

COLUMBINE LOGGING

Scale: 5" / 100'
Measured Depth Log

Well Name Rohn State LD10-65-1HN

Location SEC. 9 T9N R58W

State Colorado

County Weld

Country USA

Rig Number PD 829

API Number 05-123-37621

AFE # 200228

Region DJ Basin

Field Wattenberg

Spud Date 10/26/2014

Drilling Completed 11/1/2014

Surface Coordinates 2125 FSL ; 330 FEL
40.76441 ; -103.86111

Bottom Hole Coordinates 2310 FSL ; 660 FEL
40.76502 ; -103.84328

Ground Elevation 4716'

K.B. Elevation 4732'

Logged Interval 1245' **To** 5039'

Total Depth 10243'

Formation Niobrara C chalk

Type of Drilling Fluid FW LSND

Operator

Company Noble Energy, Inc.

Address 1625 BROADWAY
DENVER, CO 80202

Geologist

Name Holly Duncan

Company Noble Energy, Inc.

Address 1625 BROADWAY
DENVER, CO 80202

Other

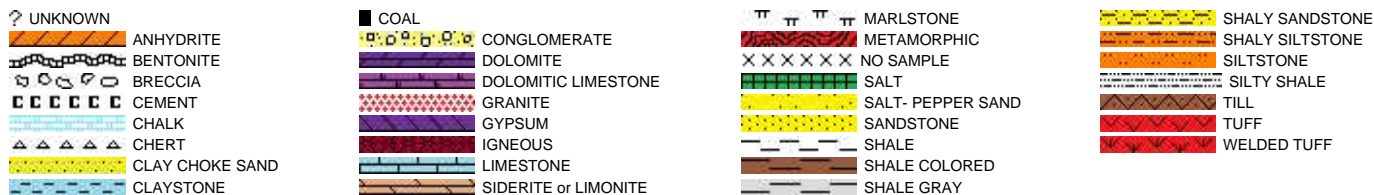
Columbine Logging, Inc.

2385 S. Lipan St.
Denver, CO 80223

Well Site Geologists

Ryan Shilling
Mark Norris

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

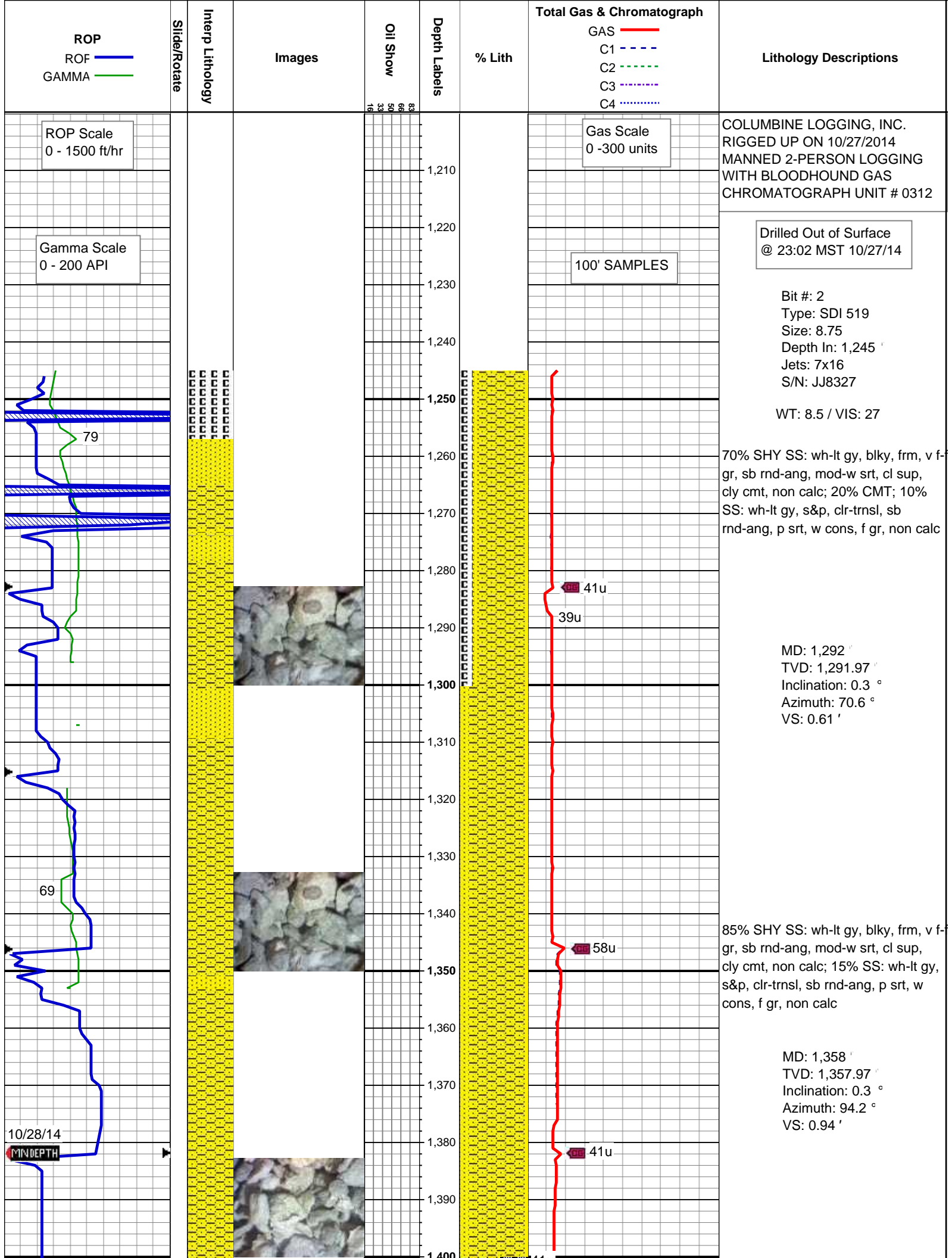
WS WACKESTONE

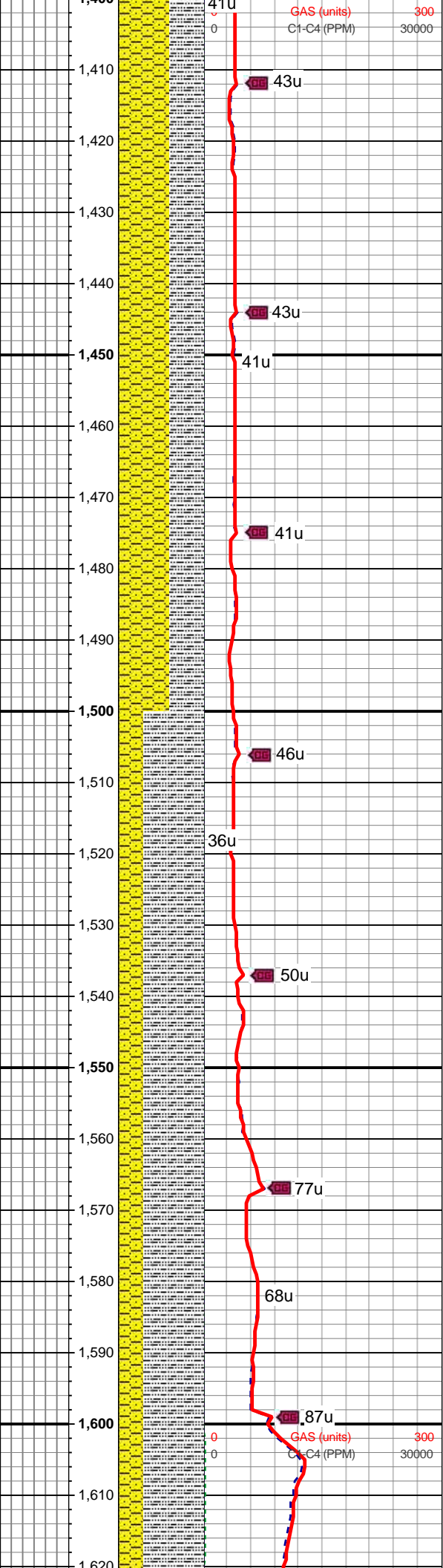
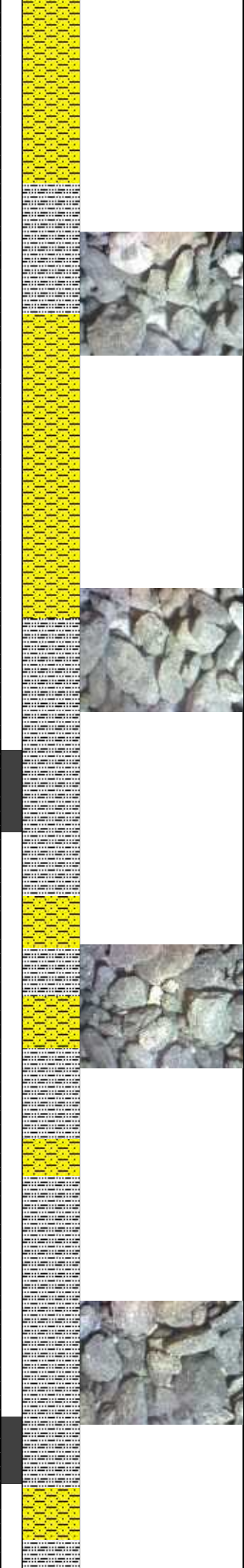
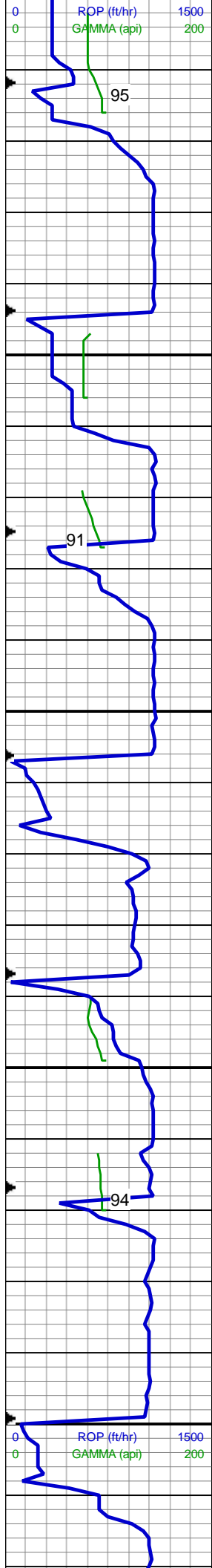
Sorting

