

COLUMBINE LOGGING

Scale: 5" / 100'
Measured Depth Log

Well Name Oscar Y10-77HN

Location NESW SEC10 T2N R64W

State COLORADO

County WELD

Country USA

Rig Number PRECISION 828

API Number 05-123-38198

AFE # 138752

Region DENVER-JULESBURG BASIN

Field WATTENBERG

Spud Date 4/19/2014

Drilling Completed 4/28/2014

Surface Coordinates 2380' FSL, 1980' FWL

Lat/Long: 40.15224/-104.53999

Ground Elevation 4930'

K.B. Elevation 4946'

Logged Interval 1177' **To** 14600'

Total Depth 14600'

Formation FOX HILLS, PIERRE, PARKMAN, SUSSEX, SHANNON, TEEPEE BUTTES

Type of Drilling Fl... LSND

Operator

Company NOBLE ENERGY INC.

Address 1625 Broadway
Denver, CO 80202

Geologist

Name EVAN HOWELL

Company NOBLE ENERGY, INC.

Address 1625 Broadway
Denver, CO 80202

Other

Wellsite Geologists: GARY MYERS, TED STOCKWELL

Rock Types

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

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
MICACEOUS
MINERAL CRYSTALS
NODULES
PHOSPHATE PELLETS
PYRITE
SALT CAST
SANDY
SILICEOUS
SILTY

ANHYDRITE STRINGER
BENTONITE STRINGER
COAL STRINGER
DOLOMITE STRINGER
GYPSUM 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
F FENESTRAL
F FRACTURE
X INTERCRYSTALLINE
O INTEROOLITIC
M MOLDIC

ORGANIC
P PINPOINT
V 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

A ANGULAR
R ROUNDED
S SUBANG
S SUBRND

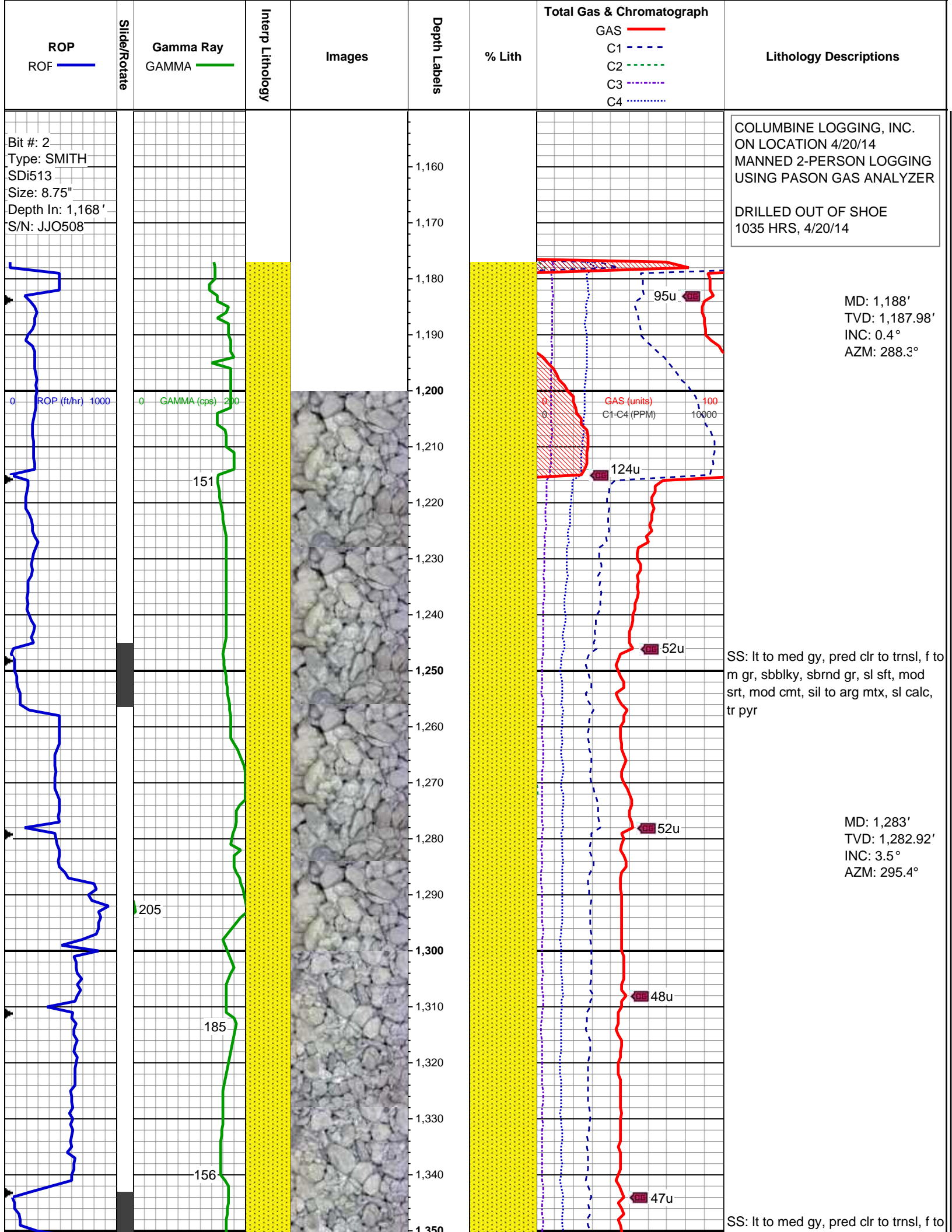
Textures

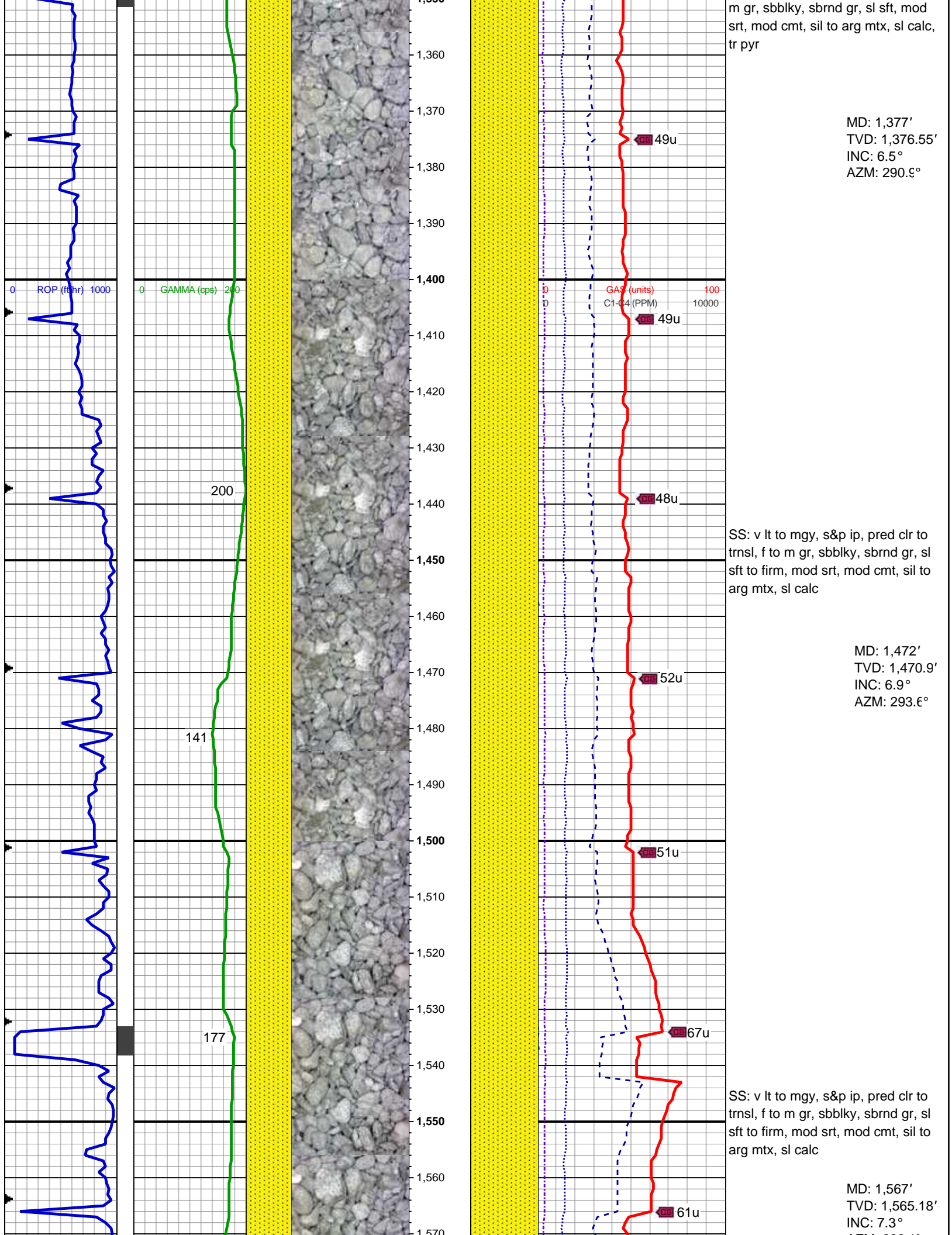
B BOUNDSTONE
C CHALKY
C CRYPTOXLN

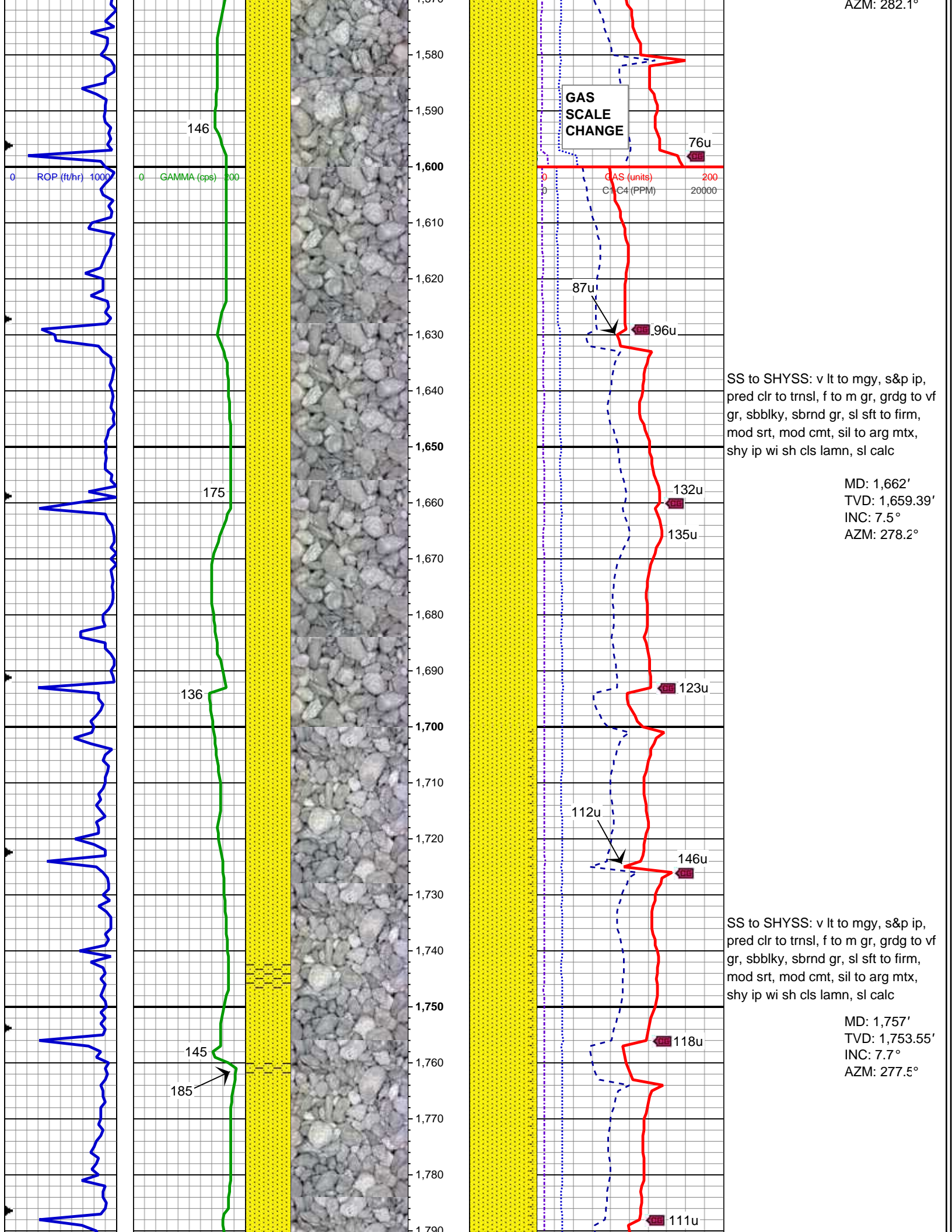
E EARTHY
F FINELYXLN
G GRAINSTONE
L LITHOGRAPHIC
M MICROXLN
M MUDSTONE
P PACKSTONE
W WACKESTONE

