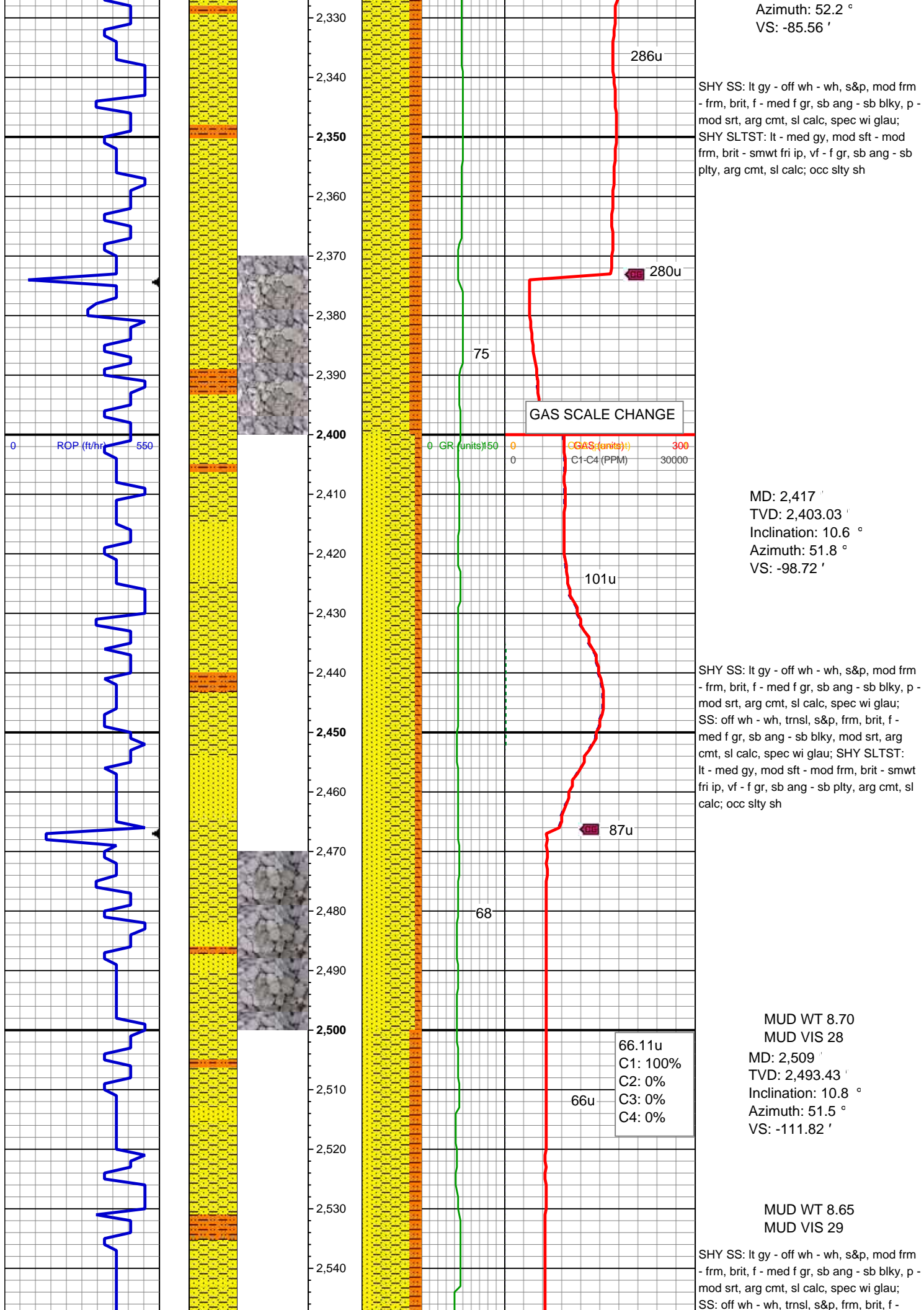
MD: 2,139 '
TVD: 2,130.32 '
Inclination: 12.2 °
Azimuth: 38.3 °
VS: -62.32 '

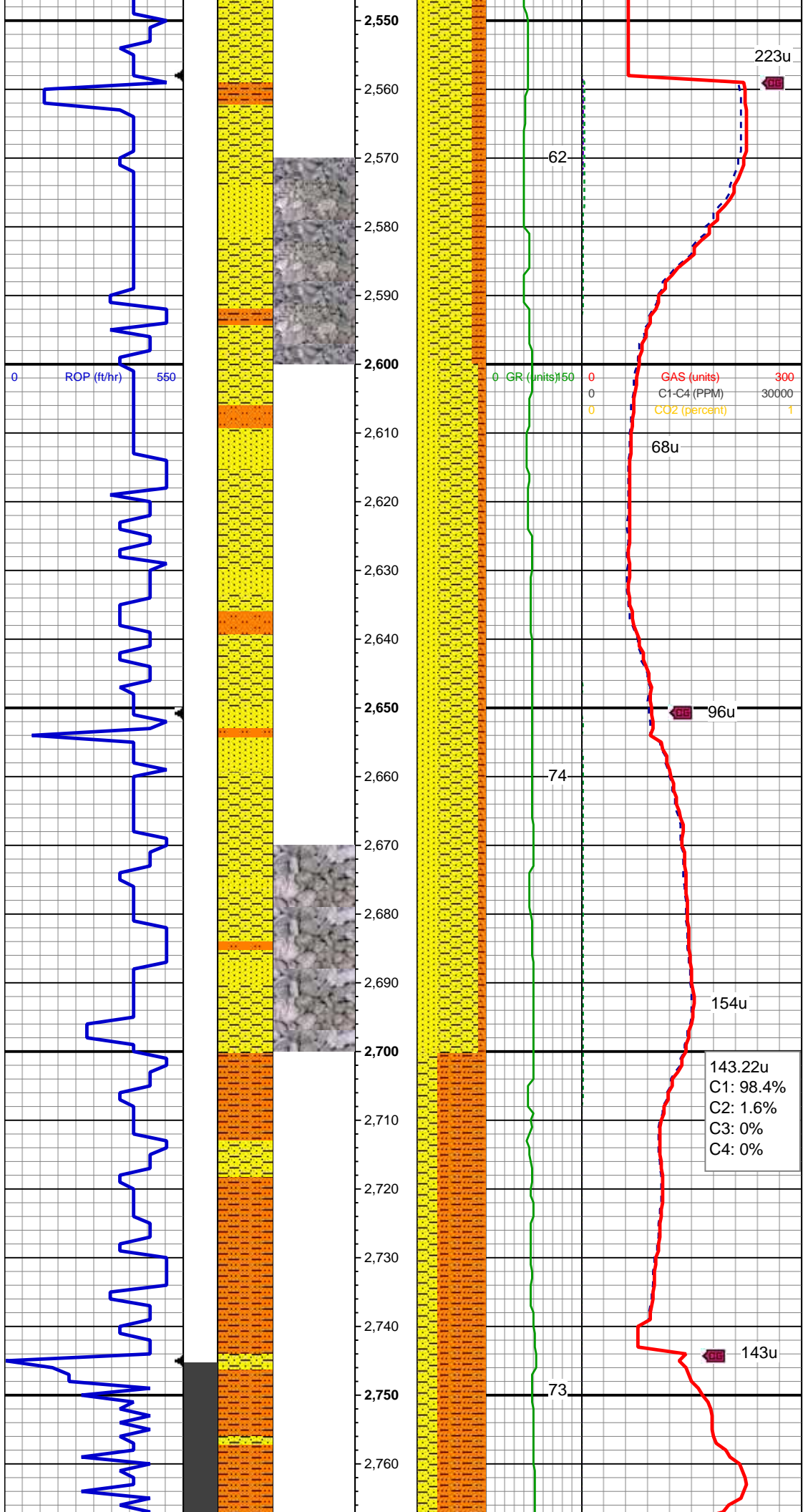
SHY SLTST: lt - med gy, mod sft, smwt fri, vf gr, sb ang - sb plty, arg cmt, sl calc;
SHY SS: lt gy, s&p, mod sft - frm, brit - smwt fri, f gr, sb ang - sb blk, p - mod srt, arg cmt, v sl calc; occ slty sh