M MODERATE

P POOR

W WELL





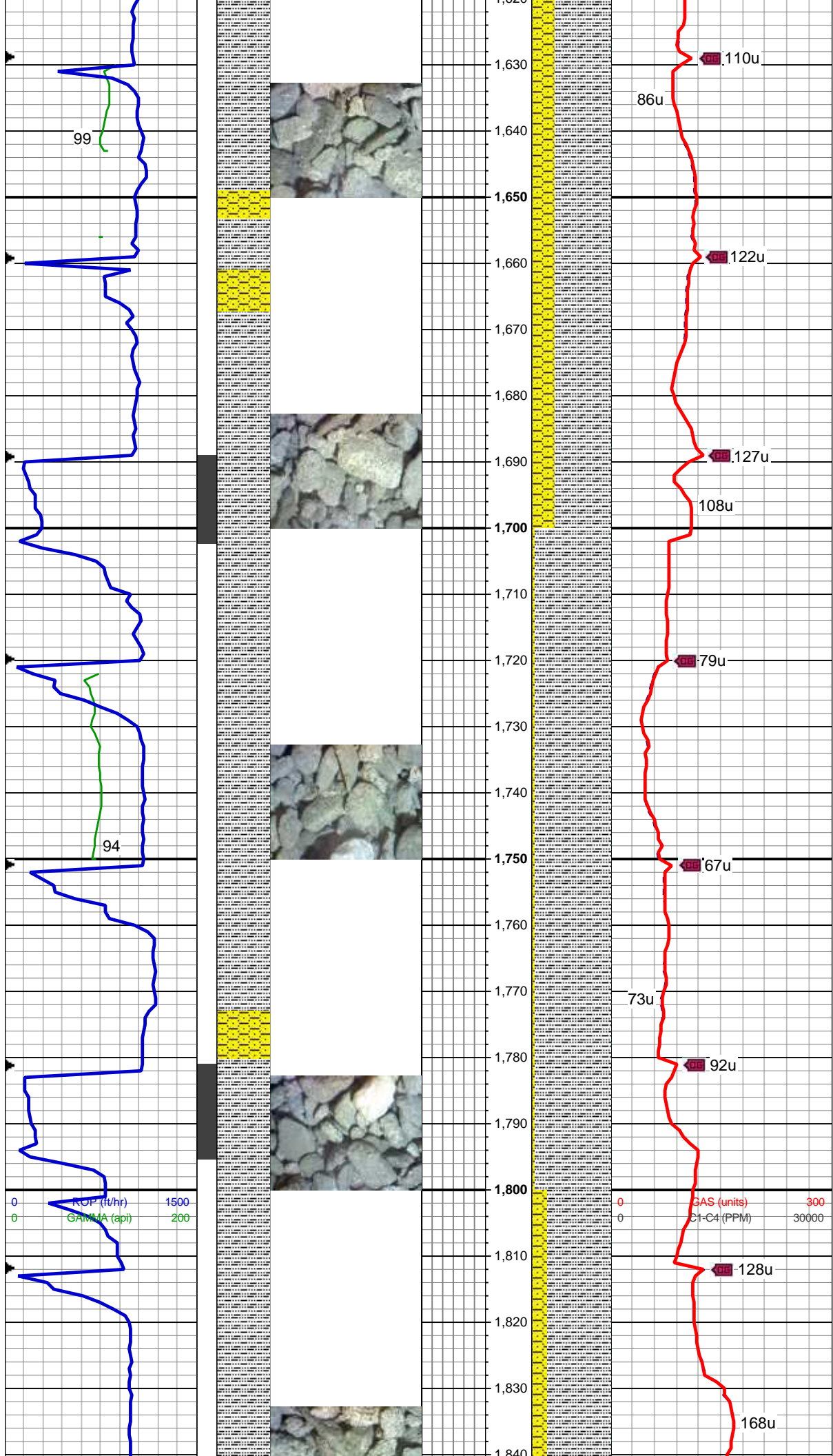
MD: 1,450 '
TVD: 1,449.97 '
Inclination: 0.4 °
Azimuth: 38.2 °
VS: 1.4 '

60% SHY SS: wh-lt gy, blkly, 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 calc

WT: 8.5 / VIS: 27

MD: 1,543 '
TVD: 1,542.95 '
Inclination: 1.8 °
Azimuth: 60.2 °
VS: 2.92 '

70% 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, blkly, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc



MD: 1,635 '
TVD: 1,634.87 '
Inclination: 2.9 °
Azimuth: 40.6 °
VS: 5.85 '

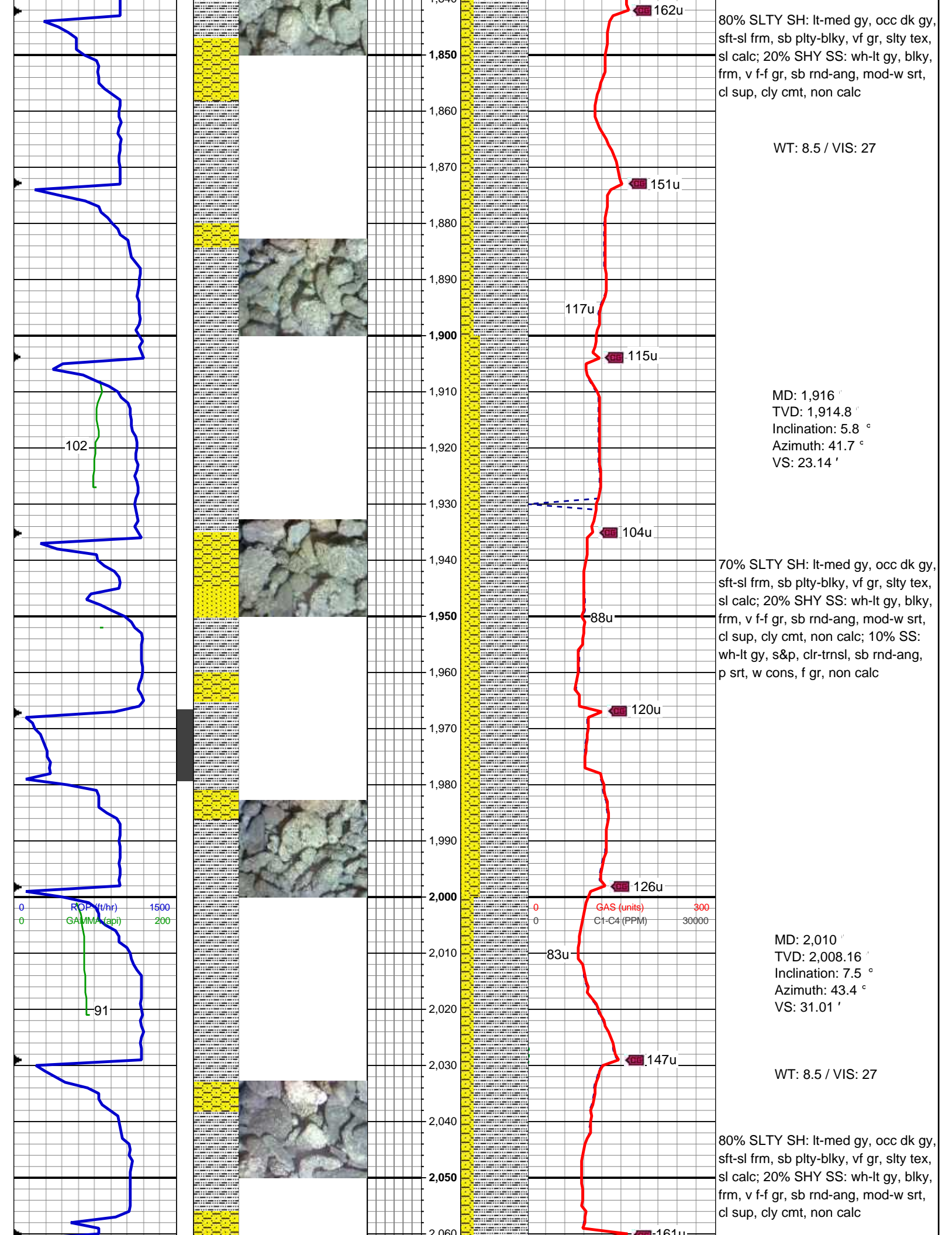
70% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl calc; 30% SHY SS: wh-lt gy, blky, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc

