

COLUMBINE LOGGING

Scale: 5" / 100'
Measured Depth Log

Well Name HEARTLAND STATE G36-75-1HN

Location Sec. 25 T4N R65W

State Colorado

County Weld

Country USA

Rig Number PD 829

API Number 05-123-39549

AFE # 141941

Region DJ Basin

Field Wattenberg

Spud Date 7/26/2014

Drilling Completed 8/2/2014

Surface Coordinates 282' FSL ; 807' FEL
40.27673 ; -104.60523

Bottom Hole Coordinates 75' FSL ; 2310' FEL
40.26168 ; -104.61071

Ground Elevation 4834'

K.B. Elevation 4850'

Logged Interval 744' **To** 6454'

Total Depth 12323'

Formation Niobrara C chalk

Type of Drilling Fluid FW LSND

Operator

Company Noble Energy, Inc.

Address 1625 BROADWAY
DENVER, CO 80202

Geologist

Name Melanie Peterson

Company Noble Energy, Inc.

Address 1625 BROADWAY
DENVER, CO 80202

Other

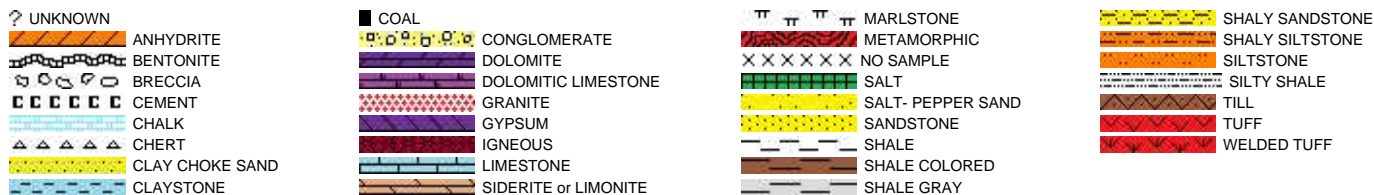
Columbine Logging, Inc.

2385 S. Lipan St.
Denver, CO 80223

Well Site Geologists

Ryan Shilling
Garrett Luallen

Rock Types



Accessories

Fossils



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

GYPHIFEROUS

HEAVY MINERAL

KAOLIN

MARLSTONE

MICACEOUS

MINERAL CRYSTALS

NODULES

PHOSPHATE PELLETS

PYRITE

SALT CAST

SANDY

SILICEOUS

SILTY

TUFFACEOUS

ANHYDRITE STRINGER

BENTONITE STRINGER

COAL STRINGER

DOLOMITE STRINGER

GYPHUM STRINGER

LIMESTONE STRINGER

MARLSTONE (CALC) STRG

MARLSTONE (DOL) STRG

SANDSTONE STRINGER

SHALE STRINGER

SILTSTONE STRINGER

Stringer

Other Symbols

Oil Show

DEAD

EVEN

QUESTIONABLE

SPOTTED STAINING

Porosity

E EARTHY

FENESTRAL

FRACTURE

INTERCRYSTALLINE

INTEROOLITIC

MOLDIC

ORGANIC

PINPOINT

VUGGY

Engineering

BIT CHANGE

CONNECTION (LEFT)

CONNECTION (RIGHT)

CONNECTION GAS

TRIP GAS

DOWN TIME GAS

CORE - LOST

CORE - RECOVERED

DST INTERVAL

FAULT

FORMATION TOP

GAS SHOW

OIL SHOW

MN DEPTH

MN DEPTH (RIGHT)

NORMAL FAULT

OVERTURNED STRATA

REVERSE FAULT

CASING

SIDEWALL CORE (LEFT)

SIDEWALL CORE (RIGHT)

SLIDE

SURVEY

DRILL STEM TEST

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

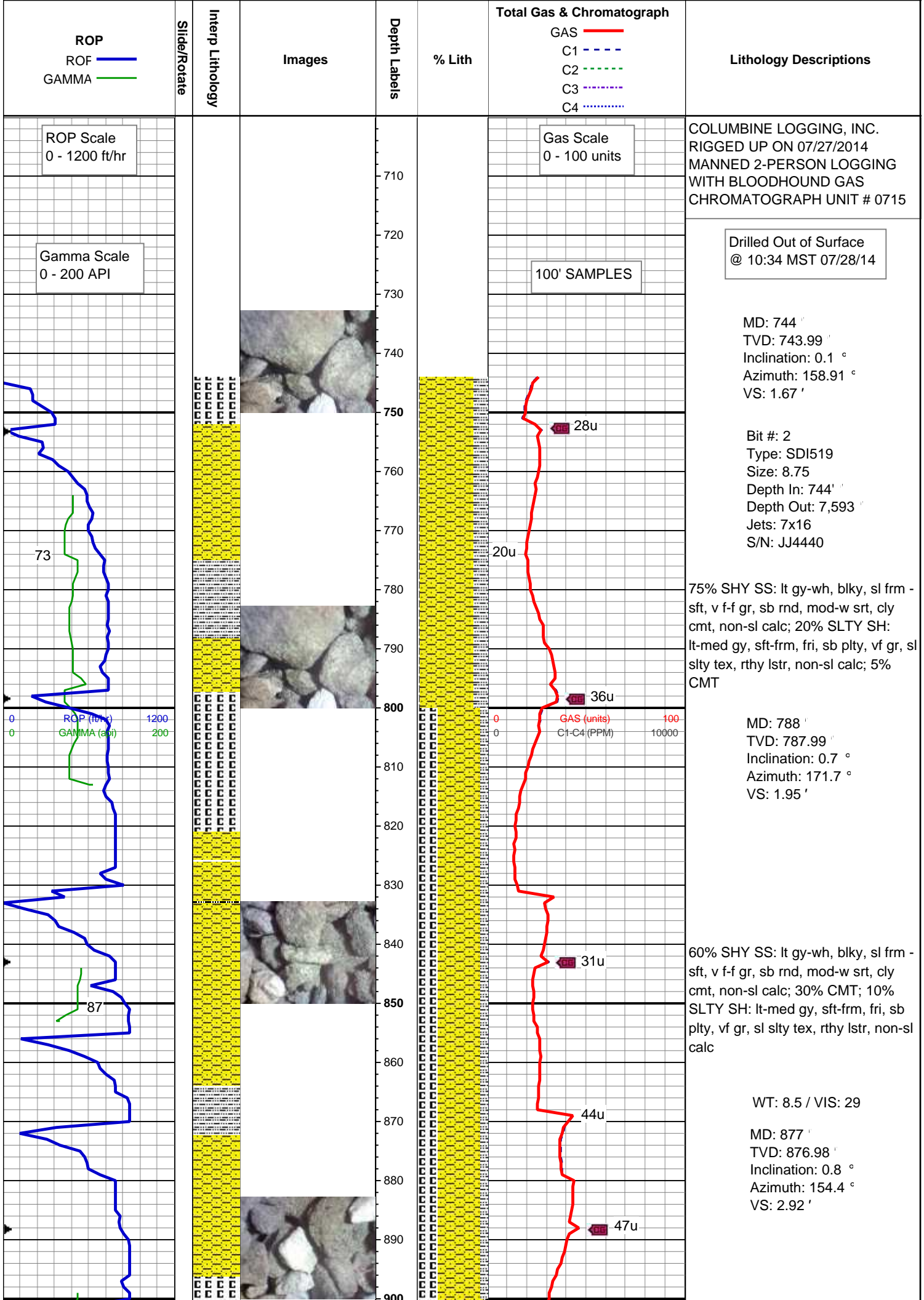
WS WACKSTONE

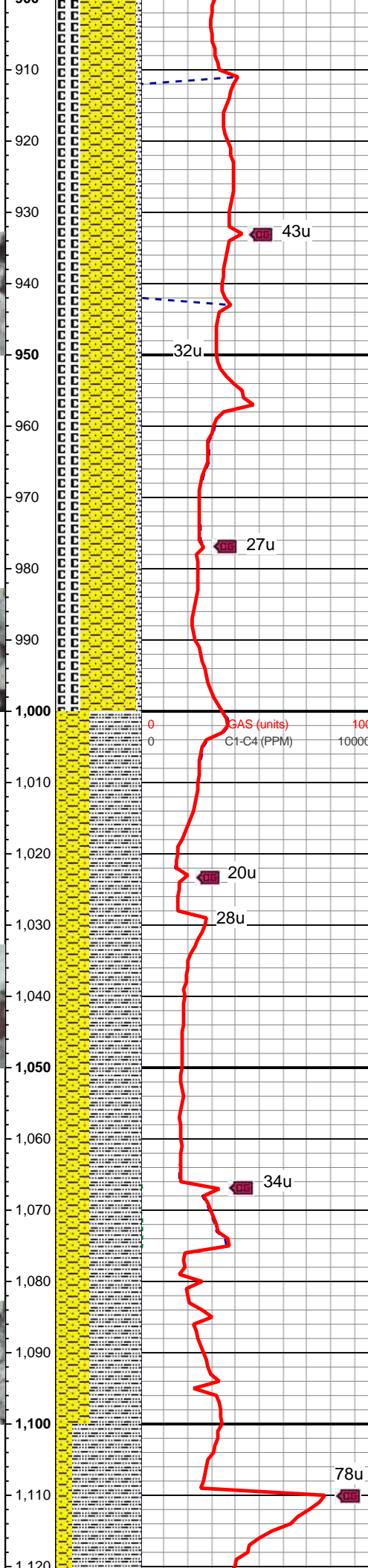
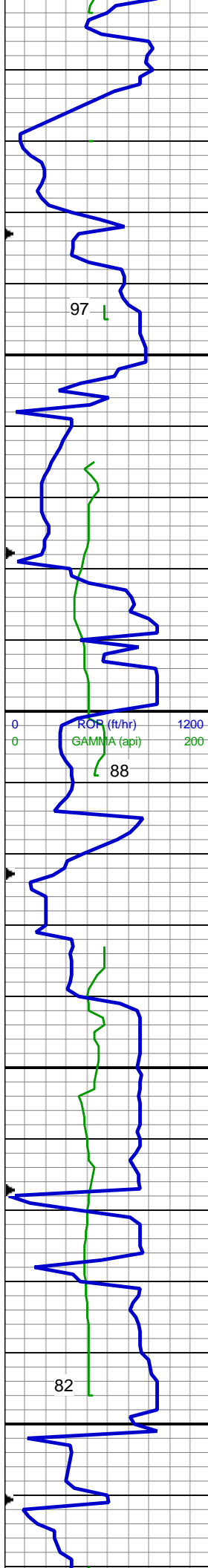
Sorting

M MODERATE

P POOR

W WELL



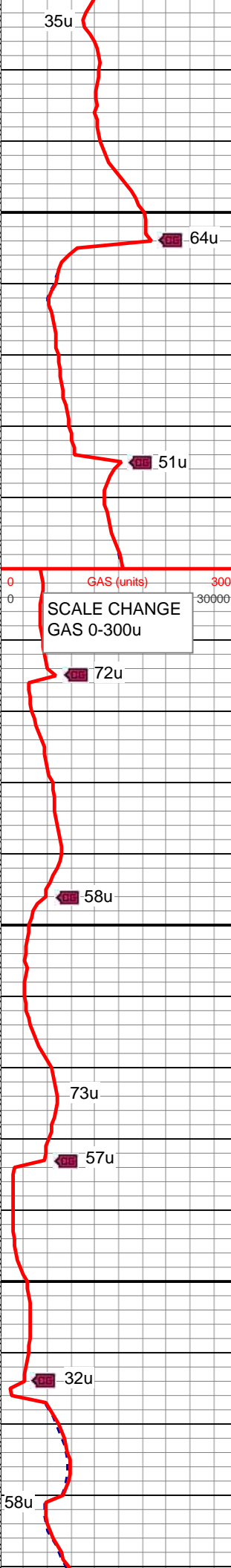
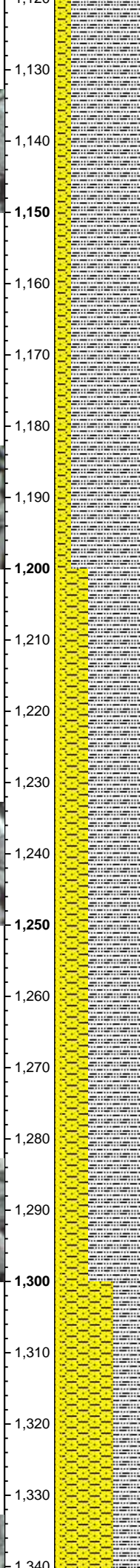
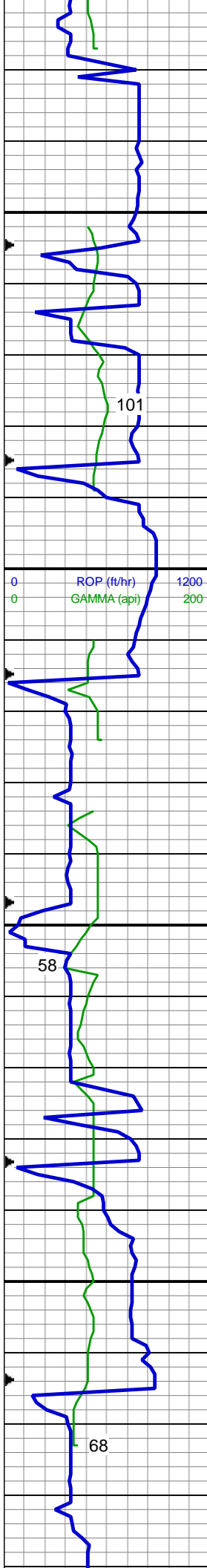


65% SHY SS: lt gy-wh, blk, sl frm -
sft, v f-f gr, sb rnd, mod-w srt, cly
cmt, non-sl calc; 30% CMT; 5%
SLTY SH: lt-med gy, sft-frm, fri, sb
ply, vf gr, sl slty tex, rthy lstr, non-sl
calc

MD: 967 '
TVD: 966.98 '
Inclination: 0.6 °
Azimuth: 166.4 °
VS: 3.81 '

MD: 1,057 '
TVD: 1,056.97 '
Inclination: 0.8 °
Azimuth: 269.3 °
VS: 4.39 '

60% SLTY SH: lt-med gy, occ dk gy,
sft-sl frm, sb ply-blky, vf gr, slty tex,
sl calc; 35% SHY SS: wh-lt gy, s&p,
blk, frm, v f-f gr, sb rnd-ang, mod-w
srt, cl sup, cly cmt, non calc; 5% SS:
wh-lt gy, clr-trns, speckl blk, sb
rnd-ang, p srt, w cons, f gr, non calc