MD: 2,232 '
TVD: 2,221.35 '
Inclination: 11.4 °
Azimuth: 36.9 °
VS: -73.51 '

SHY SS: lt gy - off wh, s&p, mod sft - frm, brit - smwt fri, f gr, sb ang - sb blk, p - mod srt, arg cmt, sl calc, spec wi glau;
SHY SLTST: lt - med gy, mod sft - mod frm, smwt fri ip, vf gr, sb ang - sb plty, arg cmt, sl calc; occ slty sh

MD: 2,325 '
TVD: 2,312.63 '
Inclination: 10.8 °





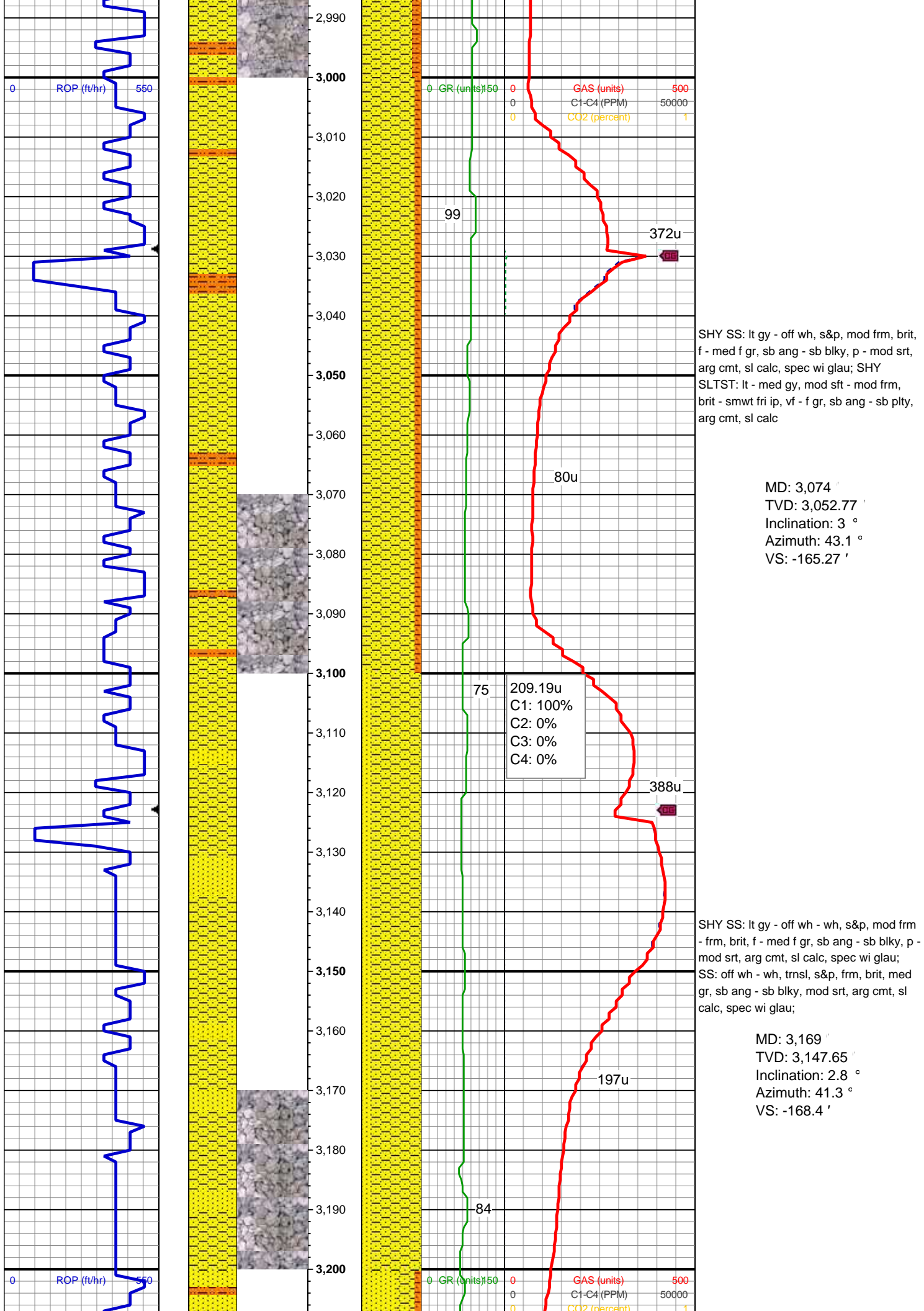
med f gr, sb ang - sb blkly, mod srt, arg cmt, sl calc, spec wi glau; SHY SLTST: lt - med gy, mod sft - mod frm, brit - smwt fri ip, vf - f gr, sb ang - sb plty, arg cmt, sl calc; occ slty sh