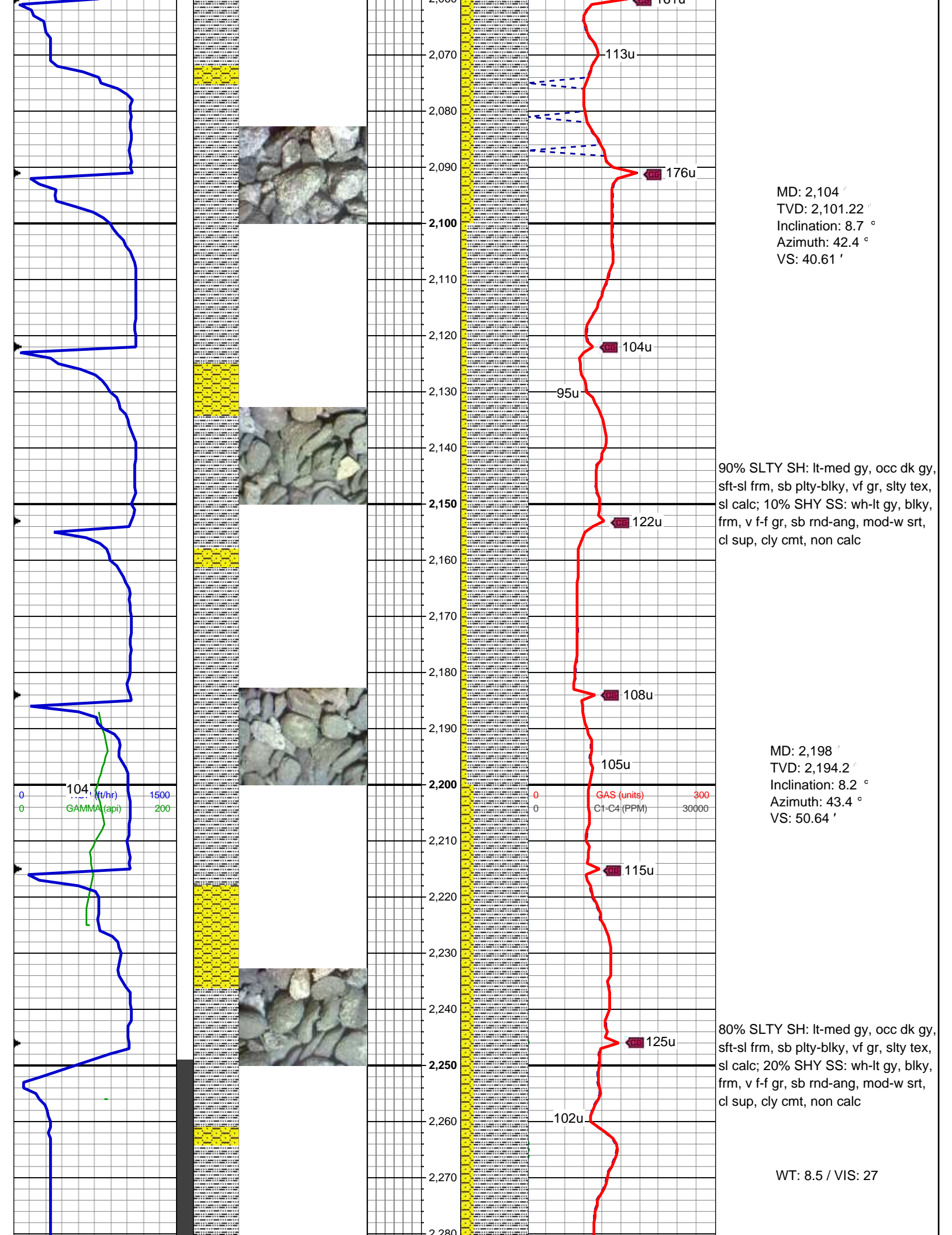
WT: 8.5 / VIS: 27

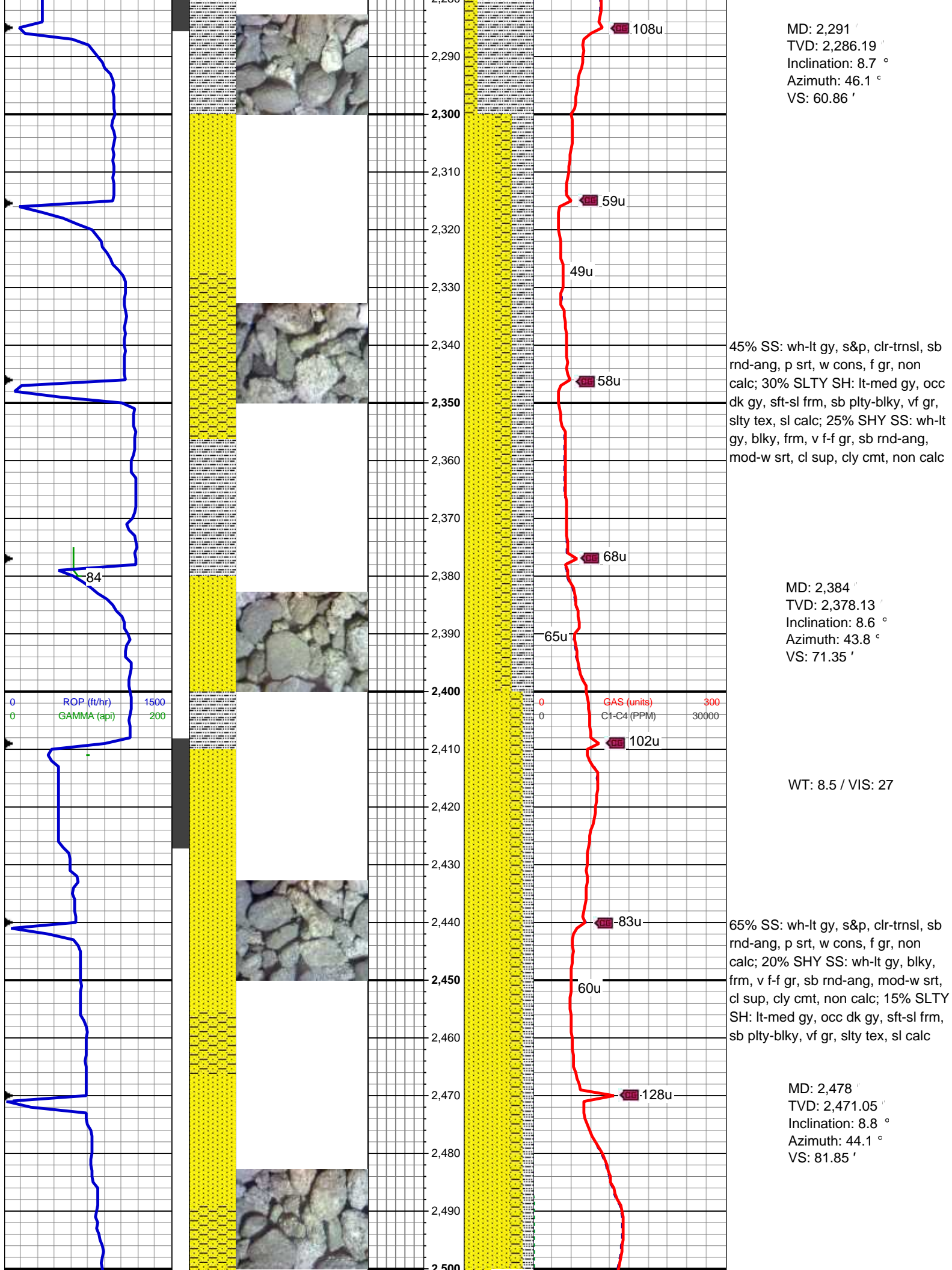
MD: 1,728 '
TVD: 1,727.7 '
Inclination: 4.1 °
Azimuth: 47.9 °
VS: 10.09 '

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, blky, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc

MD: 1,823 '
TVD: 1,822.31 '
Inclination: 6.2 °
Azimuth: 40.3 °
VS: 16.31 '







MD: 2,291 '
TVD: 2,286.19 '
Inclination: 8.7 °
Azimuth: 46.1 °
VS: 60.86 '

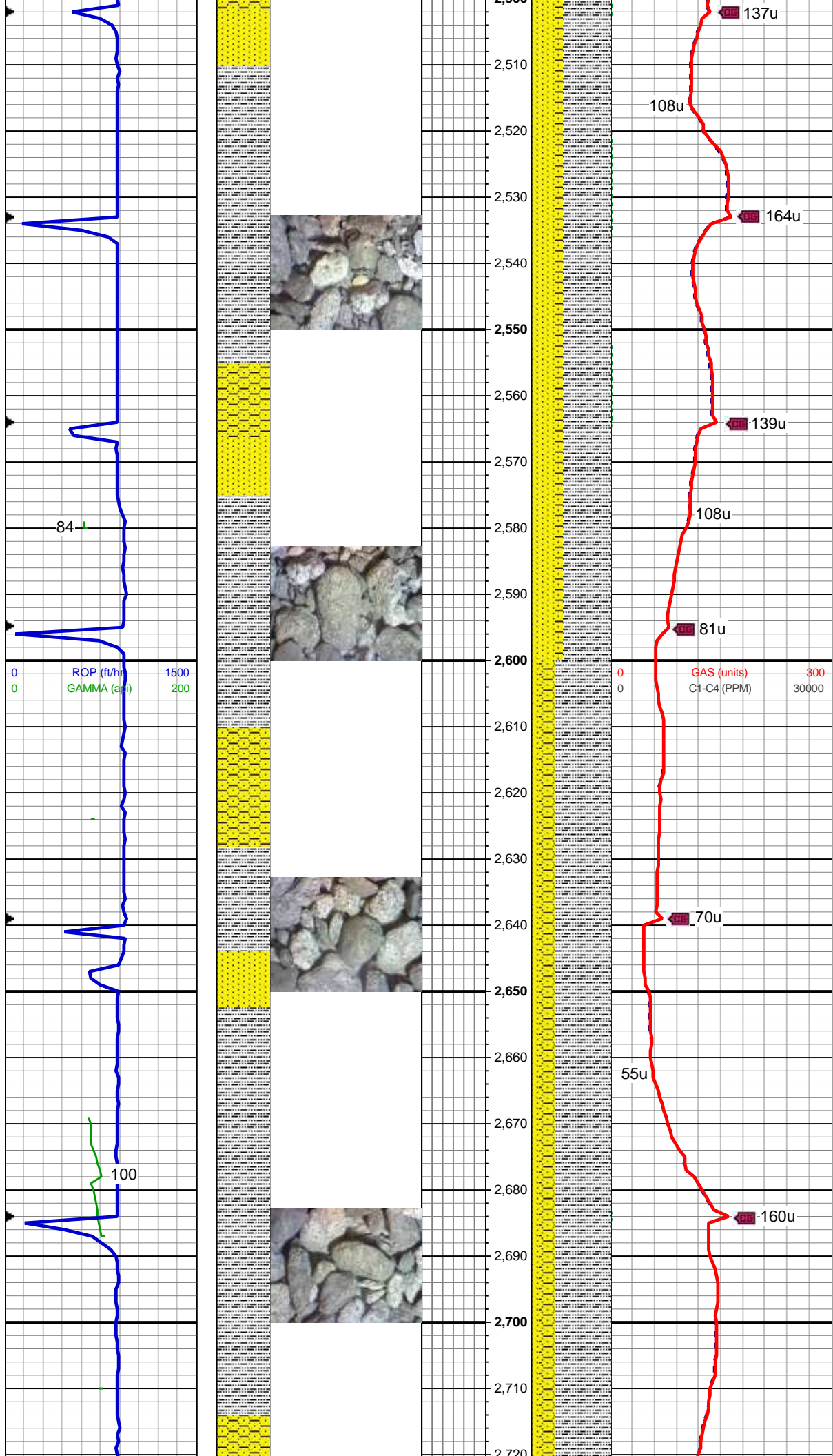
45% SS: wh-lt gy, s&p, clr-trnsl, sb rnd-ang, p srt, w cons, f gr, non calc; 30% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl calc; 25% SHY SS: wh-lt gy, blkgy, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc

MD: 2,384 '
TVD: 2,378.13 '
Inclination: 8.6 °
Azimuth: 43.8 °
VS: 71.35 '

WT: 8.5 / VIS: 27

65% SS: wh-lt gy, s&p, clr-trnsl, sb rnd-ang, p srt, w cons, f gr, non calc; 20% SHY SS: wh-lt gy, blkgy, 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: 2,478 '
TVD: 2,471.05 '
Inclination: 8.8 °
Azimuth: 44.1 °
VS: 81.85 '



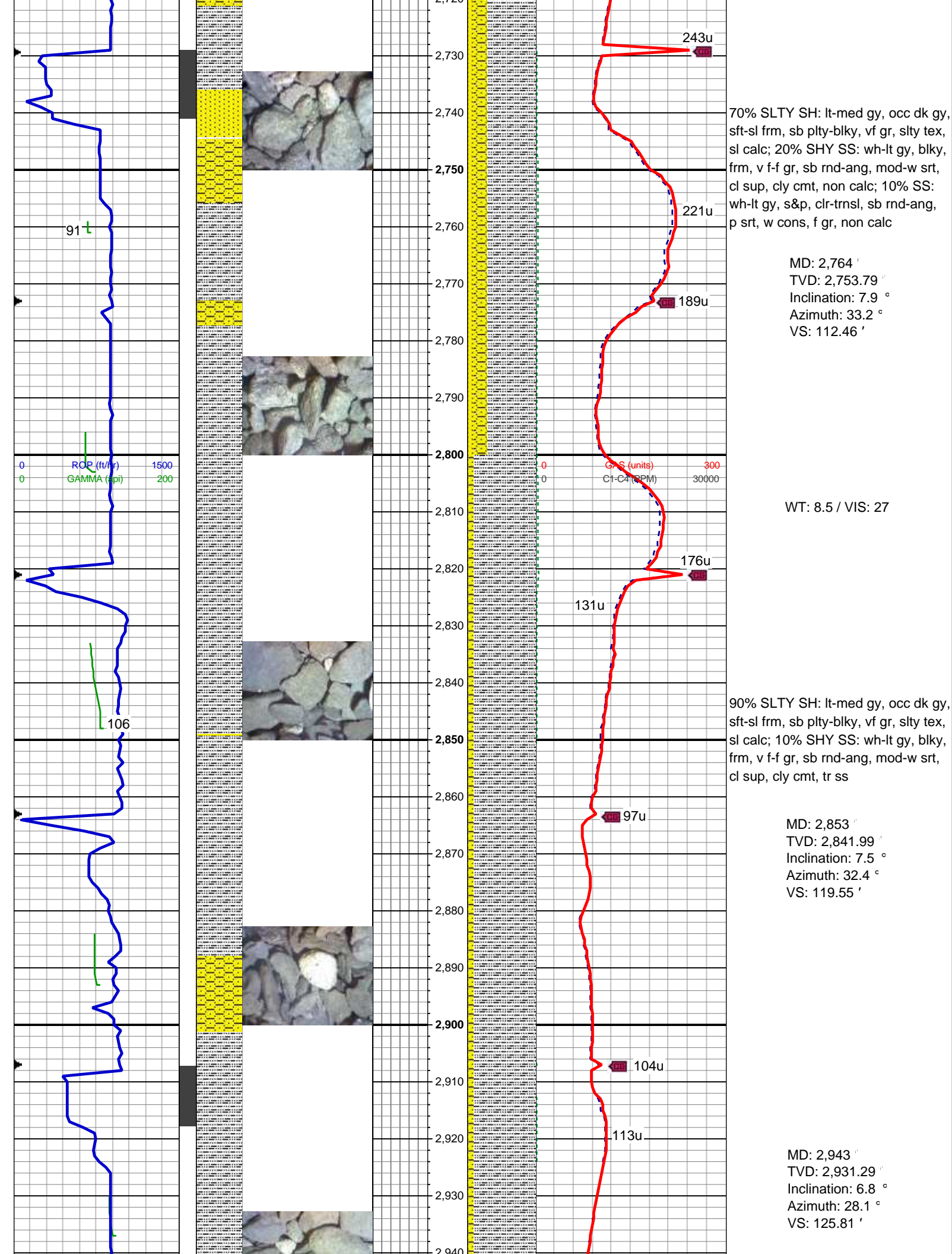
60% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl calc; 30% SS: wh-lt gy, s&p, cl-trnsl, sb rnd-ang, p srt, w cons, f gr, non calc; 10% SHY SS: wh-lt gy, blky, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc

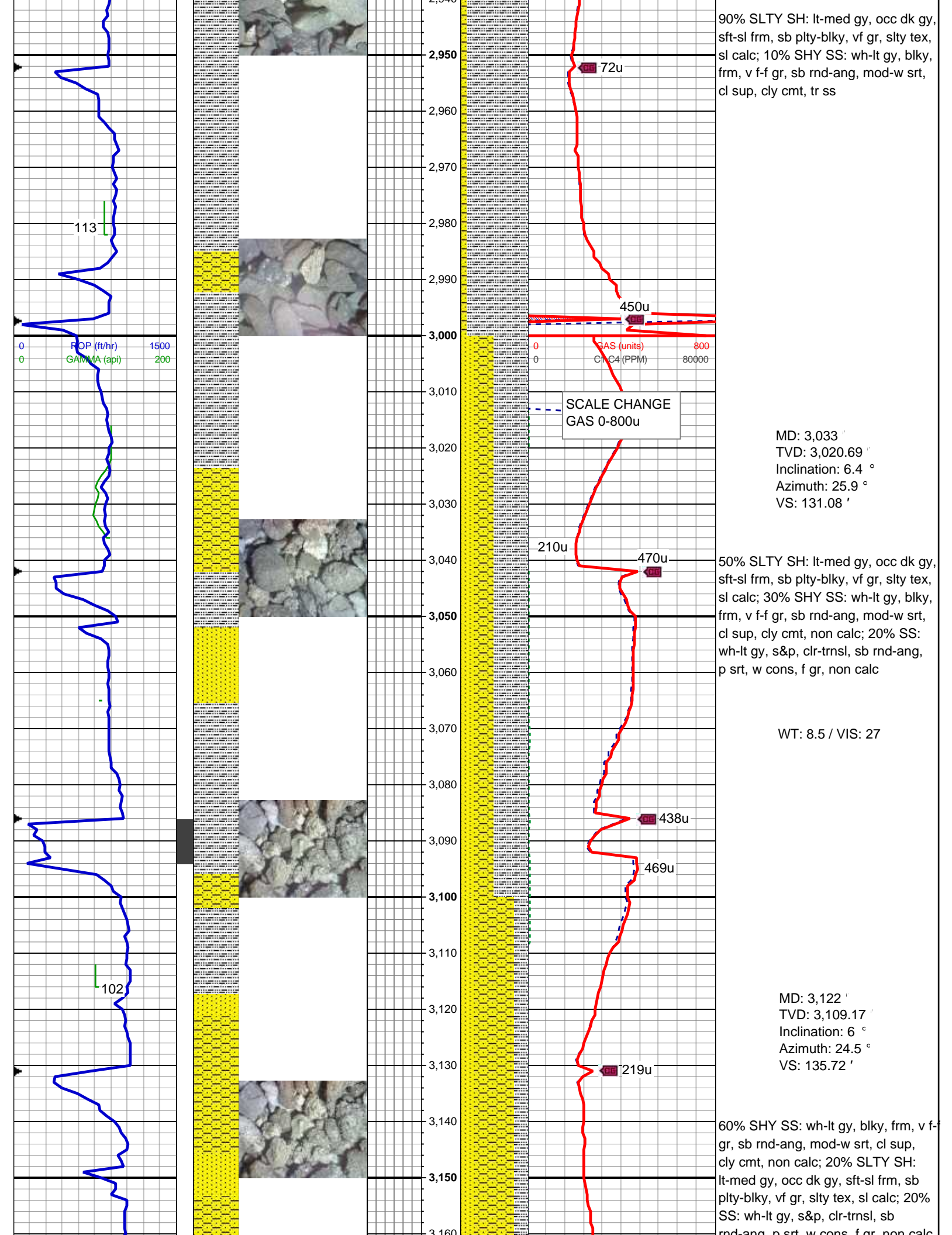
MD: 2,585 '
TVD: 2,576.78 '
Inclination: 8.9 °
Azimuth: 43.1 °
VS: 93.93 '