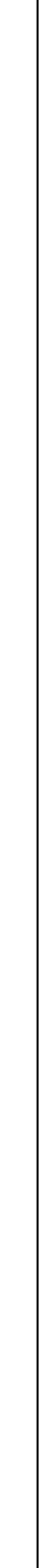
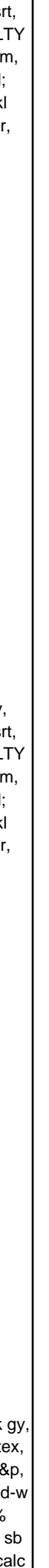
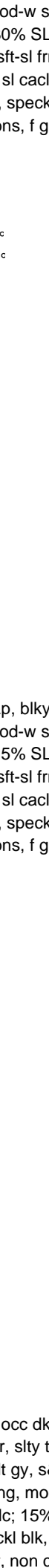
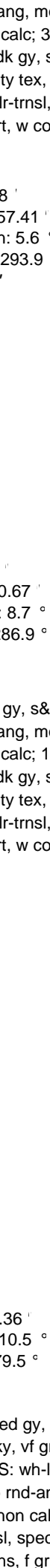
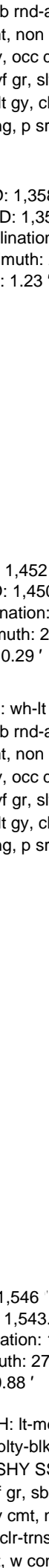
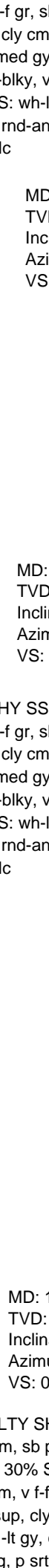
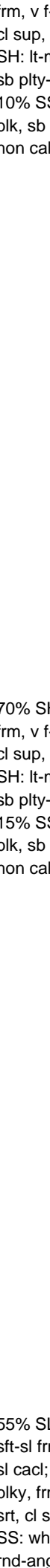
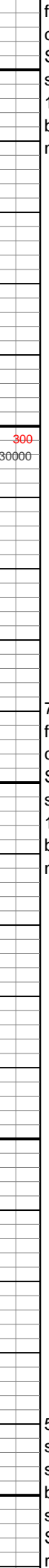
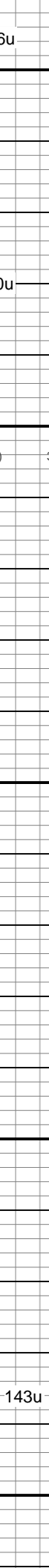
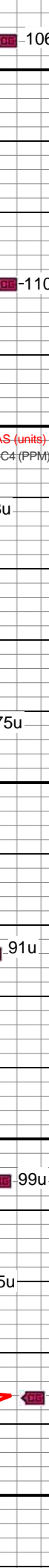
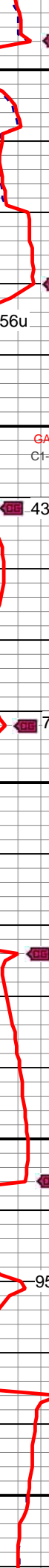
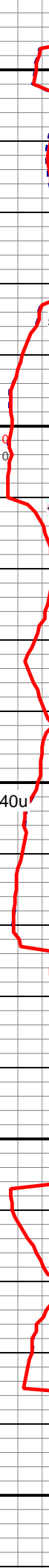
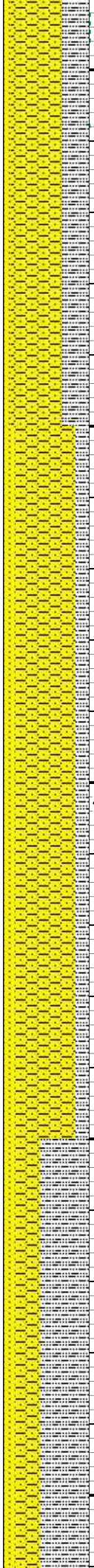
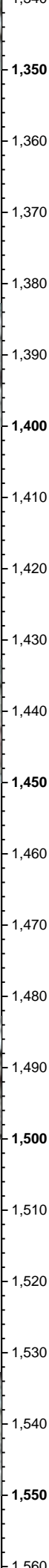
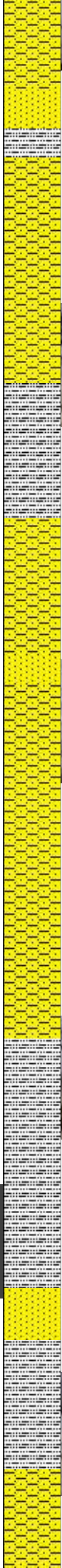
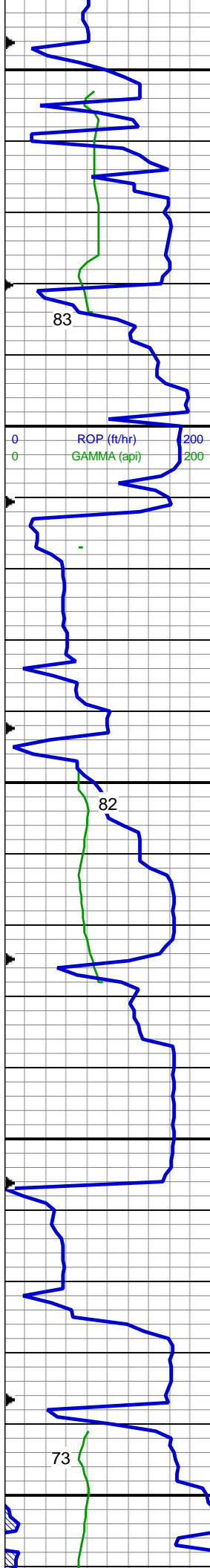
80% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl clac; 15% SHY SS: wh-lt gy, s&p, blky, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc; 5% SS: wh-lt gy, clr-trnsl, speckl blk, sb rnd-ang, p srt, w cons, f gr, non calc

MD: 1,165 '
TVD: 1,164.93 '
Inclination: 2.3 °
Azimuth: 304.9 °
VS: 3.86 '

60% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl clac; 30% SHY SS: wh-lt gy, s&p, blky, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc; 10% SS: wh-lt gy, clr-trnsl, speckl blk, sb rnd-ang, p srt, w cons, f gr, non calc

MD: 1,260 '
TVD: 1,259.77 '
Inclination: 4.2 °
Azimuth: 295.1 °
VS: 2.6 '

60% SHY SS: wh-lt gy, s&p, blky,



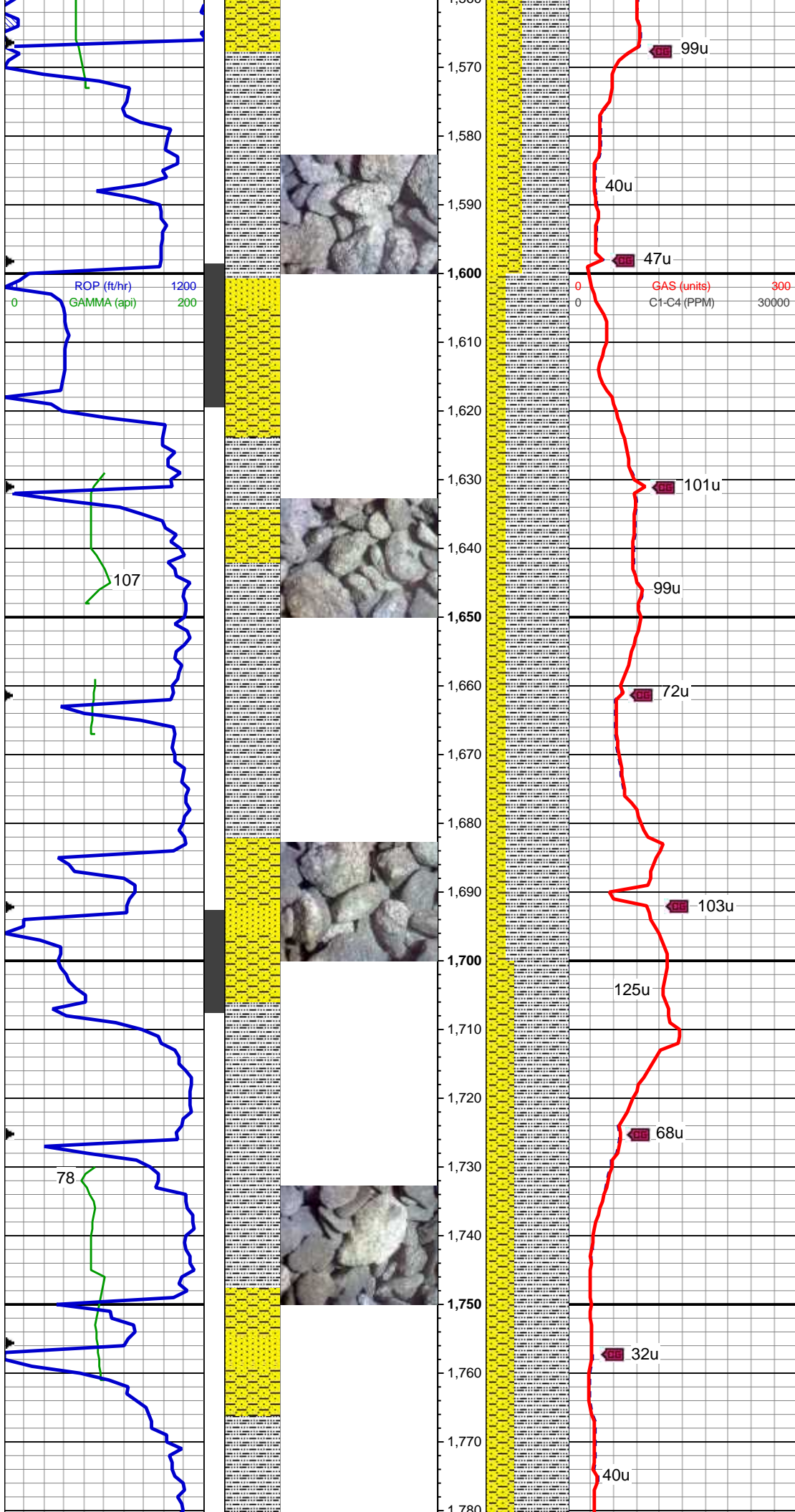
frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc; 30% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl cacl; 10% SS: wh-lt gy, clr-trnsl, speckl blk, sb rnd-ang, p srt, w cons, f gr, non calc

MD: 1,358 '
TVD: 1,357.41 '
Inclination: 5.6 °
Azimuth: 293.9 °
VS: 1.23 '

70% SHY SS: wh-lt gy, s&p, blky, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc; 15% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl cacl; 15% SS: wh-lt gy, clr-trnsl, speckl blk, sb rnd-ang, p srt, w cons, f gr, non calc

MD: 1,546 '
TVD: 1,543.36 '
Inclination: 10.5 °
Azimuth: 279.5 °
VS: 0.88 '

55% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl cacl; 30% SHY SS: wh-lt gy, s&p, blky, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc; 15% SS: wh-lt gy, clr-trnsl, speckl blk, sb rnd-ang, p srt, w cons, f gr, non calc



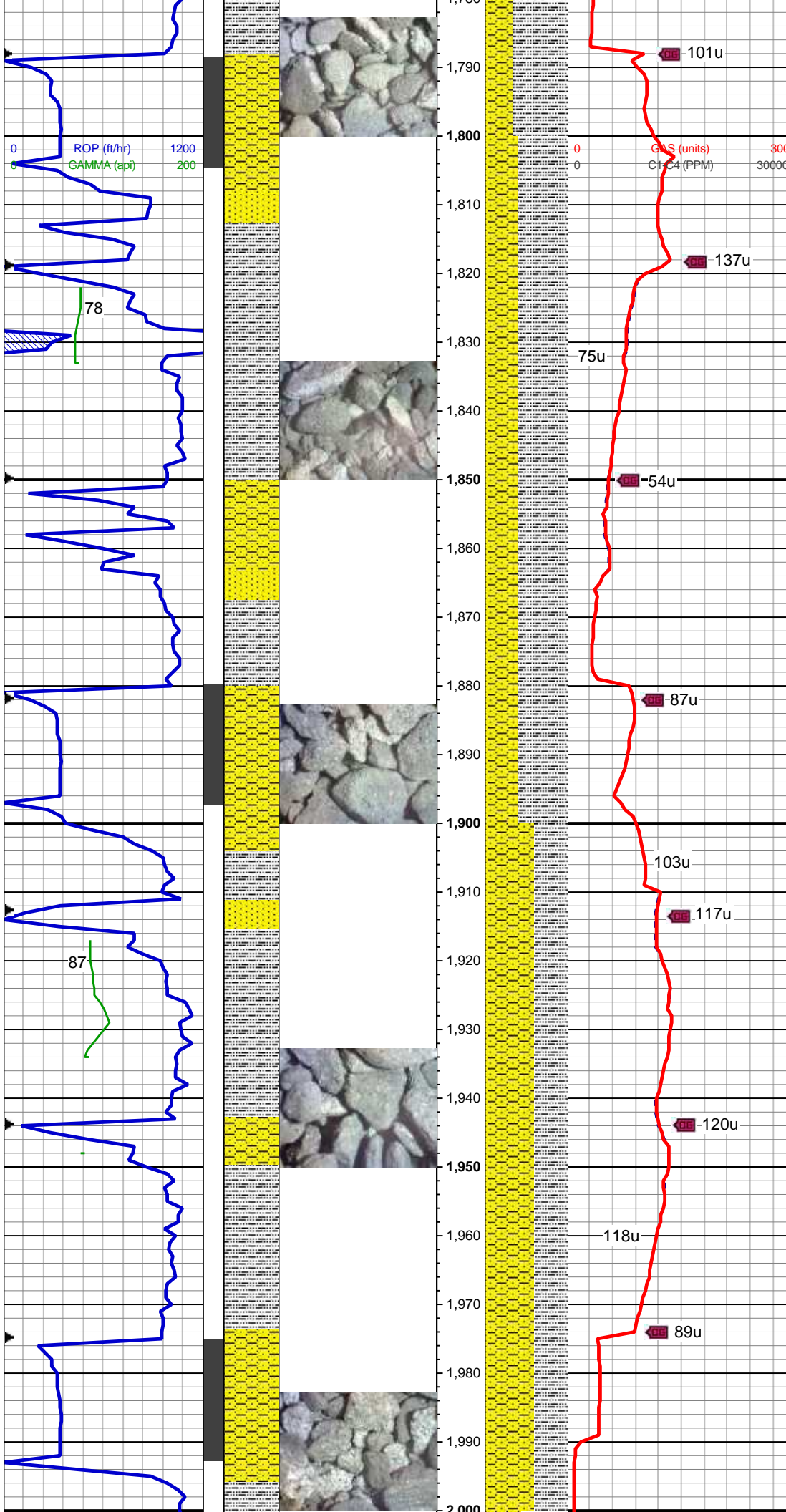
MD: 1,640 '
TVD: 1,635.69 '
Inclination: 11.2 °
Azimuth: 266.3 °
VS: 4.63 '

75% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl cac; 20% SHY SS: wh-lt gy, s&p, blky, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc; 5% SS: wh-lt gy, clr-trnsl, speckl blk, sb rnd-ang, p srt, w cons, f gr, non calc

WT: 8.4 / VIS: 28

MD: 1,733 '
TVD: 1,726.9 '
Inclination: 11.3 °
Azimuth: 269.1 °
VS: 10.02 '

65% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl cac; 30% SHY SS: wh-lt gy, s&p, blky, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc; 5% SS: wh-lt gy, clr-trnsl, speckl blk, sb rnd-ang, p srt, w cons, f gr, non calc

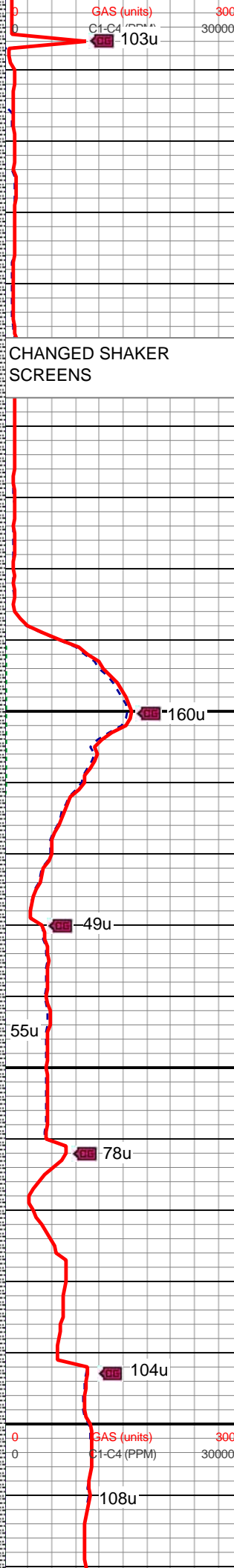
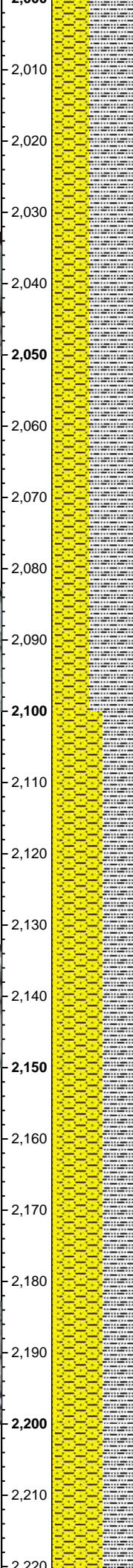
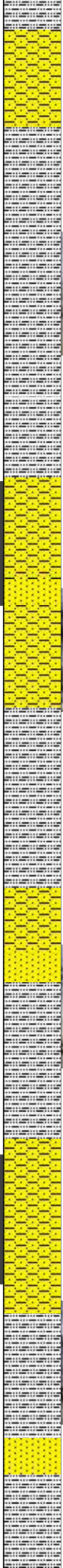
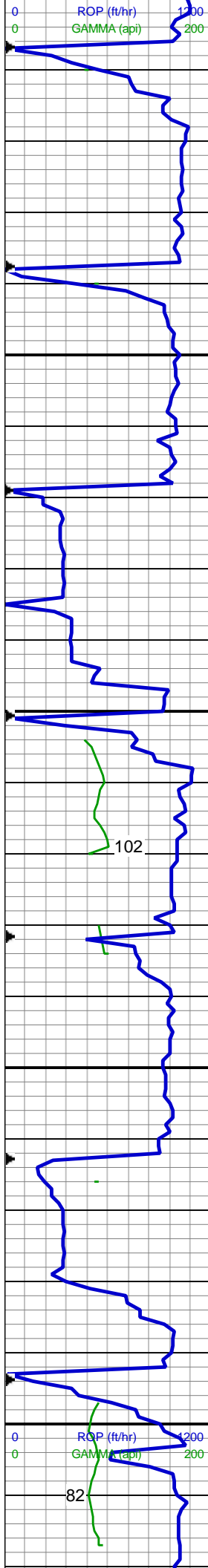


MD: 1,827 '
TVD: 1,818.83 '
Inclination: 12.8 °
Azimuth: 266.2 °
VS: 15.91 '

60% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl cac; 35% SHY SS: wh-lt gy, s&p, blky, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc; 5% SS: wh-lt gy, clr-trnsl, speckl blk, sb rnd-ang, p srt, w cons, f gr, non calc

MD: 1,920 '
TVD: 1,909.32 '
Inclination: 13.9 °
Azimuth: 261.3 °
VS: 23.72 '

55% SHY SS: wh-lt gy, s&p, blky, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc; 40% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl cac; 5% SS: wh-lt gy, clr-trnsl, speckl blk, sb rnd-ang, p srt, w cons, f gr, non calc



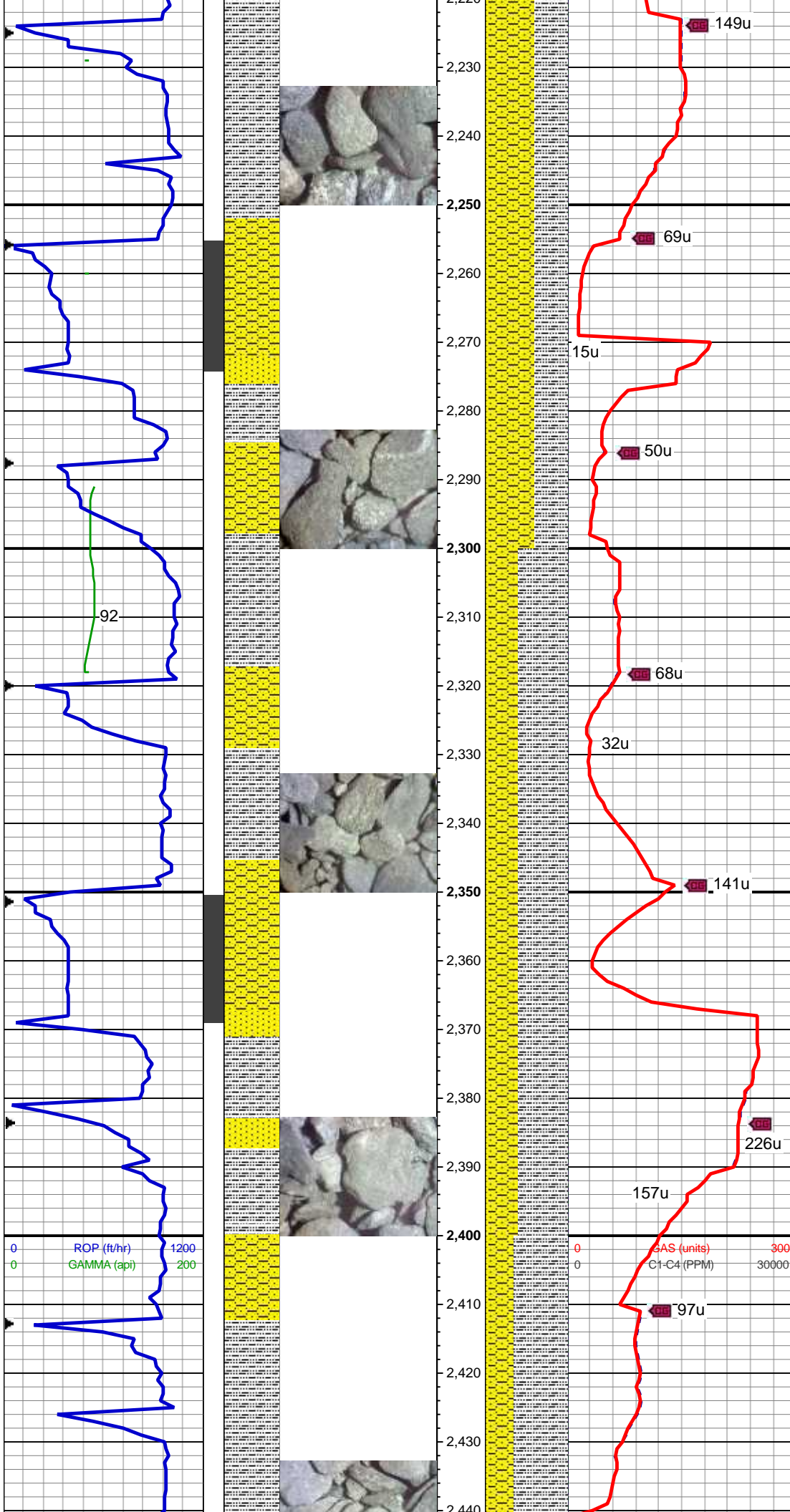
MD: 2,014 '
TVD: 2,000.39 '
Inclination: 14.8 °
Azimuth: 262.7 °
VS: 32.82 '

55% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl cac; 40% SHY SS: wh-lt gy, s&p, blky, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc; 5% SS: wh-lt gy, clr-trnsl, speckl blk, sb rnd-ang, p srt, w cons, f gr, non calc

MD: 2,108 '
TVD: 2,091.12 '
Inclination: 15.5 °
Azimuth: 261.7 °
VS: 42.35 '

50% SHY SS: wh-lt gy, s&p, blky, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc; 40% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl cac; 10% SS: wh-lt gy, clr-trnsl, speckl blk, sb rnd-ang, p srt, w cons, f gr, non calc

MD: 2,201 '
TVD: 2,180.74 '
Inclination: 15.5 °
Azimuth: 262.2 °
VS: 52.08 '



WT: 8.4 / VIS: 30

55% SHY SS: wh-lt gy, s&p, blk, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc; 40% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb pty-blky, vf gr, slty tex, sl cacl; 5% SS: wh-lt gy, clr-trnsl, speckl blk, sb rnd-ang, p srt, w cons, f gr, non calc

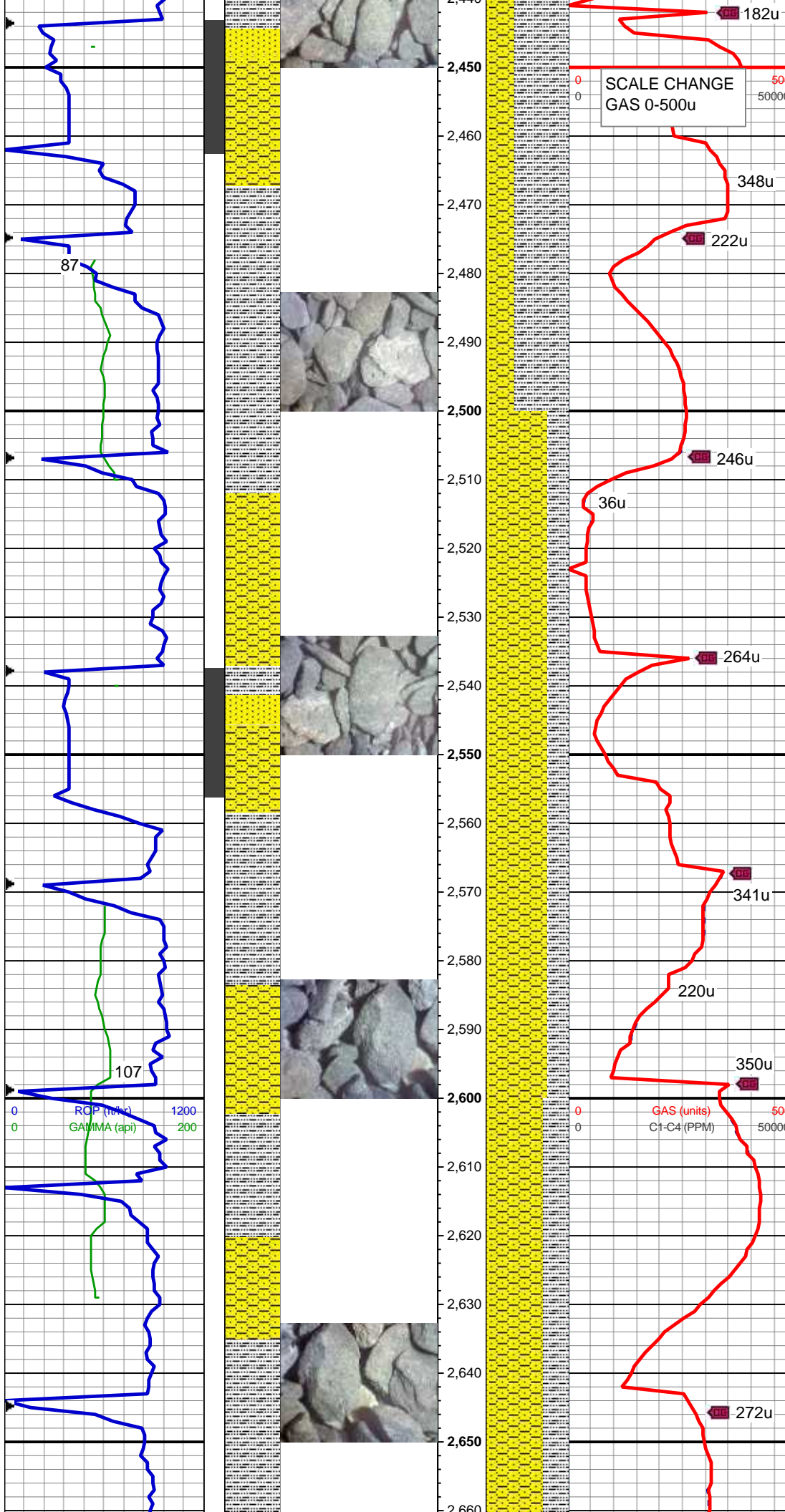
MD: 2,296 '
TVD: 2,272.24 '
Inclination: 15.7 °
Azimuth: 266.2 °
VS: 61.15 '

60% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb pty-blky, vf gr, slty tex, sl cacl; 35% SHY SS: wh-lt gy, s&p, blk, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc; 5% SS: wh-lt gy, clr-trnsl, speckl blk, sb rnd-ang, p srt, w cons, f gr, non calc

MD: 2,389 '
TVD: 2,361.77 '
Inclination: 15.7 °
Azimuth: 268.6 °
VS: 68.76 '

