

COLUMBINE LOGGING

Scale: 5" / 100'
Measured Depth Log

Well Name Loeffler K1-69-1HN

Location SW NW SEC 1 T4N R66W

State COLORADO

County WELD

Country USA

Rig Number PRECISION 829

API Number 05-123-37735

Region DJ BASIN

Field WATTENBERG

Spud Date 9/5/2013

Drilling Completed 9/23/2013

Surface Coordinates 1650' FNL, 265' FWL

Bottom Hole Coordinates NE NE SEC 1 T4N R66W
535' FEL, 330' FNL

Ground Elevation 4666'

K.B. Elevation 4682'

Logged Interval 700' **To** 6416'

Total Depth 11700'

Formation PEIRRE

Type of Drilling Fluid LSND

Operator

Company NOBLE ENERGY

Address 1625 BROADWAY, SUITE 2200
DENVER, COLORADO 80202

Geologist

Name HOLLY DUNCAN

Company NOBLE ENERGY

Address 1626 BROADWAY, SUITE 2200
DENVER, COLORADO 80202
303.389.3600

Other

WELLSITE GEOLOGICAL SERVICES PROVIDED BY COLUMBINE LOGGING INC.
LOG CONTINUES FROM FILE: HorzLoeffler K1-69-1HN.mplot

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 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

E EARTHY
F FENESTRAL
F FRACTURE
X INTERCRYSTALLINE
Q 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

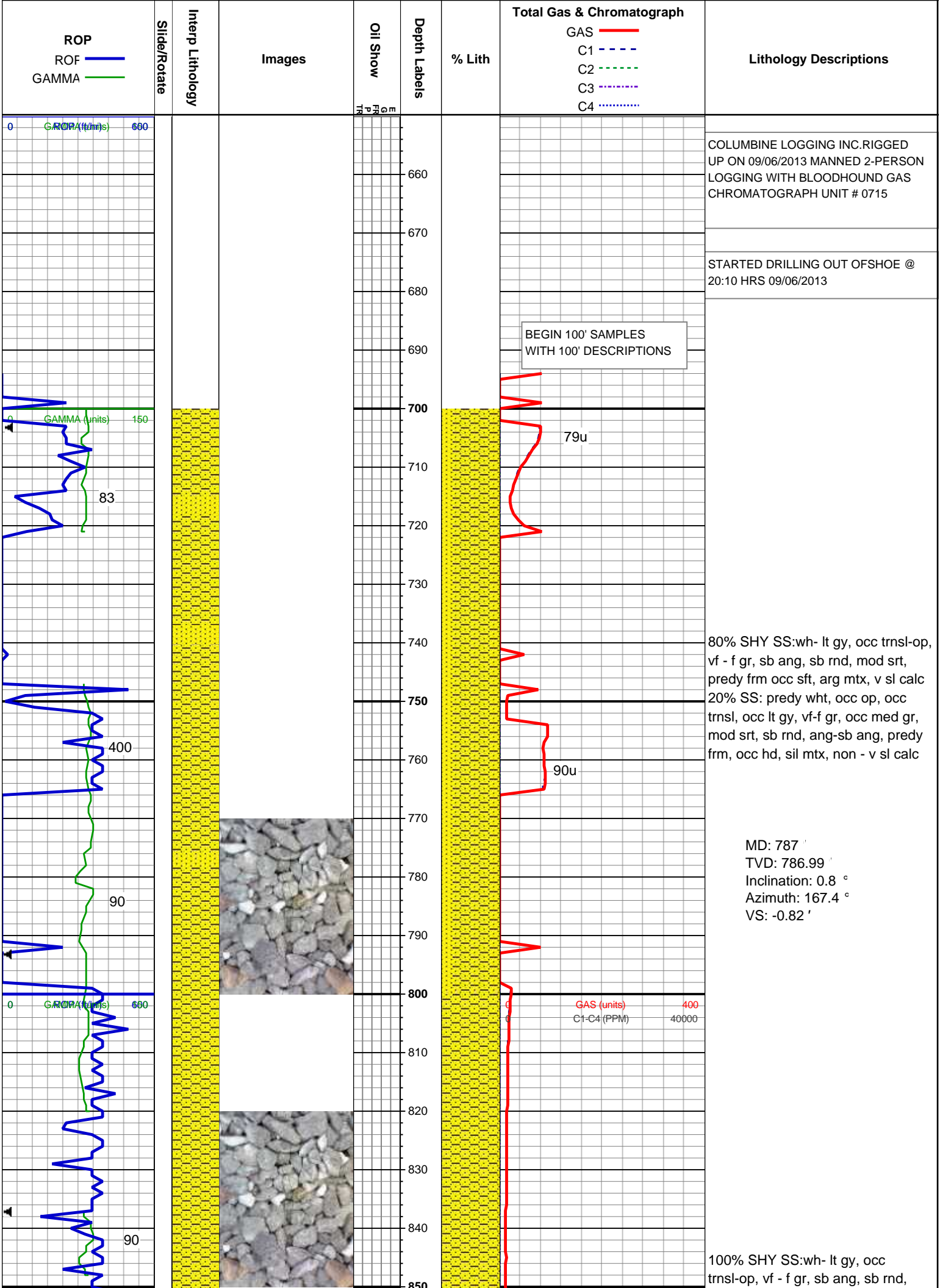
BOUNDSTONE
CHALKY
CRYPTOXLN

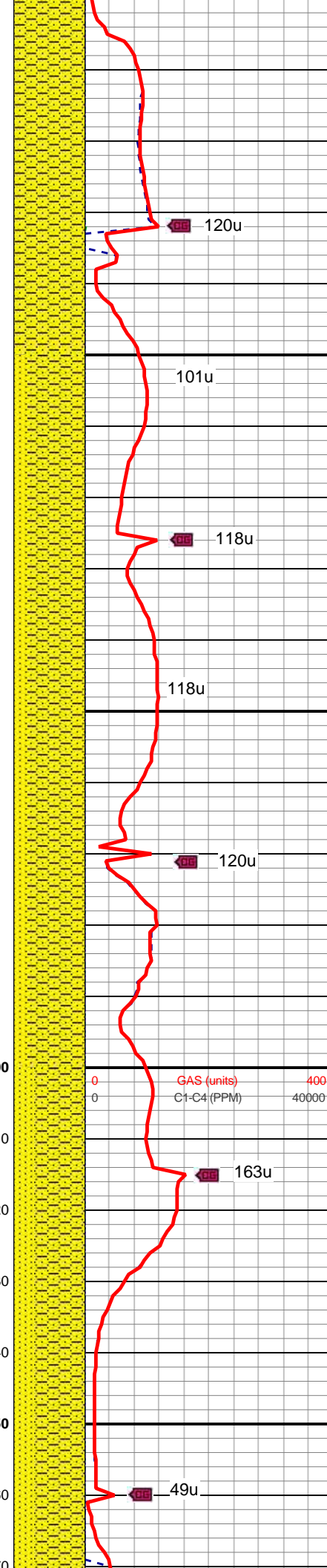
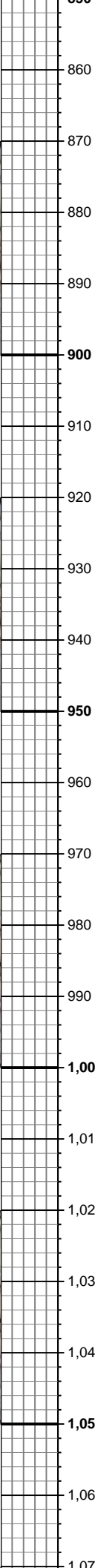
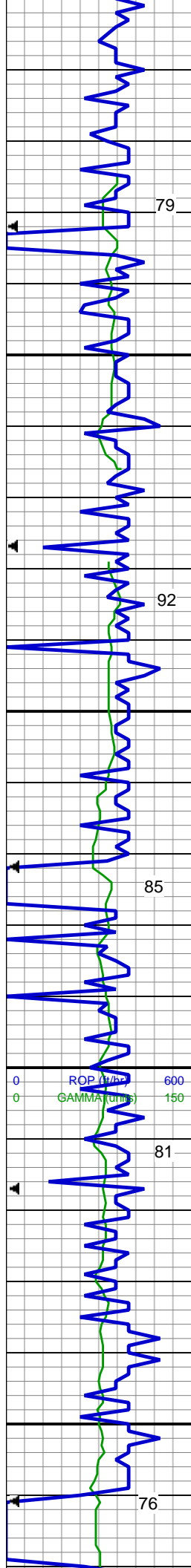
E Earthy

FINELYXLN
GRAINSTONE
L LITHOGRAPHIC
MICROXLN
MUDSTONE
PACKSTONE
WACKESTONE

Sorting

MODERATE
POOR
WELL





mod srt, predy frm occ sft, arg mtx, v
sl calc

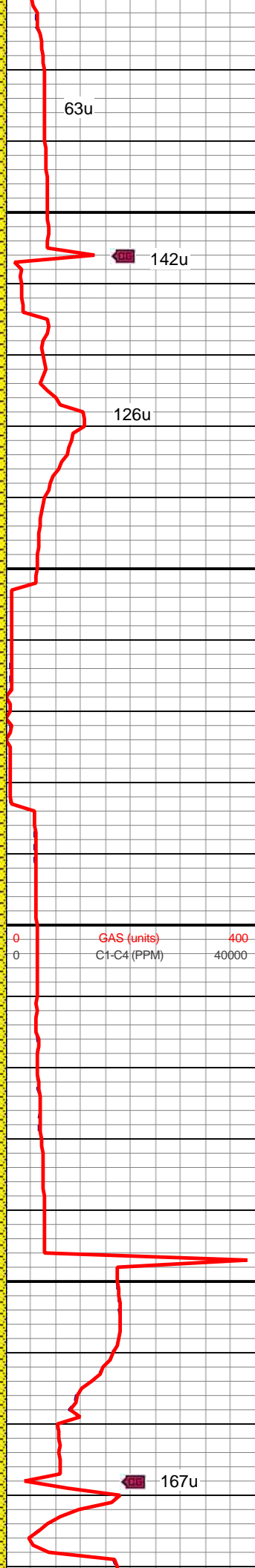
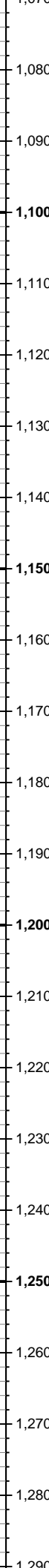
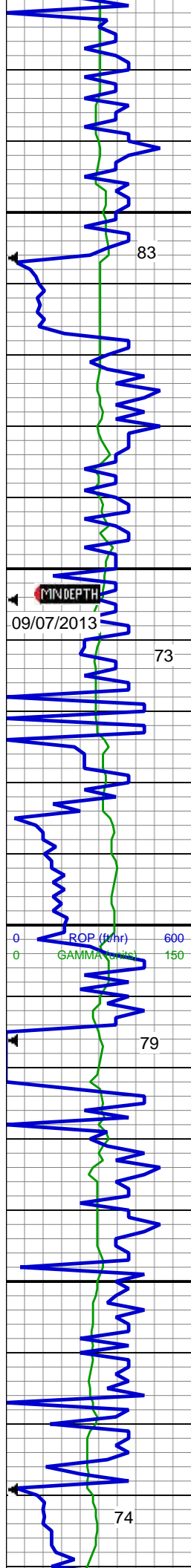
MD: 877 '
TVD: 876.99 '
Inclination: 0.63 °
Azimuth: 265.66 °
VS: -1.35 '

80% SHY SS:wh- lt gy, occ trns-l-op,
vf - f gr, sb ang, sb rnd, mod srt,
predy frm occ sft, arg mtx, v sl calc
20% SS: predy wht, occ op, occ
trns-l, occ lt gy, vf-f gr, occ med gr,
mod srt, sb rnd, ang-sb ang, predy
frm, occ hd, sil mtx, non - v sl calc

MD: 966 '
TVD: 965.98 '
Inclination: 0.38 °
Azimuth: 219.55 °
VS: -2.07 '

70% SHY SS:wh- lt gy, occ trns-l-op,
vf - f gr, sb ang, sb rnd, mod srt,
predy frm occ sft, arg mtx, v sl calc,
tr glau; 30% SS: predy wht, occ op,
occ trns-l, occ lt gy, vf-f gr, occ med
gr, mod srt, sb rnd, ang-sb ang,
predy frm, occ hd, sil mtx, non - v sl
calc

MD: 1,056 '
TVD: 1,055.98 '
Inclination: 0.77 °
Azimuth: 301.77 °
VS: -2.73 '

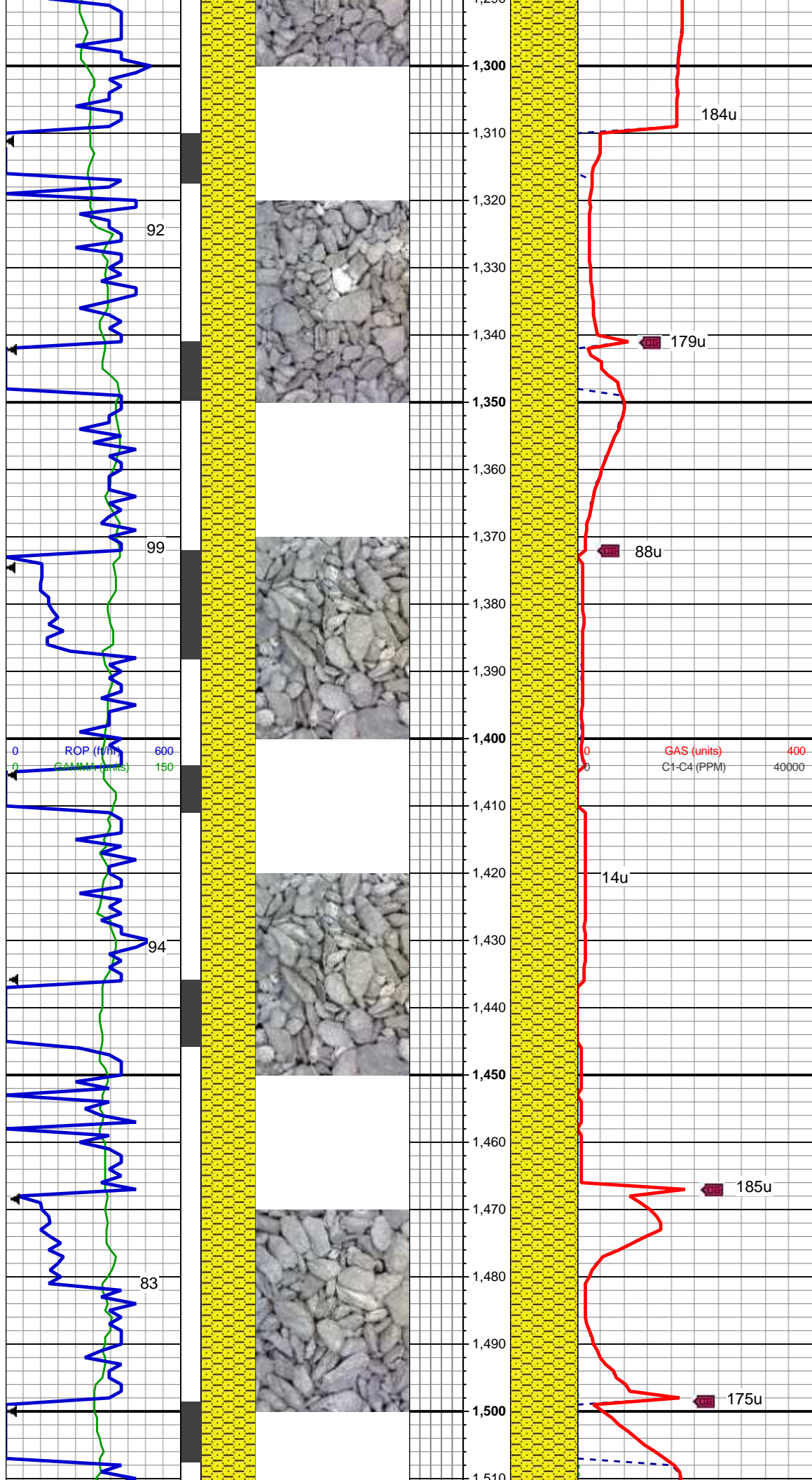


MD: 1,135 '
TVD: 1,134.97 '
Inclination: 0.99 °
Azimuth: 307.48 °
VS: -3.48 '