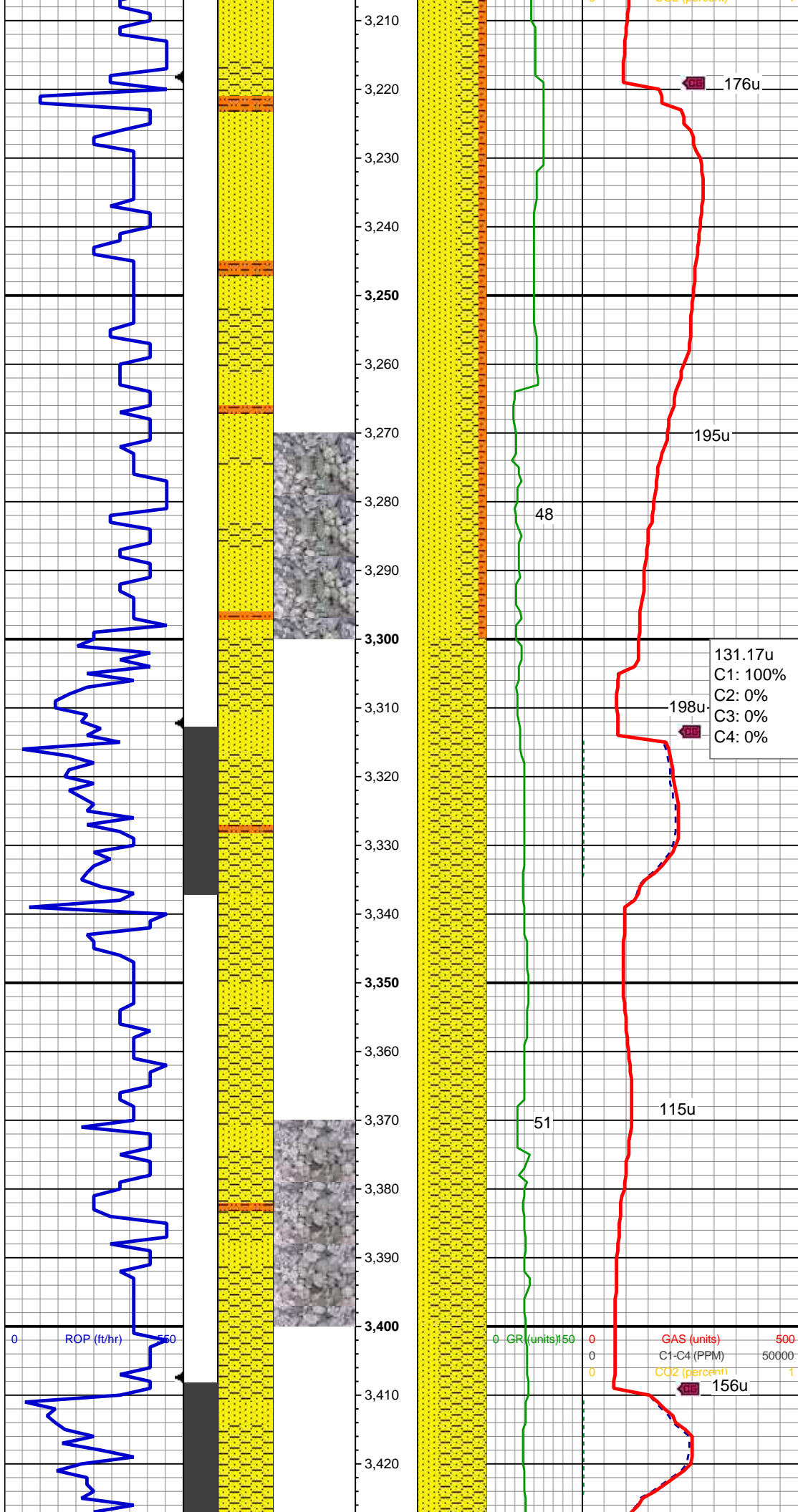
MD: 2,602 '
TVD: 2,584.76 '
Inclination: 11 °
Azimuth: 51.1 °
VS: -125.24 '

SHY SS: lt gy - off wh - wh, s&p, mod frm - frm, brit, f - med f gr, sb ang - sb blkly, p - mod srt, arg cmt, sl calc, spec wi glau; SS: off wh - wh, trns, s&p, frm, brit, f - med f gr, sb ang - sb blkly, mod srt, arg cmt, sl calc, spec wi glau; SHY SLTST: lt - med gy, mod sft - mod frm, brit - smwt fri ip, vf - f gr, sb ang - sb plty, arg cmt, sl calc; occ slty sh

MD: 2,696 '
TVD: 2,677.04 '
Inclination: 10.9 °
Azimuth: 51.7 °
VS: -138.88 '

SHY SLTST: lt - med gy, mod sft - mod frm, brit - smwt fri ip, vf - f gr, sb ang - sb plty, arg cmt, sl calc; SHY SS: lt gy - off wh - wh, s&p, mod frm - frm, brit, f - med f gr, sb ang - sb blkly, p - mod srt, arg cmt, sl calc, spec wi glau





SS: off wh - wh, trnsl, s&p, frm, brit, med
gr, sb ang - sb blkly, mod srt, arg cmt, sl
calc, spec wi glau; SHY SS: lt gy - off wh
- wh, s&p, mod frm - frm, brit, f - med f gr,
sb ang - sb blkly, p - mod srt, arg cmt, sl
calc, spec wi glau; SHY SLTST: lt - med
gy, mod sft - mod frm, brit - smwt fri ip, vf
- f gr, sb ang - sb plty, arg cmt, sl calc