ROP (ft/hr) 1200
GAMMA (api) 200

GAS (units) 300
C1-C4 (PPM) 30000



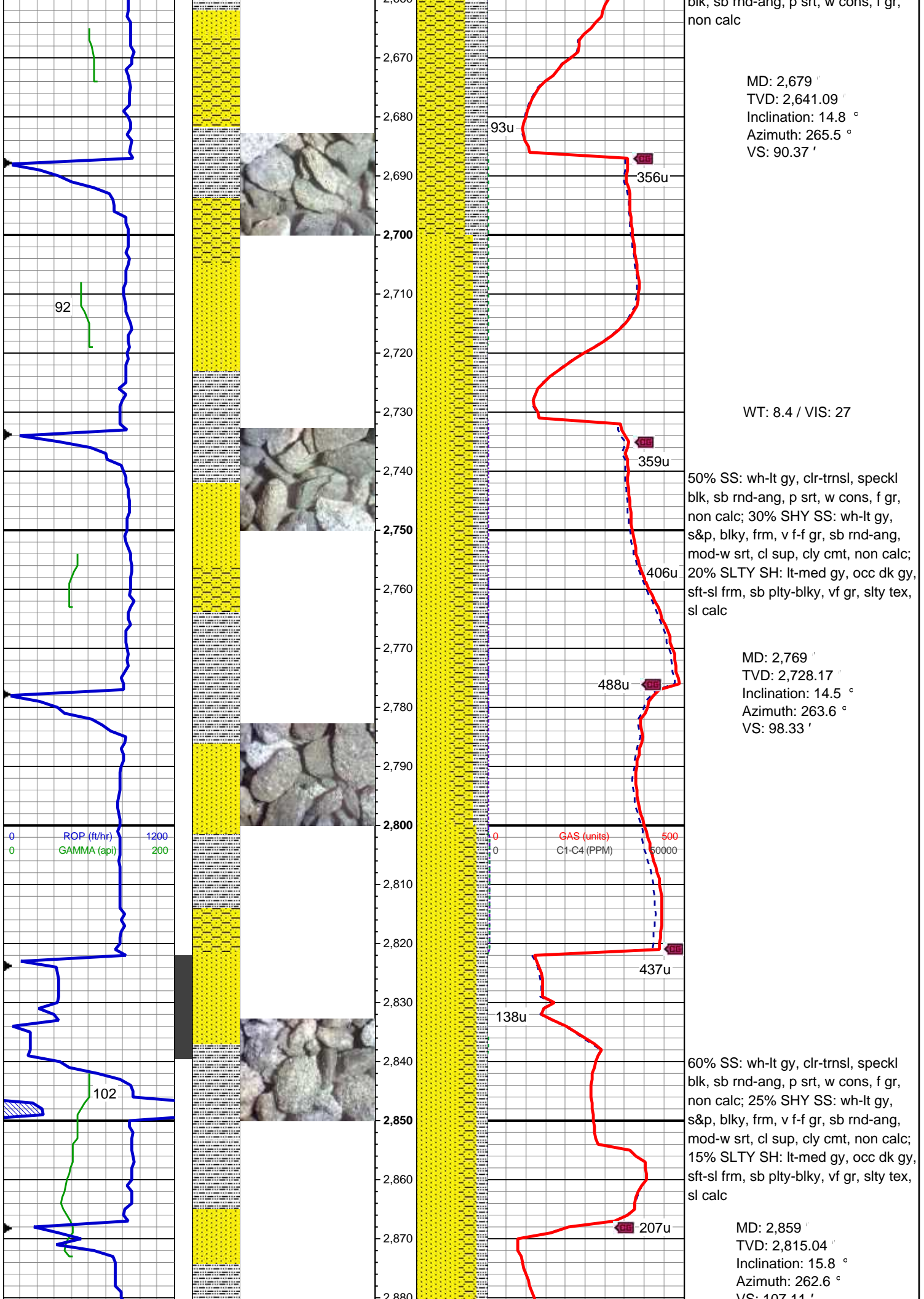
65% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl calc; 30% SHY SS: wh-lt gy, s&p, blky, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc; 5% SS: wh-lt gy, clr-trnsl, speckl blk, sb rnd-ang, p srt, w cons, f gr, non calc

MD: 2,483 '
TVD: 2,452.29 '
Inclination: 15.6 °
Azimuth: 269.3 °
VS: 75.77 '

70% SHY SS: wh-lt gy, s&p, blky, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc; 25% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl calc; 5% SS: wh-lt gy, clr-trnsl, speckl blk, sb rnd-ang, p srt, w cons, f gr, non calc

MD: 2,590 '
TVD: 2,555.27 '
Inclination: 15.9 °
Azimuth: 270.1 °
VS: 83.44 '

65% SHY SS: wh-lt gy, s&p, blky, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc; 30% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl calc; 5% SS: wh-lt gy, clr-trnsl, speckl blk, sb rnd-ang, p srt, w cons, f gr, non calc



blk, sb rnd-ang, p srt, w cons, f gr, non calc

MD: 2,679 '
TVD: 2,641.09 '
Inclination: 14.8 °
Azimuth: 265.5 °
VS: 90.37 '

WT: 8.4 / VIS: 27

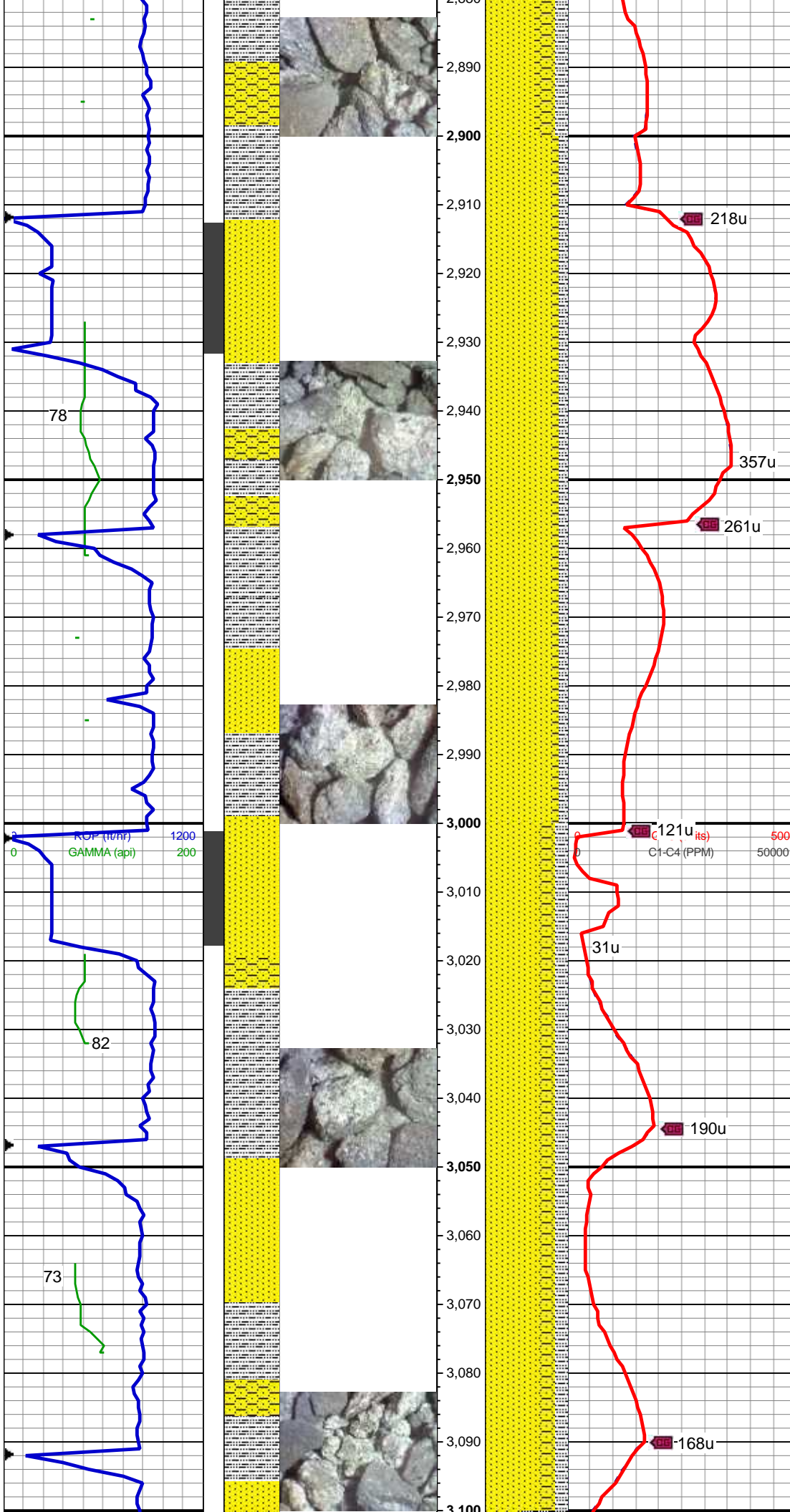
50% SS: wh-lt gy, clr-trnsl, speckl blk, sb rnd-ang, p srt, w cons, f gr, non calc; 30% SHY SS: wh-lt gy, s&p, blk, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc; 20% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl calc

MD: 2,769 '
TVD: 2,728.17 '
Inclination: 14.5 °
Azimuth: 263.6 °
VS: 98.33 '

60% SS: wh-lt gy, clr-trnsl, speckl blk, sb rnd-ang, p srt, w cons, f gr, non calc; 25% SHY SS: wh-lt gy, s&p, blk, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc; 15% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl calc

MD: 2,859 '
TVD: 2,815.04 '
Inclination: 15.8 °
Azimuth: 262.6 °
VS: 107.11 '

VS: 107.11'

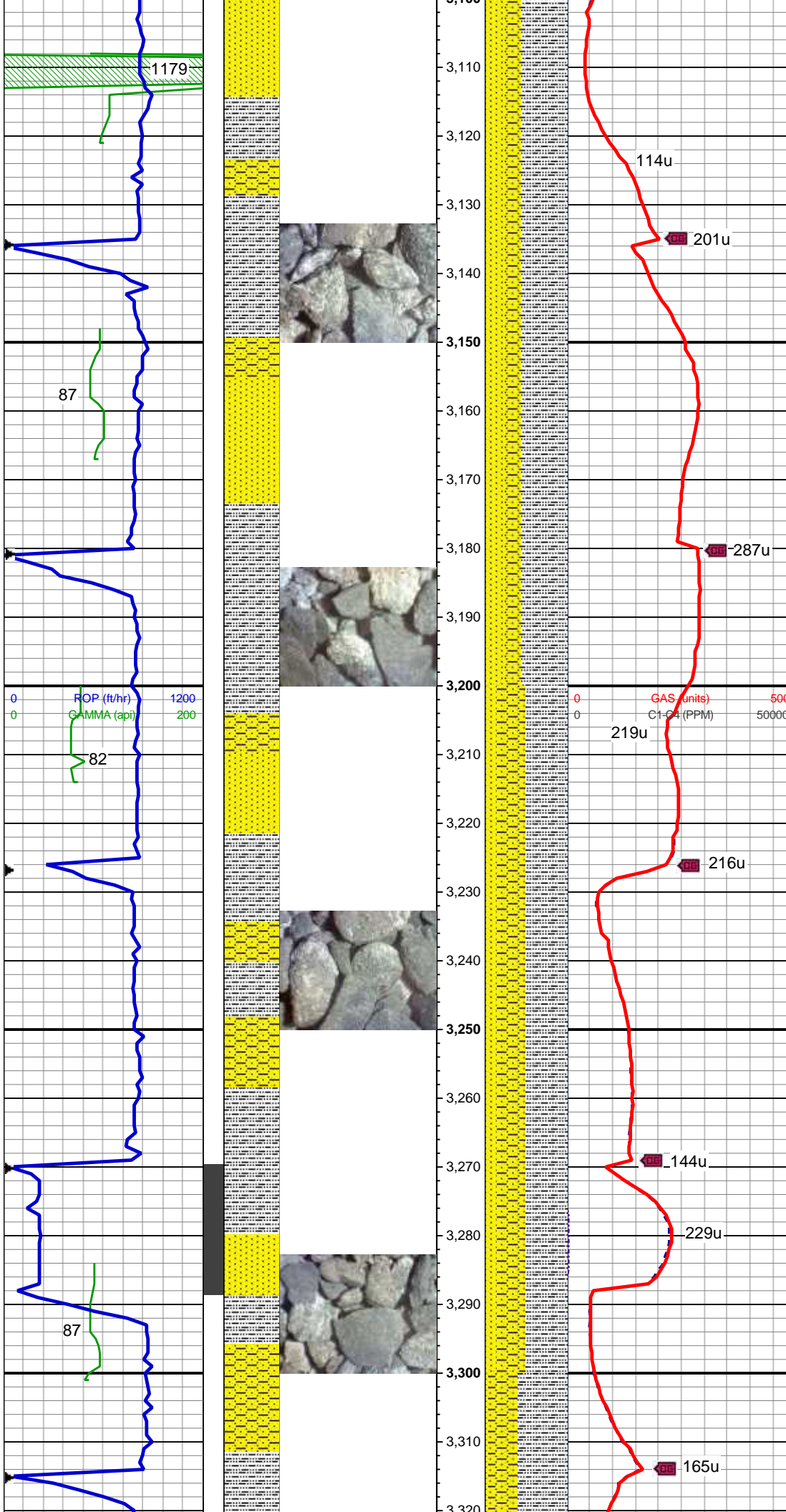


MD: 2,948 '
TVD: 2,900.51 '
Inclination: 16.6 °
Azimuth: 268.2 °
VS: 115.41 '

80% SS: wh-lt gy, clr-trnsl, speckl blk, sb rnd-ang, p srt, w cons, f gr, non calc; 10% SHY SS: wh-lt gy, s&p, blk, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc; 10% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl calc

MD: 3,038 '
TVD: 2,986.67 '
Inclination: 17 °
Azimuth: 272.5 °
VS: 121.98 '

65% SS: wh-lt gy, clr-trnsl, speckl blk, sb rnd-ang, p srt, w cons, f gr, non calc; 20% SHY SS: wh-lt gy, s&p, blk, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc; 15% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl calc