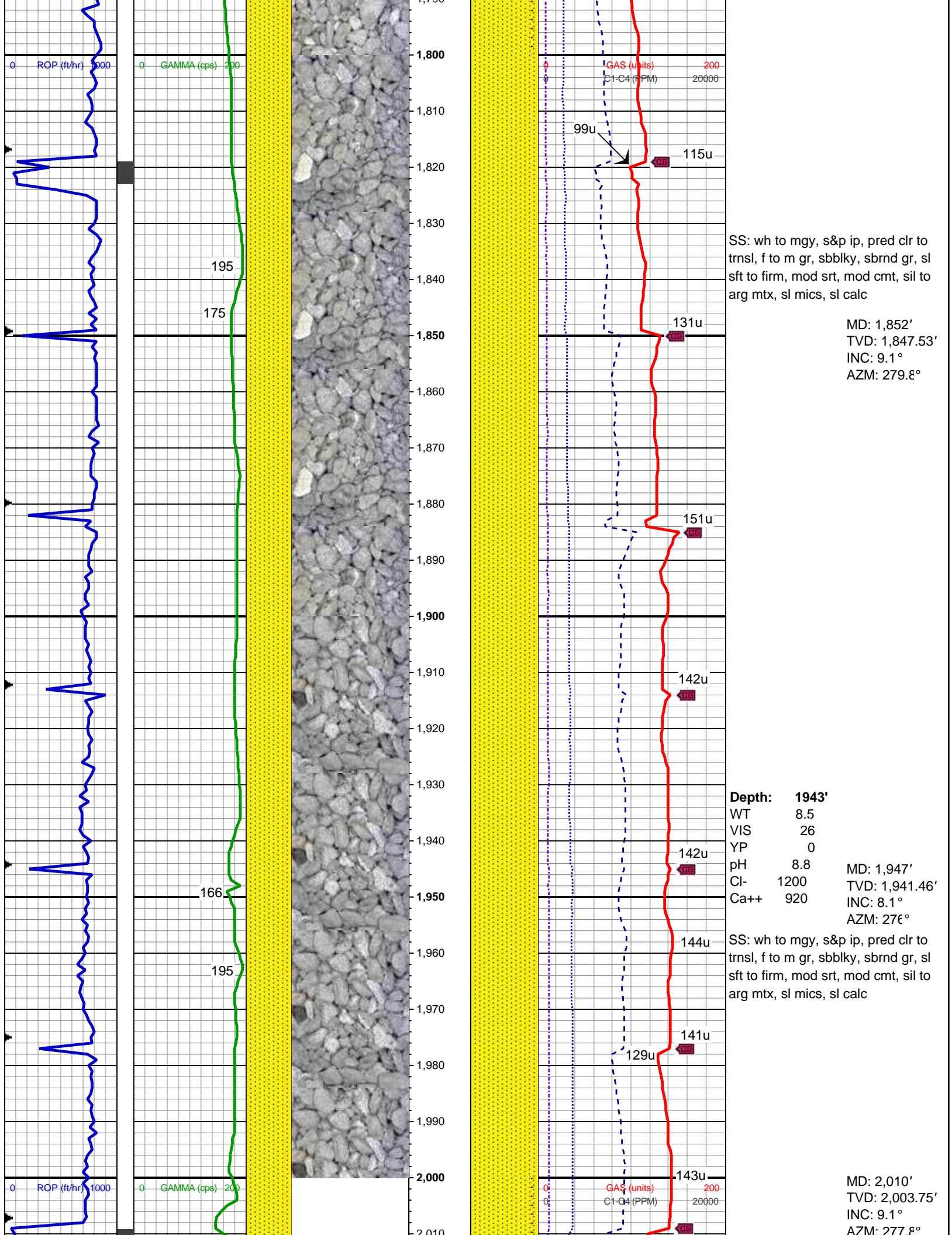
Sorting

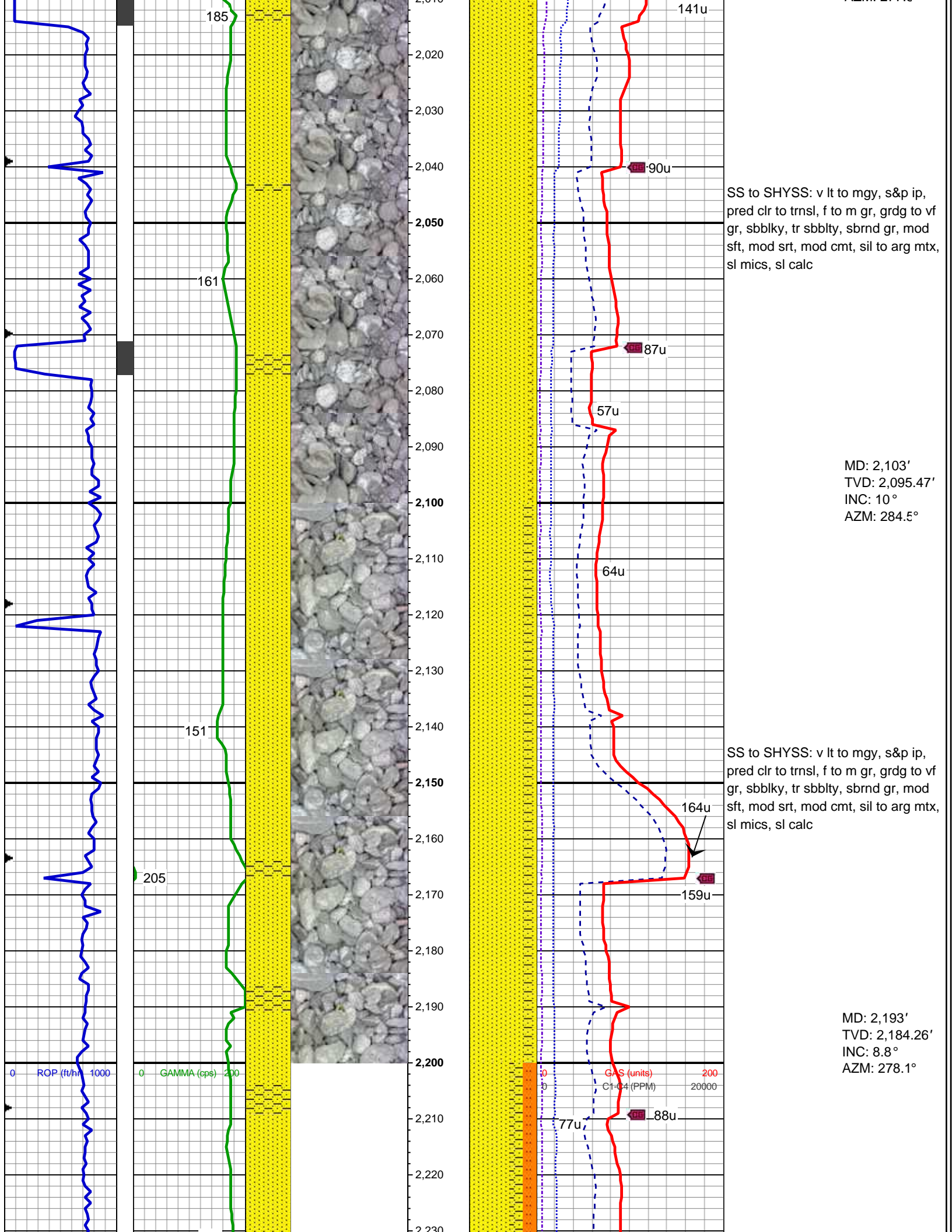
M MODERATE
P POOR
W WELL

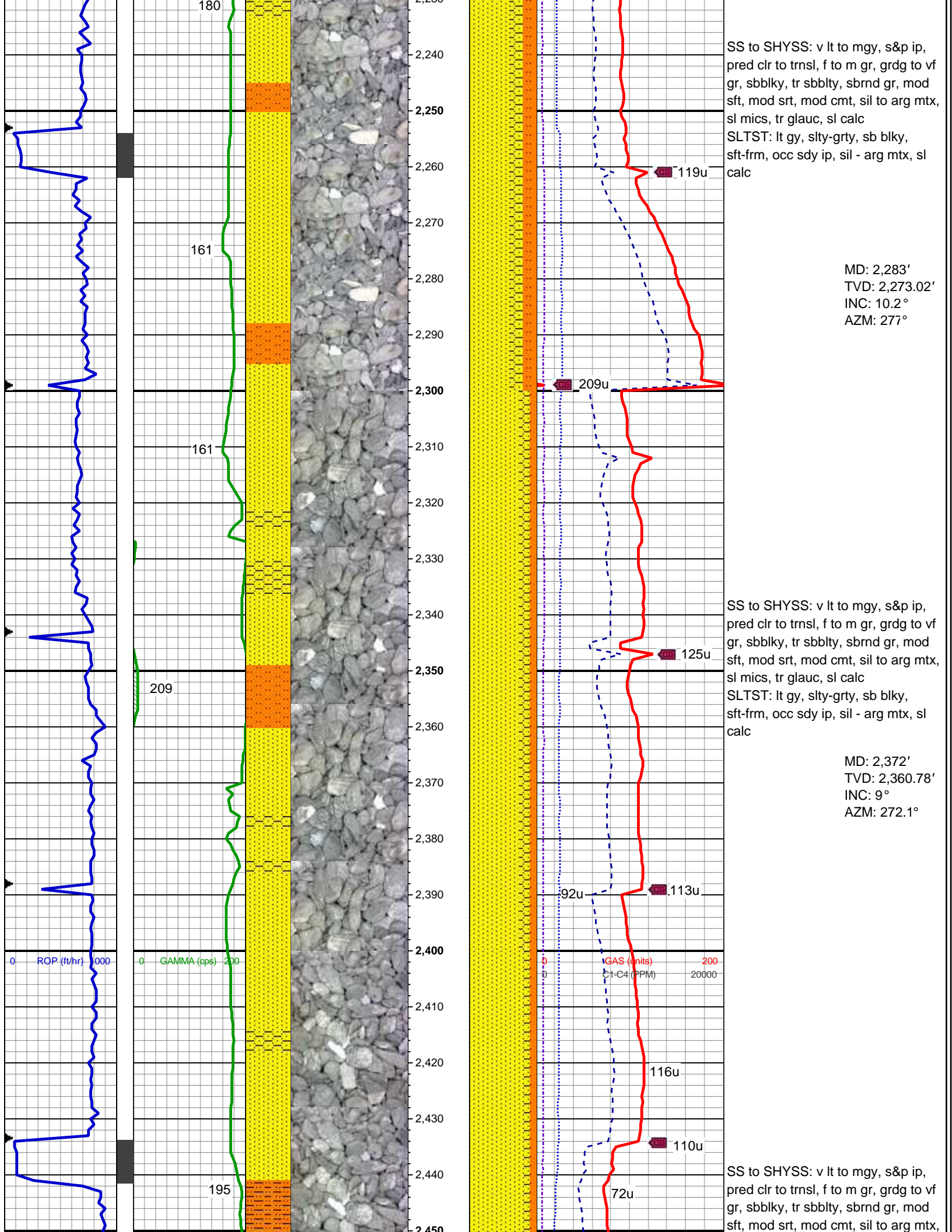


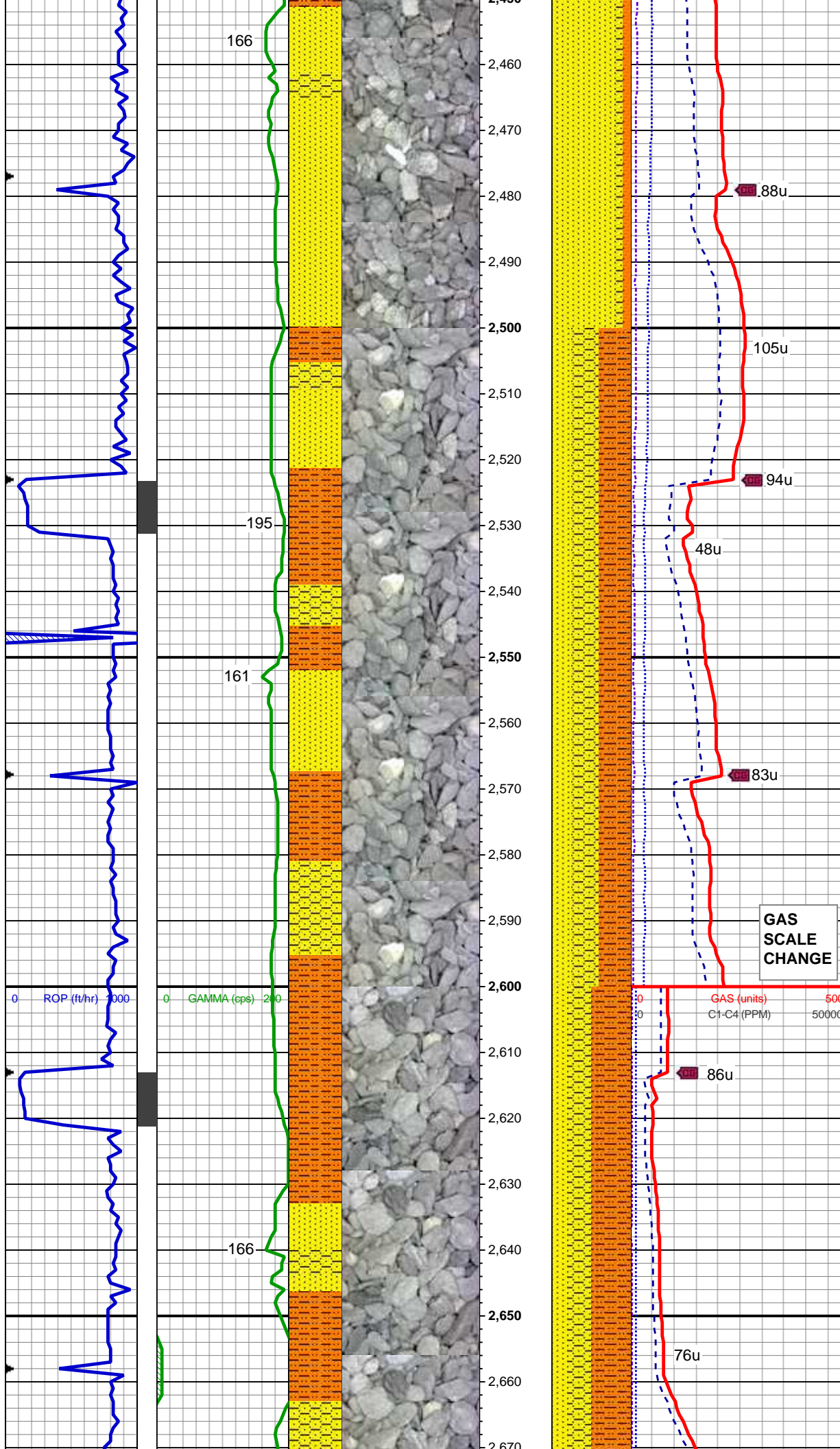