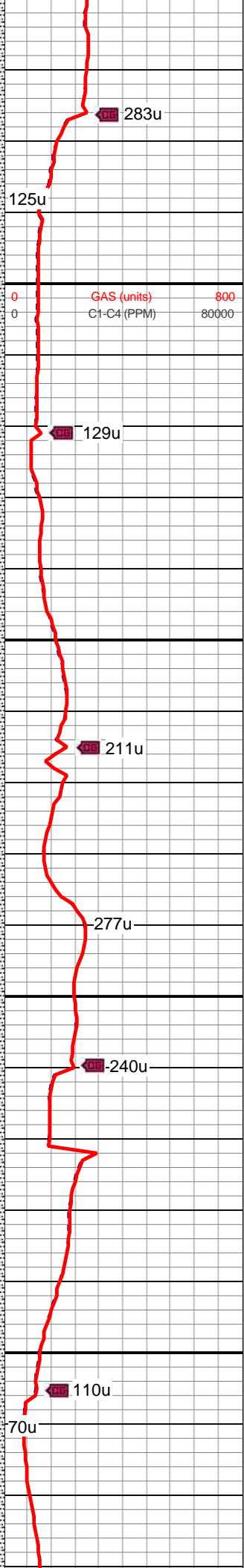
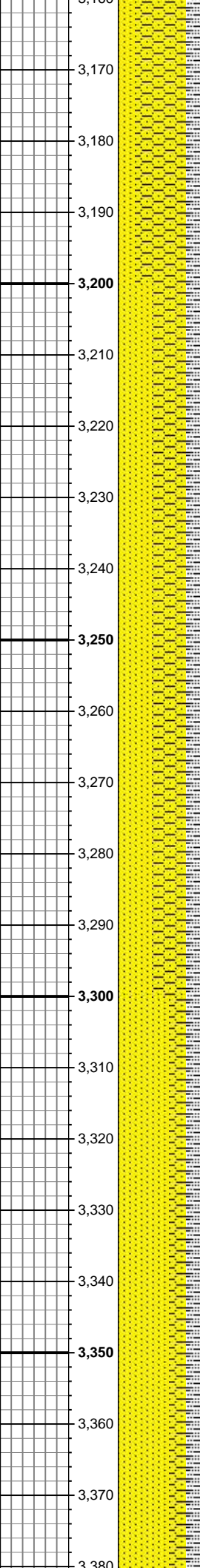
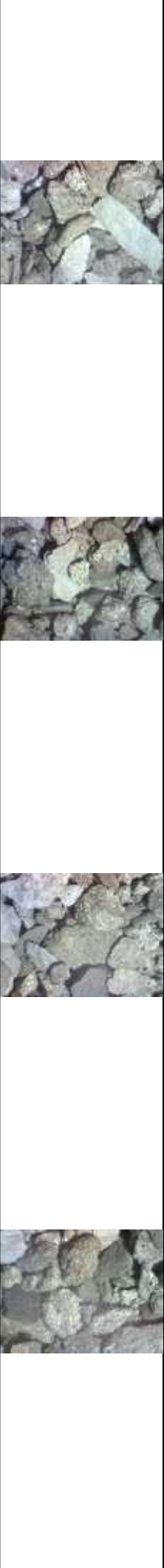
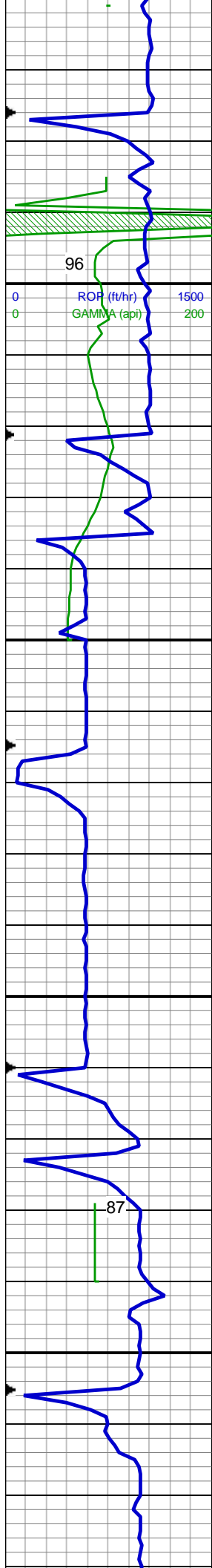
WT: 8.5 / VIS: 27

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, blky, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc; 10% SS: wh-lt gy, s&p, cl-trnsl, sb rnd-ang, p srt, w cons, f gr, non calc

MD: 2,674 '
TVD: 2,664.73 '
Inclination: 8.7 °
Azimuth: 42.8 °
VS: 103.82 '







mid-ang, p srt, w cons, f gr, non calc

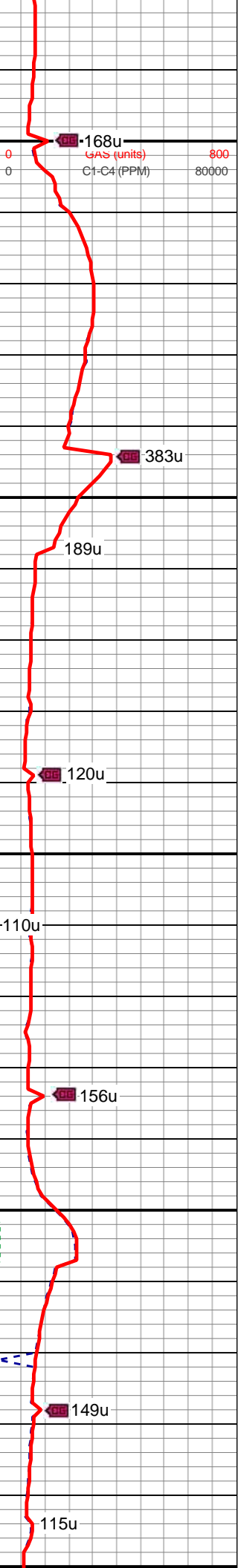
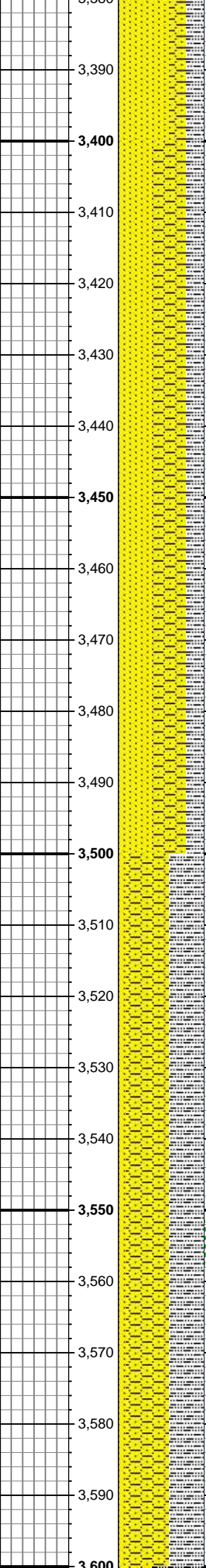
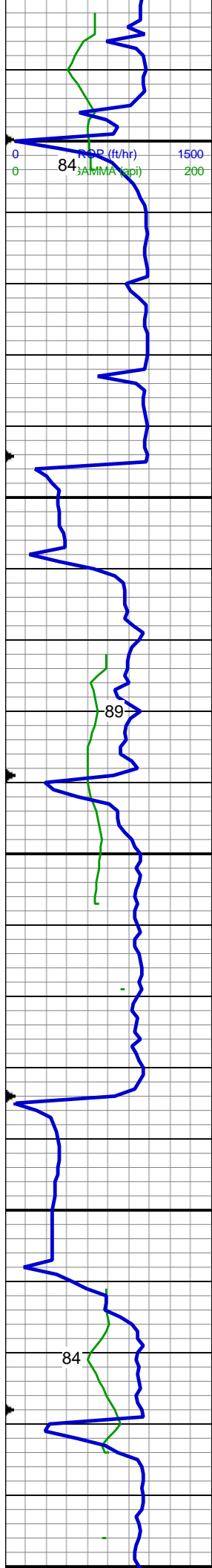
MD: 3,212 '
TVD: 3,198.69 '
Inclination: 5.9 °
Azimuth: 23.6 °
VS: 140.06 '

40% SHY SS: wh-lt gy, blk, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc; 40% SS: wh-lt gy, s&p, clr-trnsl, sb rnd-ang, p srt, w cons, f gr, non calc; 20% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl calc

WT: 8.5 / VIS: 27

MD: 3,302 '
TVD: 3,288.21 '
Inclination: 5.9 °
Azimuth: 20 °
VS: 144.03 '

60% SS: wh-lt gy, s&p, clr-trnsl, sb rnd-ang, p srt, w cons, f gr, non calc; 20% SHY SS: wh-lt gy, 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: 3,391 '
TVD: 3,376.74 '
Inclination: 5.9 °
Azimuth: 19.7 °
VS: 147.68 '