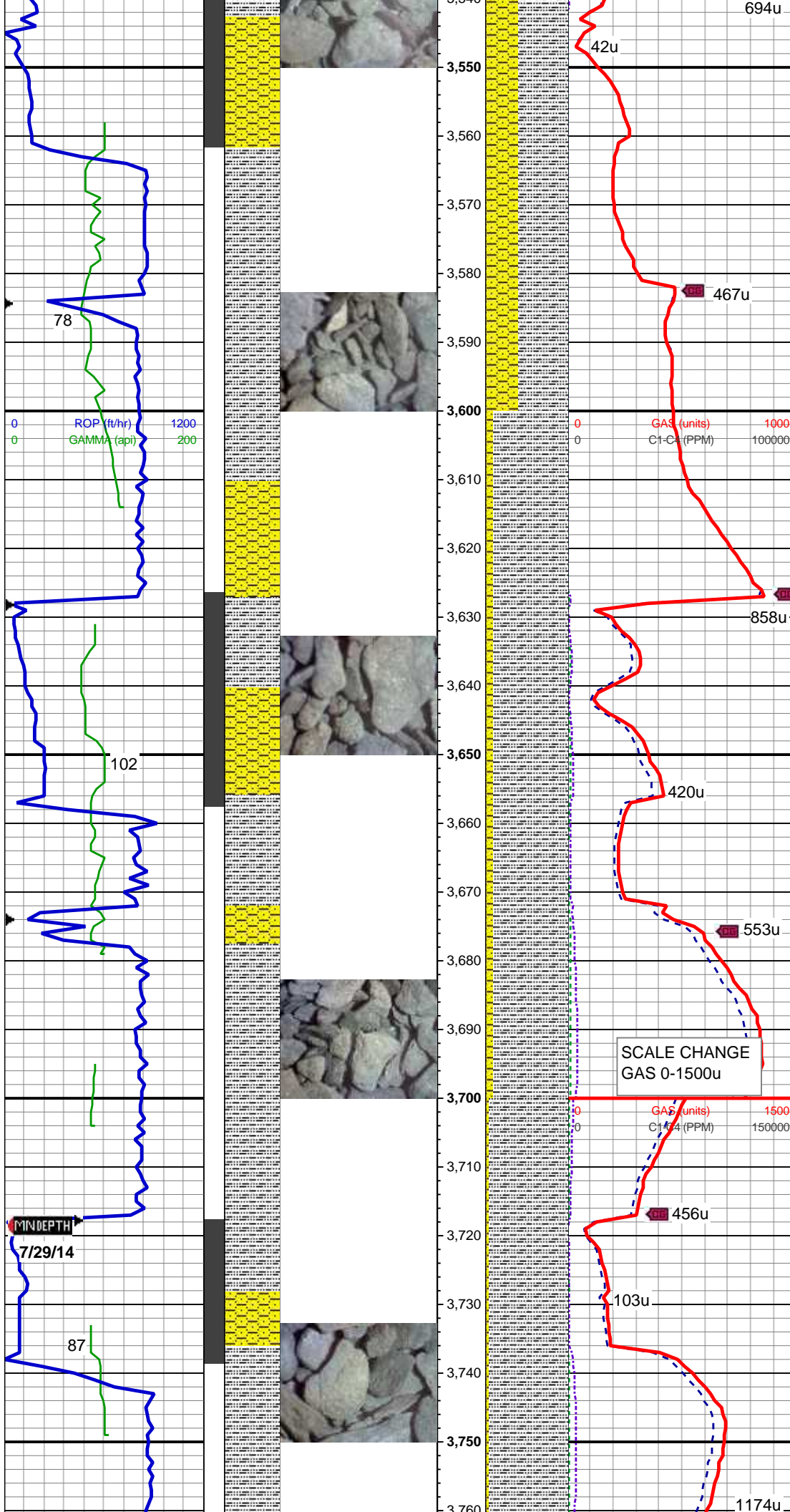


60% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl cac; 35% SHY SS: wh-lt gy, s&p, blky, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc; 5% SS: wh-lt gy, clr-trnsl, speckl blk, sb rnd-ang, p srt, w cons, f gr, non calc

MD: 3,396 '
TVD: 3,332.41 '
Inclination: 12.6 °
Azimuth: 267.7 °
VS: 145.82 '

60% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl cac; 40% SHY SS: wh-lt gy, s&p, blky, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc; tr SS

MD: 3,486 '
TVD: 3,420.33 '
Inclination: 12.1 °
Azimuth: 262.4 °
VS: 152.36 '



60% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl cac; 40% SHY SS: wh-lt gy, s&p, blky, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc

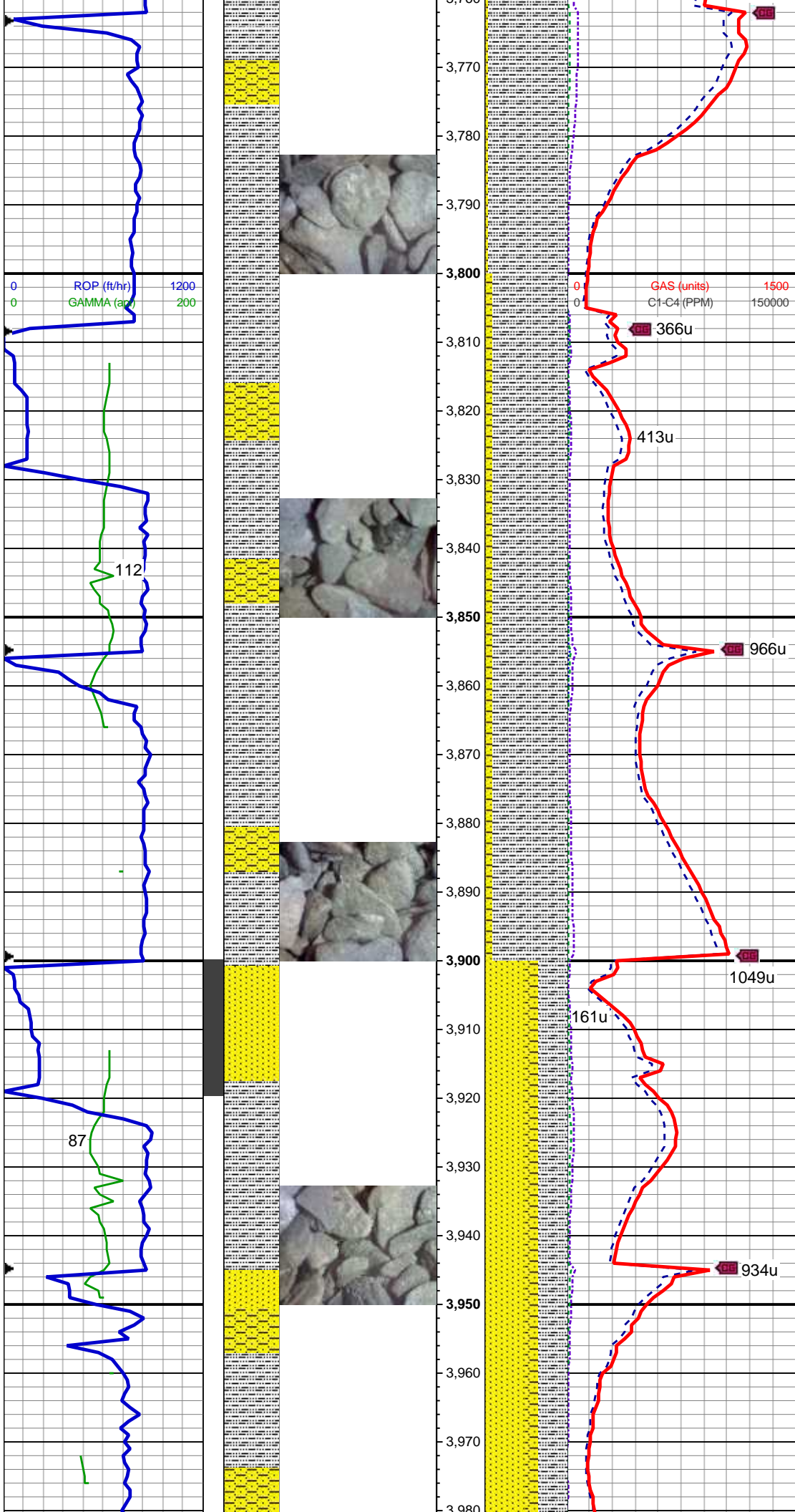
MD: 3,576 '
TVD: 3,508.34 '
Inclination: 12 °
Azimuth: 263.5 °
VS: 159.42 '

90% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl cac; 10% SHY SS: wh-lt gy, s&p, blky, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc

MD: 3,665 '
TVD: 3,595.19 '
Inclination: 13.3 °
Azimuth: 273 °
VS: 164.94 '

95% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl cac; 5% SHY SS: wh-lt gy, s&p, blky, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc

WT: 8.4 / VIS: 28



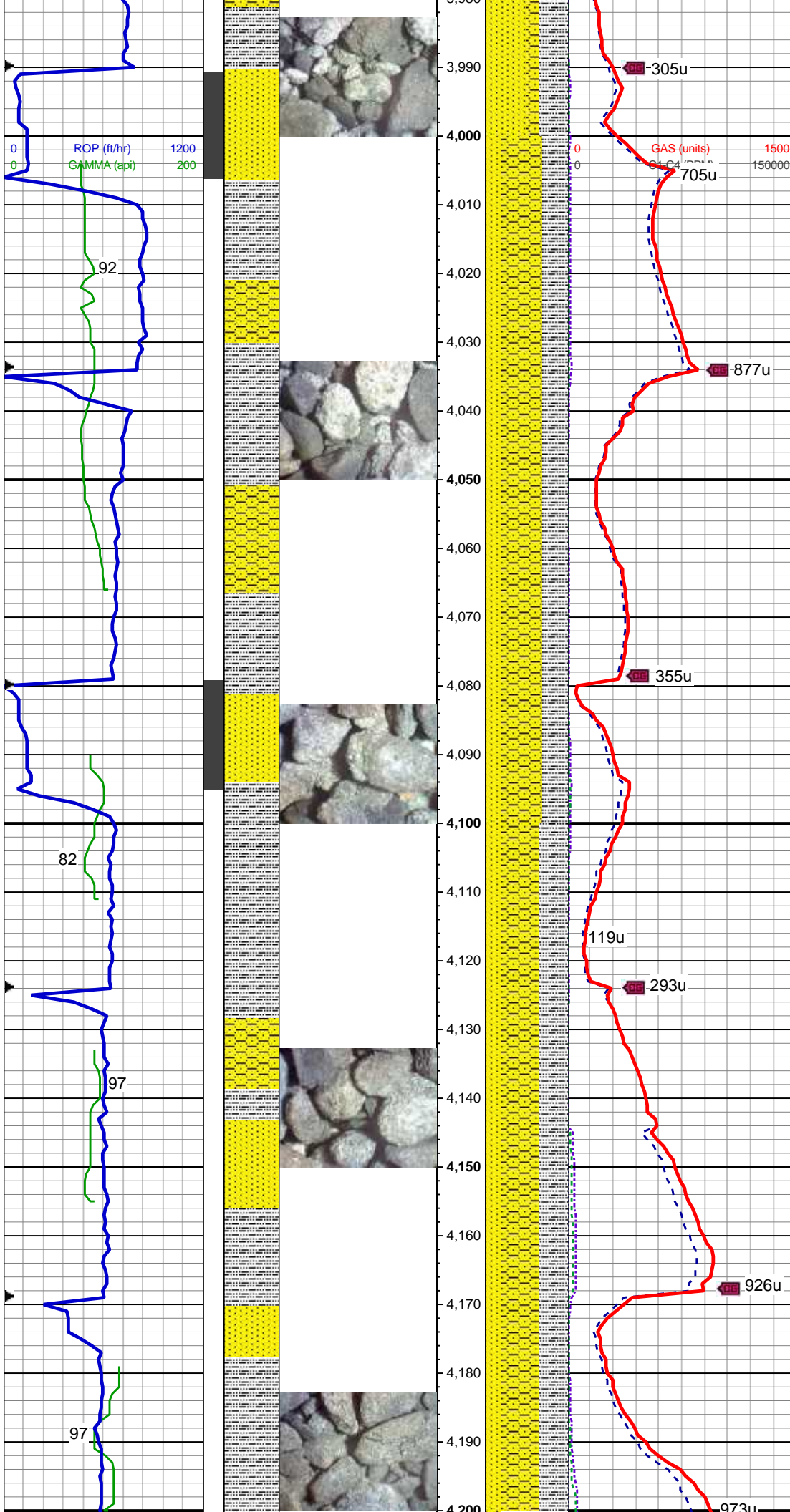
MD: 3,755 '
TVD: 3,682.63 '
Inclination: 14.1 °
Azimuth: 274.3 °
VS: 169.14 '

MD: 3,845 '
TVD: 3,769.82 '
Inclination: 14.6 °
Azimuth: 275.7 °
VS: 173.01 '

90% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl cac; 10% SHY SS: wh-lt gy, s&p, blk, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc; tr SS

MD: 3,935 '
TVD: 3,856.65 '
Inclination: 15.9 °
Azimuth: 276.4 °
VS: 176.69 '

50% SS: wh-lt gy, clr-trnsl, speckl blk, sb rnd-ang, p srt, w cons, f gr, non calc; 35% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl cal; 15% SHY SS: wh-lt gy, s&p, blk, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc



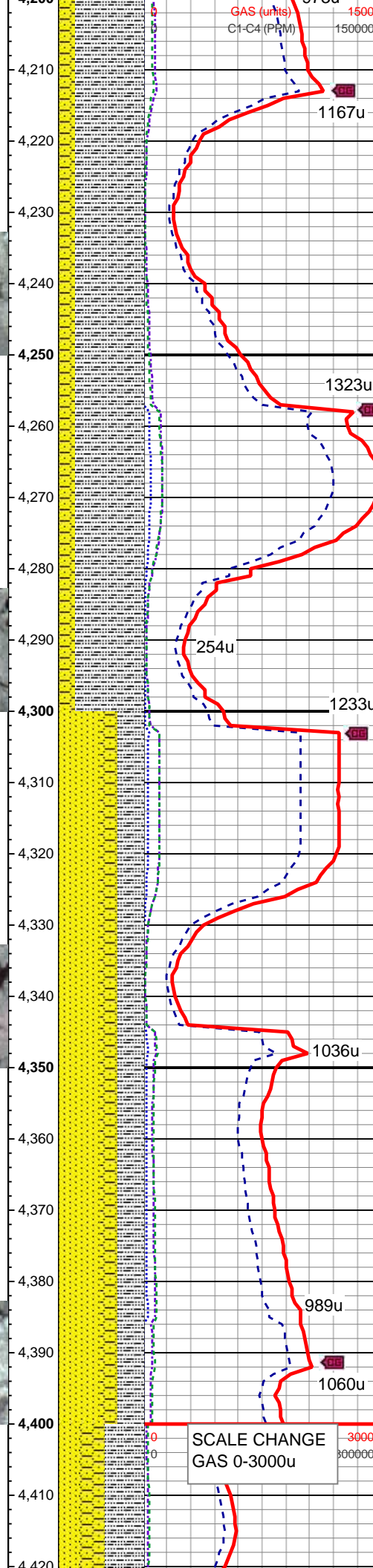
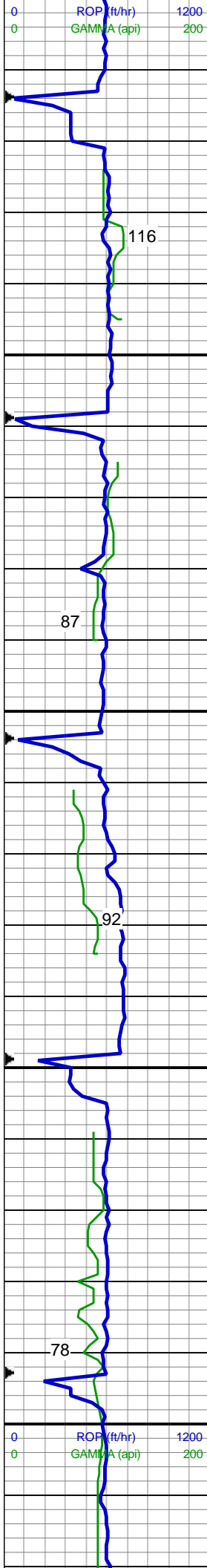
MD: 4,024 '
TVD: 3,941.94 '
Inclination: 17.3 °
Azimuth: 274.4 °
VS: 180.95 '