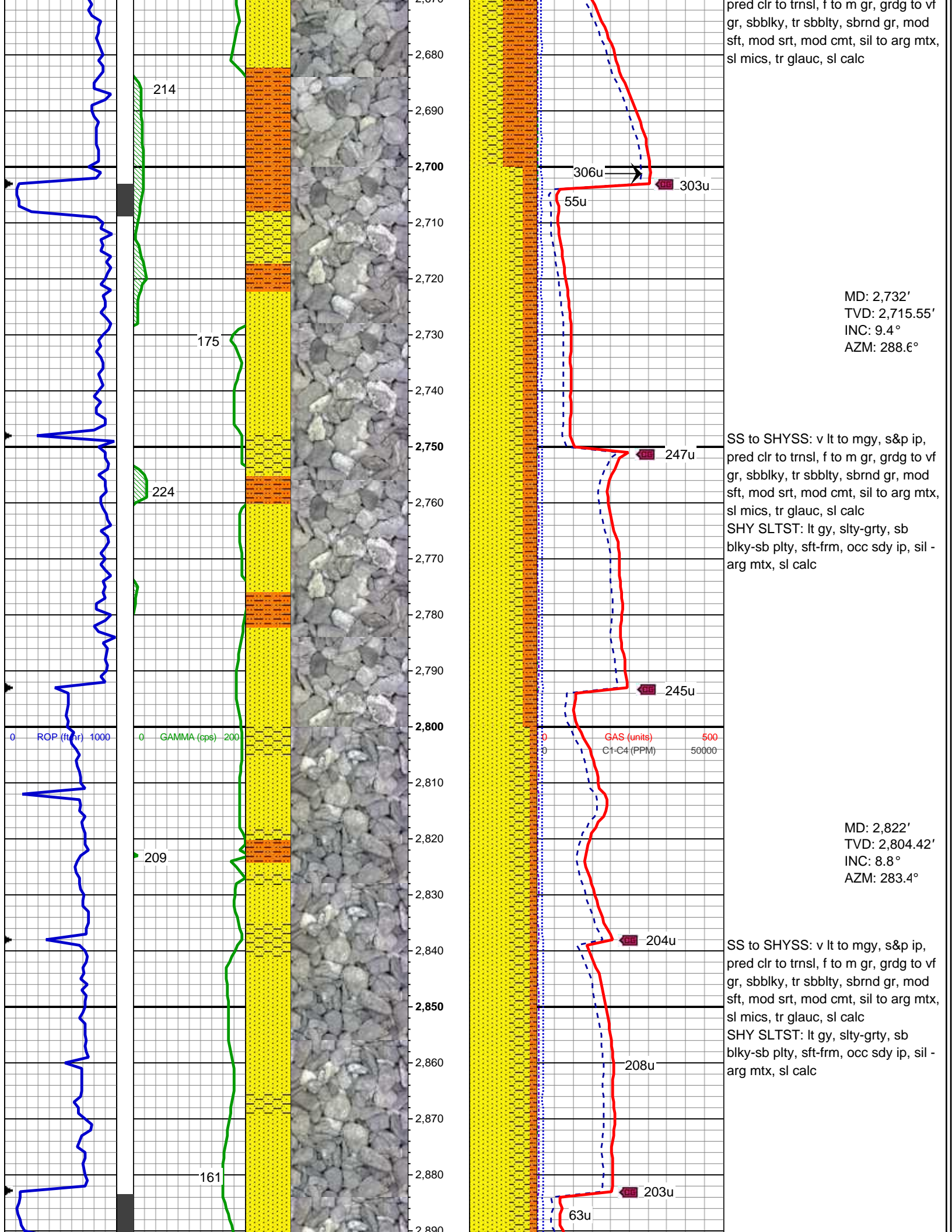


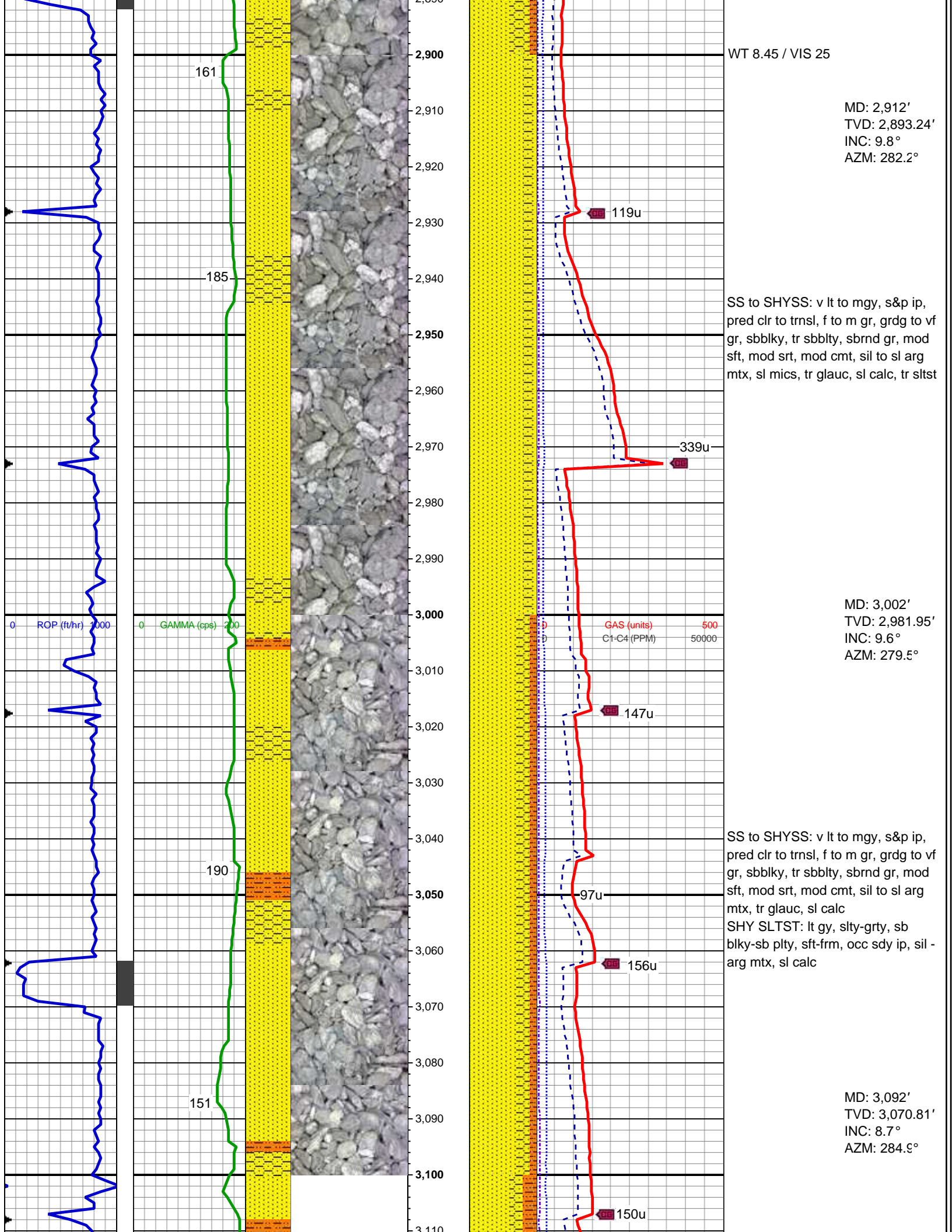
sl mics, tr glauc, sl calc
SLTST: lt gy, slty-grty, sb blkly,
sft-frm, occ sdy ip, sil - arg mtx, sl
calc
MD: 2,462'
TVD: 2,449.5'
INC: 10.3°
AZM: 272.2°