80% SHY SS:wh- lt gy, occ trns-op, vf - f gr, sb ang, sb rnd, mod srt, predy frm occ sft, arg mtx, v sl calc, tr glau; 20% SS: predy wht, occ op, occ trns, occ lt gy, vf-f gr, occ med gr, mod srt, sb rnd, ang-sb ang, predy frm, occ hd, sil mtx, non - v sl calc

MD: 1,229 '
TVD: 1,228.89 '
Inclination: 3.78 °
Azimuth: 347.51 °
VS: -3.73 '

95% SHY SS:wh- lt gy, occ trns-op, vf - f gr, sb ang, sb rnd, mod srt, predy frm occ sft, arg mtx, v sl calc, tr glau; 5% SS: predy wht, occ op, occ trns, occ lt gy, vf-f gr, occ med gr, mod srt, sb rnd, ang-sb ang, predy frm, occ hd, sil mtx, non - v sl calc



MD: 1,323 '
TVD: 1,322.6 '
Inclination: 5.15 °
Azimuth: 354.87 °
VS: -2.67 '

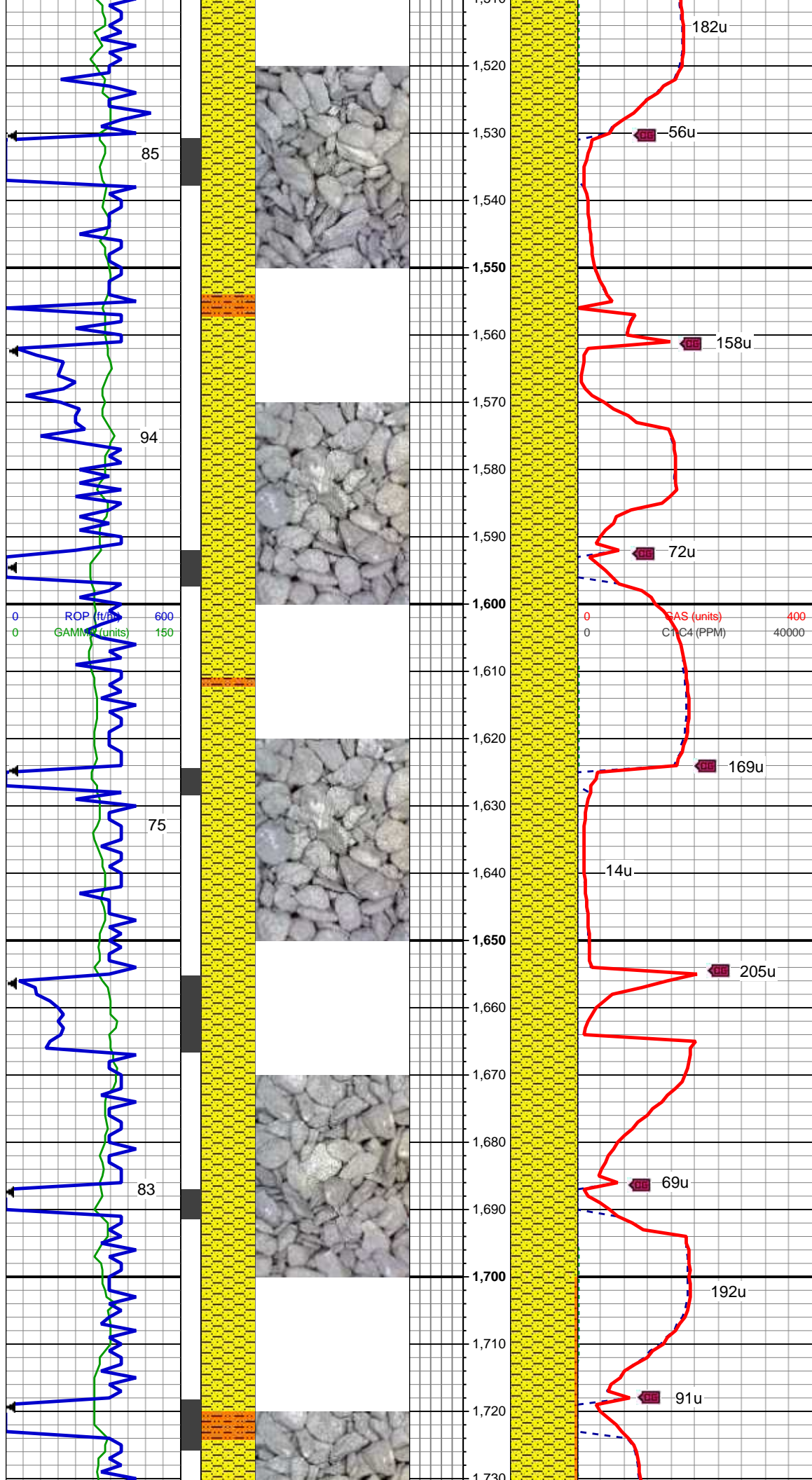
100% SHY SS:wh- lt gy, occ
trns-op, vf - f gr, sb ang, sb rnd,
mod srt, predy frm occ sft, arg mtx, v
sl calc, tr glau

WT 8.4 / VIS 27

MD: 1,418 '
TVD: 1,417.02 '
Inclination: 7.45 °
Azimuth: 356.32 °
VS: -0.44 '

100% SHY SS:wh- lt gy, occ
trns-op, vf - f gr, sb ang, sb rnd,
mod srt, predy frm occ sft, arg mtx, v
sl calc, tr glau

MD: 1,512 '
TVD: 1,509.99 '



Inclination: 9.52 °
Azimuth: 357.45 °
VS: 2.81 '

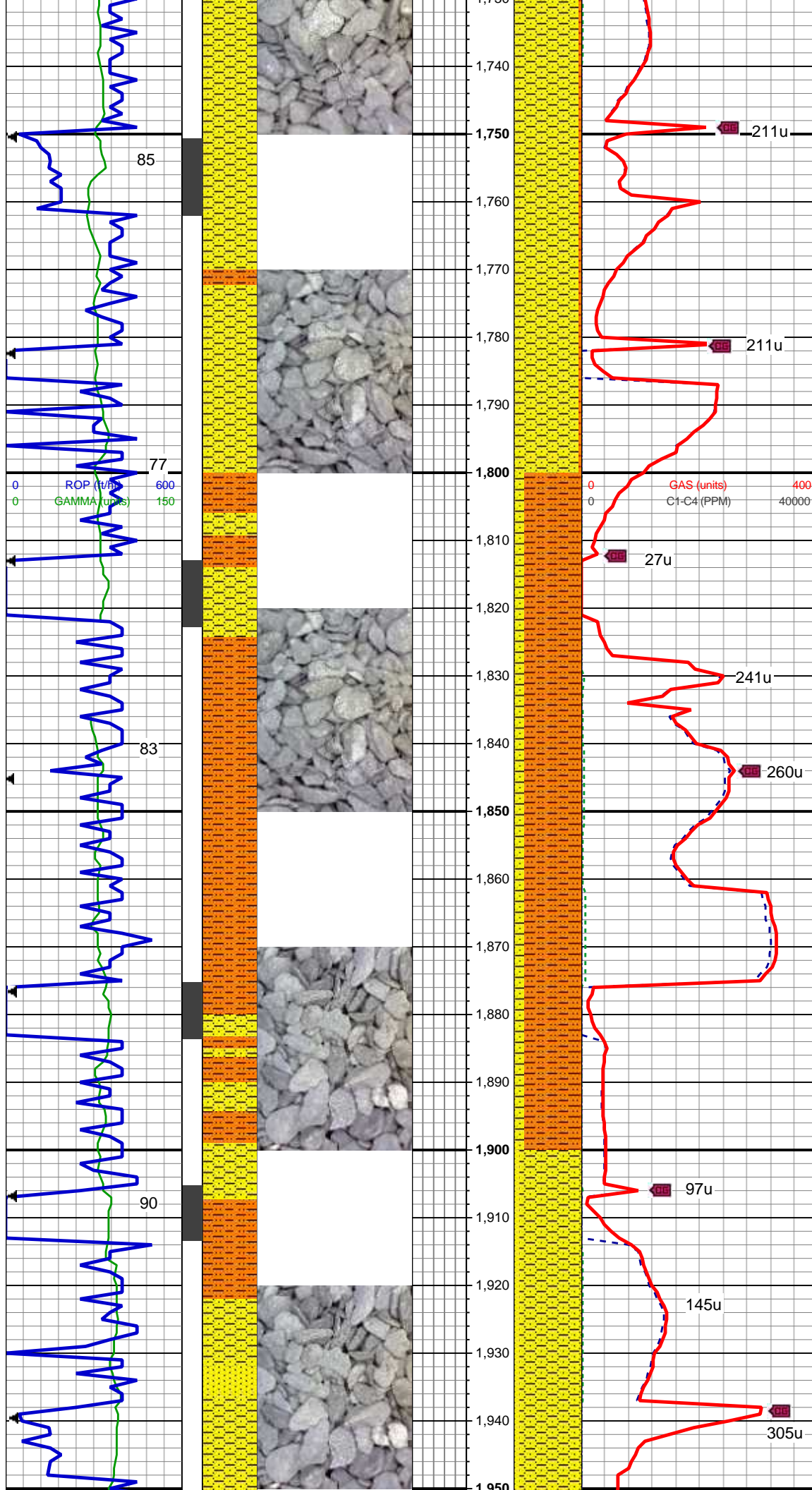
100% SHY SS:wh- lt gy, occ
trns-op, vf - f gr, sb ang, sb rnd,
mod srt, predy frm occ sft, arg mtx, v
sl calc, tr glau

WT 8.6 / VIS 26

MD: 1,606 '
TVD: 1,602.58 '
Inclination: 10.34 °
Azimuth: 351.94 °
VS: 5.96 '

100% SHY SS:wh- lt gy, occ
trns-op, vf - f gr, sb ang, sb rnd,
mod srt, predy frm occ sft, arg mtx, v
sl calc, tr glau, anhy, ss

MD: 1,700 '
TVD: 1,694.98 '
Inclination: 10.83 °
Azimuth: 350.17 °
VS: 8.26 '



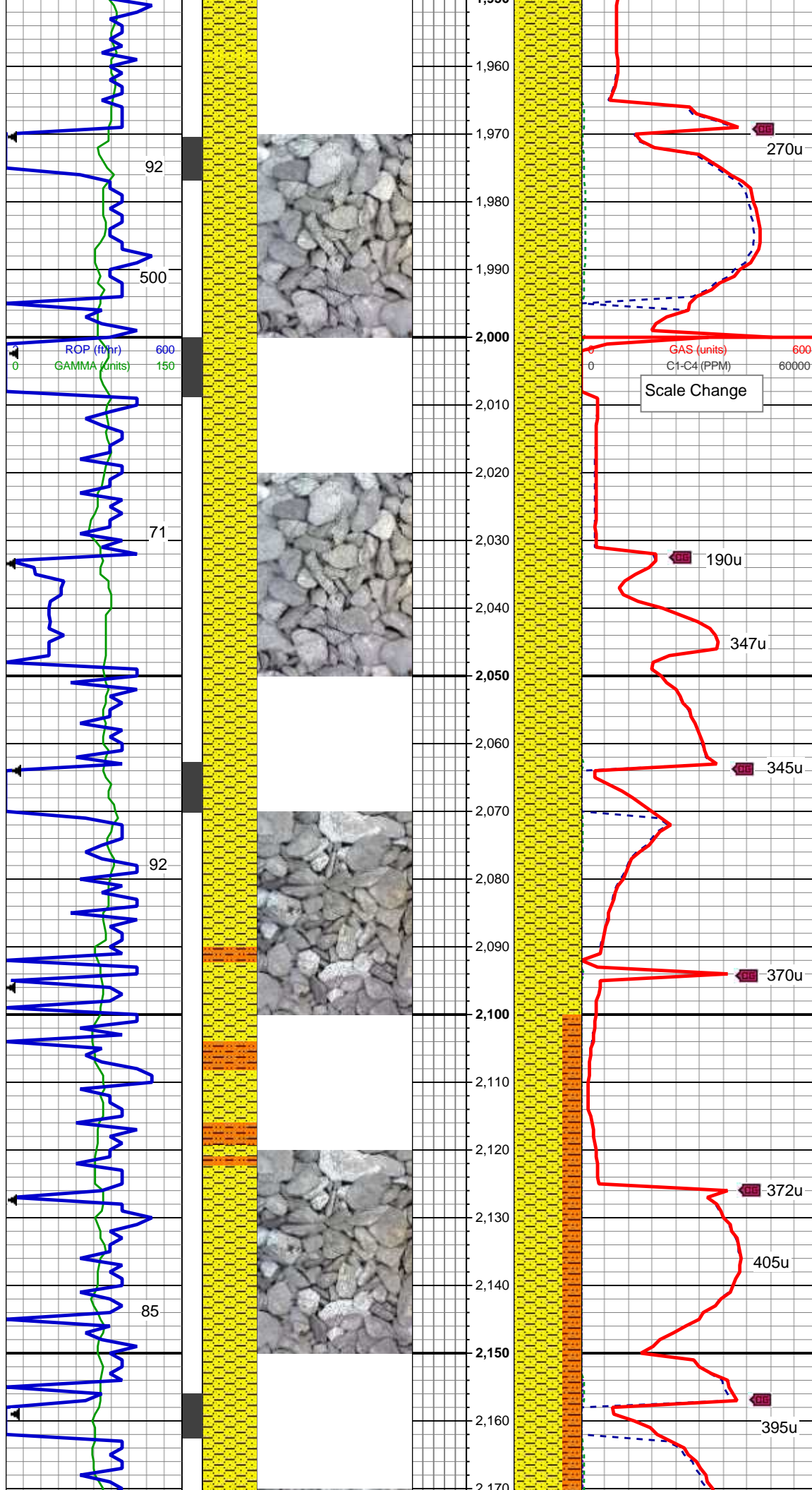
100% SHY SS:wh- lt gy, occ trns-op, vf - f gr, sb ang, sb rnd, mod srt, predy frm occ sft, arg mtx, v sl calc, tr glau, ss 10% SHY SLTST: ltgy, sft- fri, sb blk, sl sb plty, slty tex, tr biot incl