50% SHY SS: wh-lt gy, s&p, blk, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc; 30% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb pty-blky, vf gr, slty tex, sl cac; 20% SS: wh-lt gy, clr-trnsl, speckl blk, sb rnd-ang, p srt, w cons, f gr, non calc

MD: 4,114 '
TVD: 4,027.56 '
Inclination: 18.6 °
Azimuth: 271.1 °
VS: 186.87 '

45% SHY SS: wh-lt gy, s&p, blk, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc; 35% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb pty-blky, vf gr, slty tex, sl cac; 20% SS: wh-lt gy, clr-trnsl, speckl blk, sb rnd-ang, p srt, w cons, f gr, non calc

MD: 4,203 '
TVD: 4,112.06 '



Inclination: 18 °
Azimuth: 268 °
VS: 194.3 '

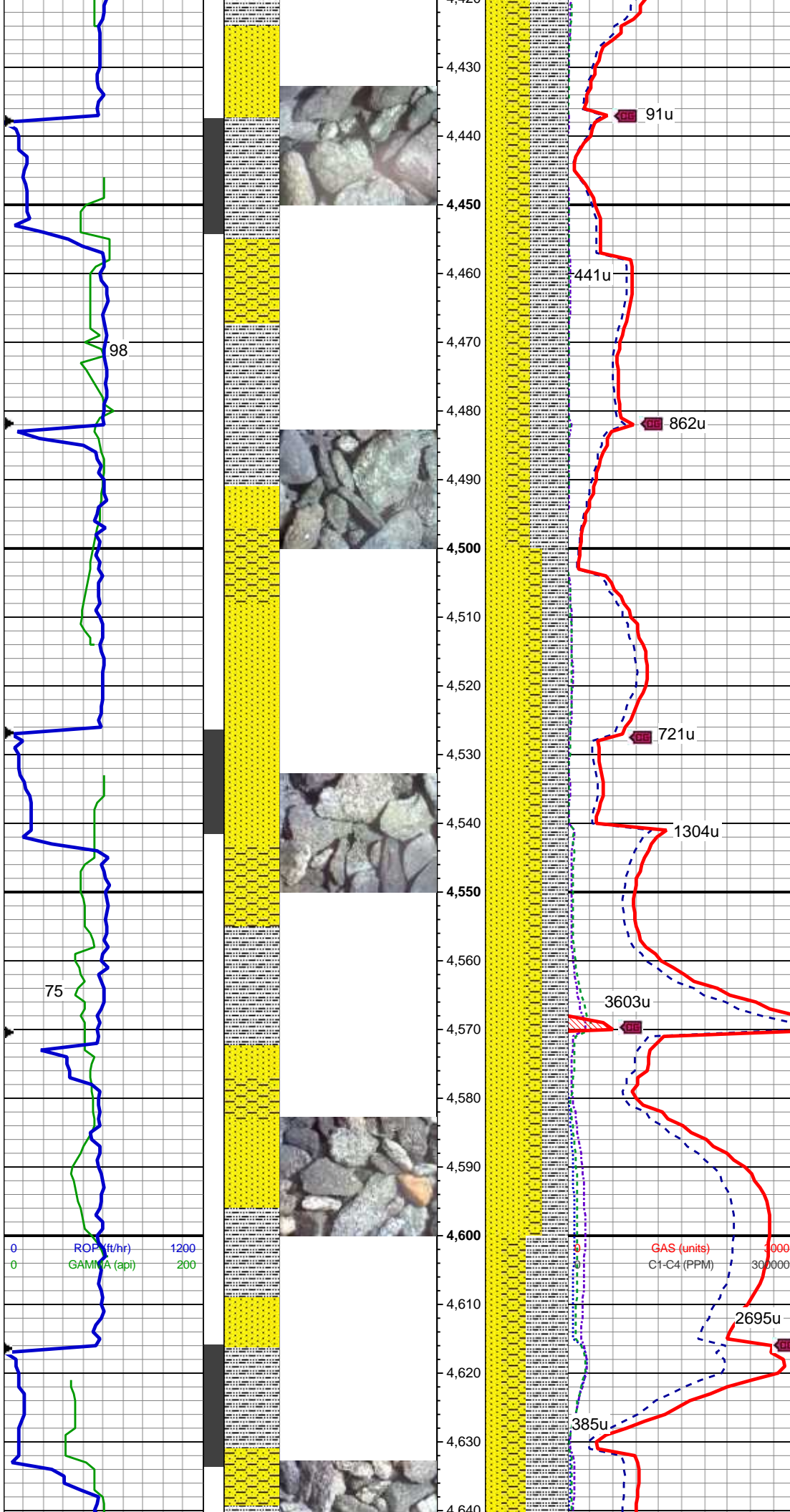
80% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl cacI; 20% SHY SS: wh-lt gy, s&p, blkly, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc; tr SS

MD: 4,293 '
TVD: 4,197.96 '
Inclination: 16.7 °
Azimuth: 265.7 °
VS: 202.65 '

50% SS: wh-lt gy, clr-trnsl, speckl blk, sb rnd-ang, p srt, w cons, f gr, non calc; 30% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl cacI; 20% SHY SS: wh-lt gy, s&p, blkly, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc

MD: 4,383 '
TVD: 4,284.26 '
Inclination: 16.3 °
Azimuth: 263.7 °
VS: 211.51 '

WT: 8.4 / VIS: 28



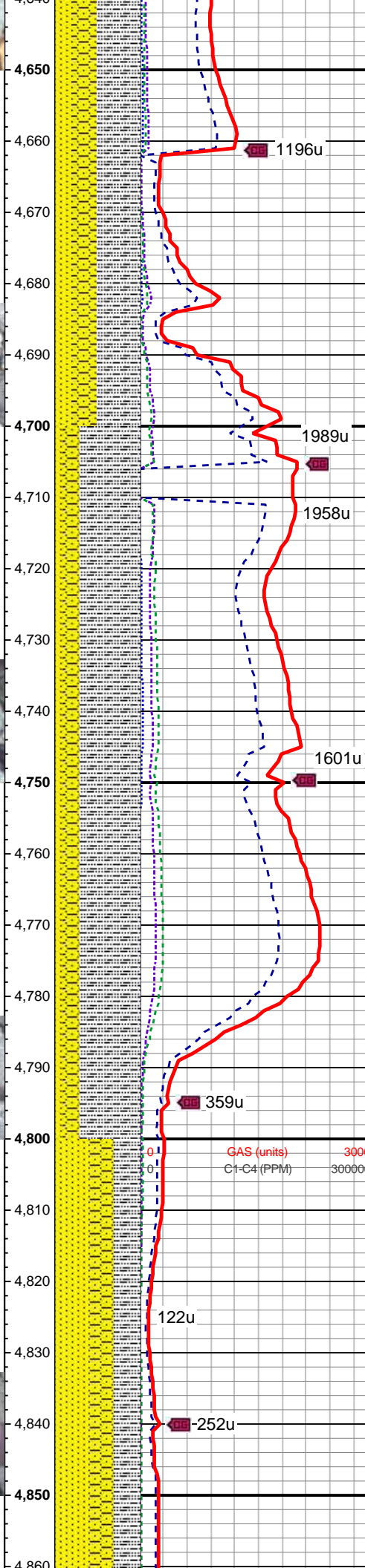
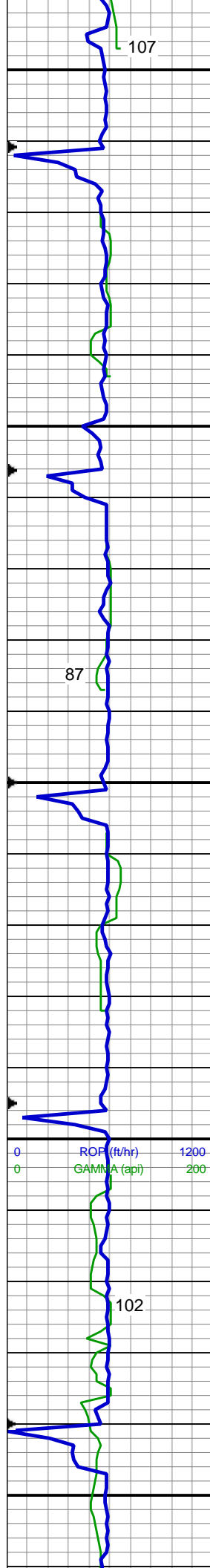
45% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl calc; 30% SHY SS: wh-lt gy, s&p, blk, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc; 25% SS: wh-lt gy, clr-trnsl, speckl blk, sb rnd-ang, p srt, w cons, f gr, non calc

MD: 4,472 '
TVD: 4,369.73 '
Inclination: 16.1 °
Azimuth: 269.2 °
VS: 219.41 '

50% SS: wh-lt gy, clr-trnsl, speckl blk, sb rnd-ang, p srt, w cons, f gr, non calc; 30% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl calc; 20% SHY SS: wh-lt gy, s&p, blk, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc

MD: 4,562 '
TVD: 4,456.2 '
Inclination: 16.1 °
Azimuth: 273.3 °
VS: 225.35 '

MD: 4,651 '
TVD: 4,541.49 '
Inclination: 17.1 °
Azimuth: 274.2 °
VS: 230.31 '



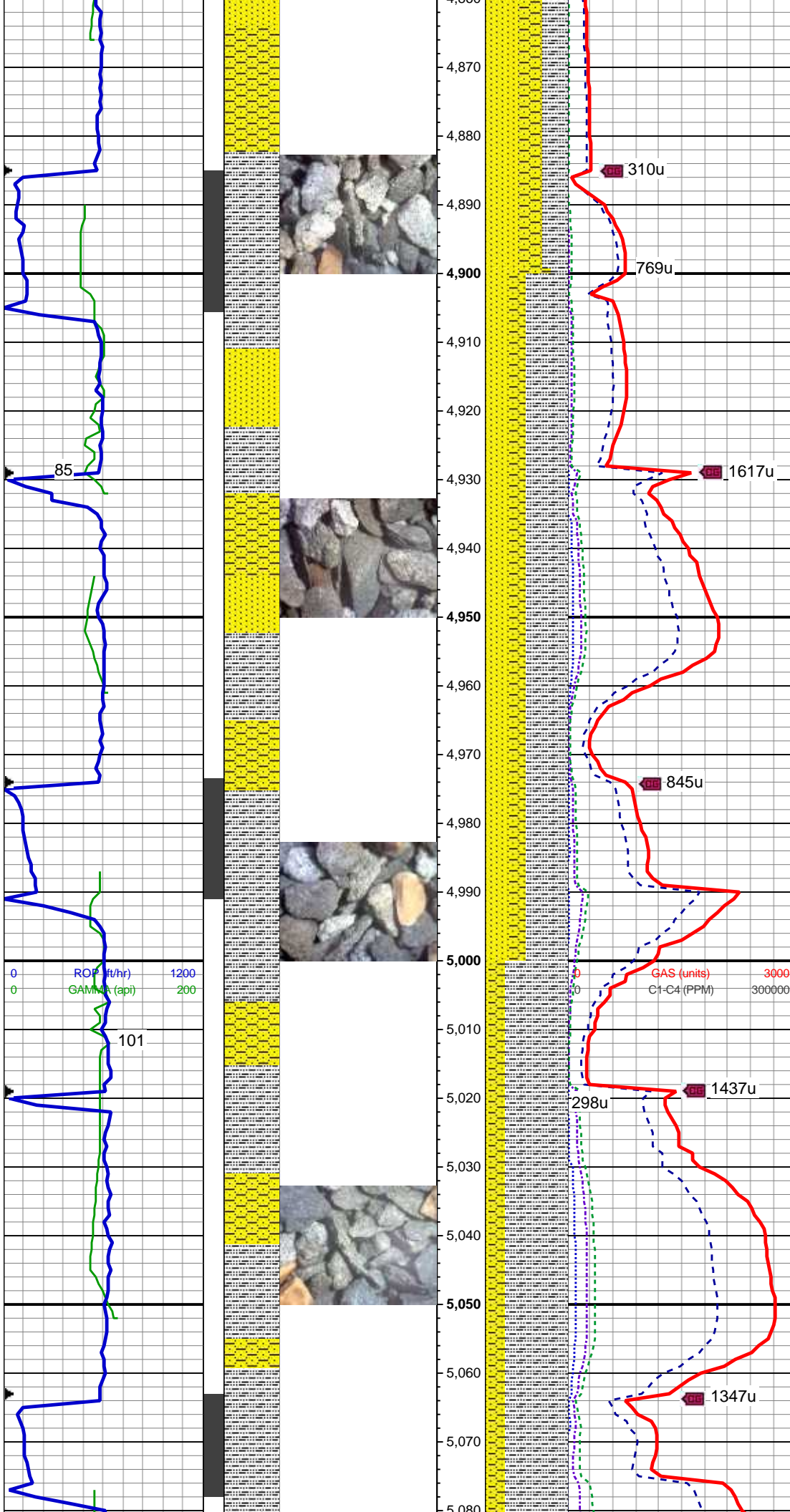
50% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl calc; 30% SHY SS: wh-lt gy, s&p, blky, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc; 20% SS: wh-lt gy, clr-trnsl, speckl blk, sb rnd-ang, p srt, w cons, f gr, non calc

MD: 4,741 '
TVD: 4,627.65 '
Inclination: 16.5 °
Azimuth: 271.9 °
VS: 235.69 '

70% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl calc; 20% SHY SS: wh-lt gy, s&p, blky, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc; 10% SS: wh-lt gy, clr-trnsl, speckl blk, sb rnd-ang, p srt, w cons, f gr, non calc