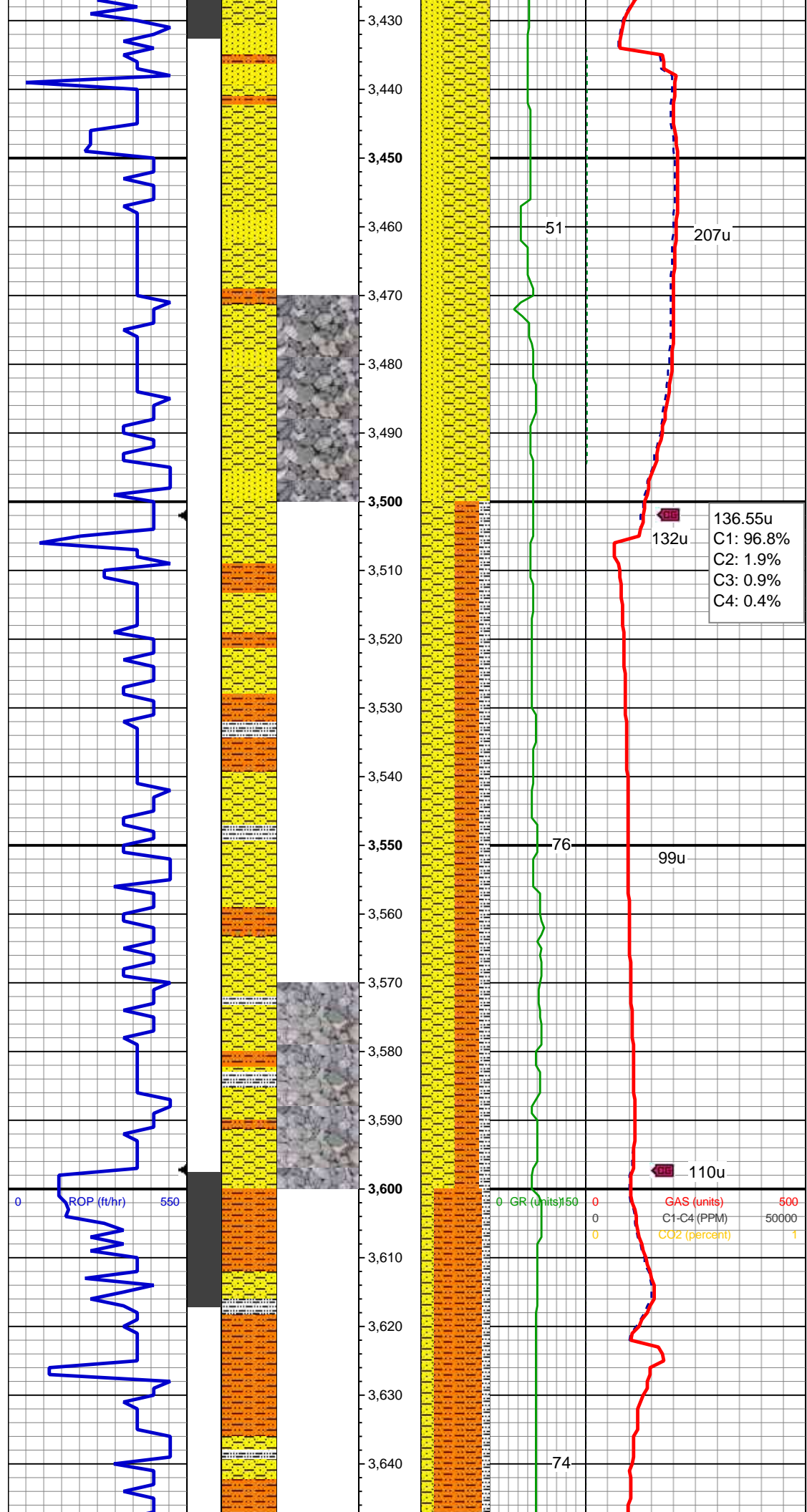
MD: 3,263 '
TVD: 3,241.54 '
Inclination: 2.8 °
Azimuth: 37.4 °
VS: -171.21 '

131.17u
C1: 100%
C2: 0%
C3: 0%
C4: 0%

SS: off wh - wh, trnsl, s&p, frm, brit, med
gr, sb ang - sb blkly, mod srt, arg cmt, sl
calc, spec wi glau; SHY SS: lt gy - off wh
- wh, s&p, mod frm - frm, brit, f - med f gr,
sb ang - sb blkly, p - mod srt, arg cmt, sl
calc, spec wi glau; occ shy sltst

MD: 3,358 '
TVD: 3,336.44 '
Inclination: 2.5 °
Azimuth: 55.7 °
VS: -174.25 '

MUD WT 8.80
MUD VIS 38



MUD WT 8.75
MUD VIS 28

SS: off wh - wh, trnsl, s&p, frm, brit, med
gr, sb ang - sb blkly, p - mod srt, arg cmt,
sl calc, spec wi glau; SHY SS: lt gy - off
wh - wh, s&p, mod frm - frm, brit, f - med f
gr, sb ang - sb blkly, p - mod srt, arg cmt, v
sl calc, spec wi glau; occ shy sltst

MD: 3,453 '
TVD: 3,431.38 '
Inclination: 1.7 °
Azimuth: 63.1 °
VS: -177.17 '

MUD WT 8.80
MUD VIS 38

136.55u
132u
C1: 96.8%
C2: 1.9%
C3: 0.9%
C4: 0.4%

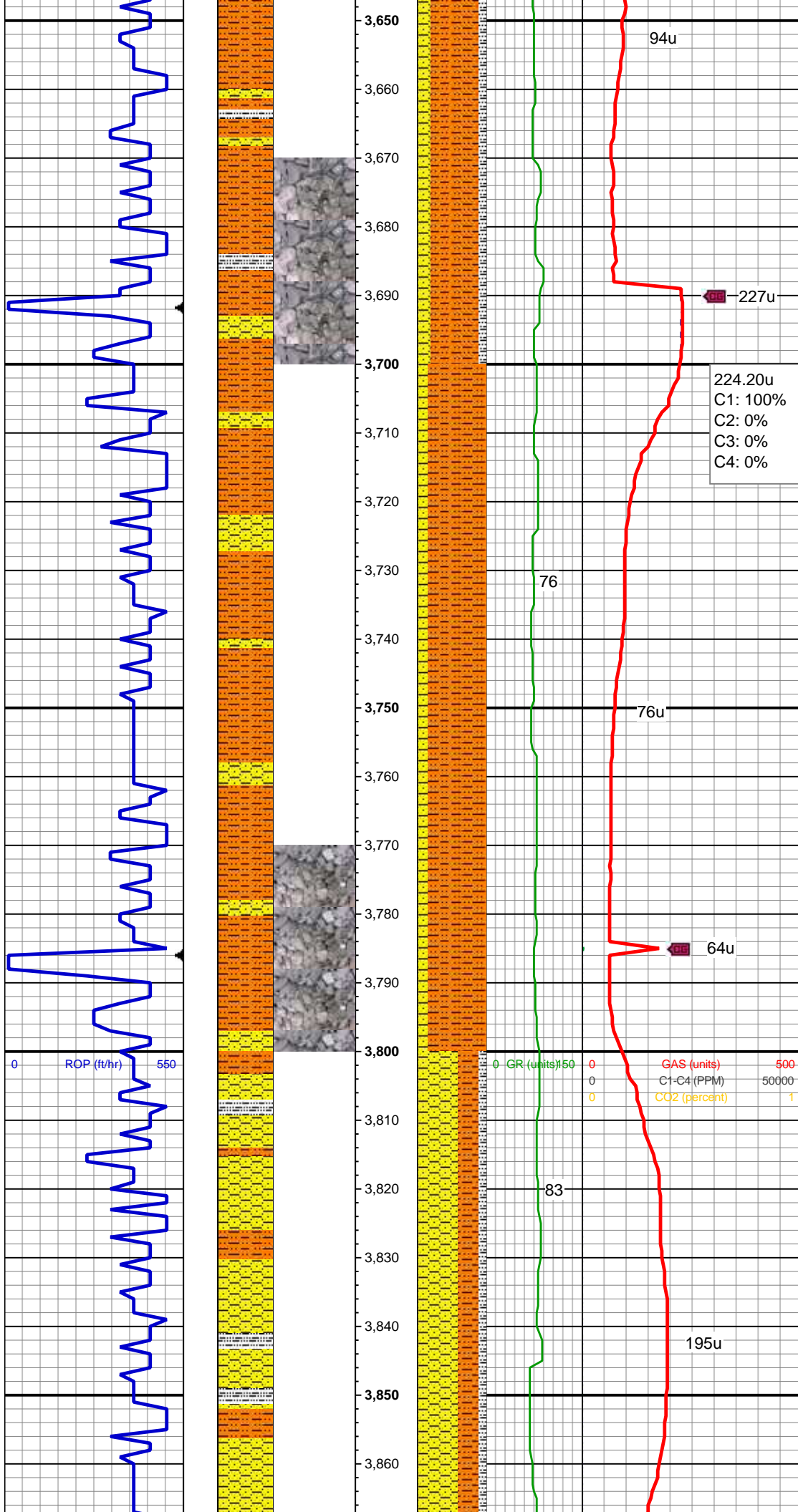
MD: 3,548 '
TVD: 3,526.33 '
Inclination: 1.8 °
Azimuth: 67.3 °
VS: -179.77 '