MD: 1,794 '
TVD: 1,787.09 '
Inclination: 12.2 °
Azimuth: 351.8 °
VS: 10.76 '

85% SHY SLTST: ltgy, sft- fri, sb blk, sl sb plty, slty tex, tr biot incl 15% SHY SS:wh- lt gy, occ trns-op, vf - f gr, sb ang, sb rnd, mod srt, predy frm occ sft, arg mtx, v sl calc, tr glau, ss

MD: 1,889 '
TVD: 1,880.13 '
Inclination: 11.14 °
Azimuth: 348.85 °
VS: 13.1 '

90% SHY SS:wh- lt gy, occ trns-op, vf - f gr, sb ang, sb rnd, mod srt, predy frm occ sft, arg mtx, sl calc; 10% SS: predy wht, occ op, occ trns, occ lt gy, vf-f gr, occ med gr,



mod srt, sb rnd, ang-sb ang, predy frm, occ hd, sil mtx, sl calc, occ glau

WT 8.5 / VIS 28

MD: 1,983 '

TVD: 1,972.09 '

Inclination: 12.73 °

Azimuth: 348.76 °

VS: 14.94 '

95% SHY SS:wh- lt gy, occ trns-l-op, vf - f gr, sb ang, sb rnd, mod srt, predy frm occ sft, arg mtx, sl calc; 5% SS: predy wht, occ op, occ trns-l, occ lt gy, vf-f gr, occ med gr, mod srt, sb rnd, ang-sb ang, predy frm, occ hd, sil mtx, sl calc, occ glau

MD: 2,077 '

TVD: 2,063.69 '

Inclination: 13.8 °

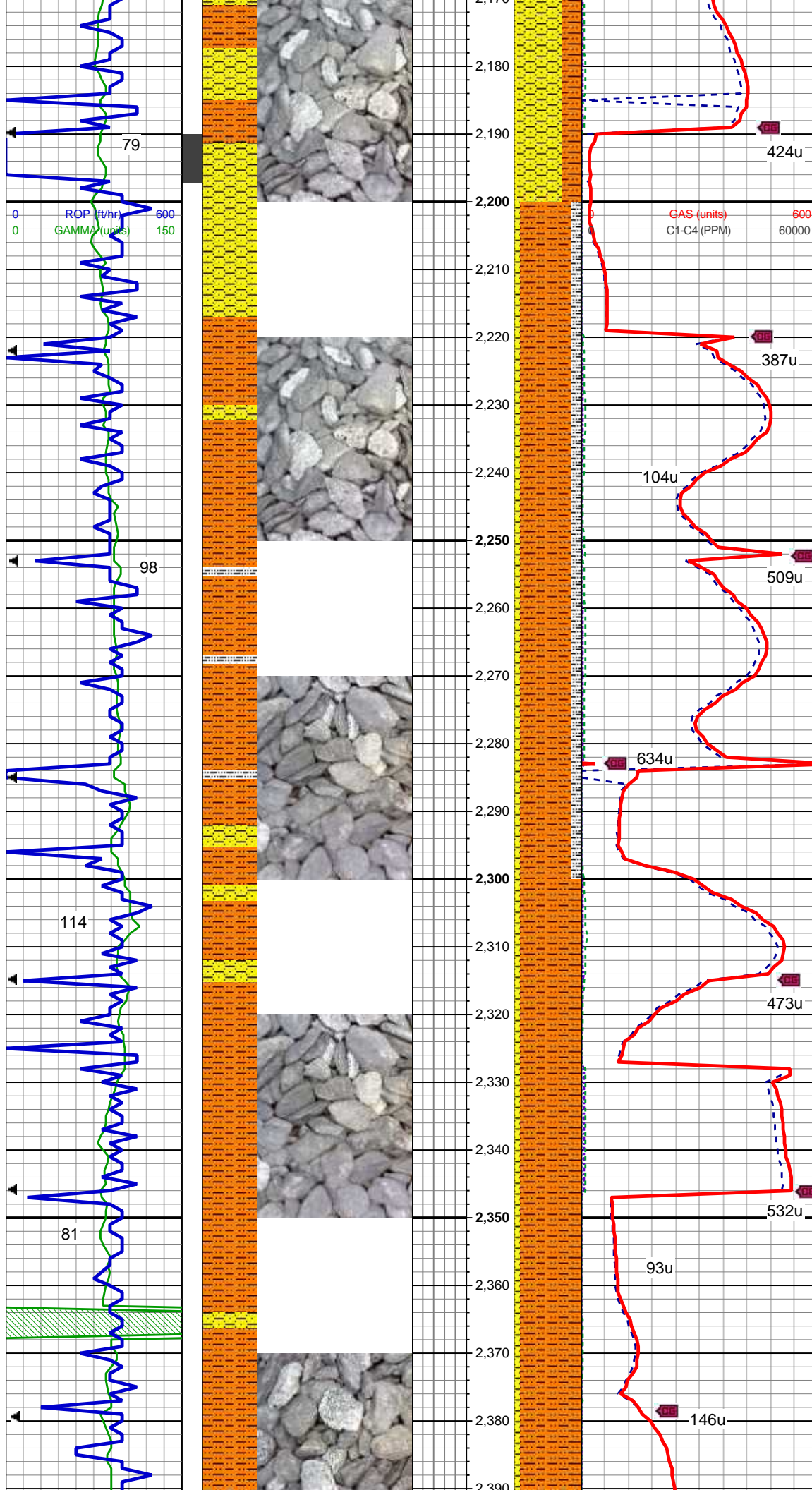
Azimuth: 356.75 °

VS: 18.41 '

30% SHY SLTST: ltgy, sft-fri, sb blk, sl sb plty, slty tex, tr biot incl 65% SHY SS:wh- lt gy, occ trns-l-op, vf - f gr, sb ang, sb rnd, mod srt, predy frm occ sft, arg mtx, v sl calc, tr glau, 5% SS: predy wht, occ op, occ trns-l, occ lt gy, vf-f gr, occ med gr, mod srt, sb rnd, ang-sb ang, predy frm, occ hd, sil mtx, v sl calc

MD: 2,171 '

TVD: 2,155.26 '



Inclination: 12.79 °
Azimuth: 355.93 °
VS: 23.16 '

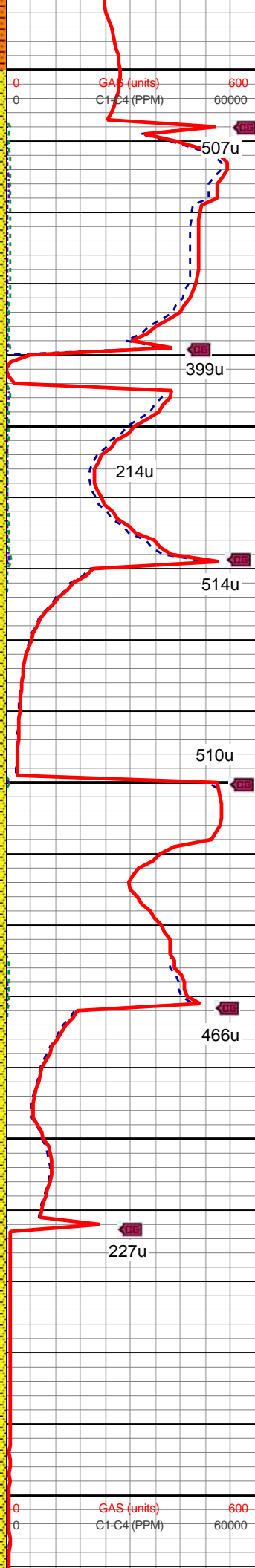
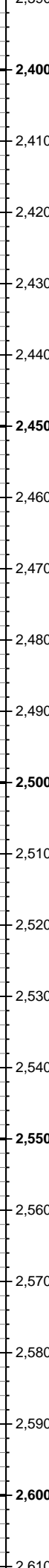
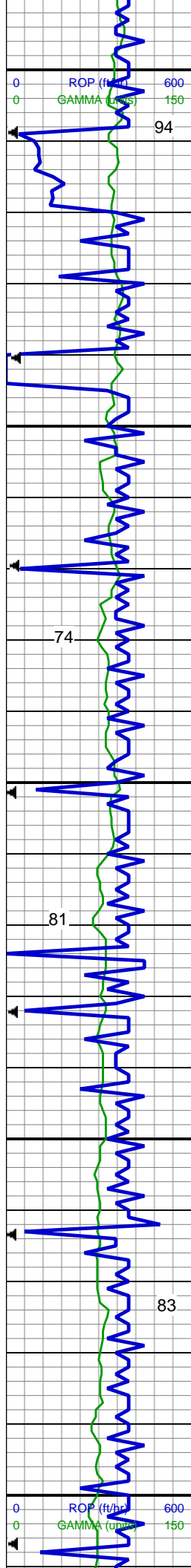
75% SHY SLTST: ltgy, sft- fri, sb
blky, sl sb plty, slty tex, tr biot incl,
10% SS: predy wht, occ op, occ
trns, occ lt gy, vf-f gr, occ med gr,
mod srt, sb rnd, ang-sb ang, predy
frm, occ hd, sil mtx, v sl calc 15%
SLTY SH: predy gy, occ lt gy, predy
frm, sb plty, sb blky, shy - slty tex, sl
calc

WT 8.6 / VIS 26

MD: 2,265 '
TVD: 2,247.04 '
Inclination: 12.2 °
Azimuth: 354.27 °
VS: 27.3 '

90% SHY SLTST: ltgy, sft- fri, sb
blky, sl sb plty, slty tex, tr biot incl,
10% SHY SS:wh- lt gy, occ trns-op,
vf - f gr, sb ang, sb rnd, mod srt,
predy frm occ sft, arg mtx, v sl calc

MD: 2,359 '
TVD: 2,339.18 '
Inclination: 10.6 °
Azimuth: 350.23 °
VS: 30.21 '



90% SHY SS:wh- lt gy, occ trnsl-op,
vf - f gr, sb ang, sb rnd, mod srt,
predy frm occ sft, arg mtx, v sl calc
5% SS: predy wht, occ op, occ trnsl,
occ lt gy, vf-f gr, occ med gr, mod
srt, sb rnd, ang-sb ang, predy frm,
occ hd, sil mtx, v sl calc

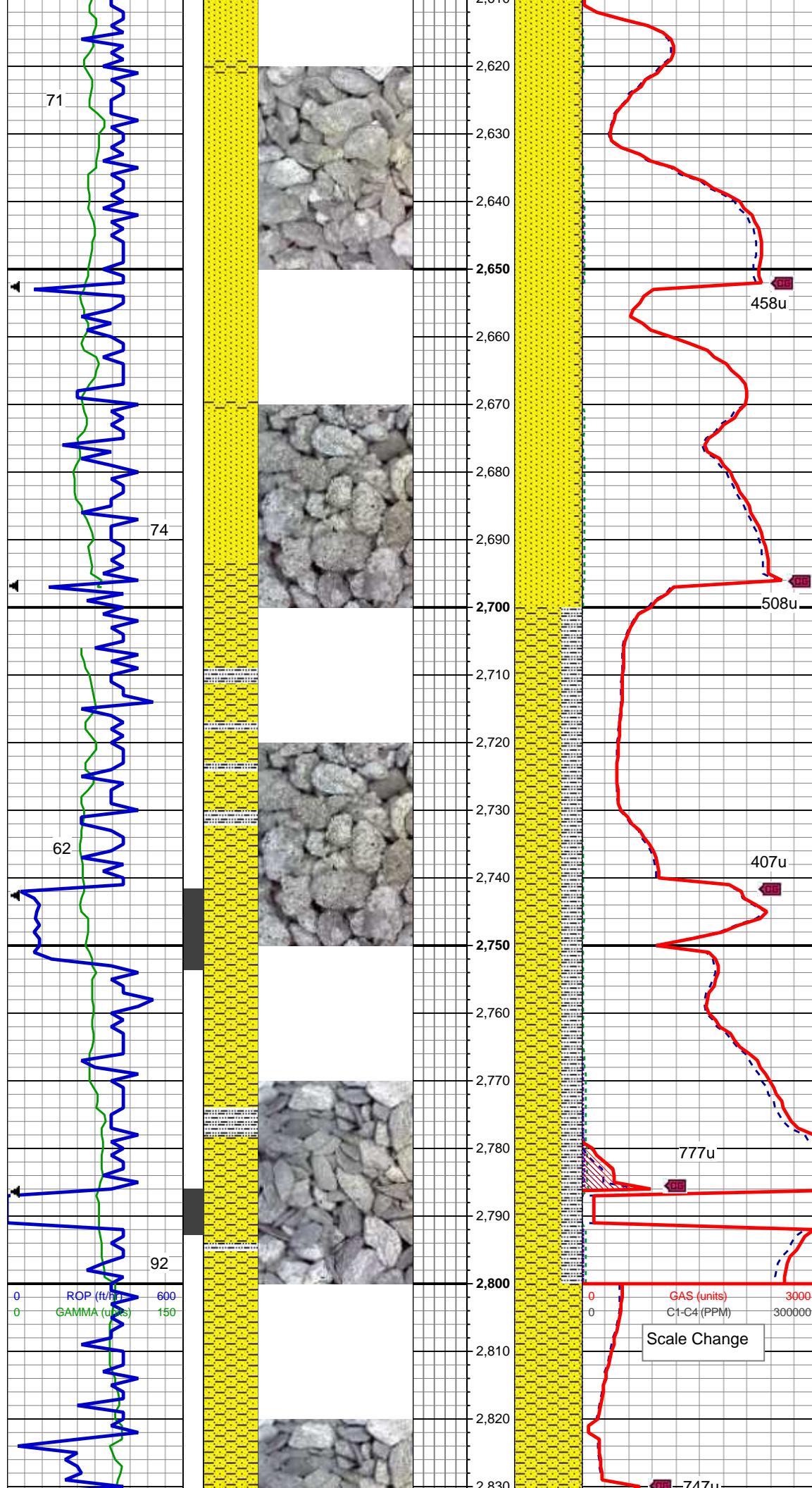
MD: 2,451 '
TVD: 2,429.29 '
Inclination: 12.68 °
Azimuth: 354.87 °
VS: 33.23 '

MD: 2,513 '
TVD: 2,489.8 '
Inclination: 12.44 °
Azimuth: 354.38 °
VS: 35.86 '

90% SHY SS:wh- lt gy, occ trnsl-op,
vf - f gr, sb ang, sb rnd, mod srt,
predy frm occ sft, arg mtx, v sl calc
5% SS: predy wht, occ op, occ trnsl,
occ lt gy, vf-f gr, occ med gr, mod
srt, sb rnd, ang-sb ang, predy frm,
occ hd, sil mtx, v sl calc