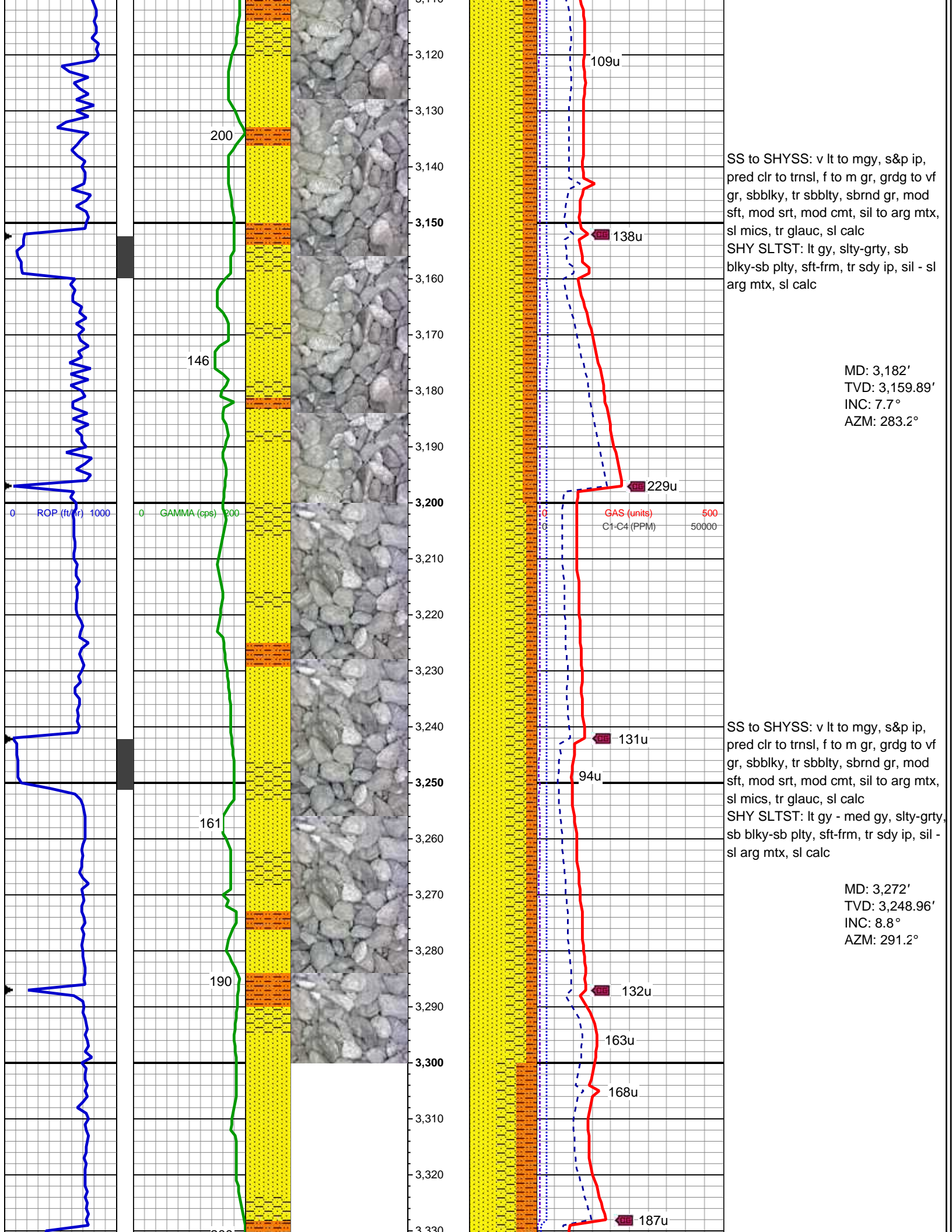
SHY SLTST: lt gy, slty-grty, sb blkly -
sb plty, sft-frm, occ sdy ip, sil - arg
mtx, sl calc
SS to SHYSS: v lt to mgy, s&p ip,
pred clr to trnsl, f to m gr, grdg to vf
gr, sbblkly, tr sbbly, sbrnd gr, mod
sft, mod srt, mod cmt, sil to arg mtx,
sl mics, tr glauc, sl calc
MD: 2,552'
TVD: 2,538.12'
INC: 9.8°
AZM: 277.5°

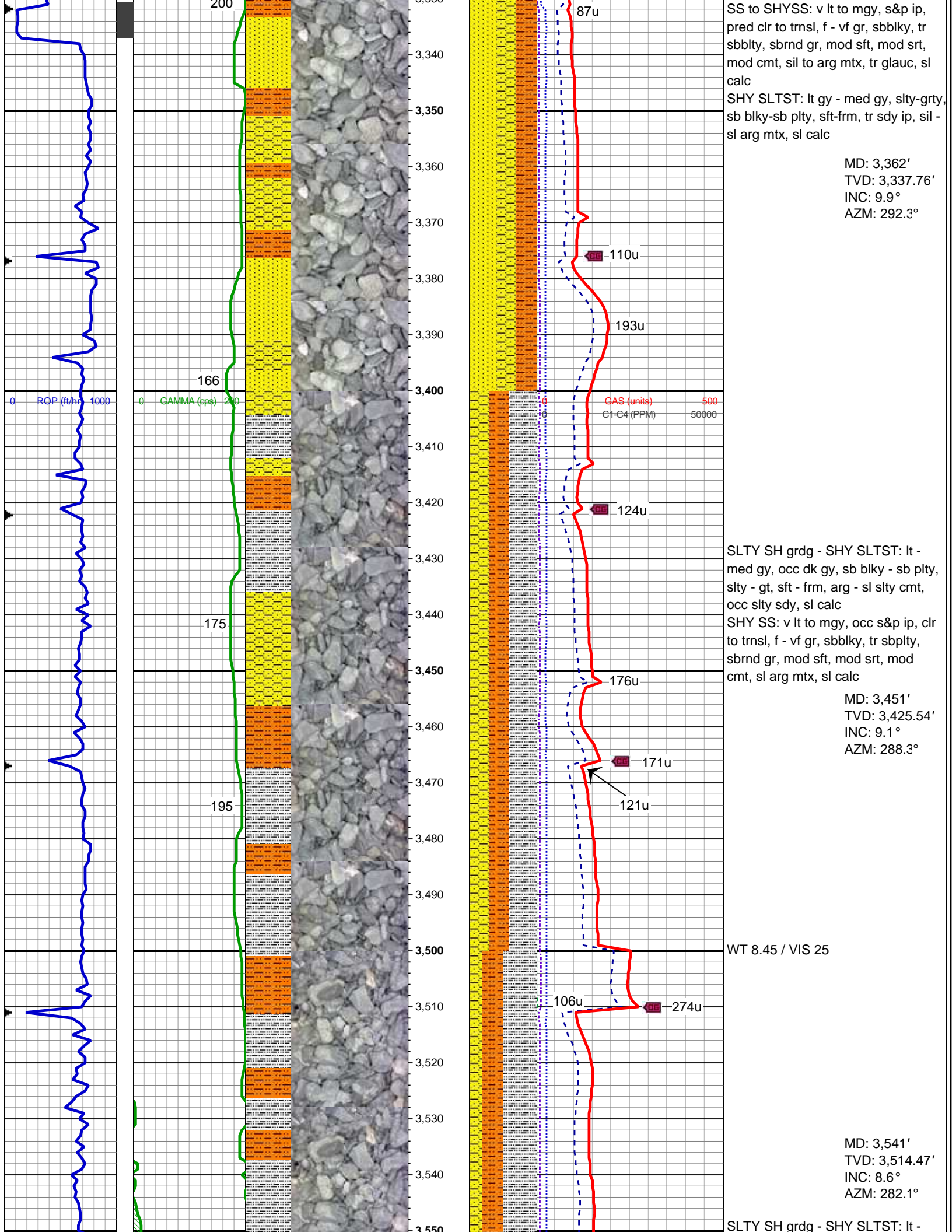
MD: 2,642'
TVD: 2,626.81'
INC: 9.8°
AZM: 284.2°

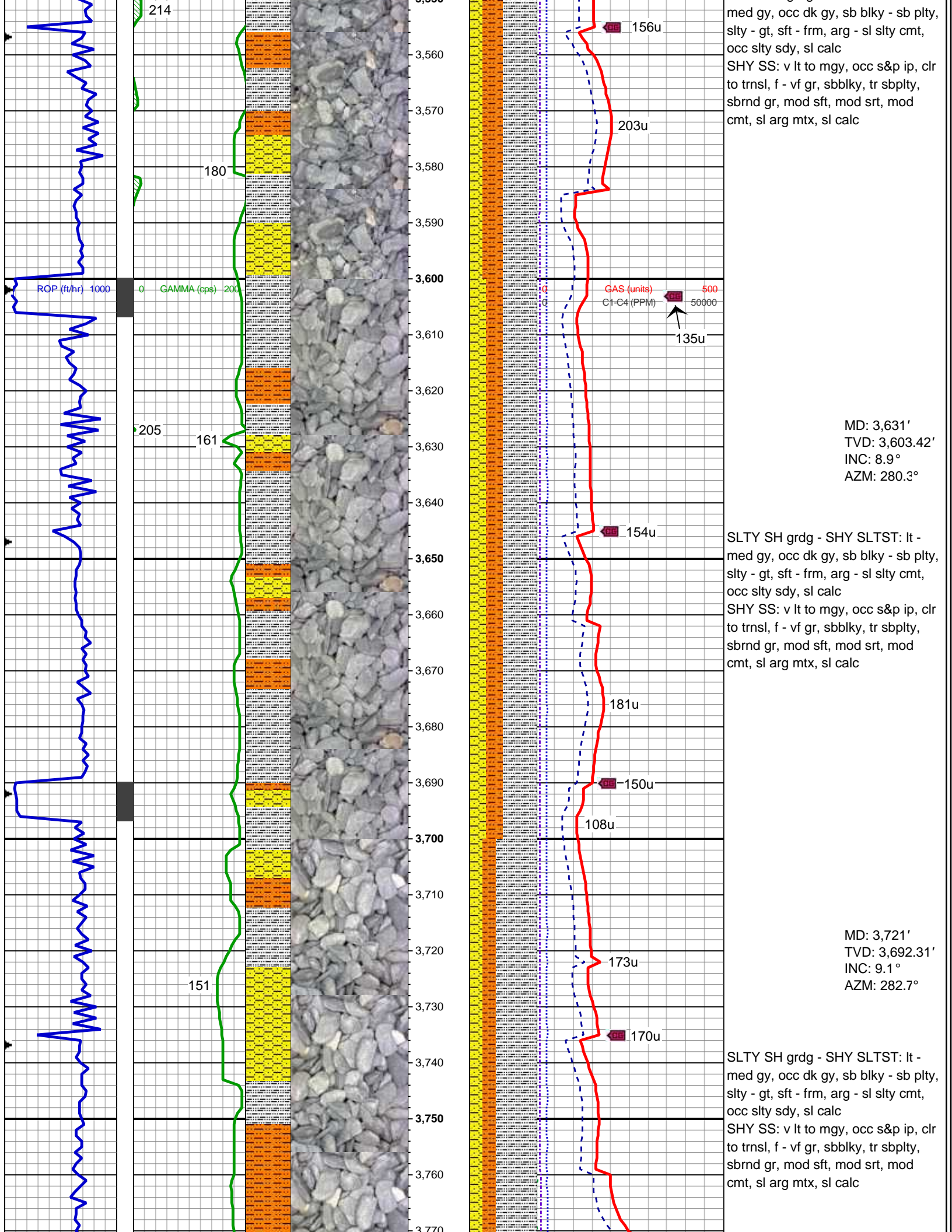
SHY SLTST: lt gy, slty-grty, sb
blkly-sb plty, sft-frm, occ sdy ip, sil -
arg mtx, sl calc
SS to SHYSS: v lt to mgy, s&p ip,