SHY SS: lt gy - off wh - wh, s&p, mod frm
- frm, brit, f - med f gr, sb ang - sb blkly, p -
mod srt, arg cmt, sl calc, spec wi glau;
SHY SLTST: lt - med gy, mod sft - mod
frm, brit - smwt fri ip, vf - f gr, sb ang - sb
plty, arg cmt, sl calc; SLTY SH: lt - med
gy, mod sft - mod frm, brit - smwt fri ip, vf
gr, sb ang - sb plty, arg cmt

110u

0 GR (units) 150 0 GAS (units) 500
0 C1-C4 (PPM) 50000
0 CO2 (percent) 1

SHY SLTST: lt - med gy, mod sft - mod
frm, brit - smwt fri ip, vf - f gr, sb ang - sb
plty, arg cmt, sl calc; SHY SS: lt ov. s&p.

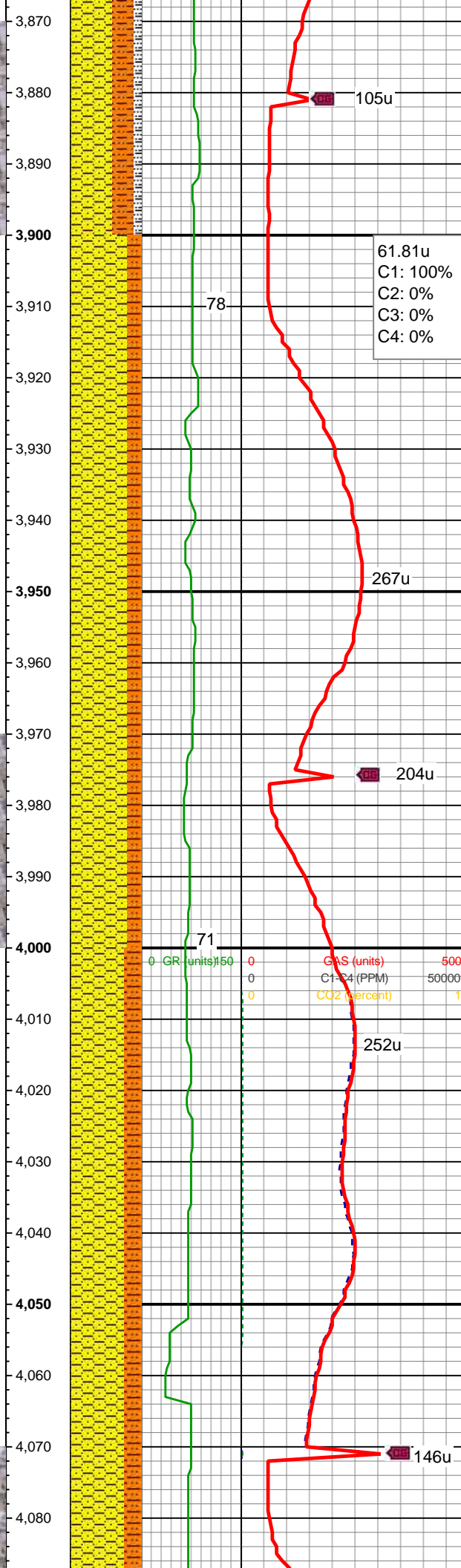
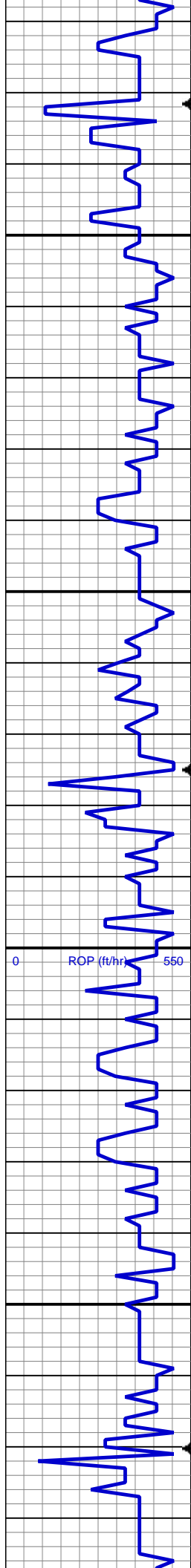


mod frm - frm, brit, f - med f gr, sb ang - sb blk, p - mod srt, arg cmt, sl calc, spec wi glau; SLTY SH: lt - med gy, mod sft - mod frm, brit, vf gr, sb ang - sb plty, arg cmt

MD: 3,737 '
TVD: 3,715.3 '
Inclination: 0.3 °
Azimuth: 162.9 °
VS: -182.63 '

SHY SLTST: lt - med gy, mod sft - mod frm, brit - smwt fri ip, vf - f gr, sb ang - sb plty, arg cmt, sl calc; SHY SS: lt gy, s&p, mod frm - frm, brit, f - med f gr, sb ang - sb blk, p - mod srt, arg cmt, sl calc, spec wi occ glau

SHY SS: lt gy, s&p, mod frm, brit, f gr, sb ang - sb blk, p - mod srt, arg cmt, sl calc, spec wi glau; SHY SLTST: lt - med gy, mod frm, brit, vf - f gr, sb ang - sb plty, arg cmt, sl calc; SLTY SH: lt - med gy, mod sft - mod frm, brit, vf gr, sb ang - sb plty, arg cmt