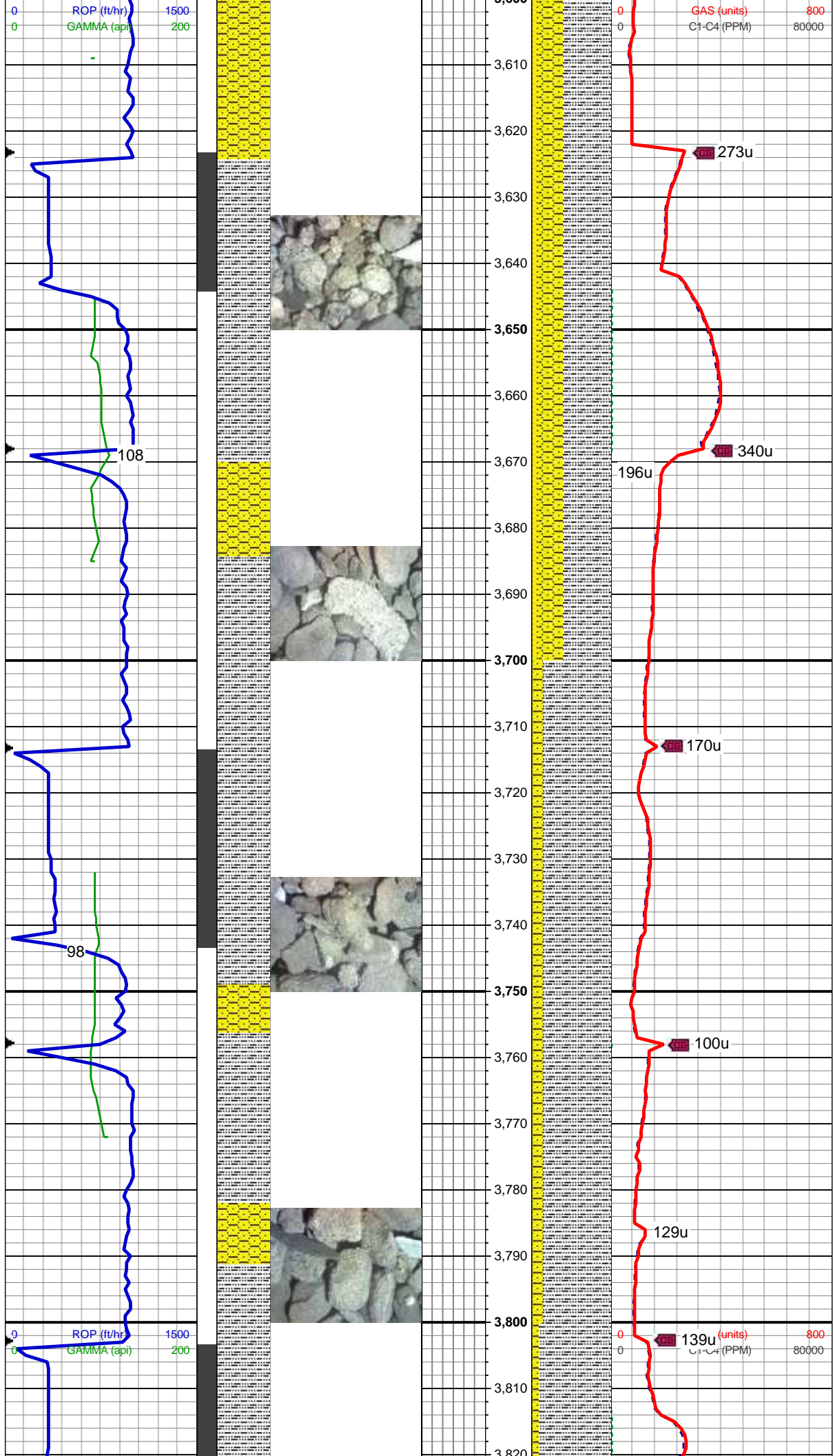
WT: 8.5 / VIS: 27

40% SS: wh-lt gy, s&p, clr-trnsl, sb rnd-ang, p srt, w cons, f gr, non calc; 40% SHY SS: wh-lt gy, 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: 3,481 '
TVD: 3,466.35 '
Inclination: 4.7 °
Azimuth: 18.3 °
VS: 150.89 '

50% SHY SS: wh-lt gy, 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 plty-blky, vf gr, slty tex, sl calc 10% SS: wh-lt gy, s&p, clr-trnsl, sb rnd-ang, p srt, w cons, f gr, non calc

MD: 3,570 '
TVD: 3,555.06 '
Inclination: 4.7 °
Azimuth: 40.6 °
VS: 154.79 '



WT: 8.5 / VIS: 27

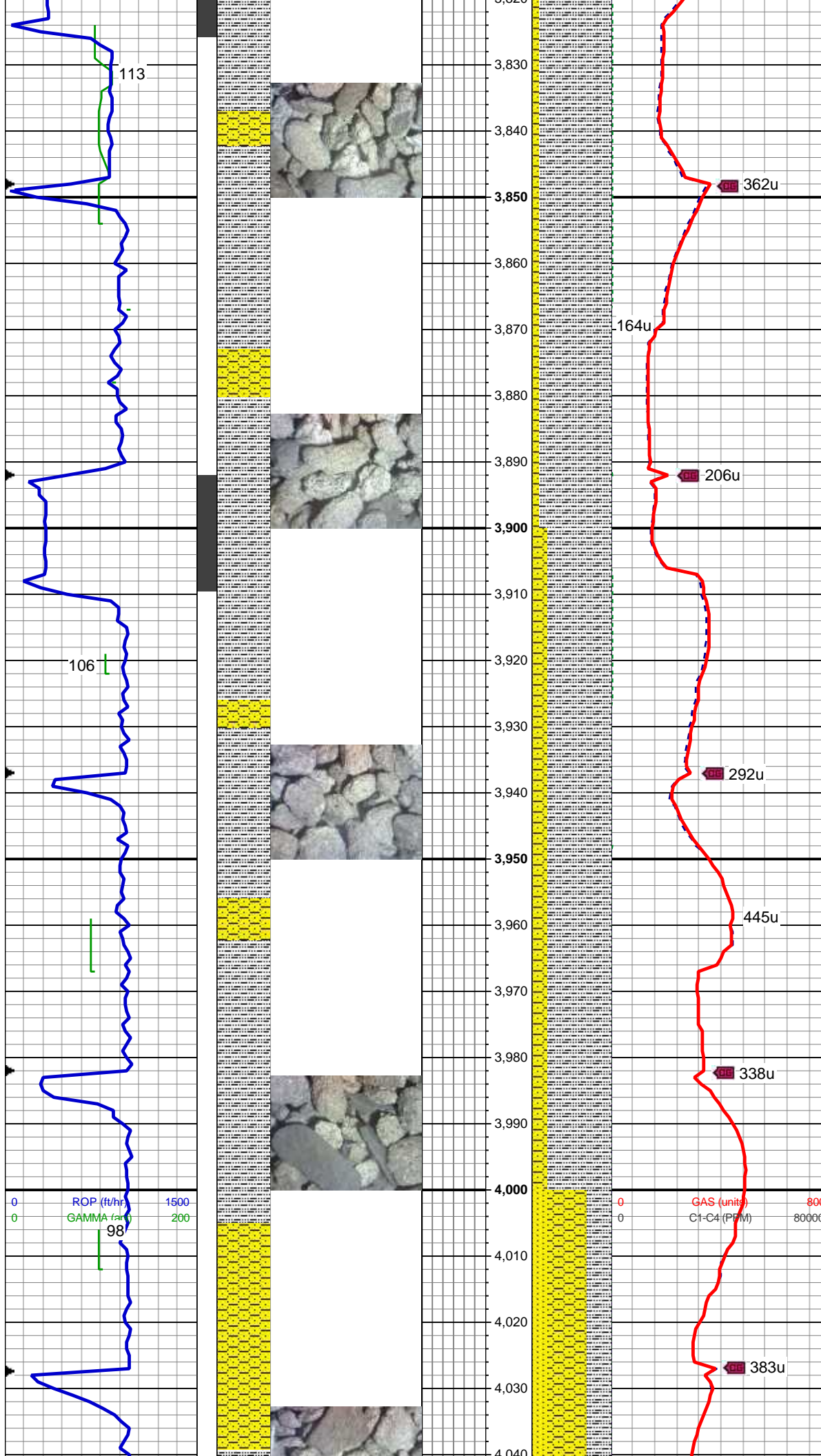
60% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl calc; 30% SHY SS: wh-lt gy, blkly, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc; 10% SS: wh-lt gy, s&p, clr-trnsl, sb rnd-ang, p srt, w cons, f gr, non calc

MD: 3,660 '
TVD: 3,644.84 '
Inclination: 3.4 °
Azimuth: 45.6 °
VS: 159.39 '

MD: 3,750 '
TVD: 3,734.76 '
Inclination: 1.8 °
Azimuth: 333.7 °
VS: 160.87 '

85% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl calc; 15% SHY SS: wh-lt gy, blkly, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc

WT: 8.5 / VIS: 27



MD: 3,840 '
TVD: 3,824.74 '
Inclination: 0.7 °
Azimuth: 49.8 °
VS: 160.76 '