MD: 2,602 '
TVD: 2,576.71 '
Inclination: 12.47 °
Azimuth: 355.22 °

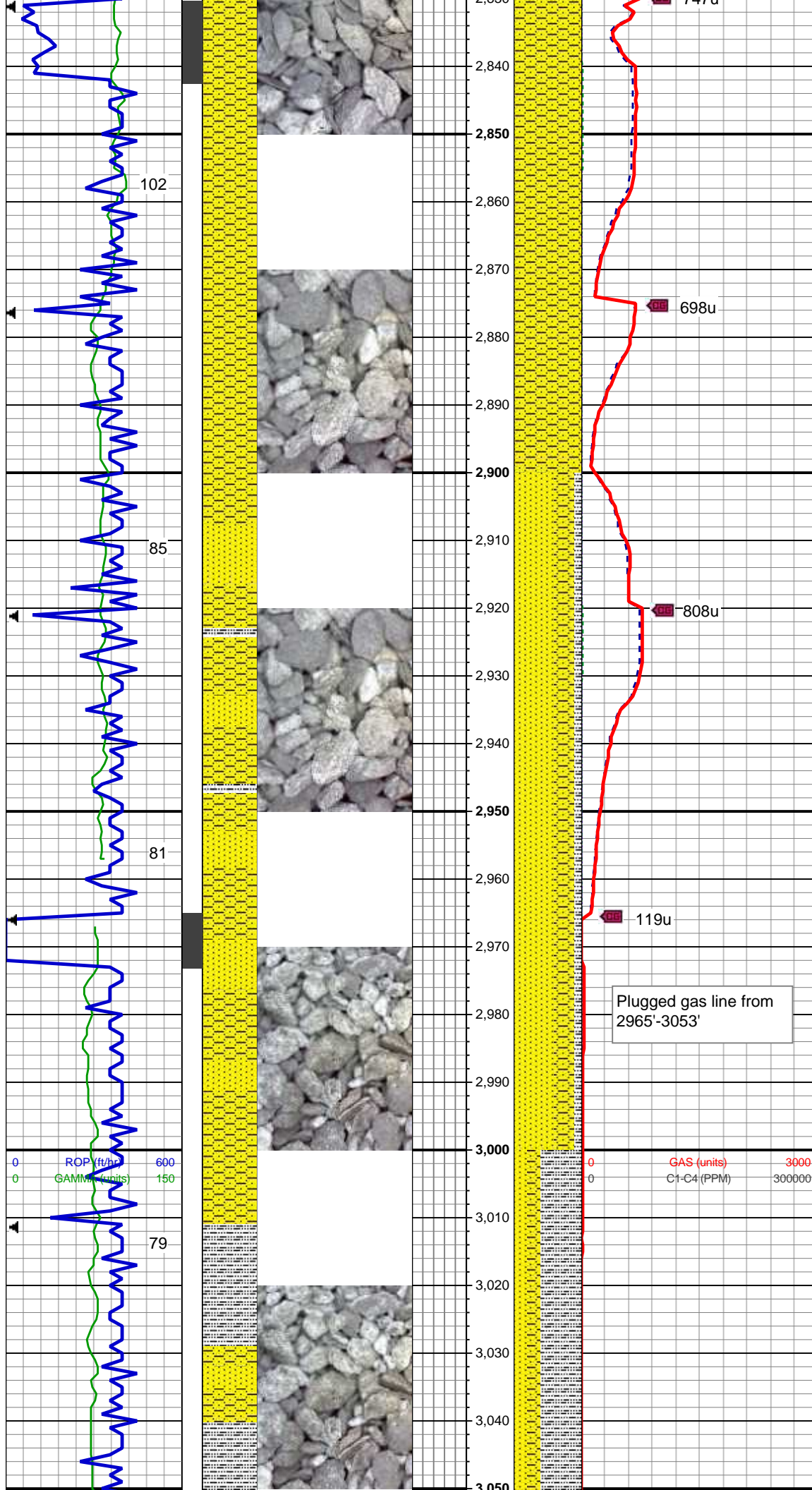
VS: 39.66 '



90% SS: predy wht, s&p ip, occ op, occ trns, occ lt gy, vf-f gr, mod srt, sb rnd, ang-sb ang, predy frm, occ hd, calc 10% SHY SS:wh- lt gy, occ trns-op, vf - f gr, sb ang, sb rnd, mod srt, predy frm occ sft, arg mtx, calc

70% SHY SS:wh- lt gy, occ trns-op, vf - f gr, sb ang, sb rnd, mod srt, predy frm occ sft, arg mtx, v sl calc 30% SLTY SH: predy gy, occ lt gy, predy frm, sb plty, sb blk, shy - slty tex, sl calc, tr ss

MD: 2,781 '
TVD: 2,750.99 '
Inclination: 12.38 °
Azimuth: 351.43 °
VS: 47.58 '



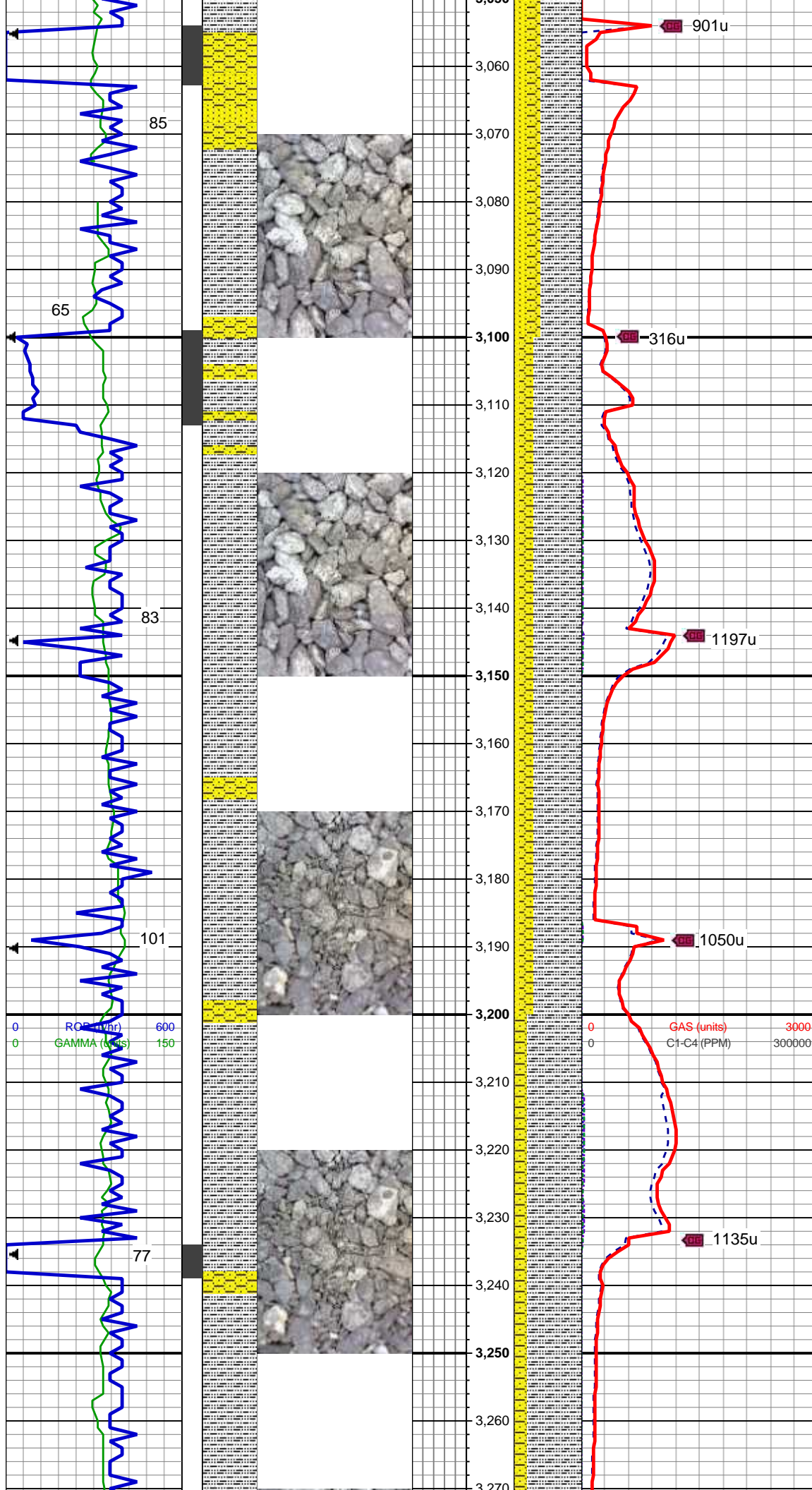
70% SHY SS:wh- lt gy, occ trnsl-op, vf - f gr, sb ang, sb rnd, mod srt, predy frm occ sft, arg mtx, sl calc, occ ss strg

MD: 2,871 '
TVD: 2,839.2 '
Inclination: 10.48 °
Azimuth: 348.83 °
VS: 49.71 '

60% SS: predy wht, s&p ip, occ op, occ trnsl, occ lt gy, vf-f gr, mod srt, sb rnd, ang-sb ang, predy frm, occ hd, calc30% SHY SS:wh- lt gy, occ trnsl-op, vf - f gr, sb ang, sb rnd, mod srt, predy frm occ sft, arg mtx, v sl calc 10% SLTY SH: predy gy, occ lt gy, predy frm, sb plty, sb blk, shy - slty tex, sl calc

MD: 2,961 '
TVD: 2,927.75 '
Inclination: 10.11 °
Azimuth: 348.19 °
VS: 51.15 '

60% SLTY SH: predy gy, occ lt gy, predy frm, sb plty, sb blk, shy - slty tex, sl calc; 20% SS: predy wht, s&p ip, occ op, occ trnsl, occ lt gy, vf-f gr,



mod srt, sb rnd, ang-sb ang, predy frm, occ hd, calc; 20% SHY SS:wh- lt gy, occ trns-op, vf - f gr, sb ang, sb rnd, mod srt, predy frm occ sft, arg mtx, v sl calc

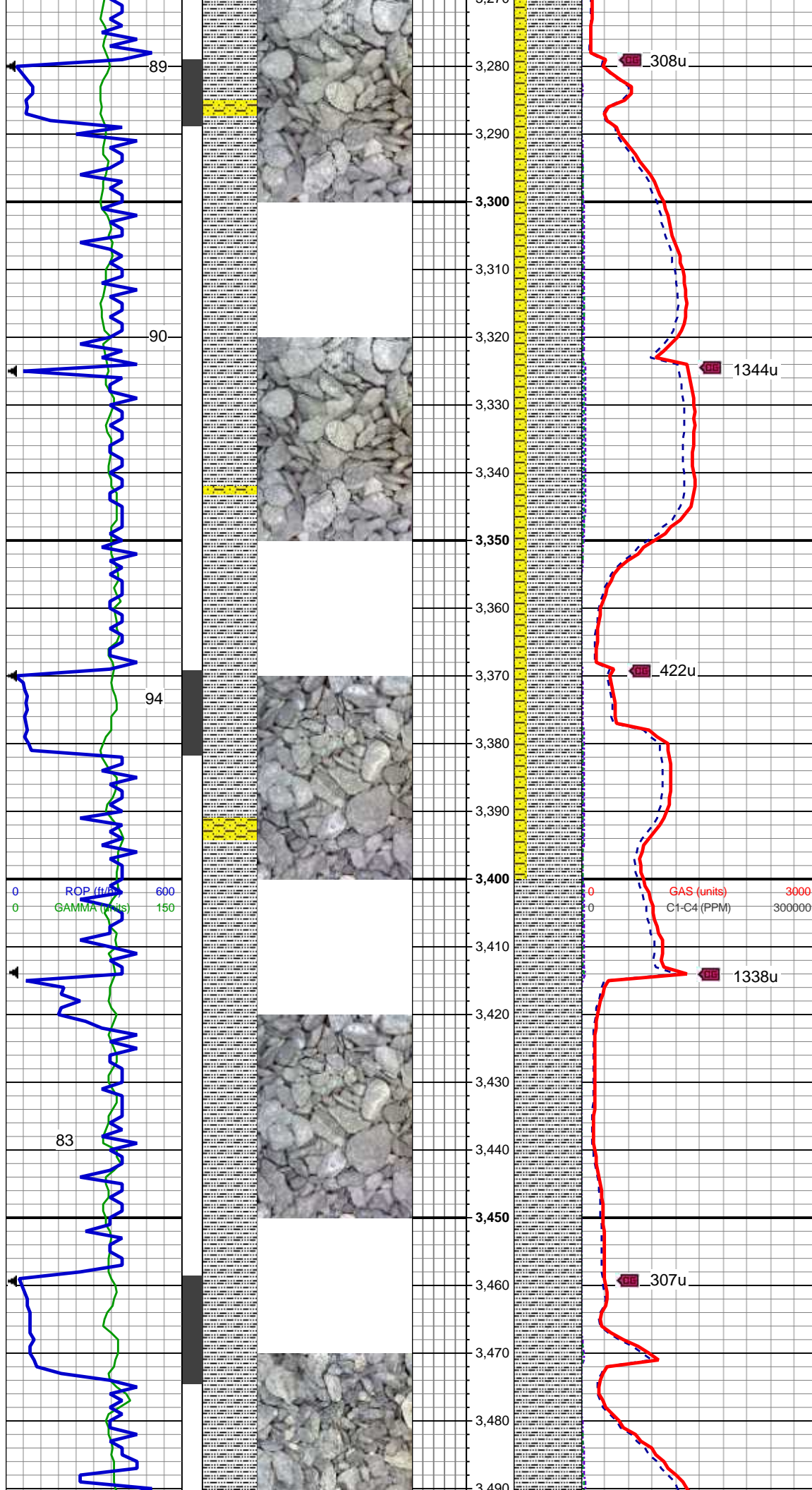
MD: 3,050 '
TVD: 3,015.44 '
Inclination: 9.57 °
Azimuth: 345.83 °
VS: 52.12 '

MD: 3,140 '
TVD: 3,103.92 '
Inclination: 11.49 °
Azimuth: 345.02 °
VS: 52.7 '

70% SLTY SH: predy gy, occ lt gy, predy frm, sb plty, sb blk, shy - slty tex, sl calc; 20% SHY SS:wh- lt gy, occ trns-op, vf - f gr, sb ang, sb rnd, mod srt, predy frm occ sft, arg mtx, v sl calc; 10% SS: predy wht, s&p ip, occ op, occ trns, occ lt gy, vf-f gr, mod srt, sb rnd, ang-sb ang, predy frm, occ hd, calc

MD: 3,230 '
TVD: 3,192.25 '
Inclination: 10.64 °
Azimuth: 338.45 °
VS: 52.24 '

80% SLTY SH: predy gy, occ lt gy, predy frm, sb plty, sb blk, shy - slty tex, sl calc; 20% SHY SS:wh- lt gy, occ trns-op, vf - f gr, sb ang, sb rnd, mod srt, predy frm occ sft, arg mtx, v sl calc

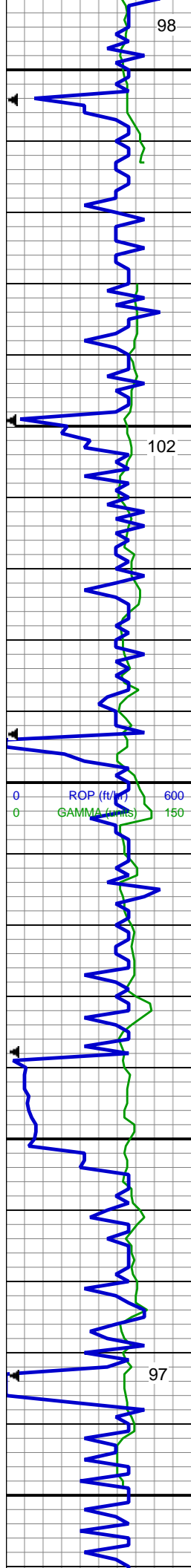


MD: 3,319 '
TVD: 3,279.88 '
Inclination: 9.5 °
Azimuth: 345.7 °
VS: 51.83 '