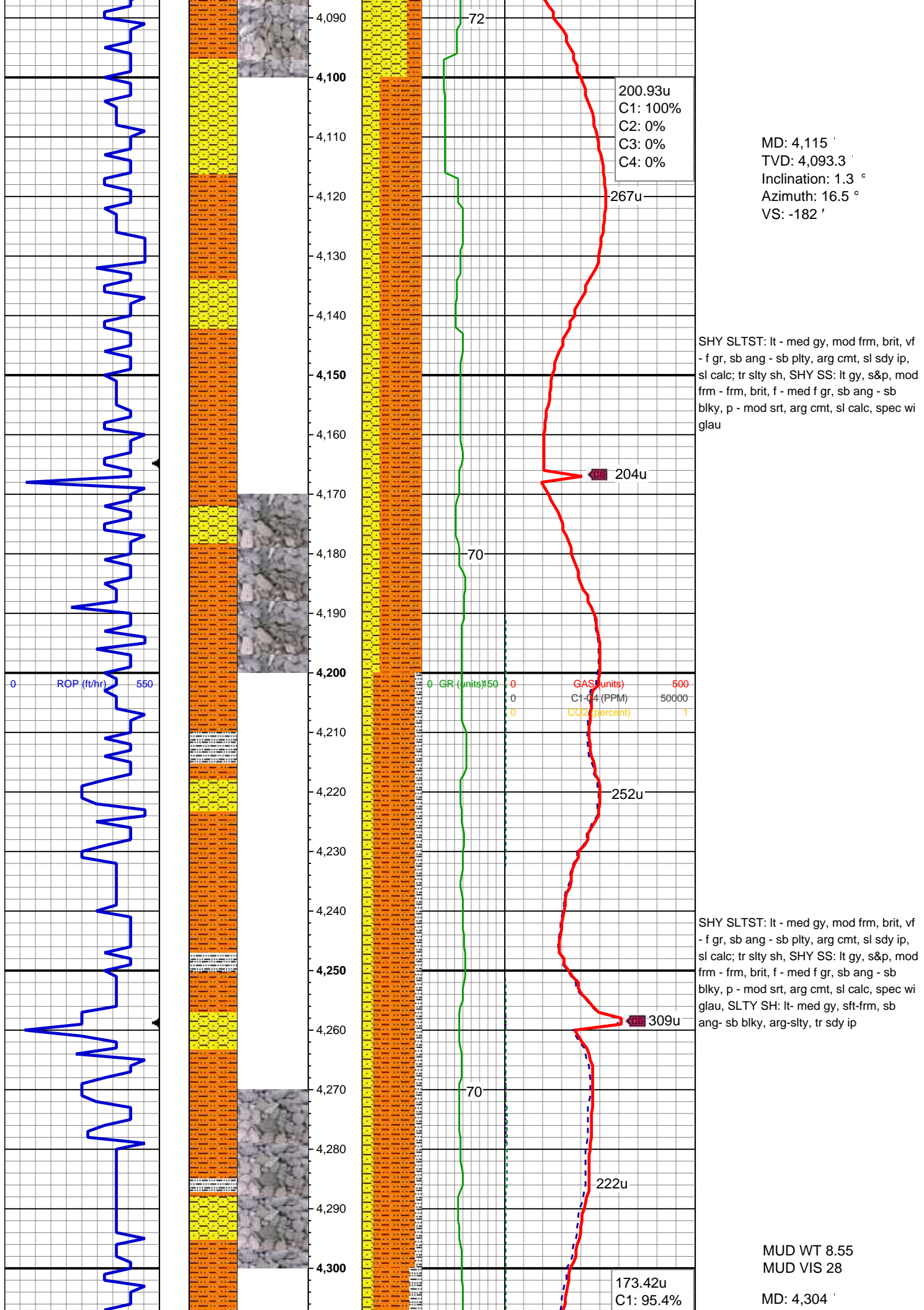
MUD WT 8.75
MUD VIS 28

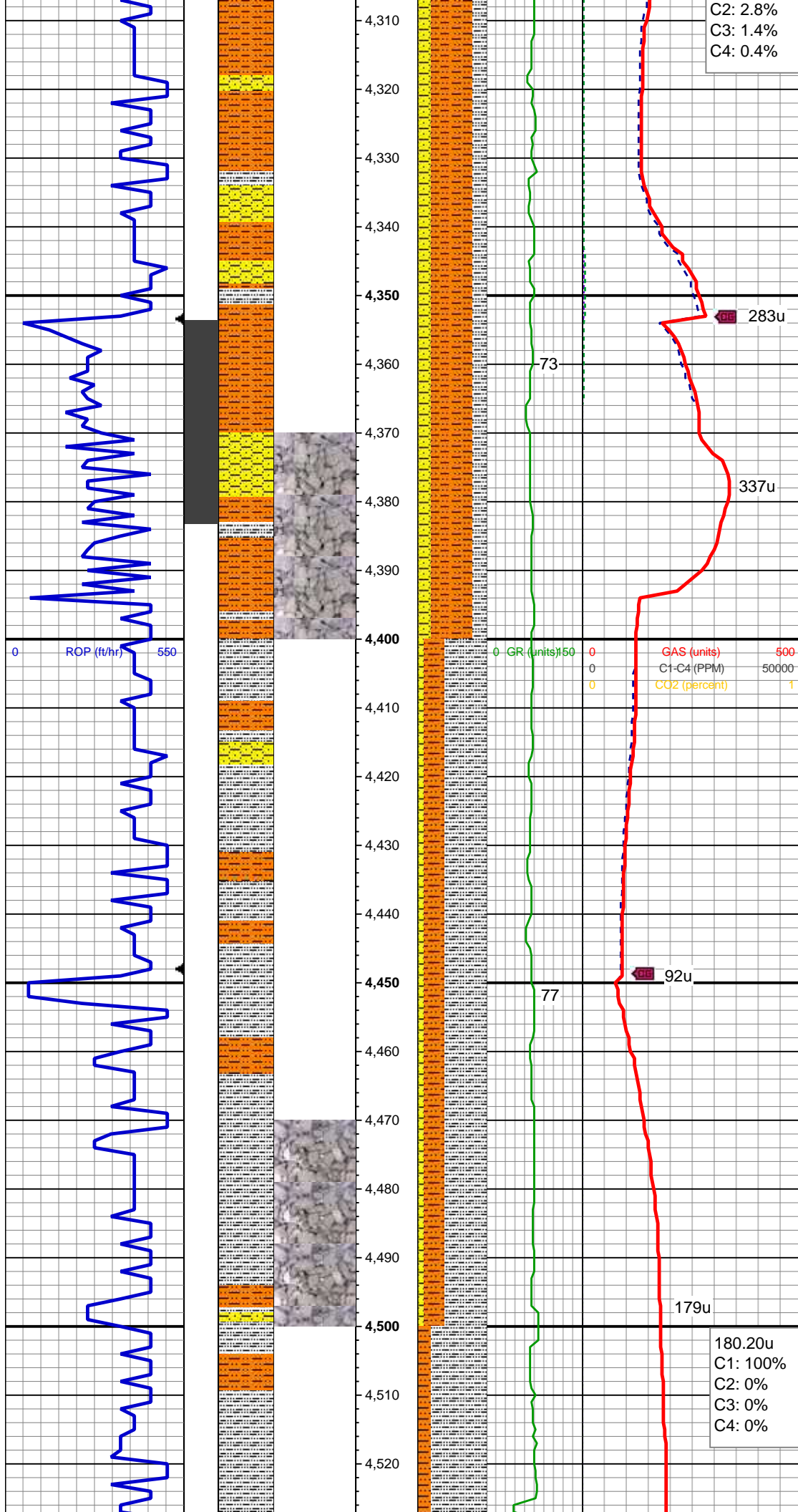
MD: 3,926 '
TVD: 3,904.31 '
Inclination: 0.2 °
Azimuth: 158.9 °
VS: -181.32 '