MD: 4,831 '
TVD: 4,714.27 '
Inclination: 15 °
Azimuth: 268.8 °
VS: 241.84 '

40% SS: wh-lt gy, clr-trnsl, speckl blk, sb rnd-ang, p srt, w cons, f gr, non calc; 30% SHY SS: wh-lt gy, s&p, blky, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc; 30% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex,

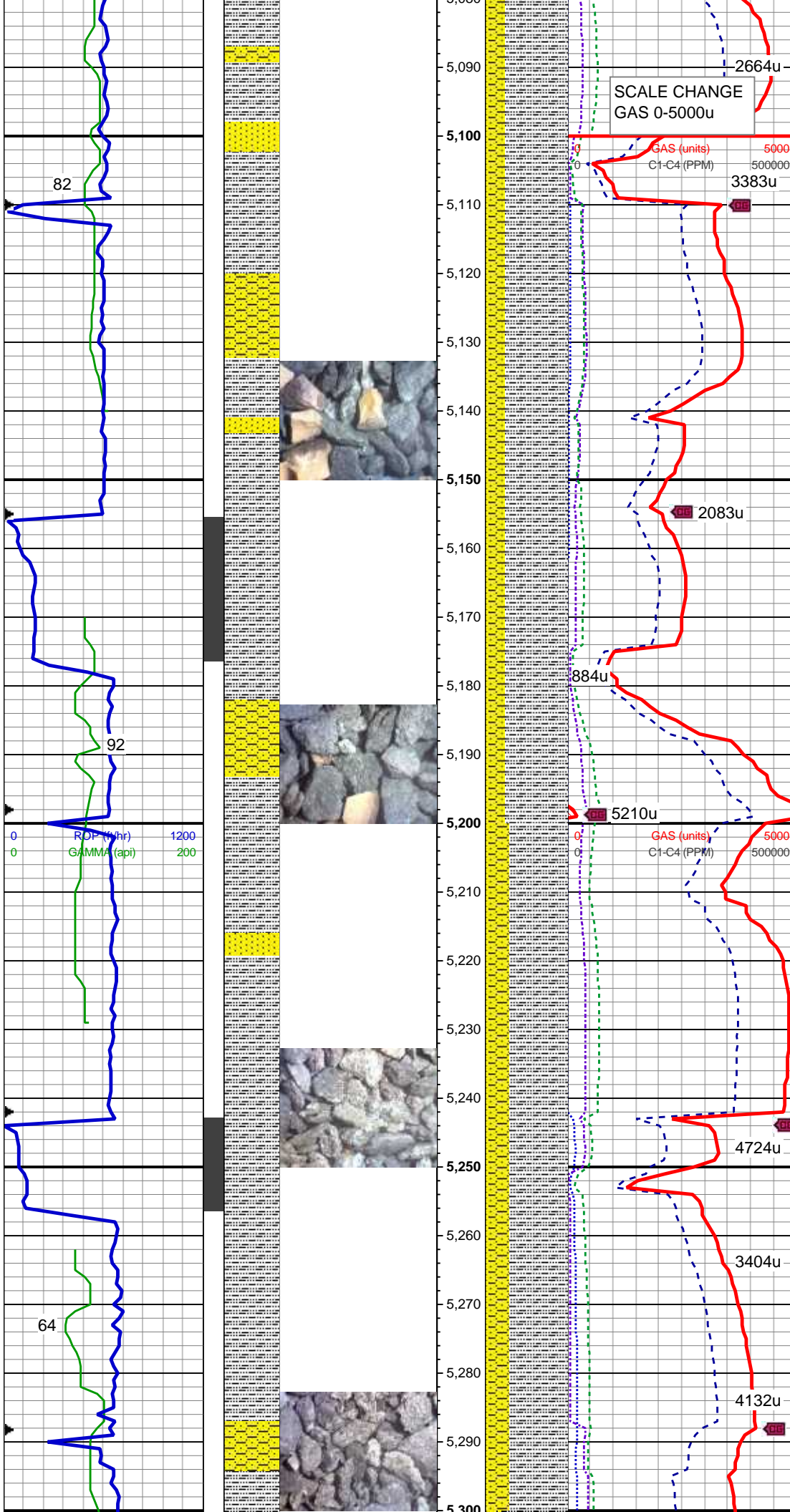


MD: 4,920 '
TVD: 4,800.12 '
Inclination: 15.6 °
Azimuth: 270.8 °
VS: 247.99 '

50% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl calc; 30% SS: wh-lt gy, clr-trnsl, speckl blk, sb rnd-ang, p srt, w cons, f gr, non calc; 20% SHY SS: wh-lt gy, s&p, blk, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc

MD: 5,010 '
TVD: 4,886.7 '
Inclination: 16.1 °
Azimuth: 272.2 °
VS: 253.73 '

75% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl calc; 20% SHY SS: wh-lt gy, s&p, blk, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc; 5% SS: wh-lt gy, clr-trnsl, speckl blk, sb rnd-ang, p srt, w cons, f gr, non calc



MD: 5,100 '
TVD: 4,973.14 '
Inclination: 16.2 °
Azimuth: 272.3 °
VS: 259.26 '

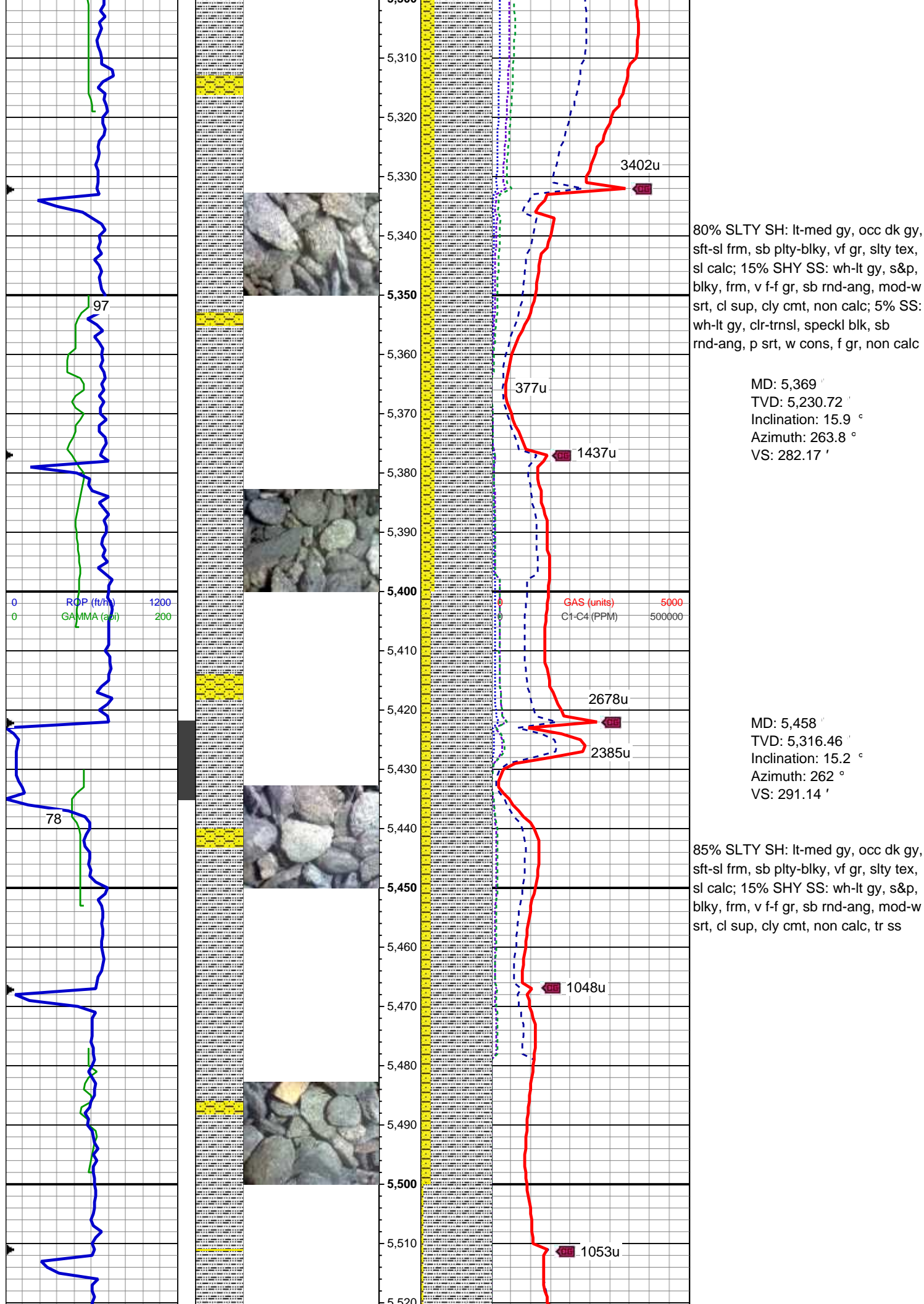
75% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl calc; 20% SHY SS: wh-lt gy, s&p, blk, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc; 5% SS: wh-lt gy, clr-trnsl, speckl blk, sb rnd-ang, p srt, w cons, f gr, non calc

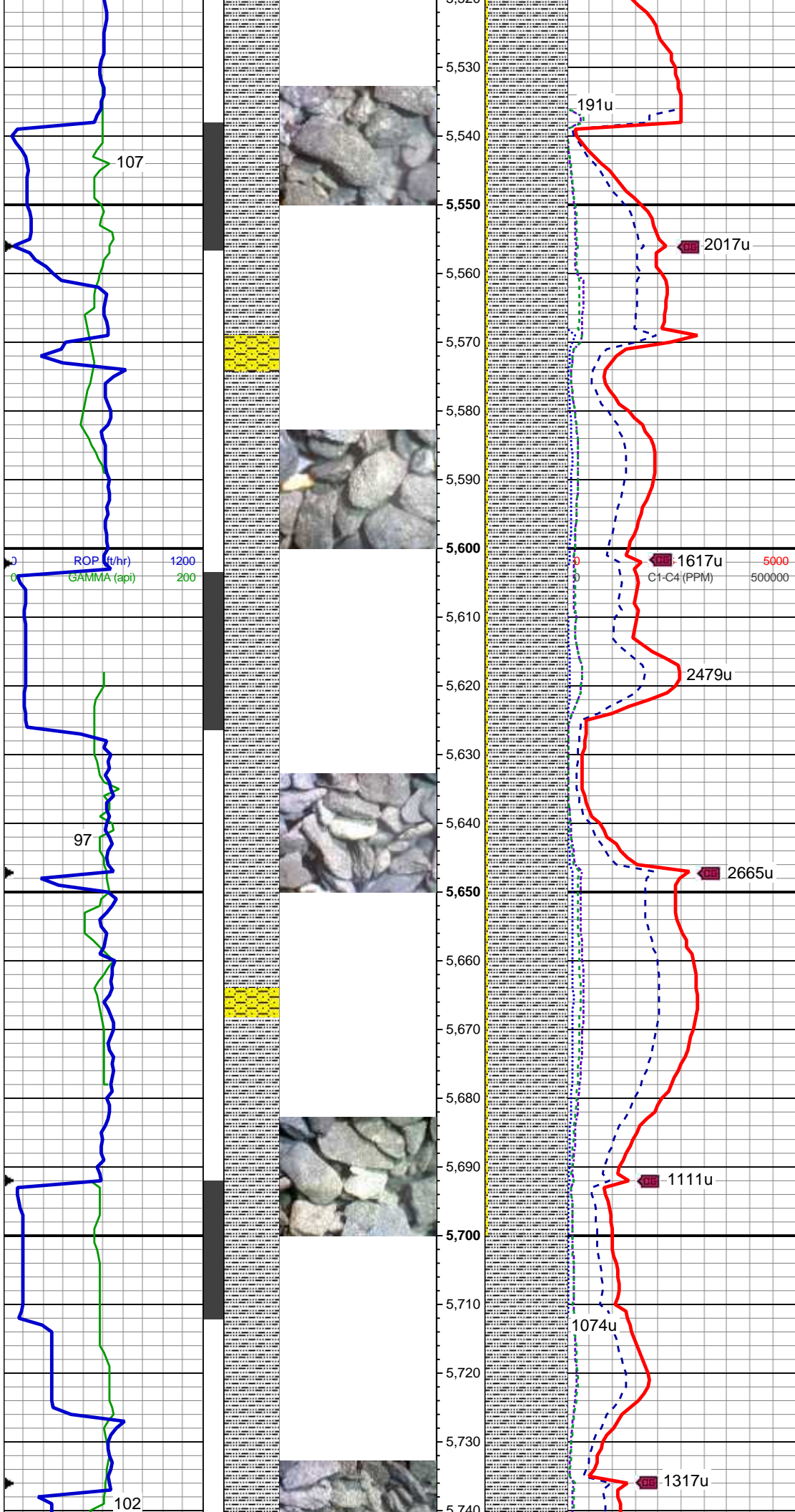
MD: 5,189 '
TVD: 5,058.57 '
Inclination: 16.4 °
Azimuth: 269.6 °
VS: 265.33 '

WT: 8.3 / VIS: 25

70% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl calc; 25% SHY SS: wh-lt gy, s&p, blk, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc; 5% SS: wh-lt gy, clr-trnsl, speckl blk, sb rnd-ang, p srt, w cons, f gr, non calc

MD: 5,279 '
TVD: 5,144.59 '
Inclination: 17.8 °
Azimuth: 265.9 °
VS: 273.21 '