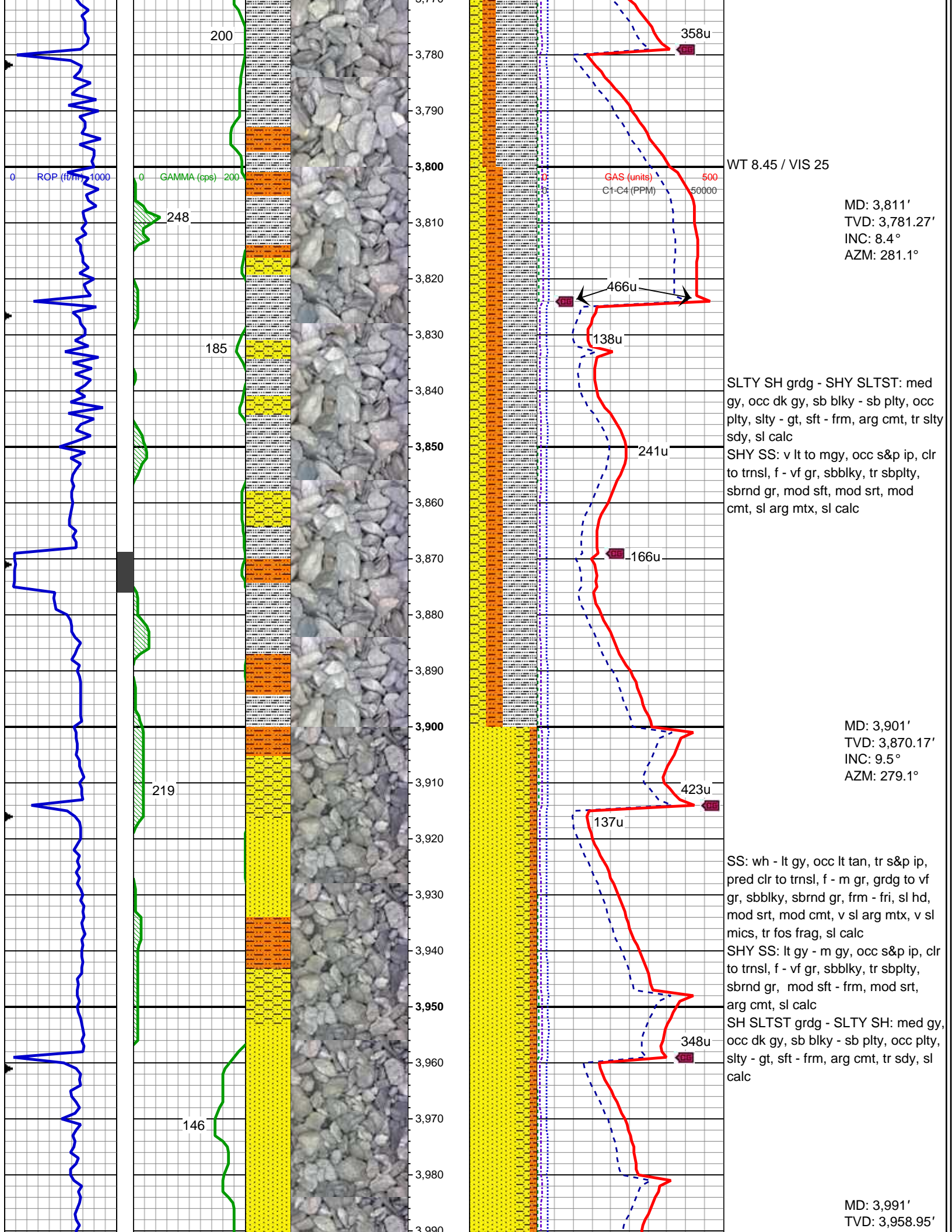


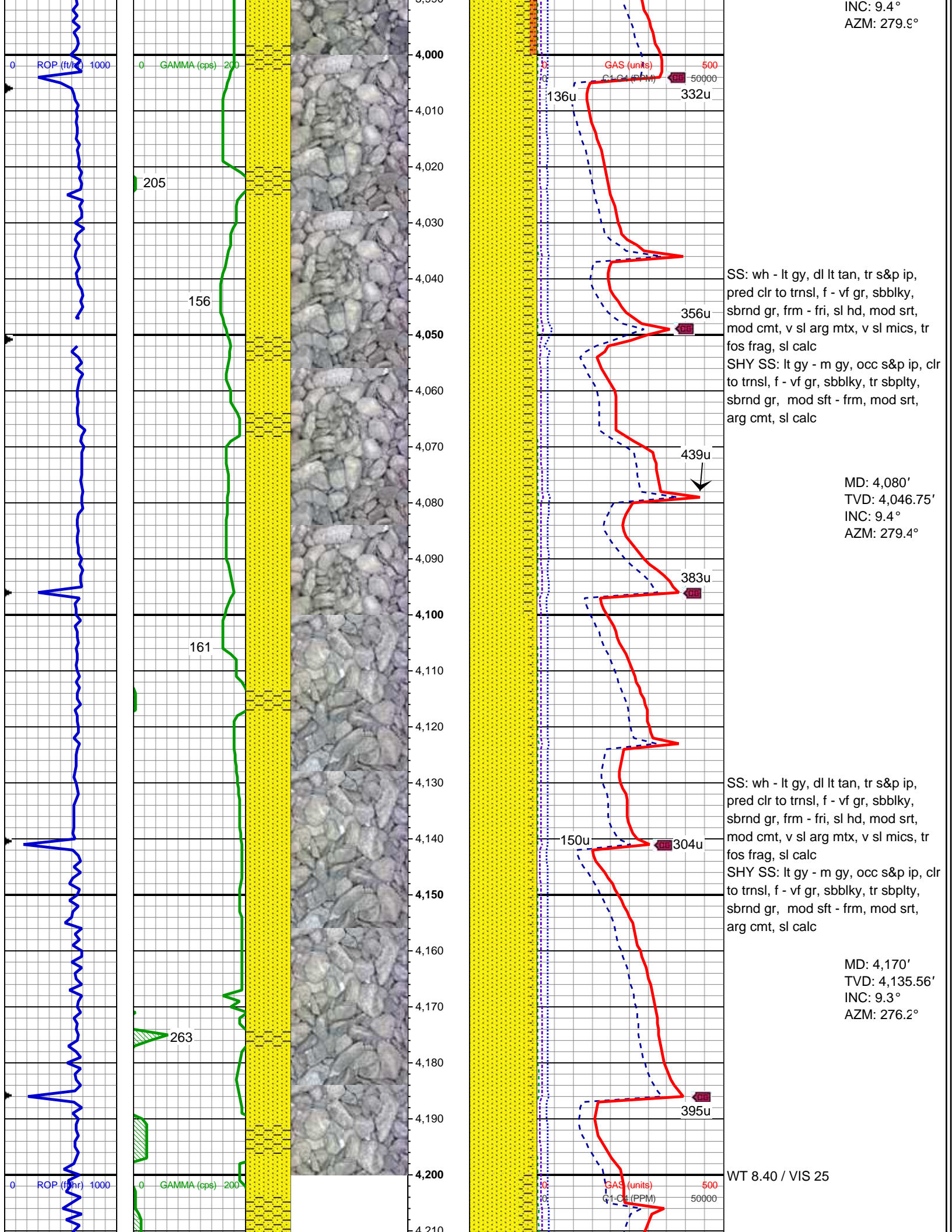


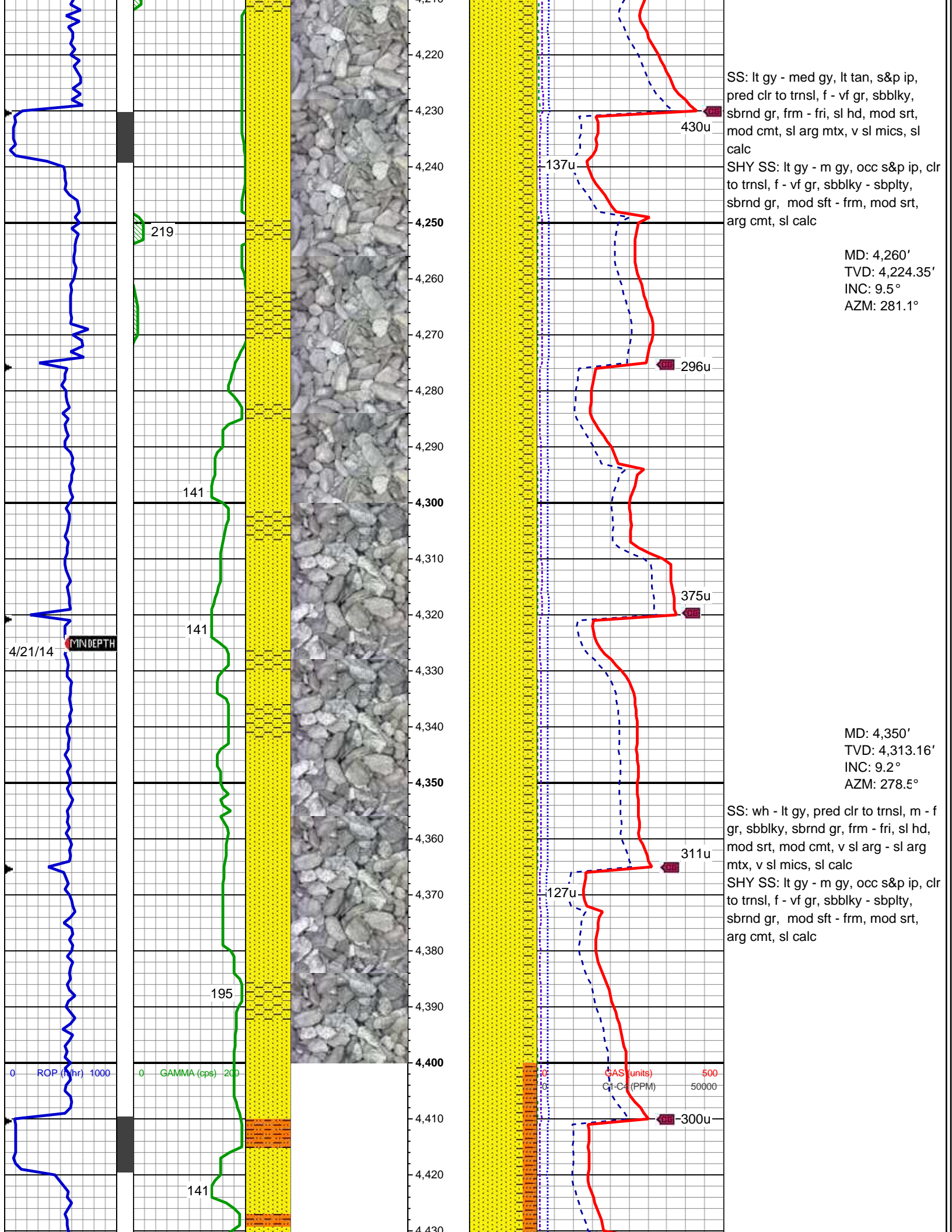


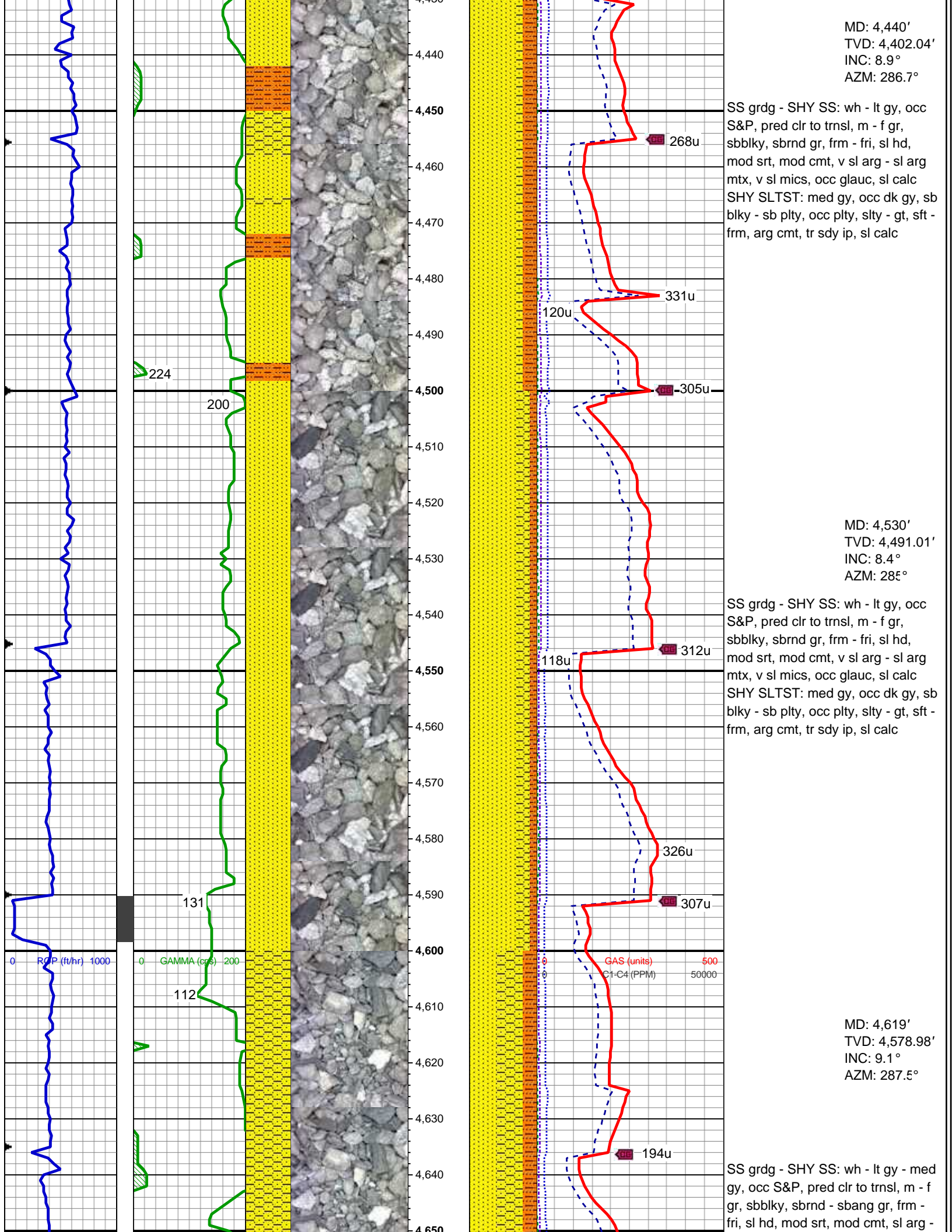












MD: 4,440'
TVD: 4,402.04'
INC: 8.9°
AZM: 286.7°

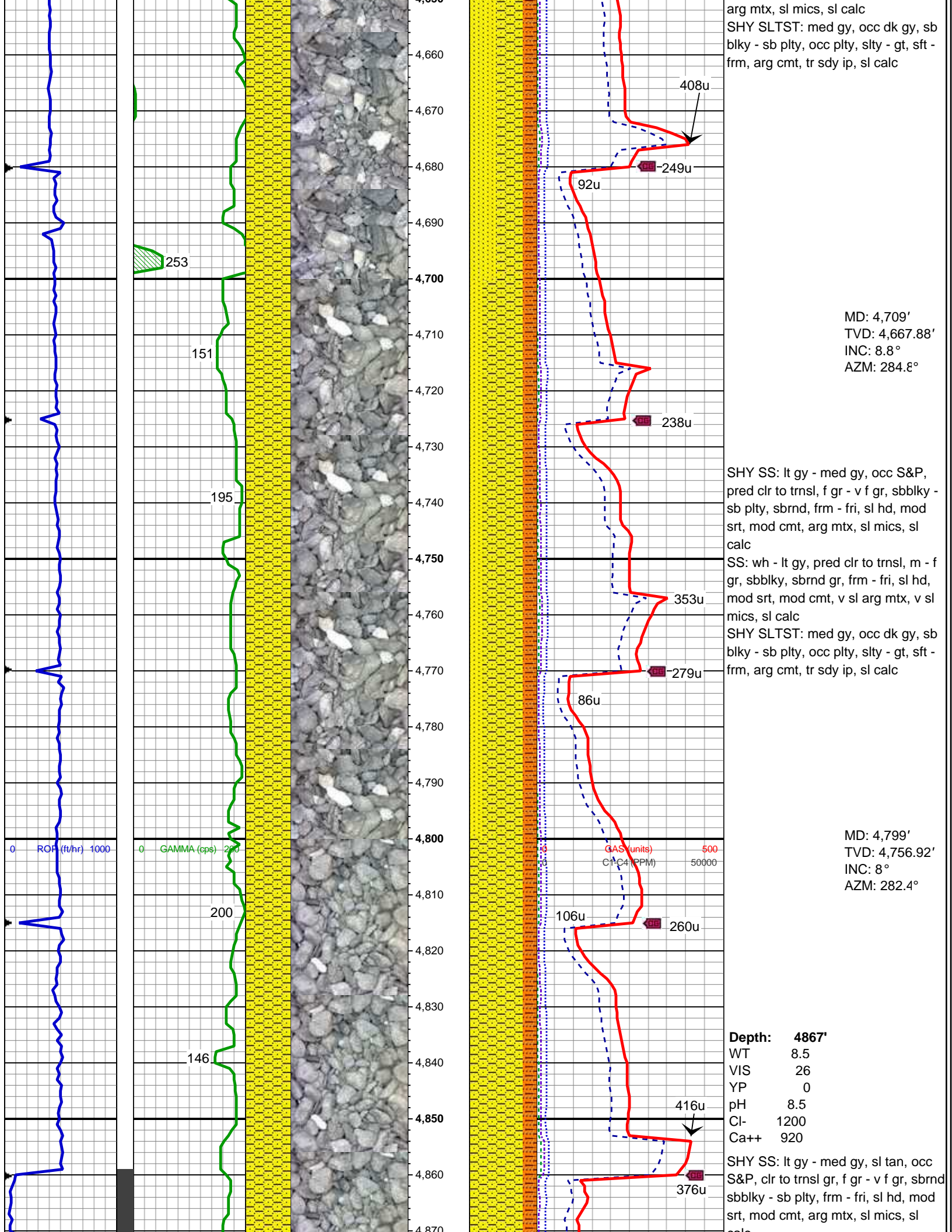
SS grdg - SHY SS: wh - lt gy, occ S&P, pred clr to trnsl, m - f gr, sbbkly, sbrnd gr, frm - fri, sl hd, mod srt, mod cmt, v sl arg - sl arg mtx, v sl mics, occ glauc, sl calc
SHY SLTST: med gy, occ dk gy, sb blkly - sb plty, occ plty, slty - gt, sft - frm, arg cmt, tr sdy ip, sl calc

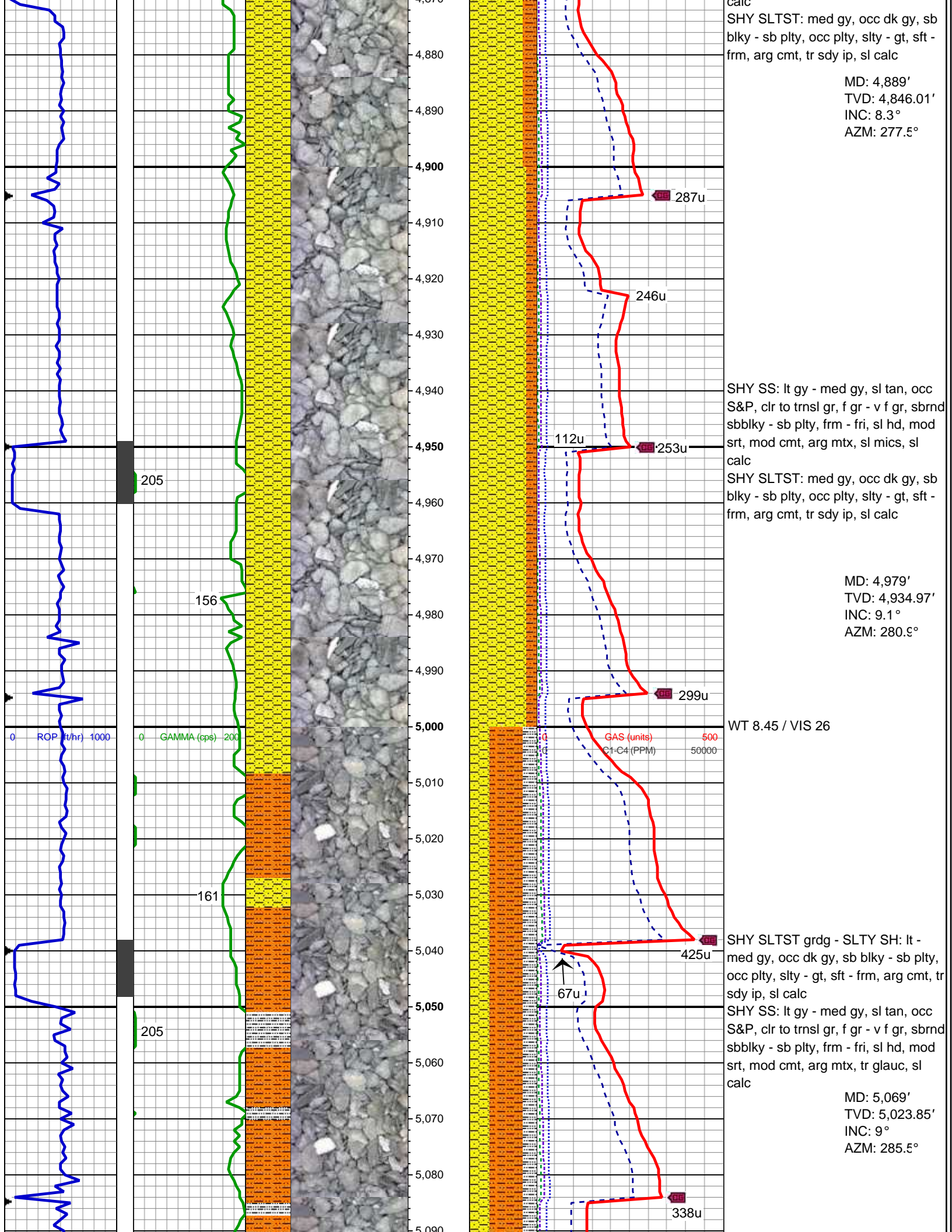
MD: 4,530'
TVD: 4,491.01'
INC: 8.4°
AZM: 285°

SS grdg - SHY SS: wh - lt gy, occ S&P, pred clr to trnsl, m - f gr, sbbkly, sbrnd gr, frm - fri, sl hd, mod srt, mod cmt, v sl arg - sl arg mtx, v sl mics, occ glauc, sl calc
SHY SLTST: med gy, occ dk gy, sb blkly - sb plty, occ plty, slty - gt, sft - frm, arg cmt, tr sdy ip, sl calc

MD: 4,619'
TVD: 4,578.98'
INC: 9.1°
AZM: 287.5°

SS grdg - SHY SS: wh - lt gy - med gy, occ S&P, pred clr to trnsl, m - f gr, sbbkly, sbrnd - sbang gr, frm - fri, sl hd, mod srt, mod cmt, sl arg -





calc
SHY SLTST: med gy, occ dk gy, sb
blky - sb plty, occ plty, slty - gt, sft -
frm, arg cmt, tr sdy ip, sl calc

MD: 4,889'
TVD: 4,846.01'
INC: 8.3°
AZM: 277.5°

SHY SS: lt gy - med gy, sl tan, occ
S&P, clr to trnsl gr, f gr - v f gr, sbrnd
sbbiky - sb plty, frm - fri, sl hd, mod
srt, mod cmt, arg mttx, sl mics, sl
calc

SHY SLTST: med gy, occ dk gy, sb
blky - sb plty, occ plty, slty - gt, sft -
frm, arg cmt, tr sdy ip, sl calc