MUD WT 8.70
MUD VIS 29

SHY SS: lt gy, s&p, mod frm - frm, brit, f - med f gr, sb ang - sb blk, p - mod srt, arg cmt, sl calc, spec wi glau; SHY SLTST: lt - med gy, mod frm, brit, vf - f gr, sb ang - sb plty, arg cmt, sl calc; tr slty sh

SHY SS: lt gy, s&p, mod frm - frm, brit, f - med f gr, sb ang - sb blk, p - mod srt, arg cmt, sl calc, spec wi glau; SHY SLTST: lt - med gy, mod frm, brit, vf - f gr, sb ang - sb plty, arg cmt, sl calc; tr slty sh





TVD: 4,282.18 '
Inclination: 2.6 °
Azimuth: 22 °
VS: -184.05 '

MUD WT 8.90
MUD VIS 32

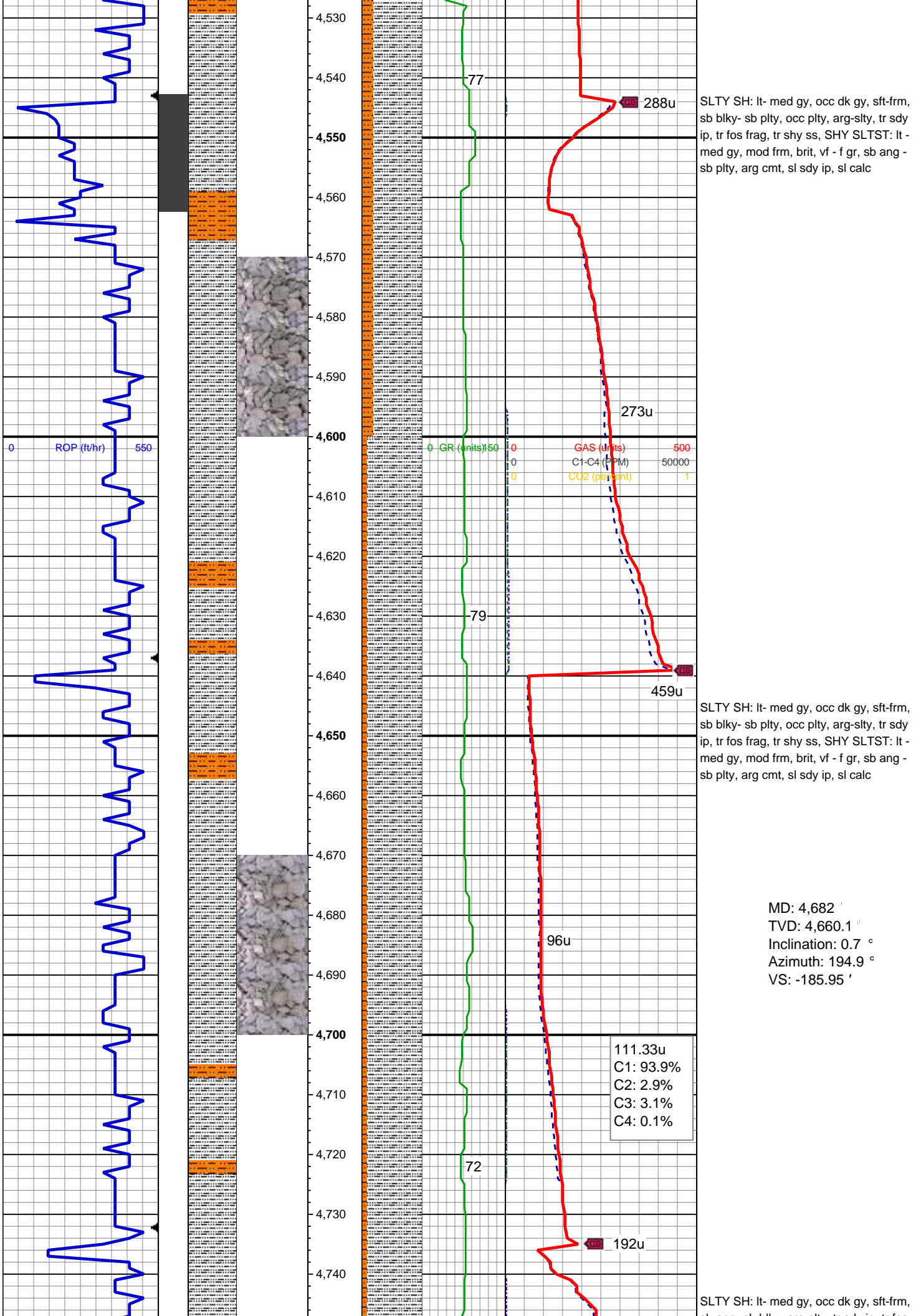
SHY SLTST: lt - med gy, mod frm, brit, vf
- f gr, sb ang - sb plty, arg cmt, sl sdy ip,
sl calc; tr slty sh, SHY SS: lt gy, s&p, mod
frm - frm, brit, f - med f gr, sb ang - sb
blky, p - mod srt, arg cmt, sl calc, spec wi
glau, SLTY SH: lt- med gy, sft-frm, sb
ang- sb blky, arg-slty, tr sdy ip