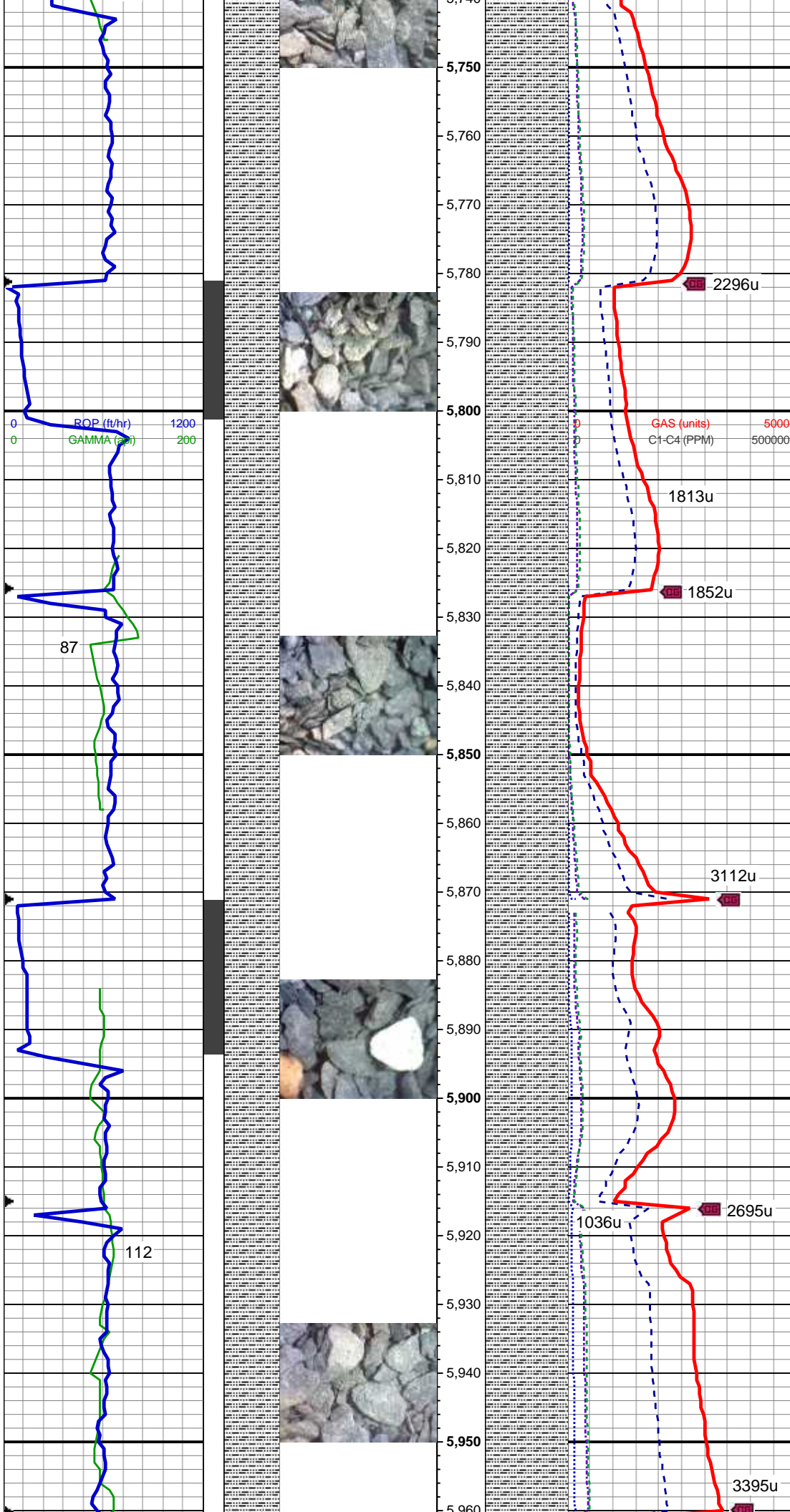
MD: 5,548 '
TVD: 5,403.73 '
Inclination: 13.1 °
Azimuth: 261.1 °
VS: 299.89 '

95% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl calc; 5% SHY SS: wh-lt gy, s&p, blky, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc, tr ss

MD: 5,637 '
TVD: 5,490.28 '
Inclination: 13.9 °
Azimuth: 268.7 °
VS: 306.98 '

95% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl calc; 5% SHY SS: wh-lt gy, s&p, blky, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc

MD: 5,727 '
TVD: 5,577.47 '
Inclination: 14.8 °
Azimuth: 264 °
VS: 314.14 '



100% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl calc, tr shy ss

WT: 8.5 / VIS: 29

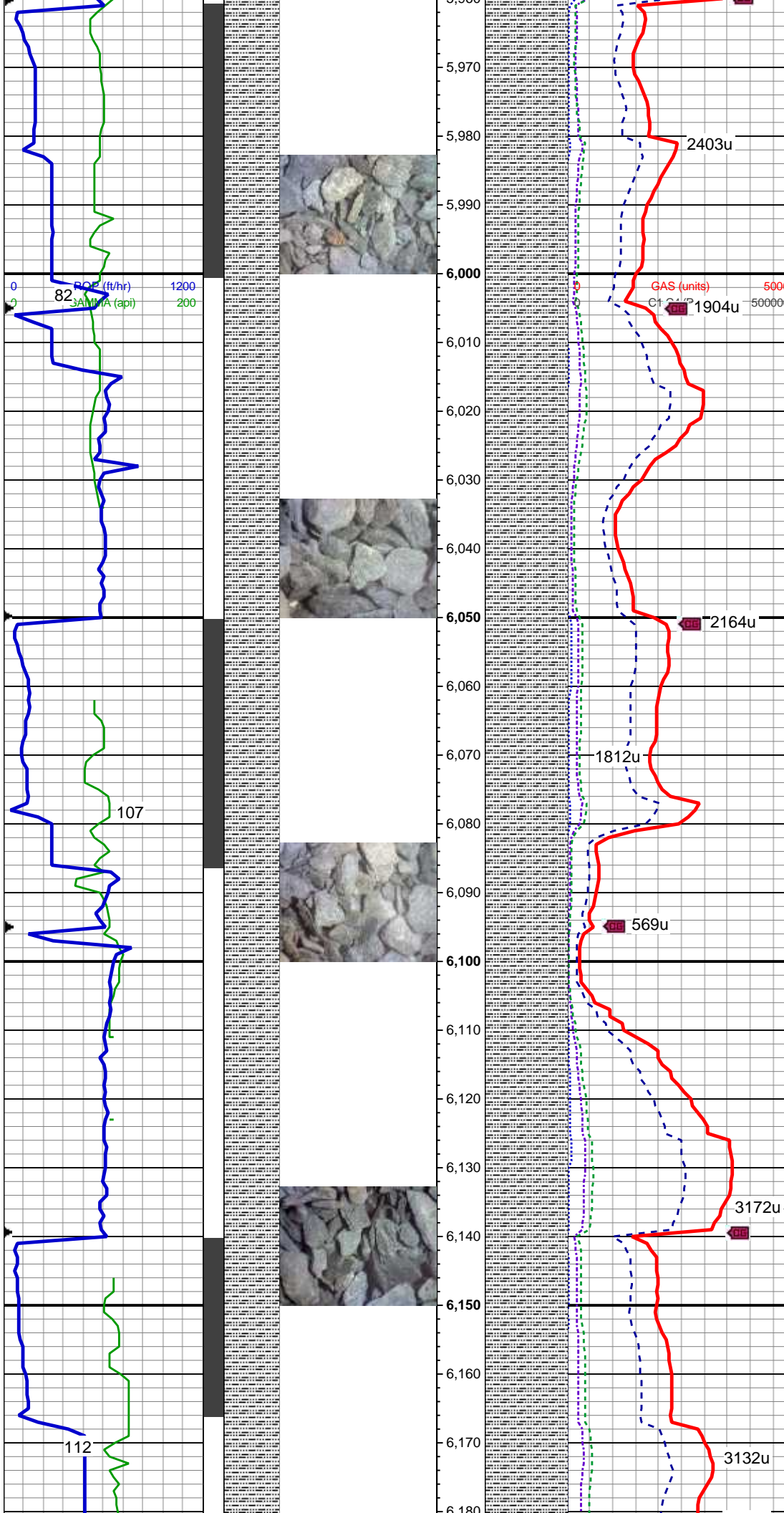
MD: 5,817 '
TVD: 5,664.5 '
Inclination: 14.7 °
Azimuth: 266 °
VS: 321.98 '

100% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl calc, tr shy ss, tr sh

WT: 8.7 / VIS: 32

MD: 5,906 '
TVD: 5,750.39 '
Inclination: 15.7 °
Azimuth: 266.6 °
VS: 329.46 '

100% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl calc, tr shy ss, tr sh



MD: 5,996 '
TVD: 5,837.46 '
Inclination: 13.6 °
Azimuth: 270.3 °
VS: 335.99 '

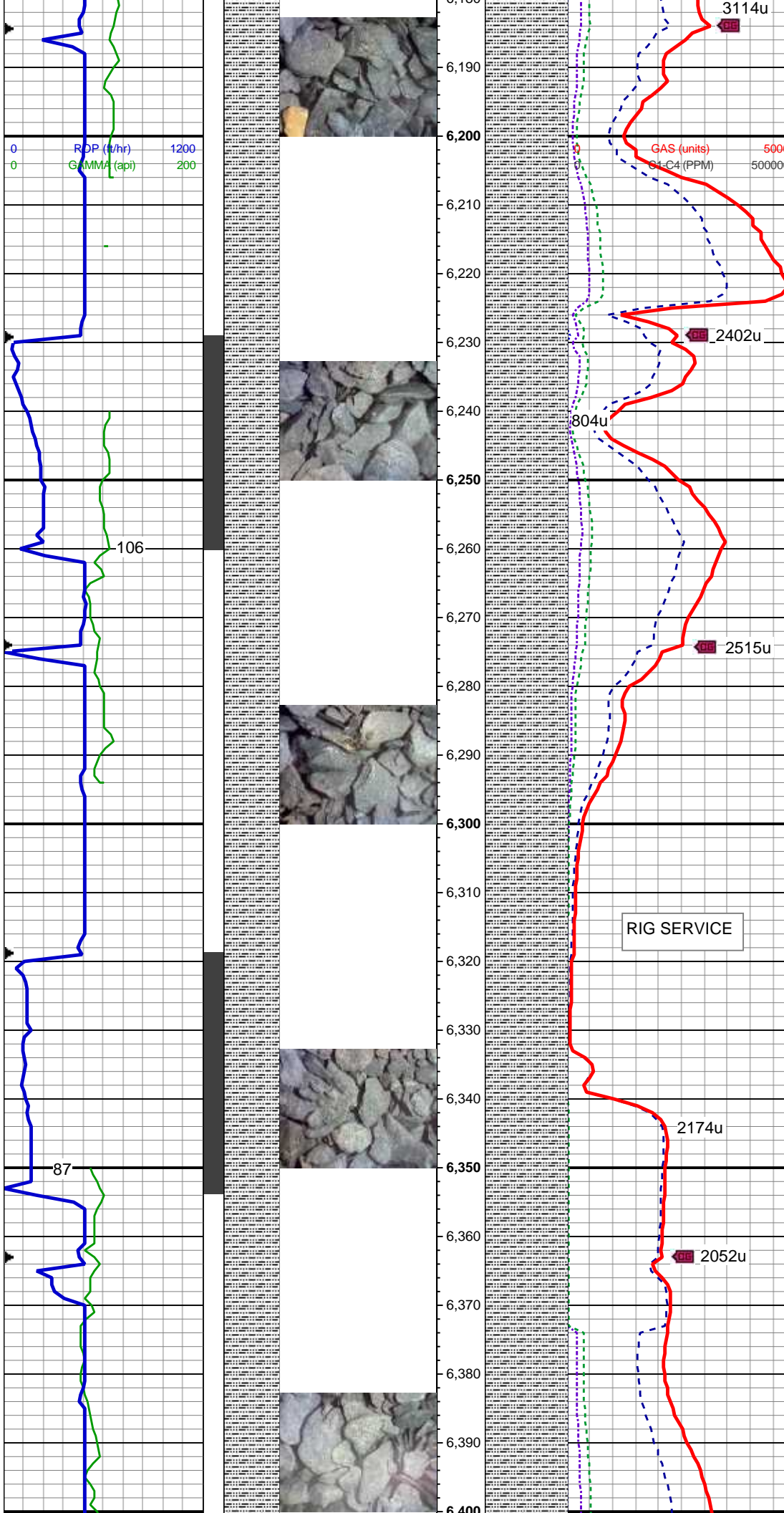
100% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl calc, tr shy ss, tr sh

MD: 6,086 '
TVD: 5,924.87 '
Inclination: 14 °
Azimuth: 264.2 °
VS: 342.55 '

WT: 8.9 / VIS: 34

100% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl calc, tr shy ss

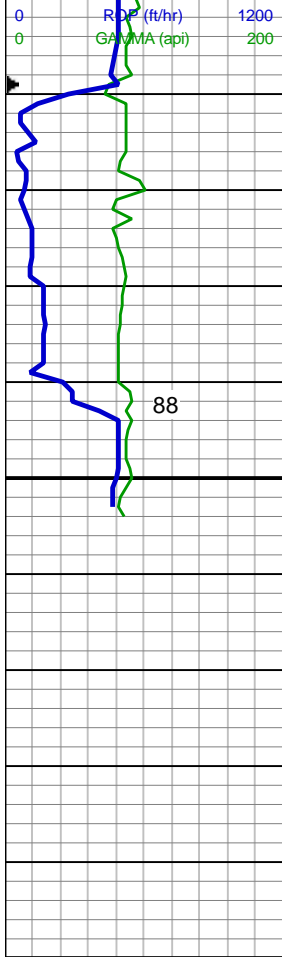
MD: 6,175 '
TVD: 6,011.19 '
Inclination: 14.2 °
Azimuth: 265.3 °
VS: 350.05 '



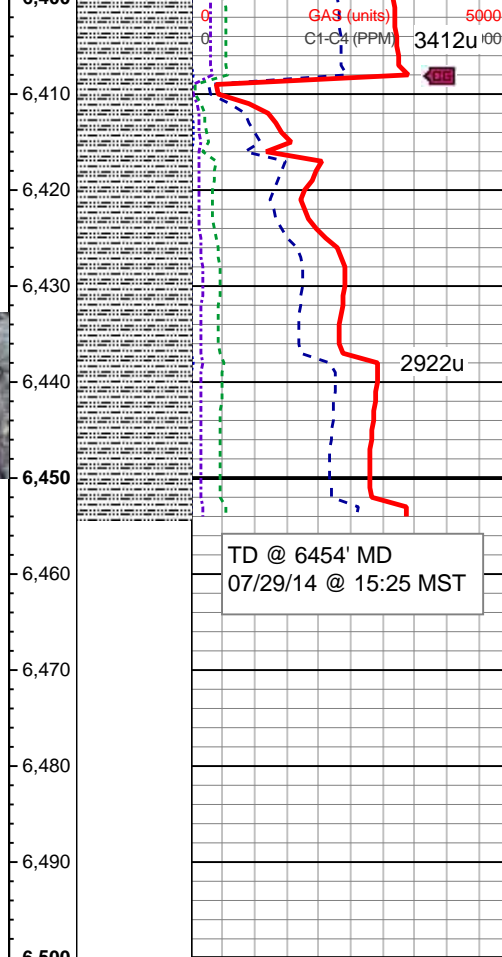
100% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl calc, tr shy ss

MD: 6,265 '
TVD: 6,098.32 '
Inclination: 14.8 °
Azimuth: 266.4 °
VS: 357.45 '

100% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl calc, tr shy ss



0 1200
0 200
ROP (ft/hr)
GAMA (api)



GA3 (units) 5000
C1-C4 (PPM) 100

100% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl calc, tr shy ss

WT: 9.4 / VIS: 37

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G36-75-1HN_Horizontal

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