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

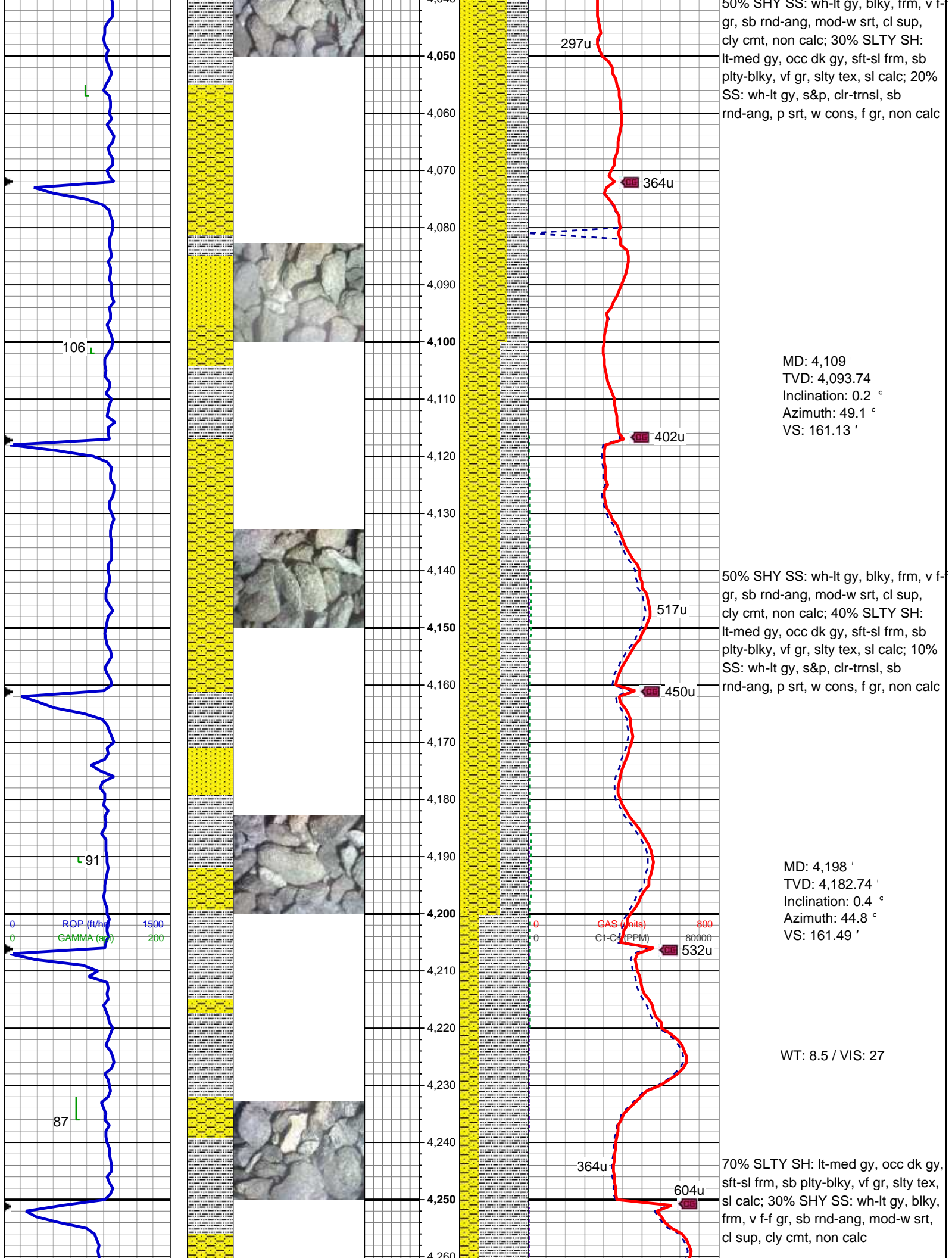
MD: 3,929 '
TVD: 3,913.74 '
Inclination: 0.6 °
Azimuth: 185.7 °
VS: 161.12 '

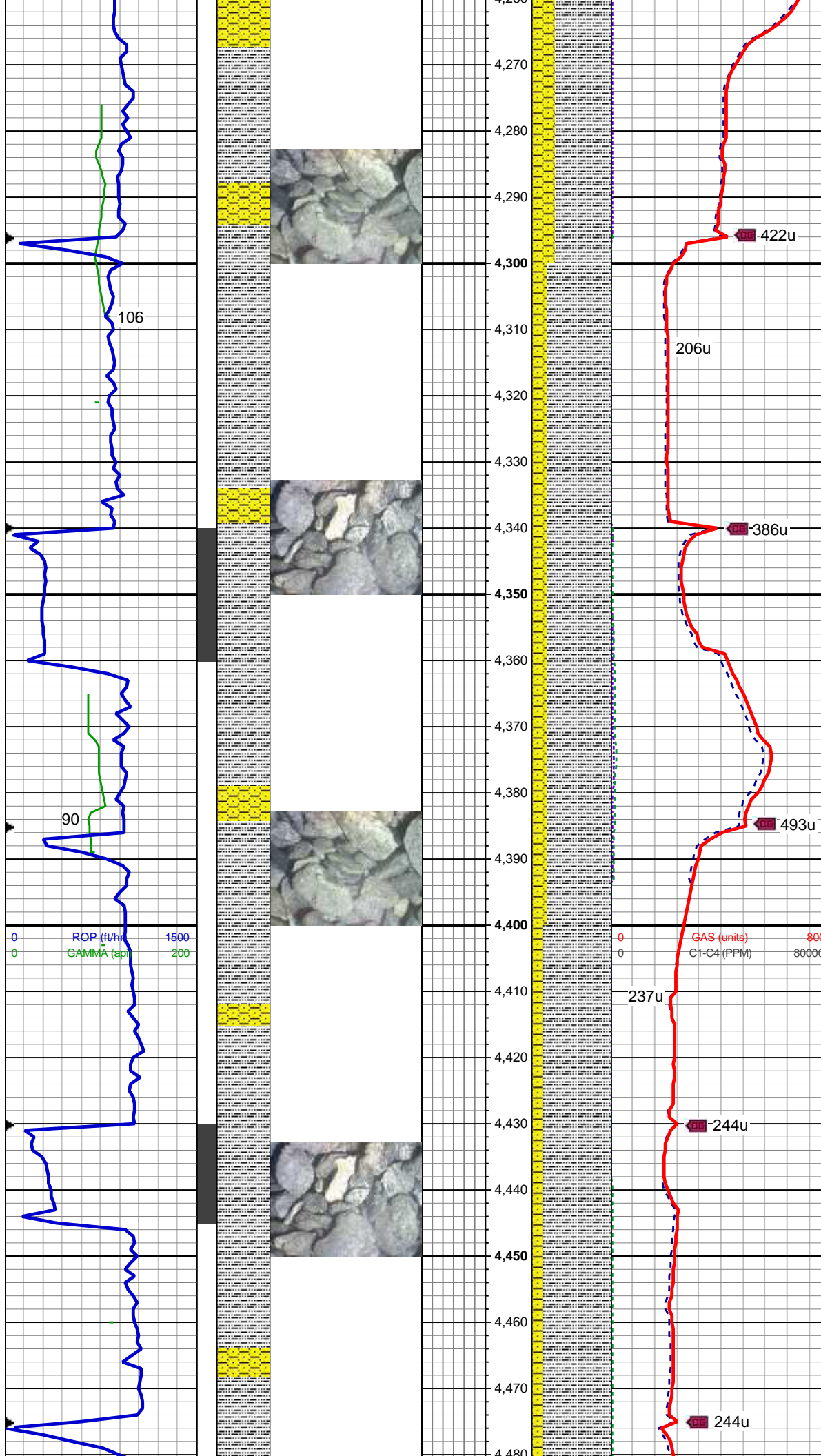
80% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl calc; 20% SHY SS: wh-lt gy, blkly, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc

WT: 8.5 / VIS: 27

MD: 4,019 '
TVD: 4,003.74 '
Inclination: 0.1 °
Azimuth: 190.3 °
VS: 161.03 '

50% SHY SS: wh-lt gy, blkly, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc





MD: 4,288 '
TVD: 4,272.73 '
Inclination: 0.7 °
Azimuth: 53.3 °
VS: 162.19 '

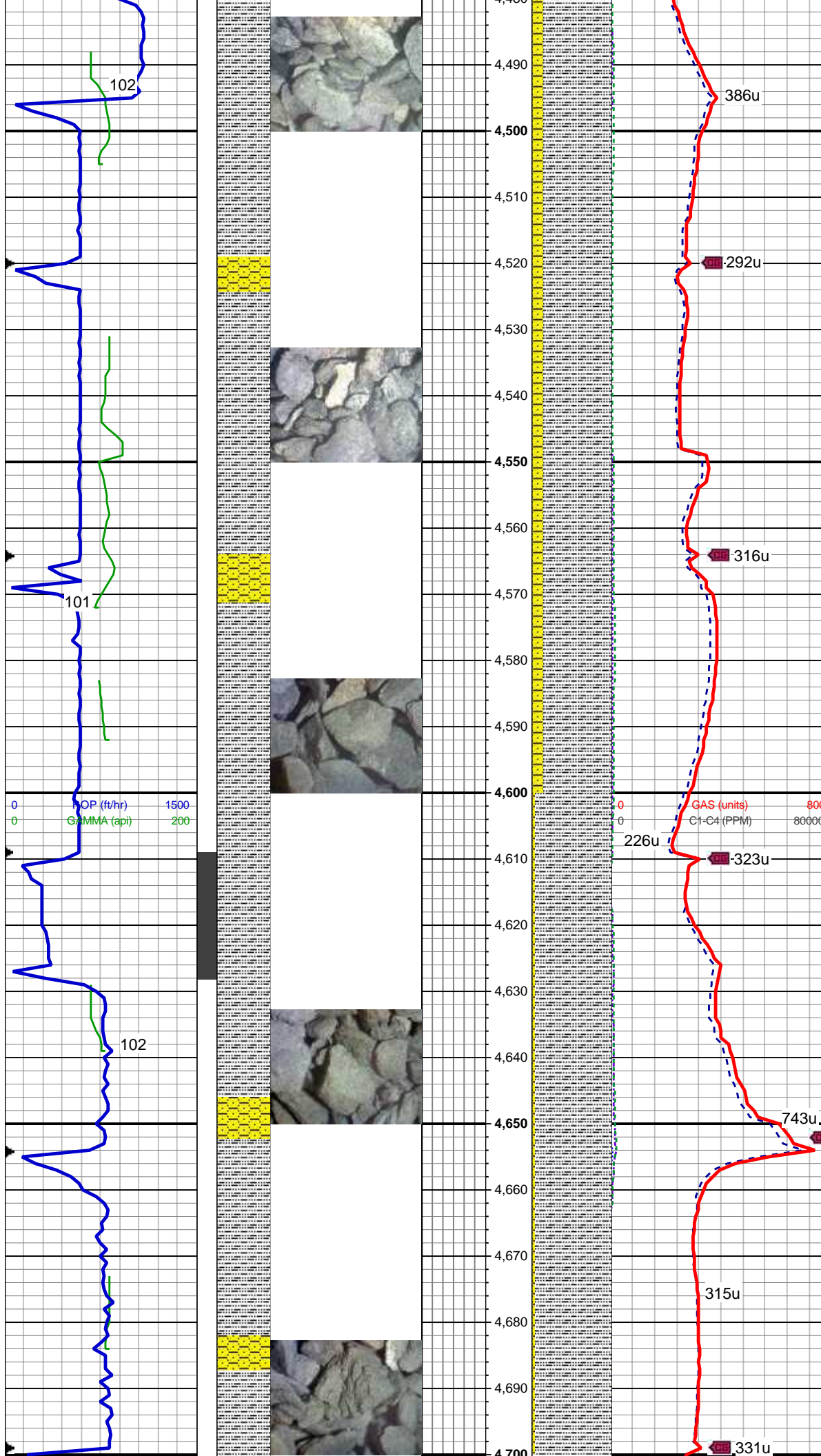
80% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl calc; 20% SHY SS: wh-lt gy, blkly, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc

MD: 4,377 '
TVD: 4,361.72 '
Inclination: 1.6 °
Azimuth: 126.3 °
VS: 163.59 '

WT: 8.5 / VIS: 27

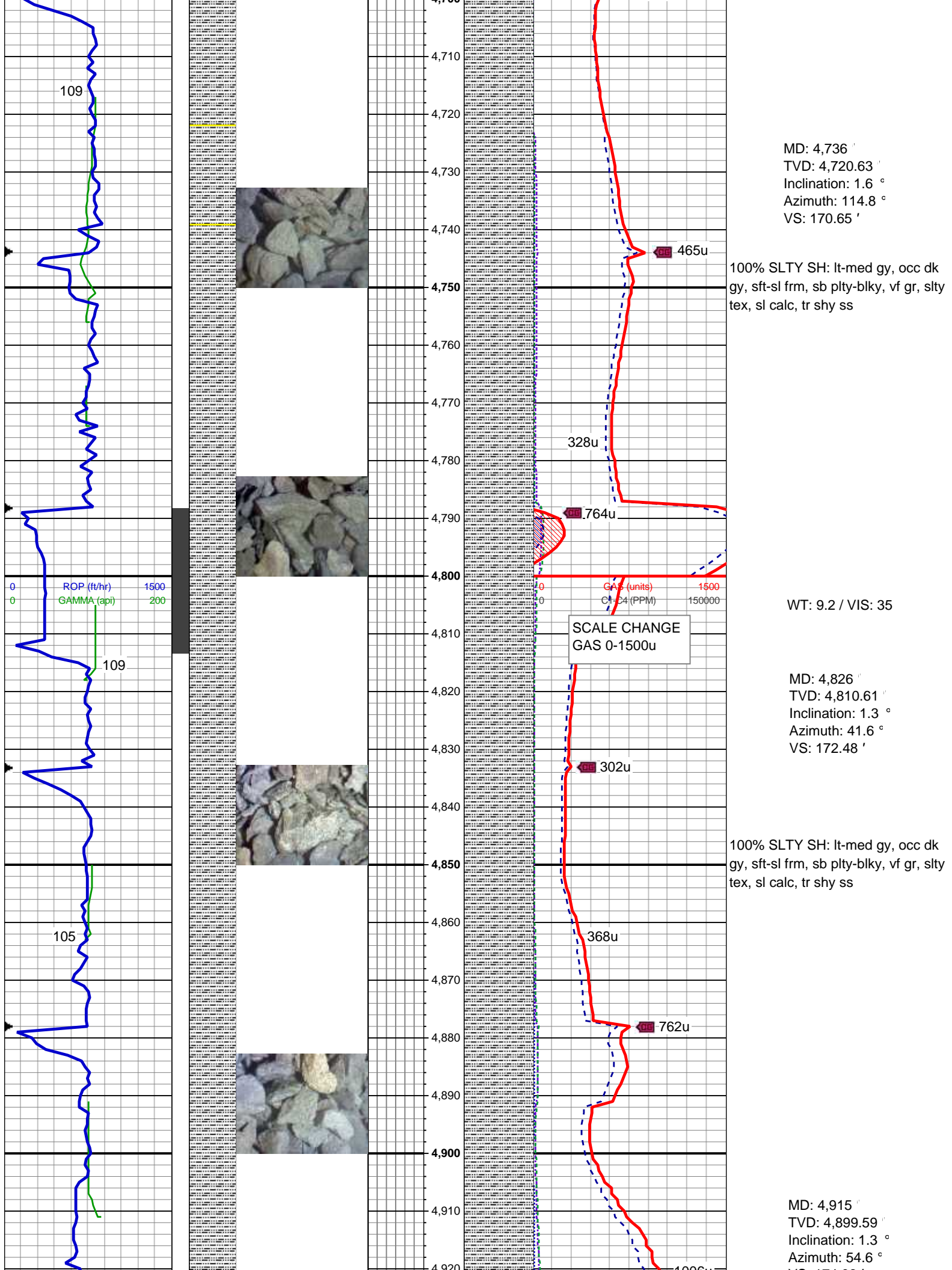
85% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl calc; 15% SHY SS: wh-lt gy, blkly, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc

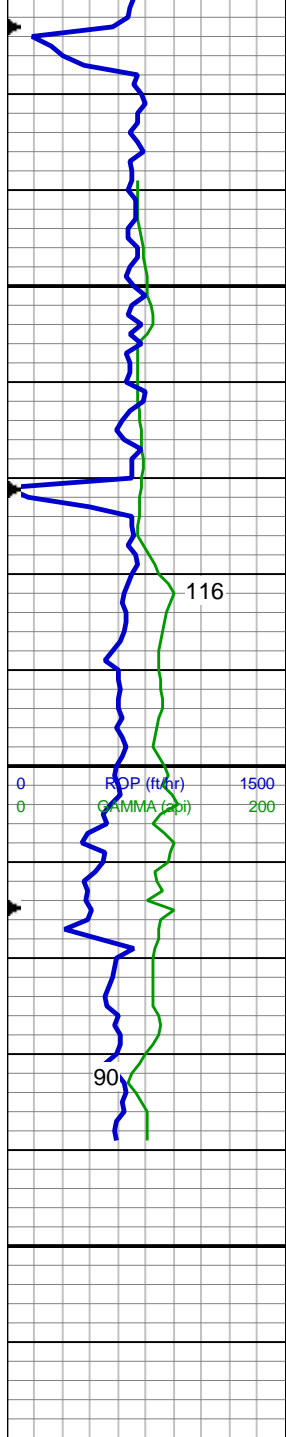
MD: 4,467 '
TVD: 4,451.69 '
Inclination: 1.1 °
Azimuth: 95.7 °
VS: 165.41 '



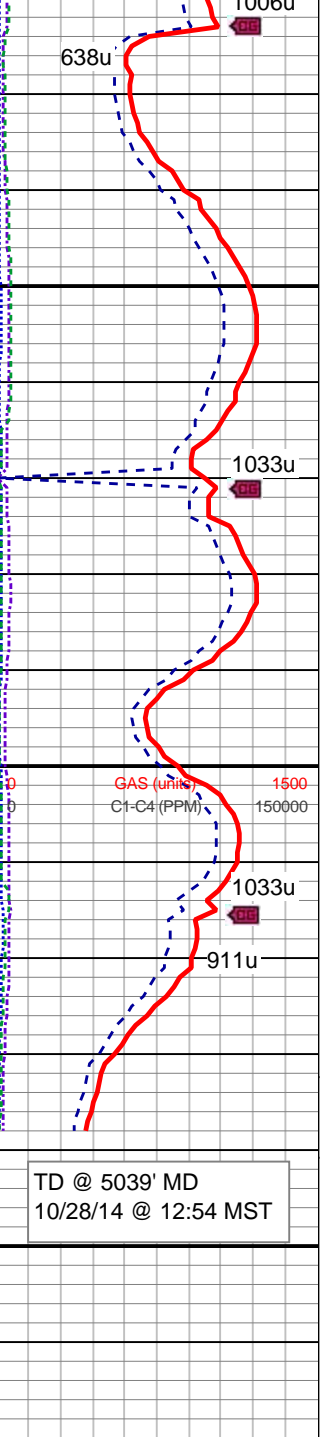
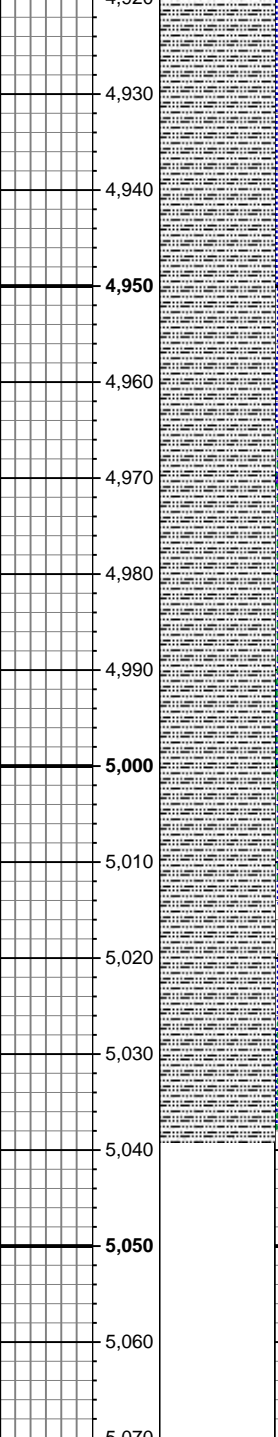
85% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl calc; 15% SHY SS: wh-lt gy, blky, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc

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, blky, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc





Log continues on Rohn State LD10-65-1HN_Horizontal



VS: 174.06 '
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: 5,005 '
TVD: 4,989.56 '
Inclination: 1.3 °
Azimuth: 52.8 °
VS: 175.78 '
WT: 9.2 / VIS: 35
100% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl calc, tr shy ss
Log Continues on Rohn State LD10-65-1HN_Horizontal
TD @ 5039' MD
10/28/14 @ 12:54 MST
Thank you for using
Columbine Logging, Inc.