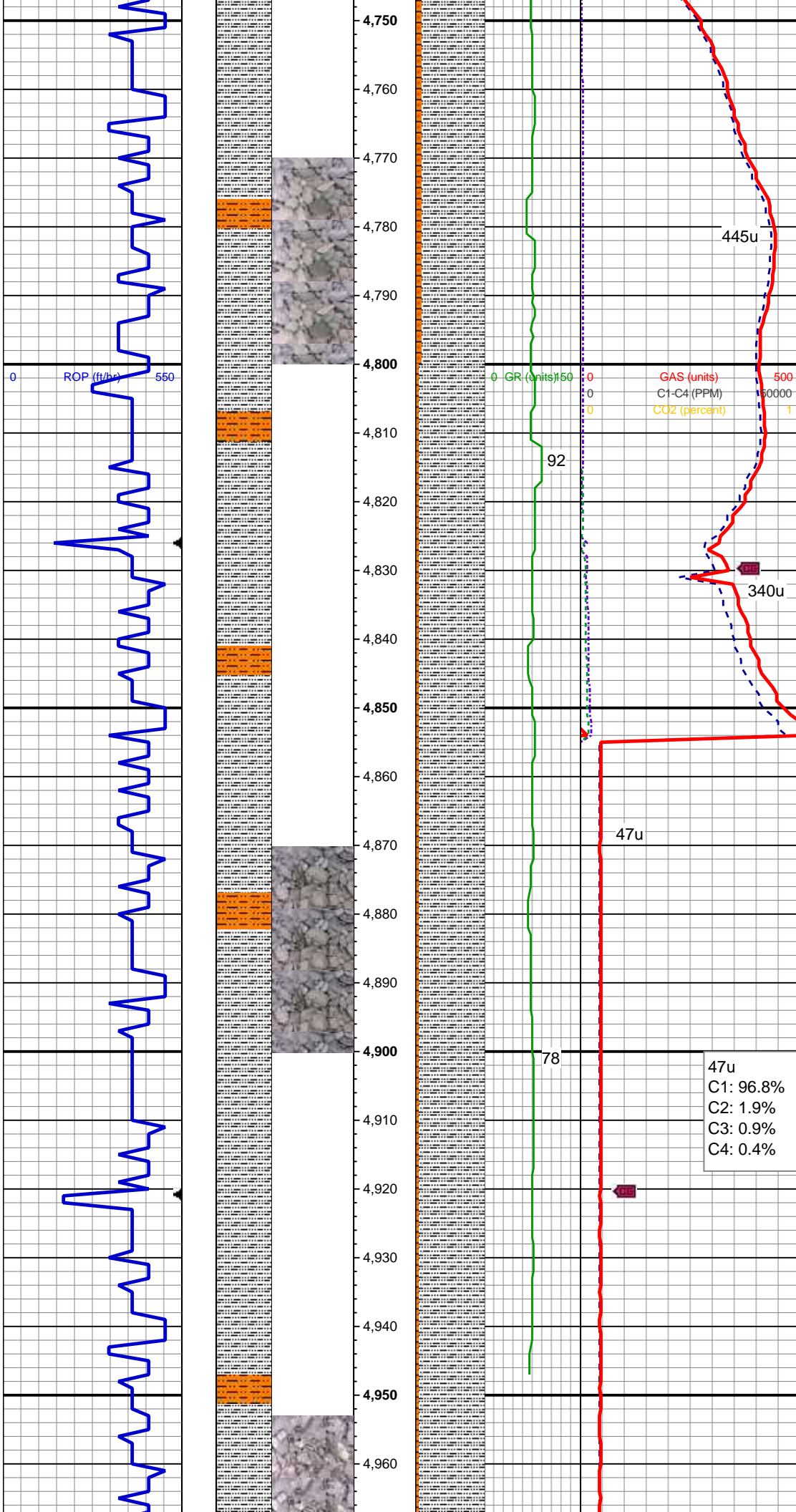
MD: 4,399 '
TVD: 4,377.13 '
Inclination: 1.1 °
Azimuth: 22.5 °
VS: -185.12 '

SLTY SH: lt- med gy, sft-frm, sb blky-sb
plty, arg-slty, tr sdy ip, SHY SLTST: lt -
med gy, mod frm, brit, vf - f gr, sb ang -
sb plty, arg cmt, sl sdy ip, sl calc; tr slty
sh, SHY SS: lt gy, s&p, mod frm - frm,
brit, f - med f gr, sb ang - sb blky, p - mod
srt, arg cmt, sl calc, spec wi glau,

MD: 4,493 '
TVD: 4,471.11 '
Inclination: 1.1 °
Azimuth: 18.1 °
VS: -185.7 '

180.20u
C1: 100%
C2: 0%
C3: 0%
C4: 0%





sb ang- sb blkly, arg-slty, tr sdy ip, tr ros
frag, tr shy ss, SHY SLTST: lt - med gy,
mod frm, brit, vf - f gr, sb ang - sb plty,
arg cmt, sl sdy ip, sl calc

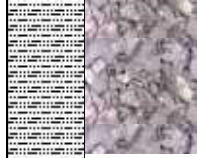
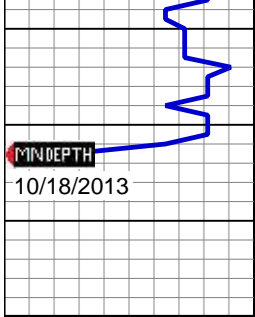
SLTY SH: lt- med gy, occ dk gy, sft-frm,
sb ang- sb blkly, arg-slty, tr sdy ip, tr fos
frag, tr shy ss, SHY SLTST: lt - med gy,
mod frm, brit, vf - f gr, sb ang - sb plty,
arg cmt, sl sdy ip, sl calc

MD: 4,871 '
TVD: 4,849.09 '
Inclination: 0.9 °
Azimuth: 158.9 °
VS: -186.26 '

47u
C1: 96.8%
C2: 1.9%
C3: 0.9%
C4: 0.4%

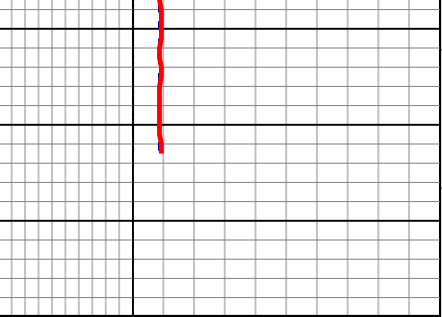
SLTY SH: lt- med gy, occ dk gy, sft-frm,
sb ang- sb blkly, arg-slty, tr sdy ip, tr fos
frag, tr shy ss, SHY SLTST: lt - med gy,
mod frm, brit, vf - f gr, sb ang - sb plty,
arg cmt, sl sdy ip, sl calc

TD @ 4983' MD
10/17/2013 @ 12:50 hrs



4,970
4,980
4,990
5,000

TOOH FOR BHA #3
LOG CONTINUES ON MPlot
"ROHN STATE
LD09-65-1HN(HORZ)"



TOOH FOR BHA #3
LOG CONTINUES ON MPlot
"ROHN STATE
LD09-65-1HN(HORZ)"

Thank you for choosing
Columbine Logging Inc.