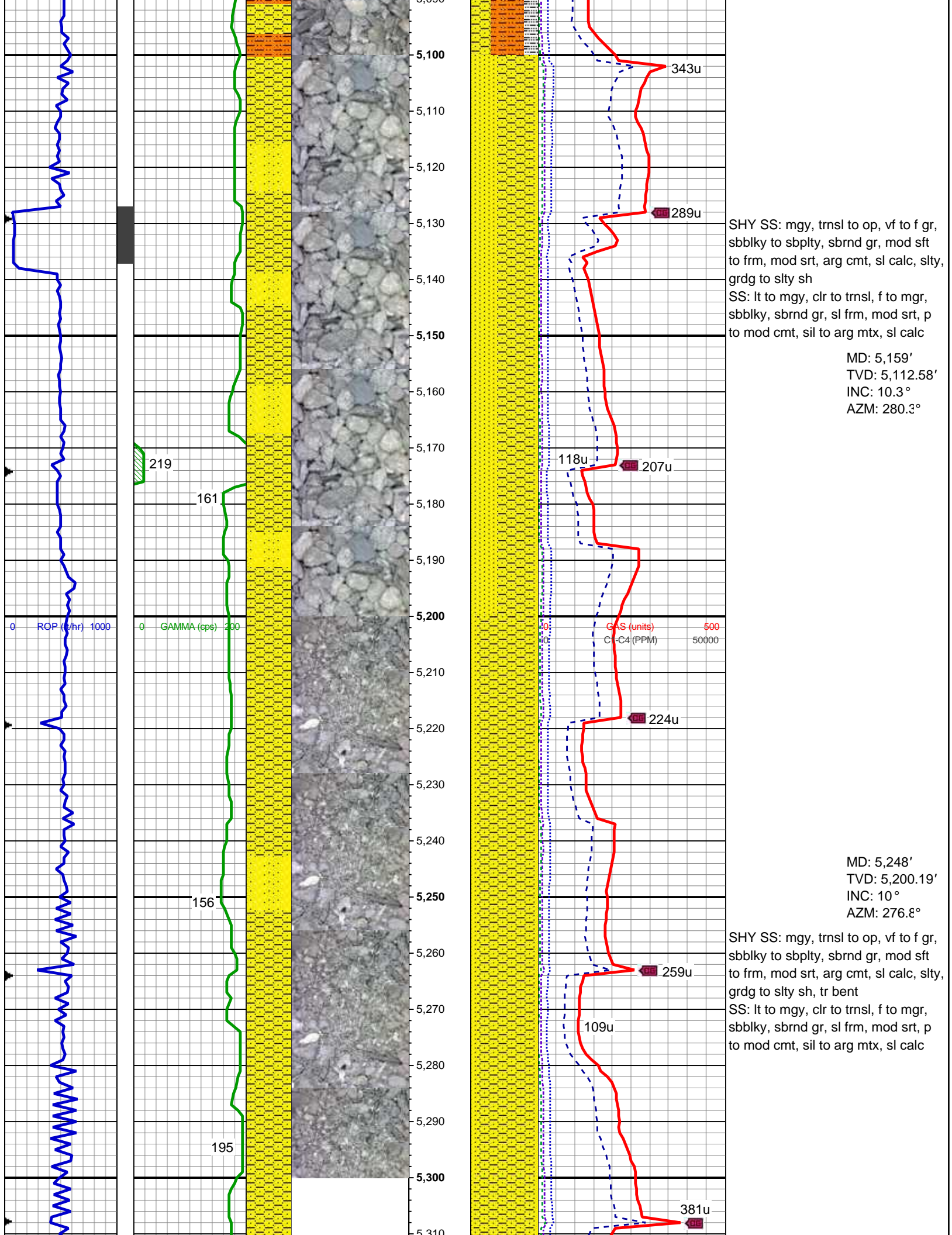
MD: 4,979'
TVD: 4,934.97'
INC: 9.1°
AZM: 280.9°

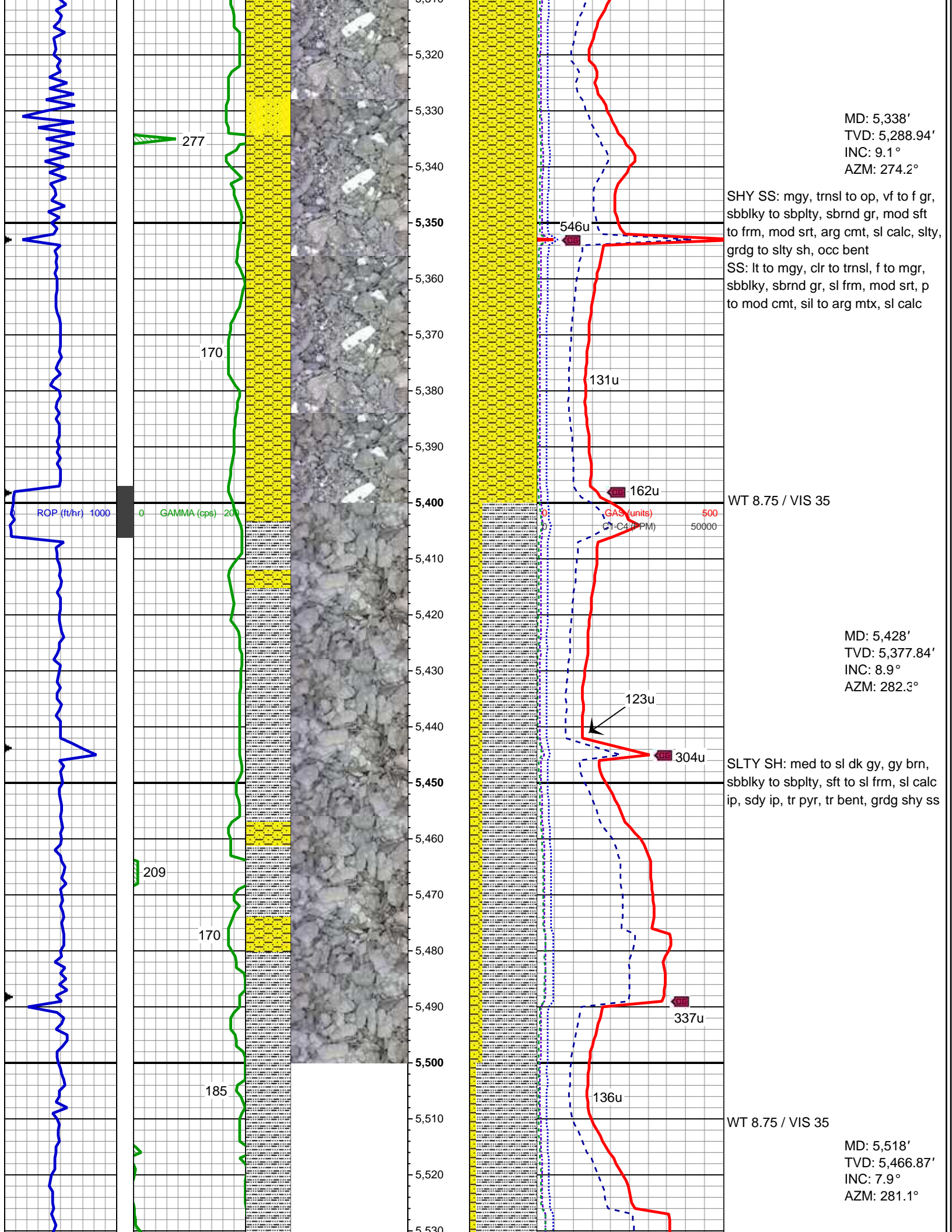
WT 8.45 / VIS 26

SHY SLTST grdg - SLTY SH: lt -
med gy, occ dk gy, sb blky - sb plty,
occ plty, slty - gt, sft - frm, arg cmt, tr
sdy ip, sl calc

SHY SS: lt gy - med gy, sl tan, occ
S&P, clr to trnsl gr, f gr - v f gr, sbrnd
sbbiky - sb plty, frm - fri, sl hd, mod
srt, mod cmt, arg mttx, tr glauc, sl
calc

MD: 5,069'
TVD: 5,023.85'
INC: 9°
AZM: 285.5°





MD: 5,338'
TVD: 5,288.94'
INC: 9.1°
AZM: 274.2°

SHY SS: mgy, trnsl to op, vf to f gr, sbblky to sbplty, sbrnd gr, mod sft to frm, mod srt, arg cmt, sl calc, slty, grdg to slty sh, occ bent
SS: lt to mgy, clr to trnsl, f to mgr, sbblky, sbrnd gr, sl frm, mod srt, p to mod cmt, sil to arg mtx, sl calc