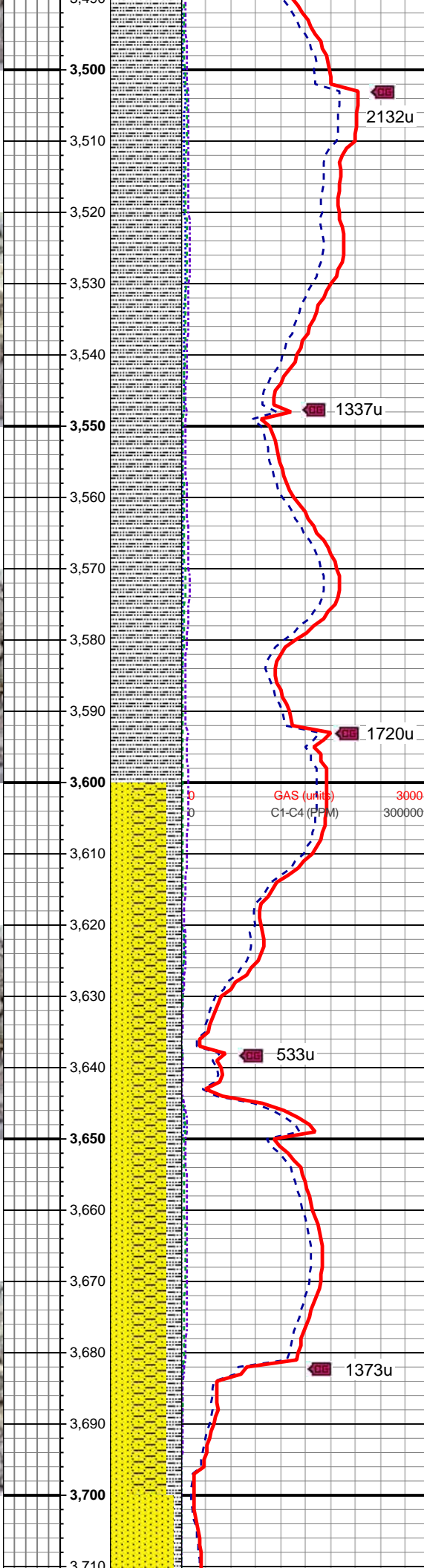
80% SLTY SH: predy gy, occ lt gy,
predy frm, sb plty, sb blk, shy - slty
tex, sl calc; 20% SHY SS:wh- lt gy,
occ trns-op, vf - f gr, sb ang, sb rnd,
mod srt, predy frm occ sft, arg mtx, v
sl calc

MD: 3,409 '
TVD: 3,368.59 '
Inclination: 9.92 °
Azimuth: 346.26 °
VS: 52.52 '

100% SLTY SH: predy gy, occ lt gy,
predy frm, sb plty, sb blk, shy - slty
tex, sl calc; tr shy ss



Log plot showing ROP (ft/hr) and GAMMA (API) curves. The ROP curve is blue and the GAMMA curve is green. The plot is divided into sections labeled 98, 102, and 97. The ROP scale ranges from 0 to 600 ft/hr, and the GAMMA scale ranges from 0 to 150 API.



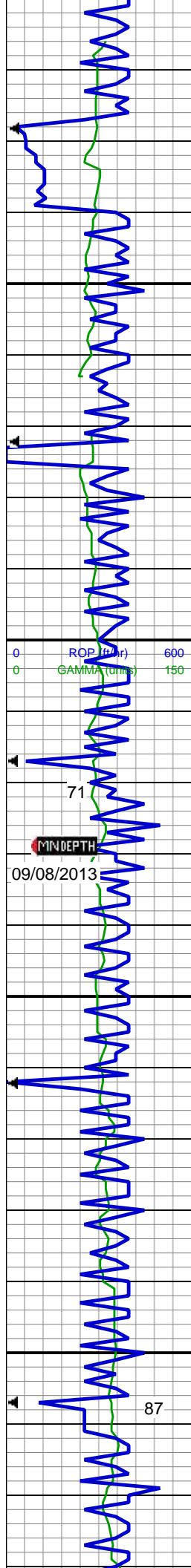
MD: 3,498 '
TVD: 3,456.06 '
Inclination: 11.37 °
Azimuth: 348.41 °
VS: 53.68 '

100% SLTY SH: predy gy, occ lt gy, predy frm, sb plty, sb blk, shy - slty tex, sl calc

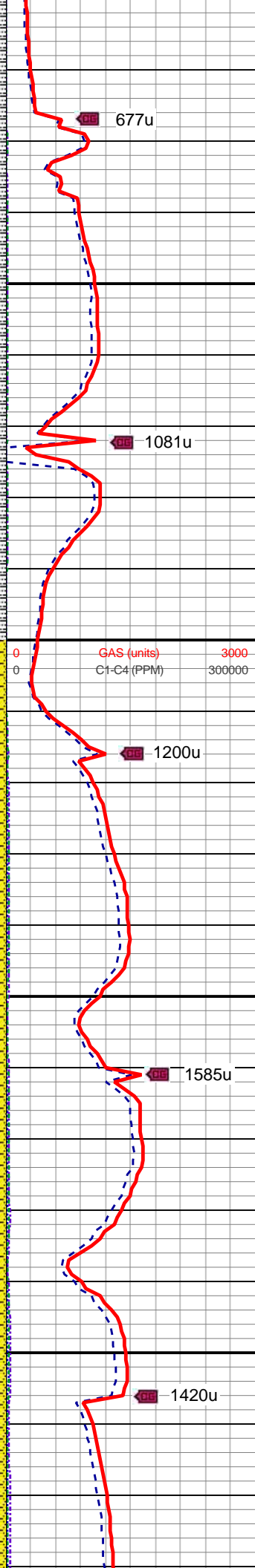
MD: 3,588 '
TVD: 3,544.6 '
Inclination: 9.26 °
Azimuth: 343.12 °
VS: 54.42 '

50% SHY SS:wh- lt gy, occ trns-op, vf - f gr, sb ang, sb rnd, mod srt, predy frm occ sft, arg mtx, v sl calc, rr glau, rr pyr; 30% SS: predy wht, occ op, occ trns, occ lt gy, vf-f gr, occ med gr, mod srt, sb rnd, ang-sb ang, predy frm, occ hd, sil mtx, v sl calc, rr glau; 20% SLTY SH: predy gy, occ lt gy, predy frm, sb plty, sb blk, shy - slty tex, sl calc

MD: 3,678 '
TVD: 3,633.22 '
Inclination: 10.77 °
Azimuth: 343.55 °
VS: 54.41 '



3,720
3,730
3,740
3,750
3,760
3,770
3,780
3,790
3,800
3,810
3,820
3,830
3,840
3,850
3,860
3,870
3,880
3,890
3,900
3,910
3,920
3,930



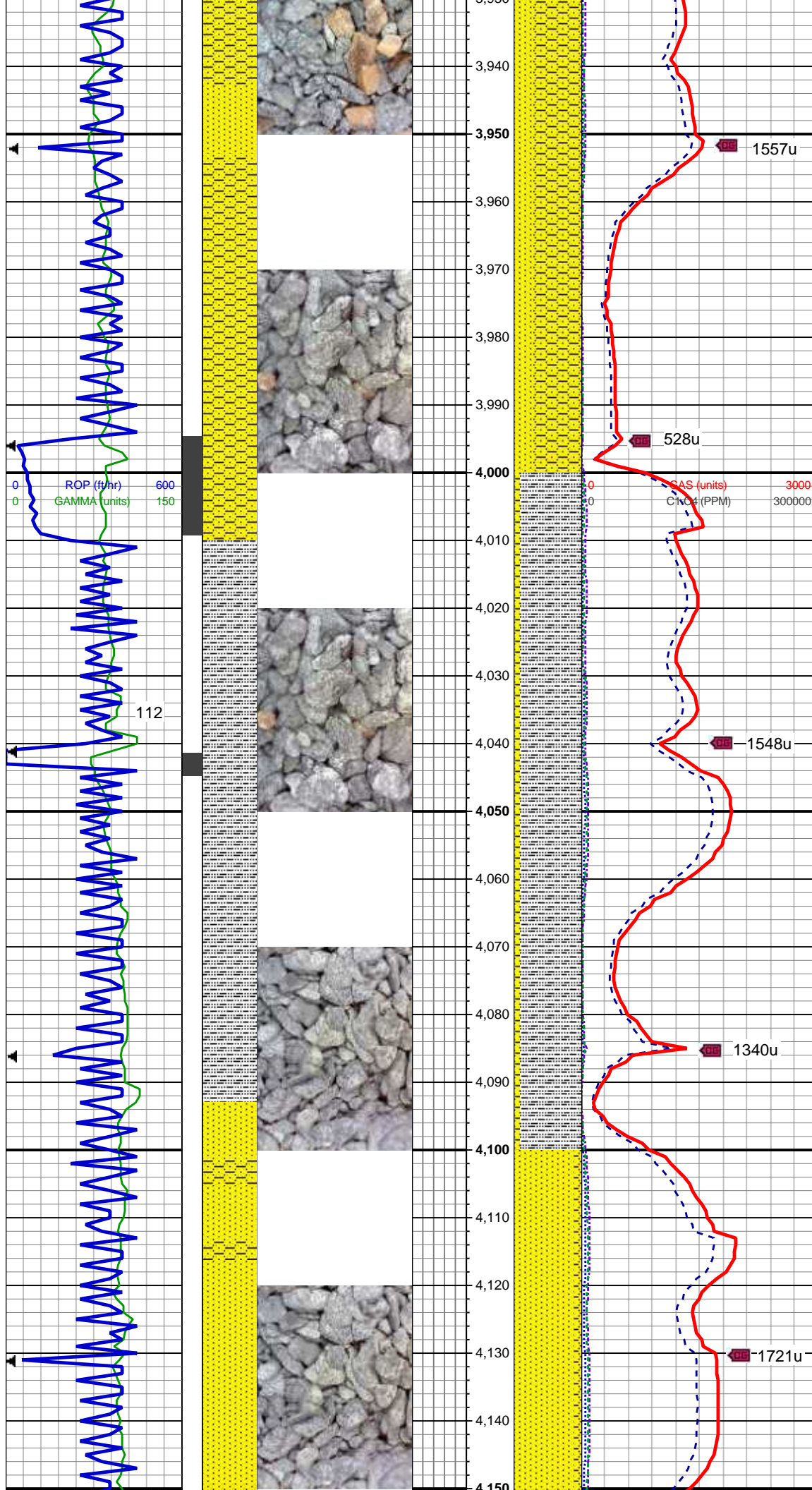
90% SS: wht, occ op, occ trns, occ
lt gy, vf-f gr, occ med gr, mod srt, sb
rnd, ang-sb ang, predy frm, occ hd,
sil mtx, v sl calc, rr glau; 10% SLTY
SH: predy gy, occ lt gy, predy frm, sb
plty, sb blk, shy - slty tex, sl calc; tr
shy ss

MD: 3,767 '
TVD: 3,720.49 '
Inclination: 11.93 °
Azimuth: 352.11 °
VS: 55.83 '

60% SS: predy wht, occ op, occ
trns, occ lt gy, vf-f gr, occ med gr,
mod srt, sb rnd, ang-sb ang, predy
frm, occ hd, sil mtx, v sl calc; 40%
SHY SS: wh- lt gy, occ trns-op, vf - f
gr, sb ang, sb rnd, mod srt, predy
frm occ sft, arg mtx, v sl calc

MD: 3,857 '
TVD: 3,808.38 '
Inclination: 12.9 °
Azimuth: 352.21 °
VS: 58.79 '

MD: 3,946 '
TVD: 3,895.09 '
Inclination: 13.14 °
Azimuth: 351.61 °



Azimuth: 351.61 °
VS: 61.76 '

70% SHY SS:wh- lt gy, occ trns-op, vf - f gr, sb ang, sb rnd, mod srt, predy frm occ sft, arg mtx, v sl calc;
30% SS: predy wht, occ op, occ trns, occ lt gy, vf-f gr, occ med gr, mod srt, sb rnd, ang-sb ang, predy frm, occ hd, sil mtx, v sl calc

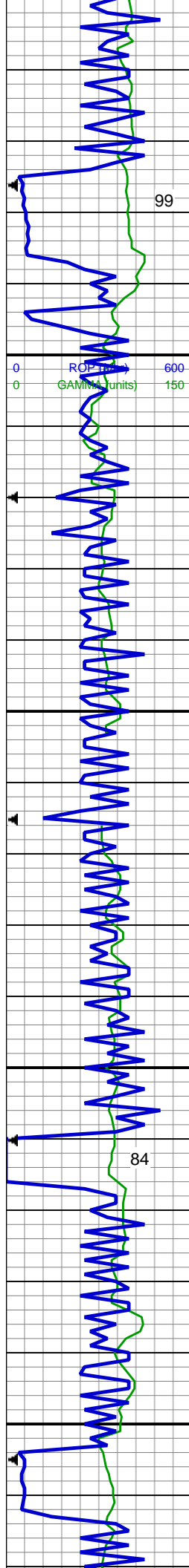
MD: 4,036 '
TVD: 3,983.13 '
Inclination: 10.83 °
Azimuth: 3,983.13 °
VS: 64.78 '

90% SLTY SH: predy gy, occ lt gy, predy frm, sb plty, sb blk, shy - slty tex, sl calc; 10% SHY SS:wh- lt gy, occ trns-op, vf - f gr, sb ang, sb rnd, mod srt, predy frm occ sft, arg mtx, v sl calc; tr SS

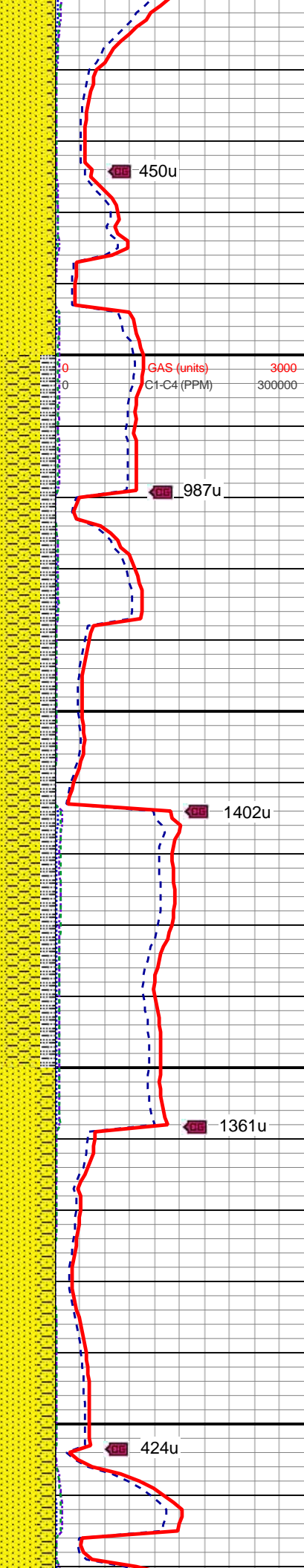
WT 8.9 / VIS 32

MD: 4,126 '
TVD: 4,071.68 '
Inclination: 9.71 °
Azimuth: 350.01 °
VS: 67.2 '