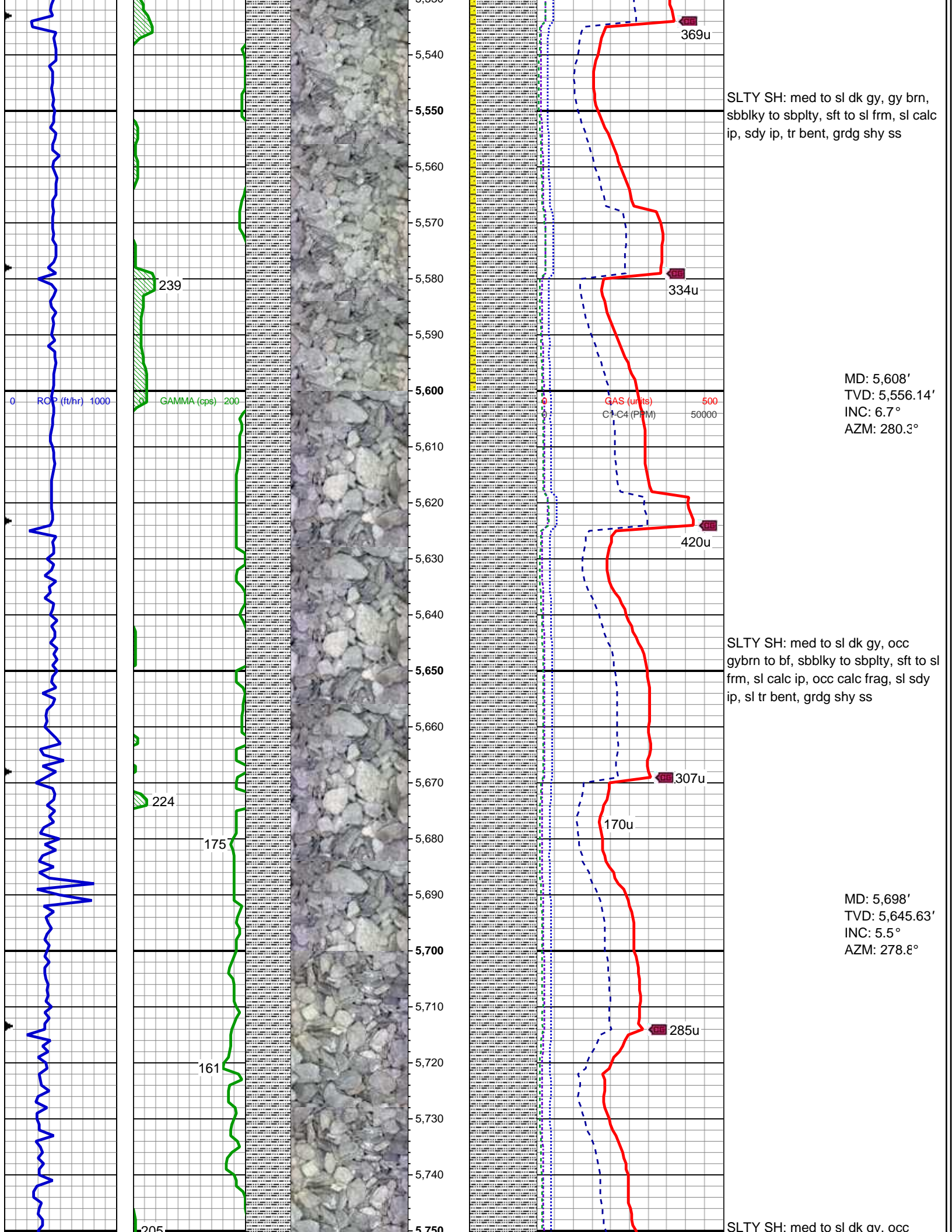
WT 8.75 / VIS 35

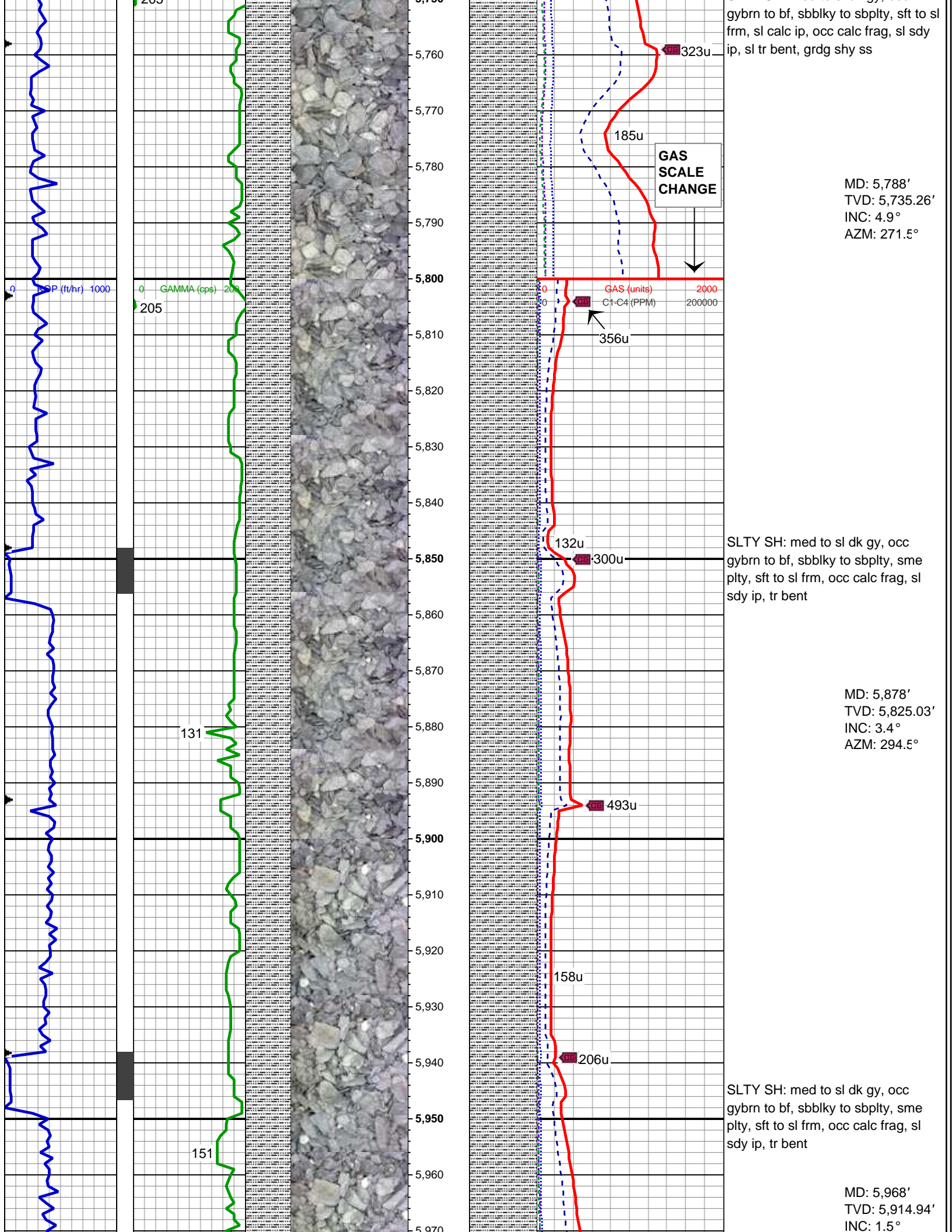
MD: 5,428'
TVD: 5,377.84'
INC: 8.9°
AZM: 282.3°

SLTY SH: med to sl dk gy, gy brn, sbblky to sbplty, sft to sl frm, sl calc ip, sdy ip, tr pyr, tr bent, grdg shy ss

WT 8.75 / VIS 35

MD: 5,518'
TVD: 5,466.87'
INC: 7.9°
AZM: 281.1°





gybrn to bf, sbblky to sbply, sft to sl
frm, sl calc ip, occ calc frag, sl sdy
ip, sl tr bent, grdg shy ss

MD: 5,788'
TVD: 5,735.26'
INC: 4.9°
AZM: 271.5°

GAS
SCALE
CHANGE

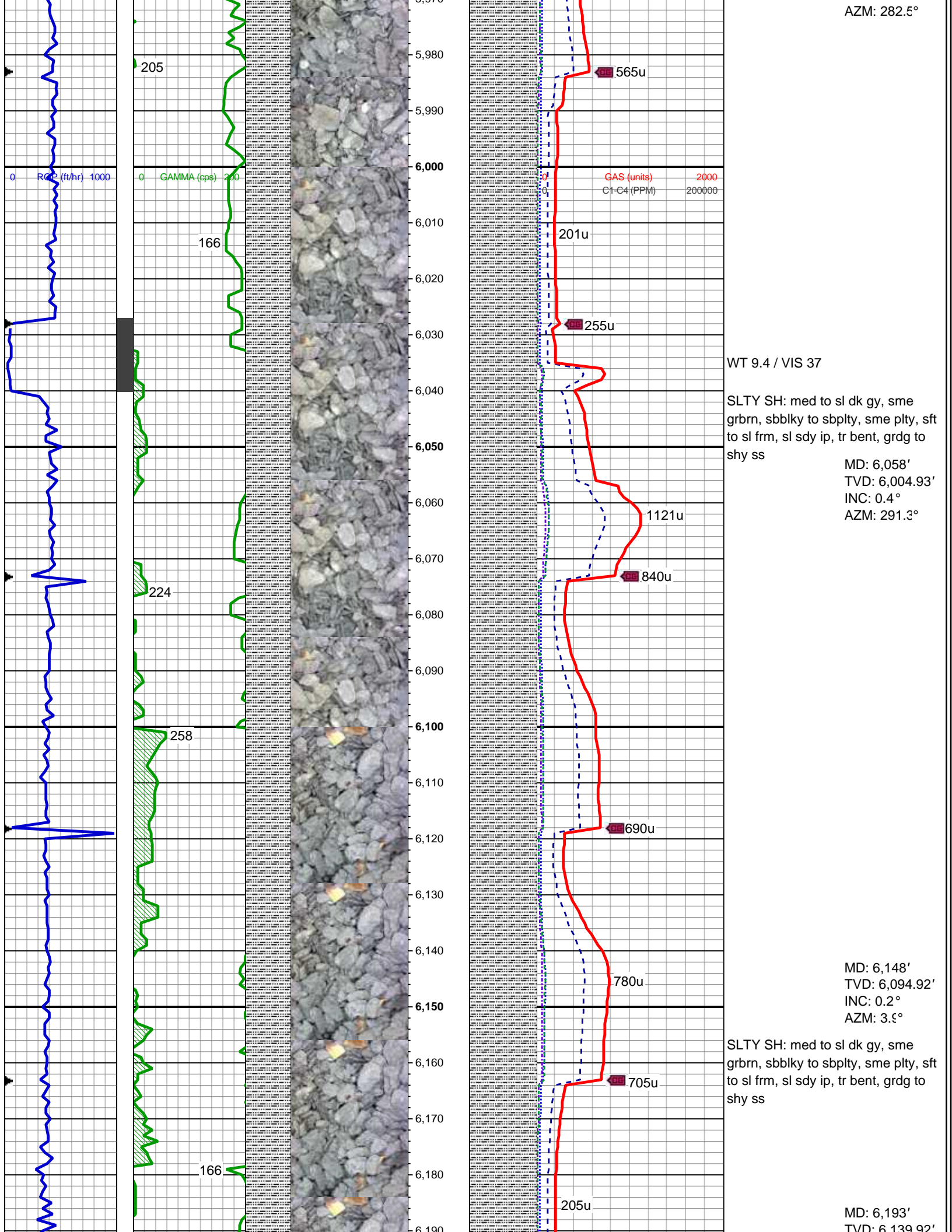
GAS (units)
C1-C4 (PPM)

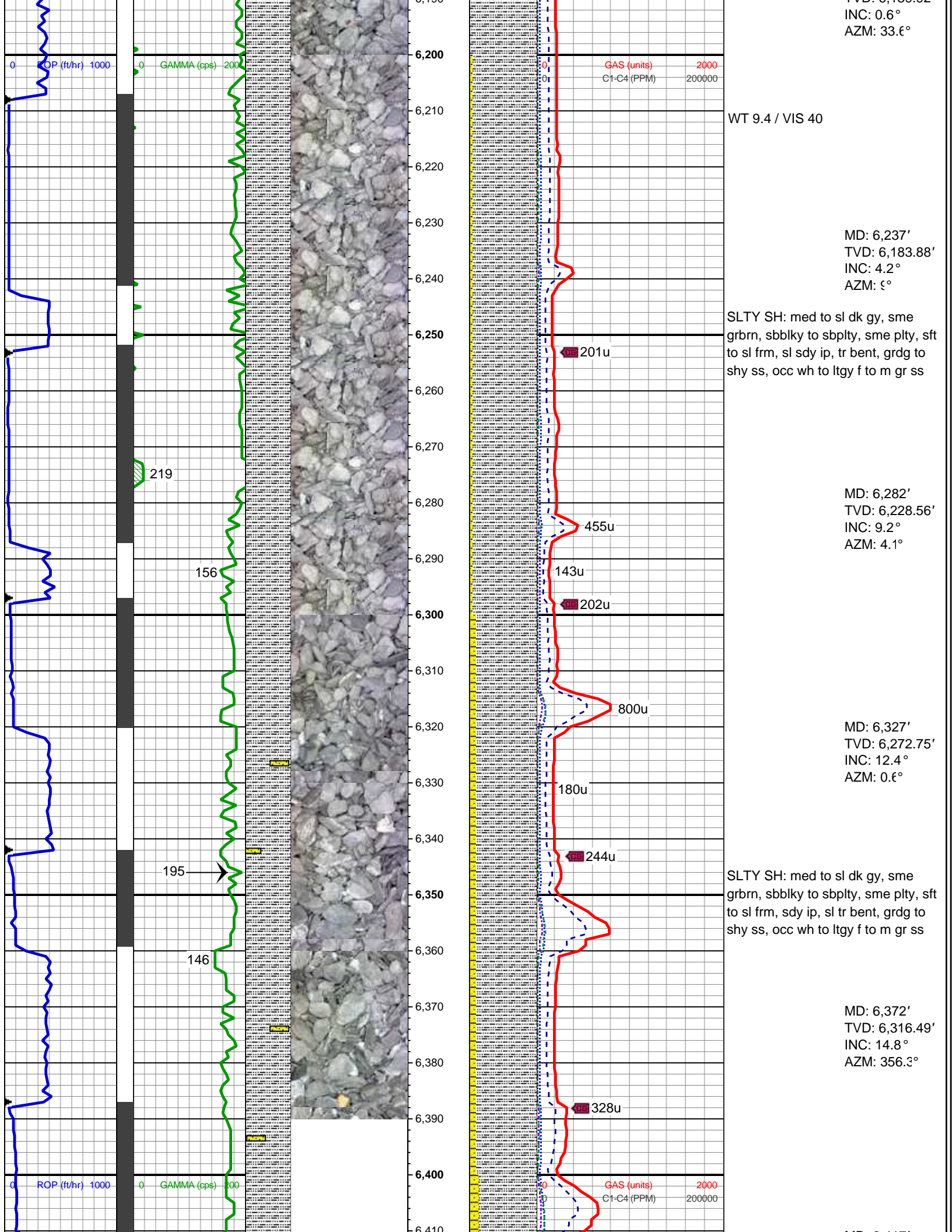
SLTY SH: med to sl dk gy, occ
gybrn to bf, sbblky to sbply, sme
ply, sft to sl frm, occ calc frag, sl
sdy ip, tr bent

MD: 5,878'
TVD: 5,825.03'
INC: 3.4°
AZM: 294.5°

SLTY SH: med to sl dk gy, occ
gybrn to bf, sbblky to sbply, sme
ply, sft to sl frm, occ calc frag, sl
sdy ip, tr bent

MD: 5,968'
TVD: 5,914.94'
INC: 1.5°





**THANK YOU FOR CHOOSING
COLUMBINE LOGGING, INC.**