90% SS: predy wht, occ op, occ trns, occ lt gy, vf-f gr, occ med gr, mod srt, sb rnd, ang-sb ang, predy frm, occ hd, v sl calc, tr glau; 10%



4,150
4,160
4,170
4,180
4,190
4,200
4,210
4,220
4,230
4,240
4,250
4,260
4,270
4,280
4,290
4,300
4,310
4,320
4,330
4,340
4,350
4,360
4,370



SHY SS:wh- lt gy, occ trns-op, vf - f
gr, sb ang, sb rnd, mod srt, predy
frm occ sft, arg mtx, v sl calc, tr glau;
tr slty sh

WT 9.00 / VIS 33

MD: 4,215 '
TVD: 4,159.15 '
Inclination: 11.51 °
Azimuth: 349.73 °
VS: 69.05 '

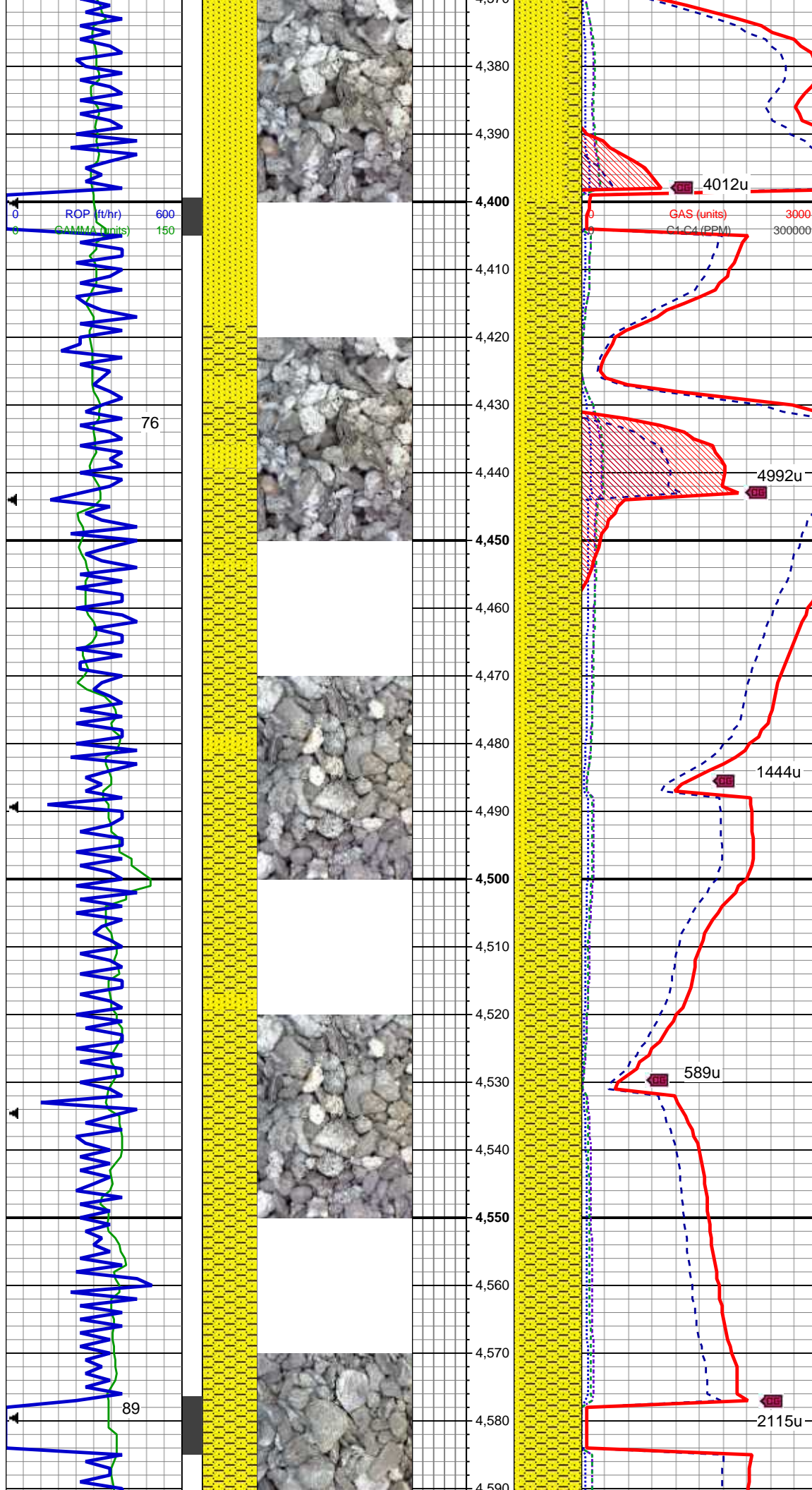
50% SHY SS:wh- lt gy, occ trns-op,
vf - f gr, sb ang, sb rnd, mod srt,
predy frm occ sft, arg mtx, v sl calc,
tr glau; 30% SS: predy wht, occ op,
occ trns, occ lt gy, vf-f gr, occ med
gr, mod srt, sb rnd, ang-sb ang,
predy frm, occ hd, v sl calc, tr glau;
20% SLTY SH: predy gy, occ lt gy,
predy frm, sb plty, sb blk, shy - slty
tex, sl calc

MD: 4,305 '
TVD: 4,247.45 '
Inclination: 10.82 °
Azimuth: 347.97 °
VS: 70.72 '

75% SS: predy wht, occ op, occ
trns, occ lt gy, vf-f gr, occ med gr,
mod srt, sb rnd, ang-sb ang, predy
frm, occ hd, v sl calc, tr glau; 25%
SHY SS:wh- lt gy, occ trns-op, vf - f
gr, sb ang, sb rnd, mod srt, predy
frm occ sft, arg mtx, v sl calc, tr glau

WT 9.05 / VIS 32

MD: 4,394 '
TVD: 4,334.72 '
Inclination: 11.8 °
Azimuth: 350.76 °
VS: 72.56 '



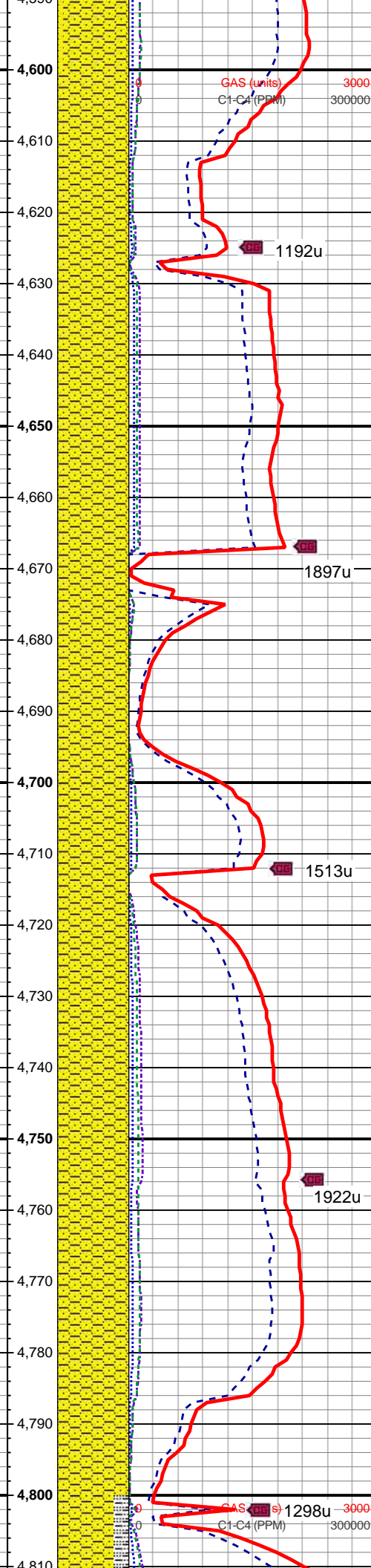
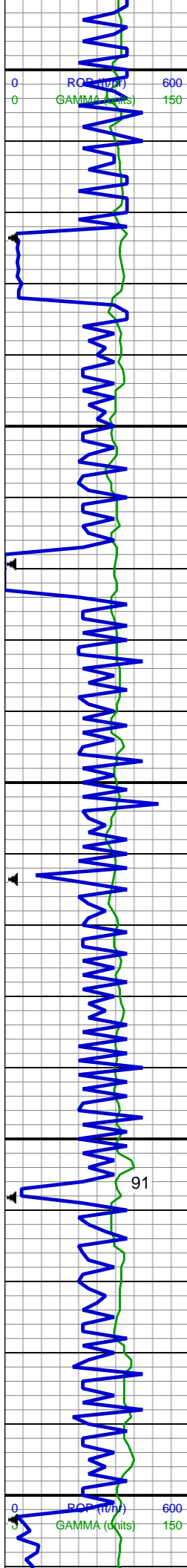
80% SHY SS:wh- lt gy, occ trns-l-op, vf - f gr, sb ang, sb rnd, mod srt, predy frm occ sft, arg mtx, v sl calc, 20% SS: predy wht, occ op, occ trns-l, occ lt gy, vf-f gr, occ med gr, mod srt, sb rnd, ang-sb ang, predy frm, occ hd, v sl calc, tr glau

MD: 4,484 '
TVD: 4,422.96 '
Inclination: 10.94 °
Azimuth: 349.21 °
VS: 74.61 '

WT 9.05 / VIS 32

90% SHY SS:wh- lt gy, occ trns-l-op, vf - f gr, sb ang, sb rnd, mod srt, predy frm occ sft, arg mtx, v sl calc, 10% SS: predy wht, occ op, occ trns-l, occ lt gy, vf-f gr, occ med gr, mod srt, sb rnd, ang-sb ang, predy frm, occ hd, v sl calc, tr glau

MD: 4,573 '
TVD: 4,510.37 '
Inclination: 10.75 °
Azimuth: 347.84 °
VS: 76.11 '



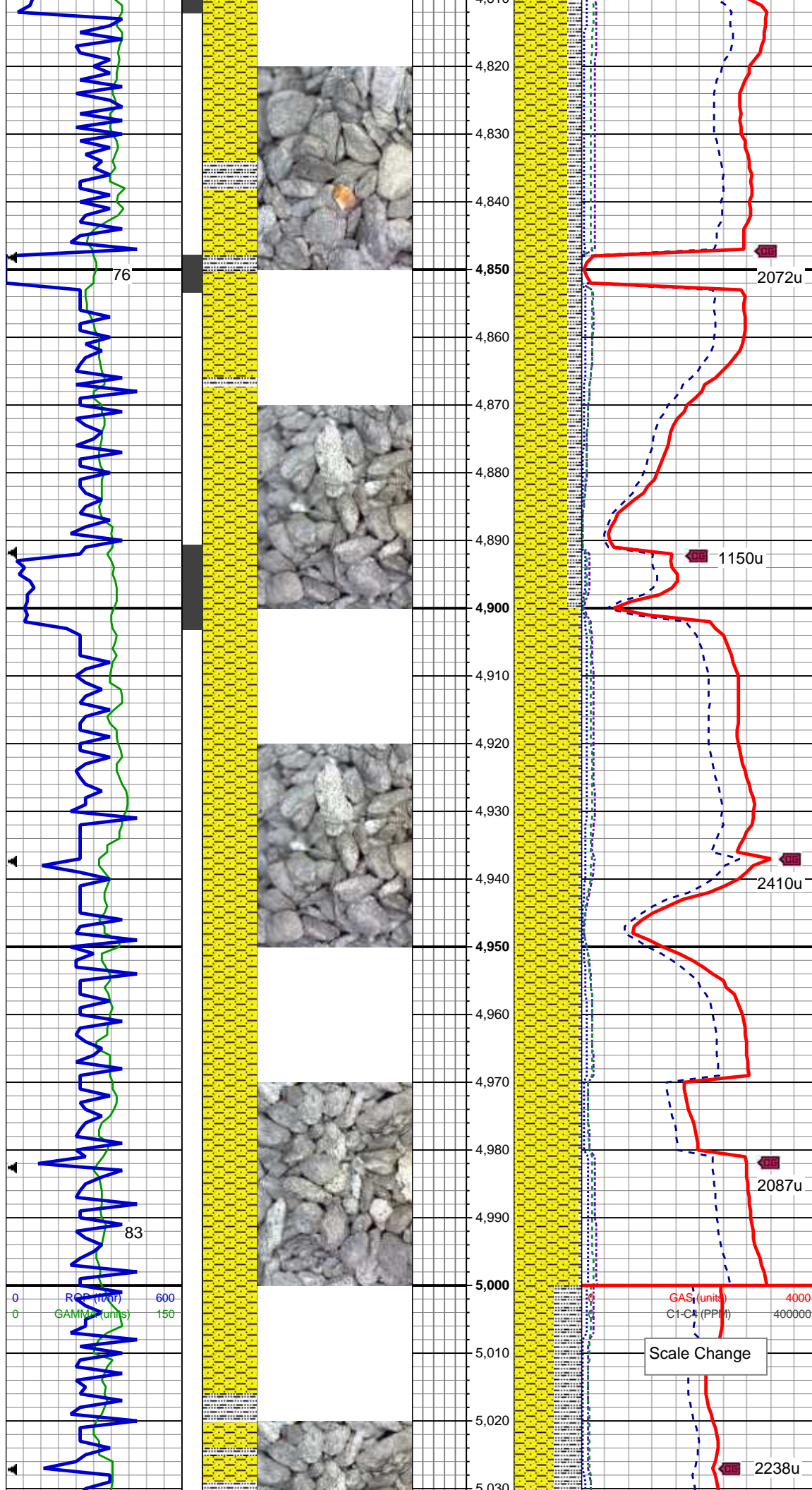
100% SHY SS:wh- lt gy, occ
trns-l-op, vf - f gr, sb ang, sb rnd,
mod srt, predy frm occ sft, arg mtx, v
sl calc, tr ss

MD: 4,663 '
TVD: 4,598.8 '
Inclination: 10.71 °
Azimuth: 353.85 °
VS: 78.29 '

100% SHY SS:wh- lt gy, occ
trns-l-op, vf - f gr, sb ang, sb rnd,
mod srt, predy frm occ sft, arg mtx, v
sl calc, tr ss

MD: 4,753 '
TVD: 4,687.41 '
Inclination: 9.42 °
Azimuth: 355.14 °
VS: 81.31 '

WT 9.2 / VIS 32



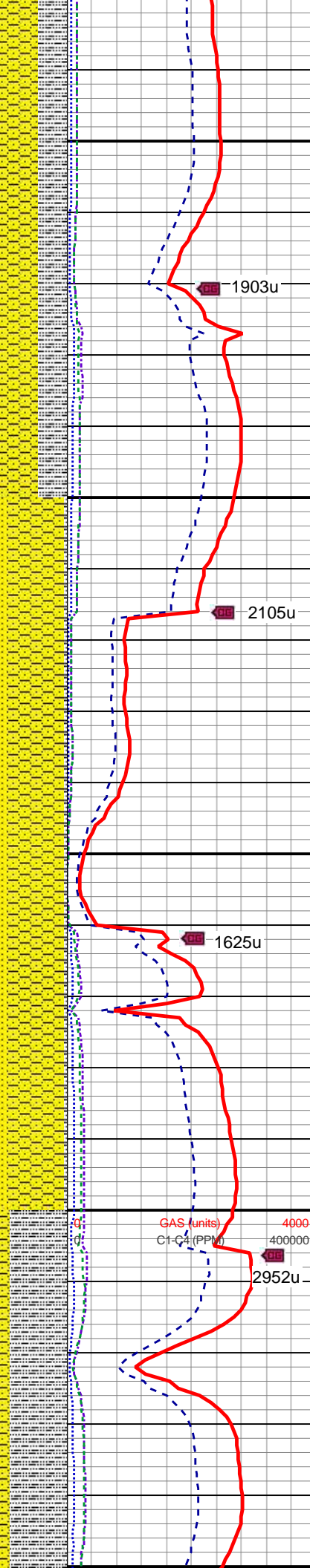
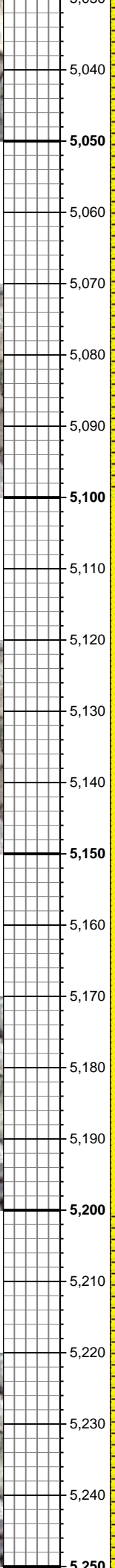
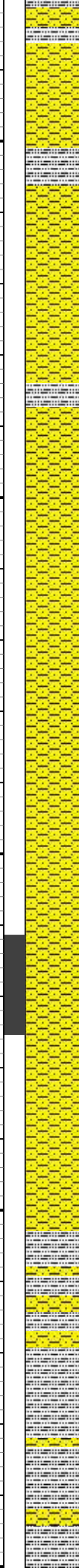
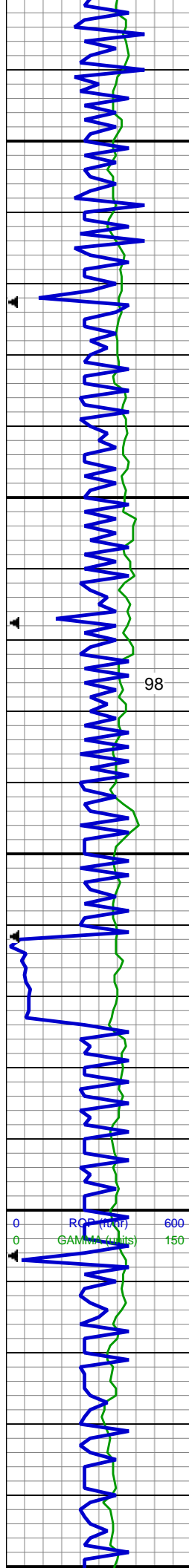
MD: 4,842 '
TVD: 4,775.15 '
Inclination: 9.93 °
Azimuth: 350.06 °
VS: 83.68 '

80% SHY SS:wh- lt gy, occ trnsl-op, vf - f gr, sb ang, sb rnd, mod srt, predy frm occ sft, arg mtx, v sl calc, tr glau; 20% SLTY SH: predy gy, occ lt gy, predy frm, sb plty, sb blk, shy - slty-aren tex, sl calc

MD: 4,932 '
TVD: 4,863.56 '
Inclination: 11.62 °
Azimuth: 350.36 °
VS: 85.69 '

90% SHY SS:wh- lt gy, occ trnsl-op, vf - f gr, sb ang, sb rnd, mod srt, predy frm occ sft, arg mtx, v sl calc, tr glau; 5% SLTY SH: predy gy, occ lt gy, predy frm, sb plty, sb blk, shy - slty-aren tex, sl calc, 5% SS: wht, occ op, occ trnsl, occ lt gy, vf-f gr, occ med gr, mod srt, sb rnd, ang-sb ang, frm, occ hd, v sl calc, tr glau

MD: 5,022 '
TVD: 4,951.73 '
Inclination: 11.53 °
Azimuth: 350.6 °
VS: 87.92 '



60% SHY SS:wh- lt gy, occ trnsl-op, vf - f gr, sb ang, sb rnd, mod srt, predy frm occ sft, arg mtx, v sl calc, tr glau; 40% SLTY SH: predy gy, occ lt gy, predy frm, sb plty, sb blkly, shy - slty-aren tex, sl calc

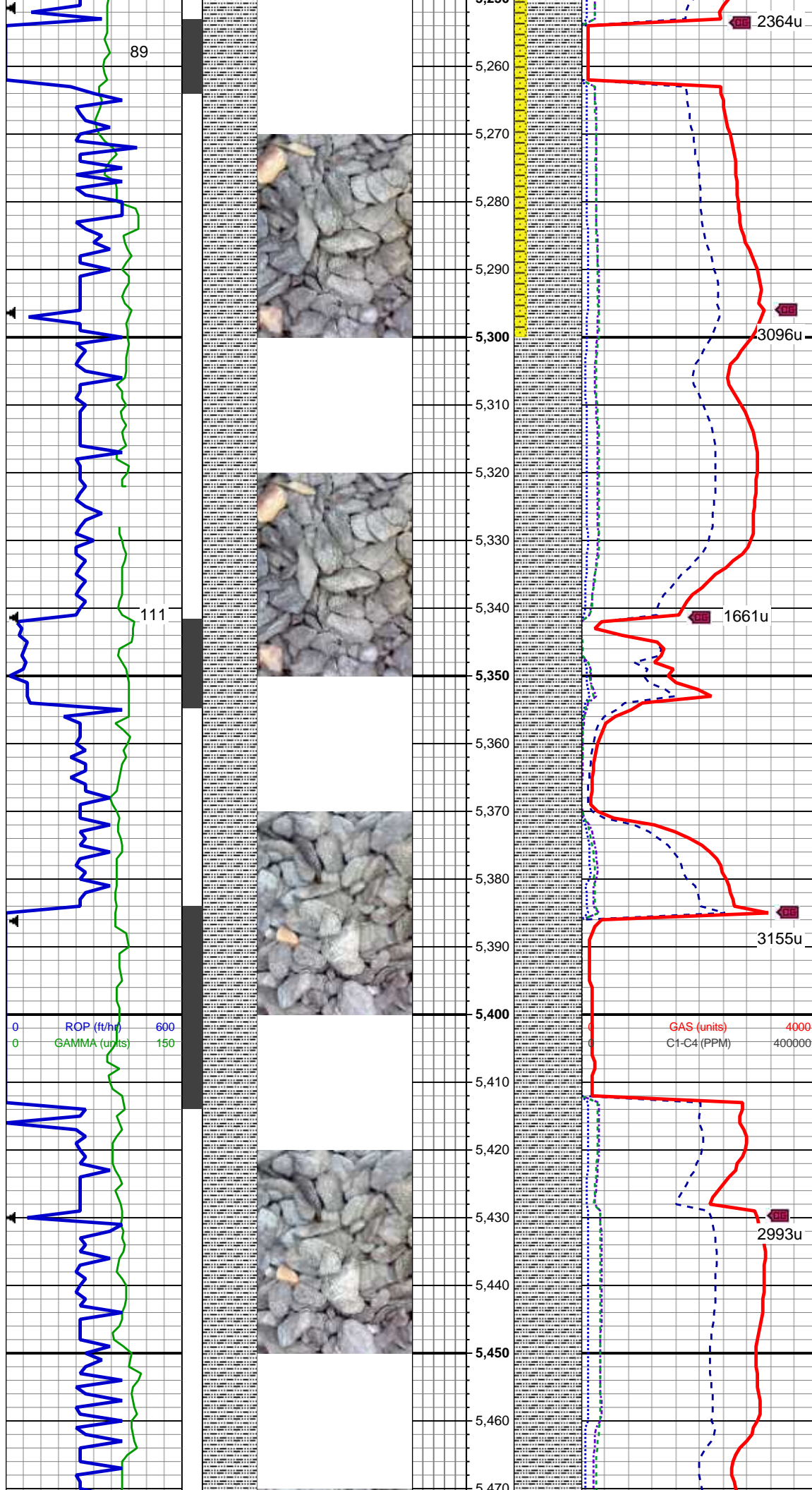
WT 9.15 / VIS 32

MD: 5,111 '
TVD: 5,039.13 '
Inclination: 10.16 °
Azimuth: 349.29 °
VS: 89.84 '

80% SHY SS:wh- lt gy, occ trnsl-op, vf - f gr, sb ang, sb rnd, mod srt, predy frm occ sft, arg mtx, v sl calc, tr glau; 15% SS: predy wht, occ op, occ trnsl, occ lt gy, vf-f gr, occ med gr, mod srt, sb rnd, ang-sb ang, predy frm, occ hd, v sl calc, tr glau; 5% SLTY SH: predy gy, occ lt gy, predy frm, sb plty, sb blkly, shy - slty-aren tex, sl calc

MD: 5,201 '
TVD: 5,127.6 '
Inclination: 11.03 °
Azimuth: 350.38 °
VS: 91.71 '

80% SLTY SH: predy gy, occ lt gy, predy frm, sb plty, sb blkly, shy - slty-aren tex, v sl calc 20% SHY SS:wh- lt gy, occ trnsl-op, vf - f gr, sb



ang, sb rnd, mod srt, predy frm occ
sft, arg mtx, v sl calc

MD: 5,291 '
TVD: 5,216.14 '
Inclination: 9.65 °
Azimuth: 348.23 °
VS: 93.4 '

WT 9.4 / VIS 35

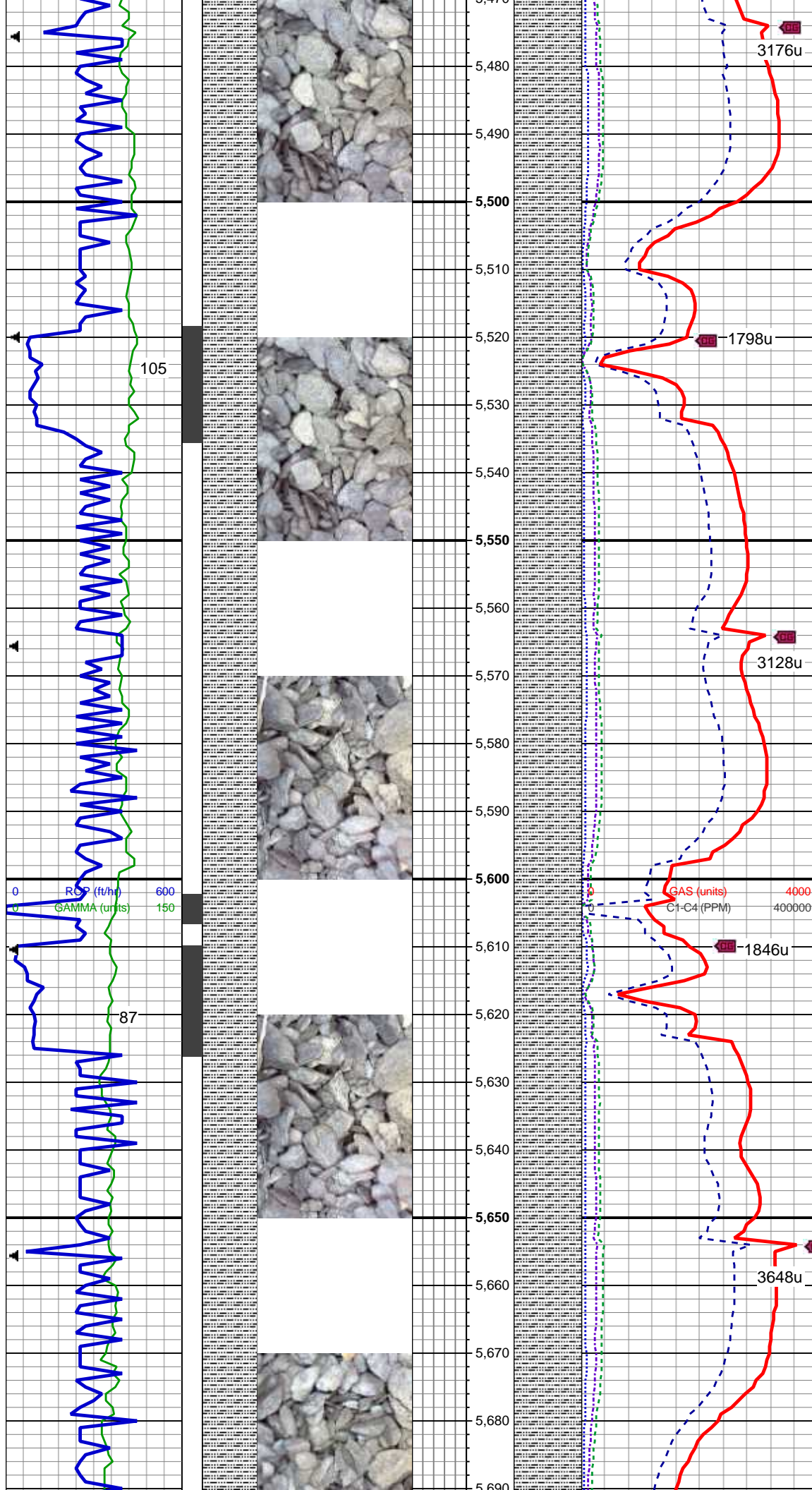
100% SLTY SH: predy gy, occ lt gy,
frm-sft, sb plty, sb blk, shy -
slty-aren tex, v sl calc, tr ss, pyr

MD: 5,380 '
TVD: 5,303.76 '
Inclination: 10.54 °
Azimuth: 354.53 °
VS: 95.6 '

WT 9.45 / VIS 35

100% SLTY SH: predy gy, occ lt gy,
frm-sft, sb plty, sb blk, shy -
slty-aren tex, v sl calc, tr ss, pyr

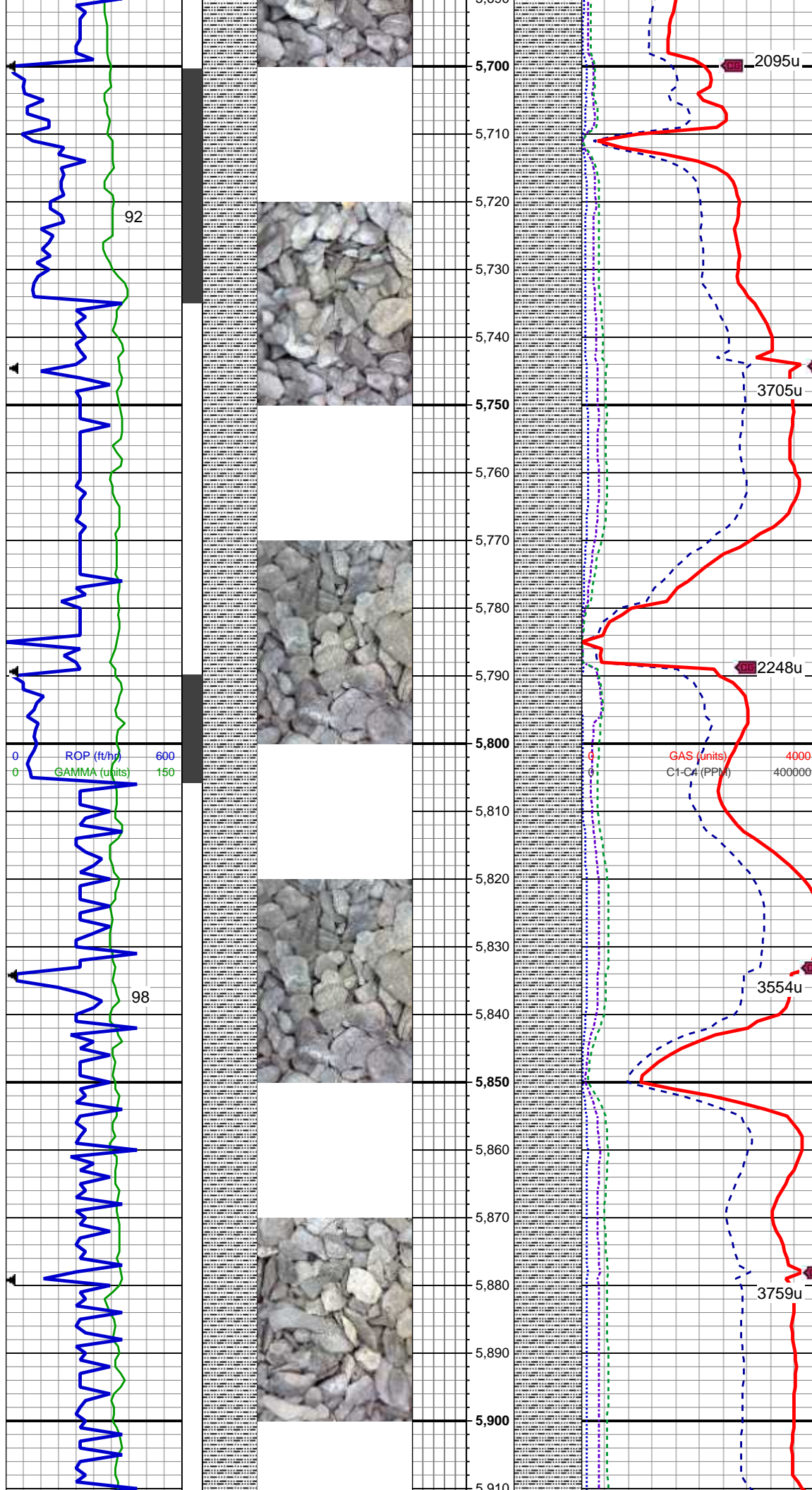
MD: 5,470 '
TVD: 5,392.43 '
Inclination: 9.17 °



Azimuth: 353.6 °
VS: 98.46 '

100% SLTY SH: predy gy, occ lt gy,
frm-sft, sb plty, sb blk, shy -
silty-aren tex, v sl calc, tr shy ss, pyr
MD: 5,560 '
TVD: 5,481.15 '
Inclination: 10.22 °
Azimuth: 348.31 °
VS: 100.42 '

100% SLTY SH: predy gy, occ lt gy,
frm-sft, sb plty, sb blk, shy -
silty-aren tex, v sl calc, tr shy ss, pyr
MD: 5,649 '
TVD: 5,568.61 '
Inclination: 11.13 °
Azimuth: 344.05 °
VS: 101.2 '



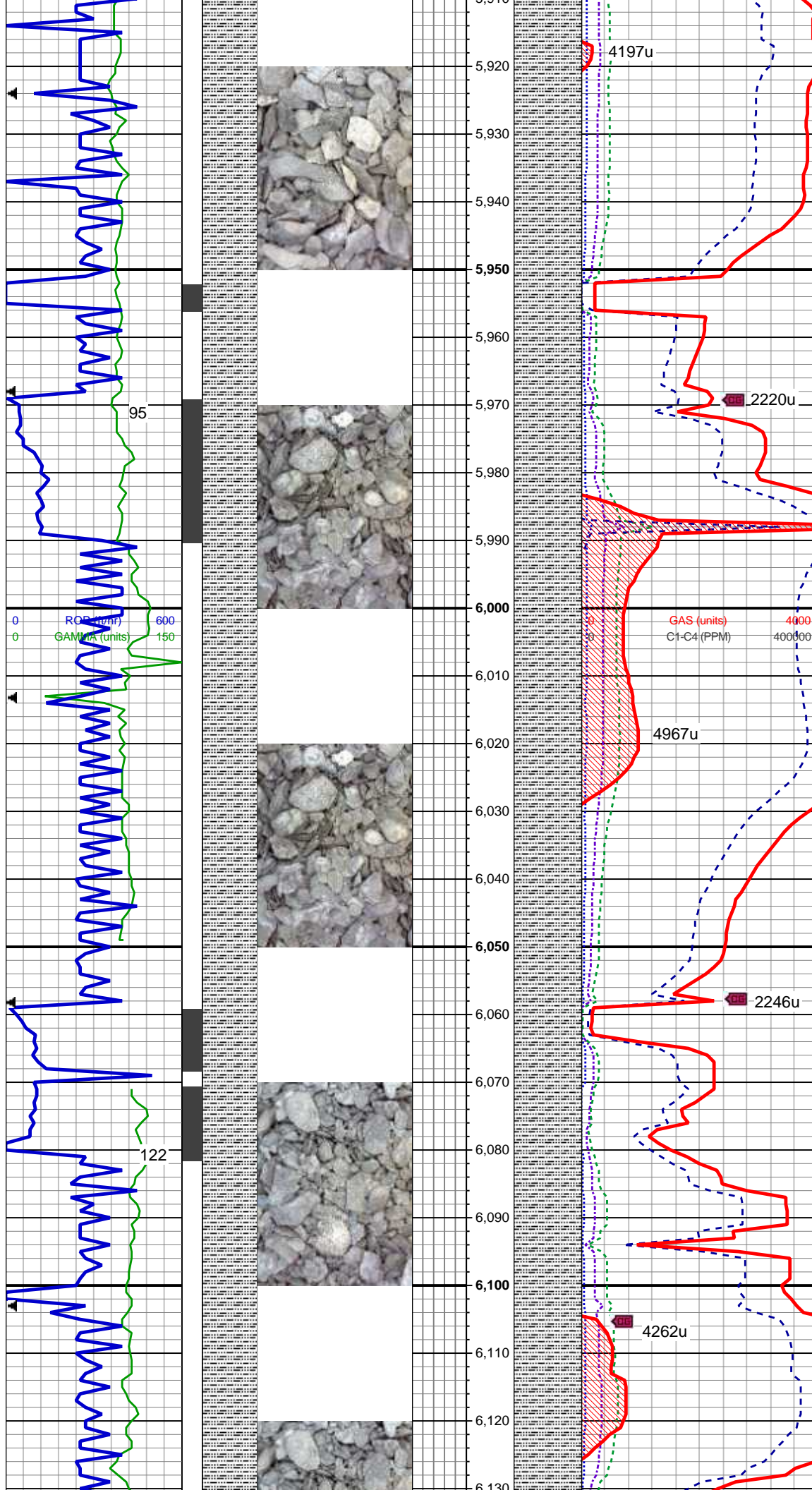
MD: 5,739 '
TVD: 5,656.85 '
Inclination: 11.57 °
Azimuth: 345.91 °
VS: 101.7 '

100% SLTY SH: predy gy, occ lt gy,
frm-sft, sb plty, sb blk, shy -
silty-aren tex, v sl calc, tr shy ss, pyr

WT 9.5 / VIS 34

MD: 5,829 '
TVD: 5,745.07 '
Inclination: 11.29 °
Azimuth: 355.55 °
VS: 103.96 '

100% SLTY SH: predy gy, occ lt gy,
frm-sft, sb plty, sb blk, shy -
silty-aren tex, v sl calc, tr shy ss, pyr



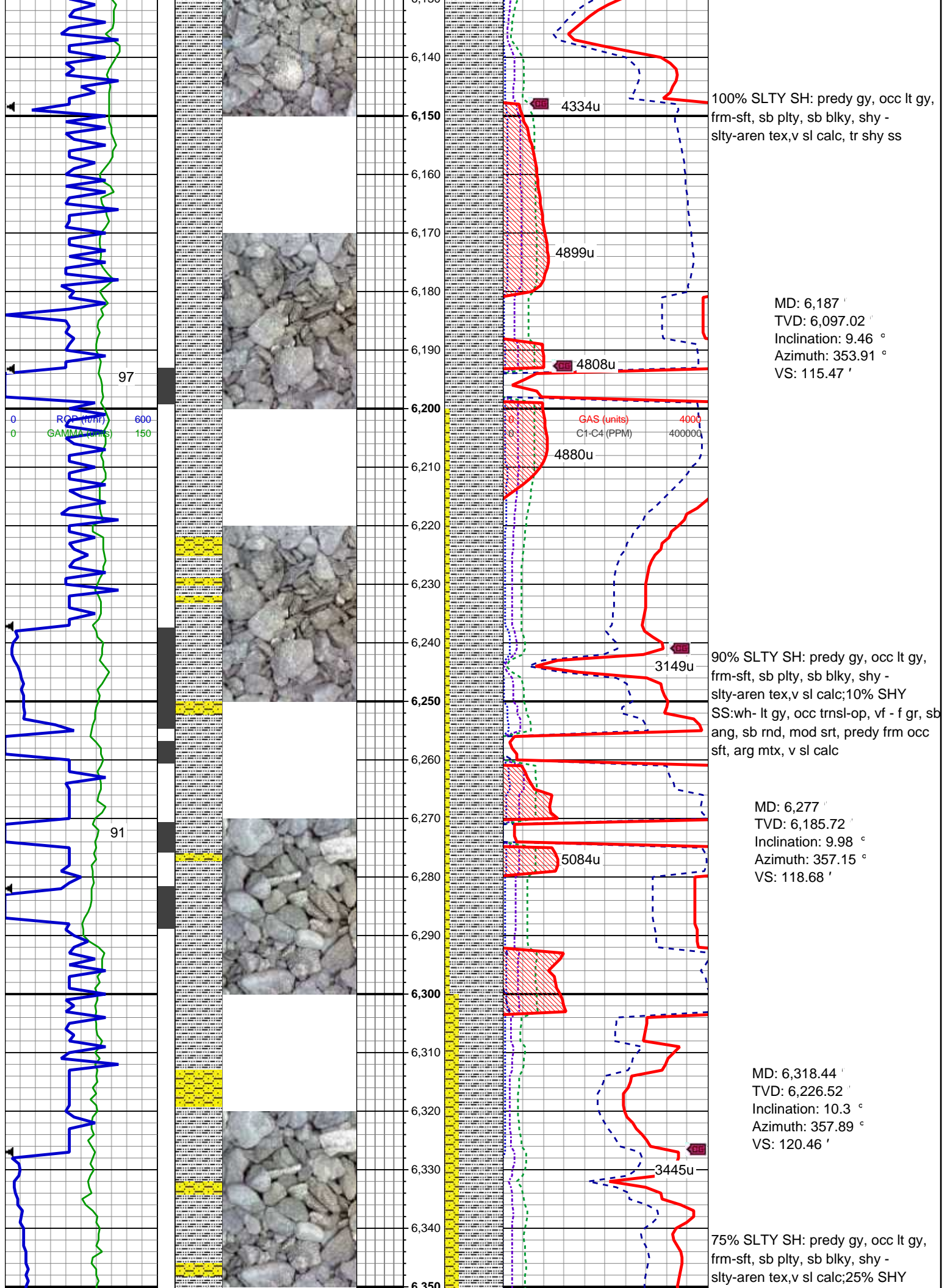
MD: 5,918
TVD: 5,832.63 '
Inclination: 9.37 °
Azimuth: 350.81 °
VS: 106.73 '

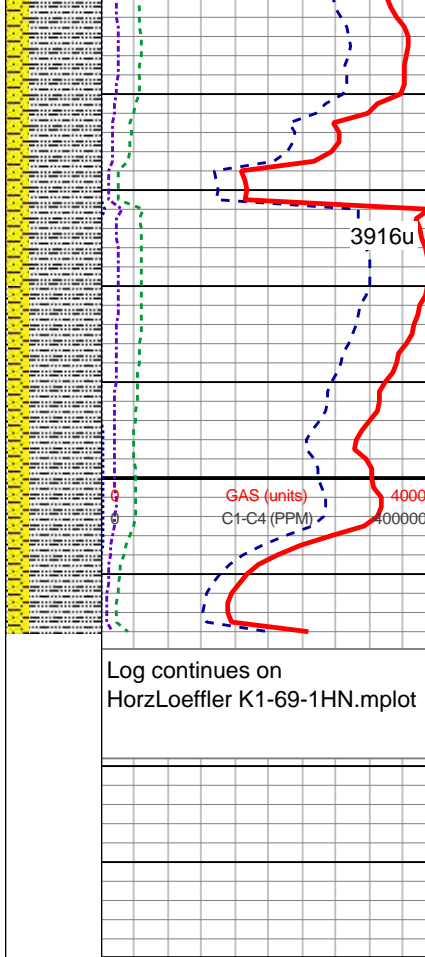
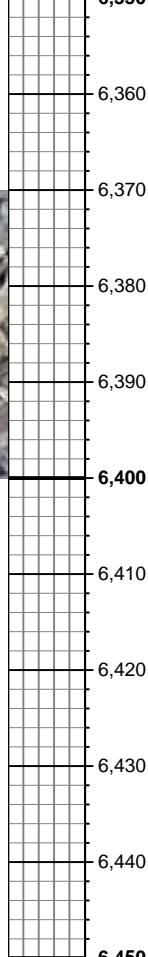
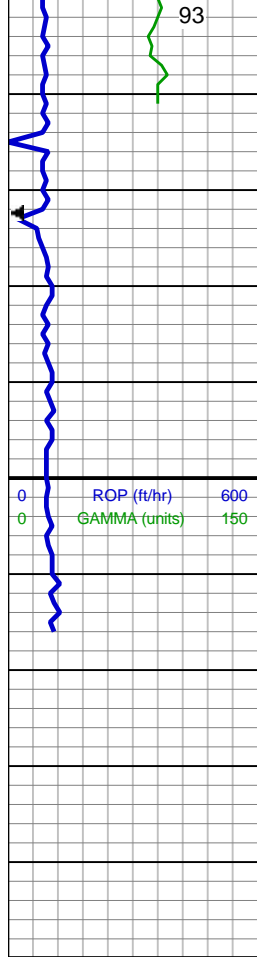
100% SLTY SH: predy gy, occ lt gy, frm-sft, sb plty, sb blk, shy - slty-aren tex, v sl calc, tr shy ss, pyr

MD: 6,008 '
TVD: 5,921.23 '
Inclination: 10.84 °
Azimuth: 348.88 °
VS: 108.49 '

100% SLTY SH: predy gy, occ lt gy, frm-sft, sb plty, sb blk, shy - slty-aren tex, v sl calc, tr shy ss, pyr

MD: 6,097 '
TVD: 6,008.54 '
Inclination: 11.61 °
Azimuth: 358.92 °
VS: 111.69 '





SS:wh- lt gy, occ trnsi-op, vf - f gr, sb
ang, sb rnd, mod srt, predy frm occ
sft, arg mtx, v sl calc

MD: 6,366 '
TVD: 6,272.97 '
Inclination: 14.31 °
Azimuth: 1.5 °
VS: 123.35 '