

# COLUMBINE LOGGING

Scale: 5" / 100'  
Measured Depth Log

**Well Name** Oscar Y10-77-1HC

**Location** NESW SEC10 T2N R64W

**State** COLORADO

**County** WELD

**Country** USA

**Rig Number** PRECISION 828

**API Number** 05-123-38197

**AFE #** 138751

**Region** DENVER-JULESBURG BASIN

**Field** WATTENBERG

**Spud Date** 4/1/2014

**Drilling Completed** 4/12/2014

**Surface Coordinates** 2380' FSL, 2018' FWL

Lat/Long: 40.15224/-104.53986

**Ground Elevation** 4929'

**K.B. Elevation** 4945'

**Logged Interval** 1180'

**To** 6620'

**Total Depth** 14740'

**Formation** FOX HILLS, PIERRE, PARKMAN, SUSSIX, SHANNON, TEEPEE BUTTES

**Type of Drilling Fl...** FRESH WATER, LSND

## Operator

**Company** NOBLE ENERGY INC.

**Address** 1625 Broadway  
Denver, CO 80202



## Geologist

**Name** EVAN HOWELL

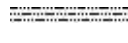
**Company** NOBLE ENERGY, INC.

**Address** 1625 Broadway  
Denver, CO 80202

## Rock Types

 SANDSTONE  
 SHALE COLORED

 SHALY SANDSTONE  
 SHALY SILTSTONE

 SILTY SHALE

# Other Symbols

## Engineering

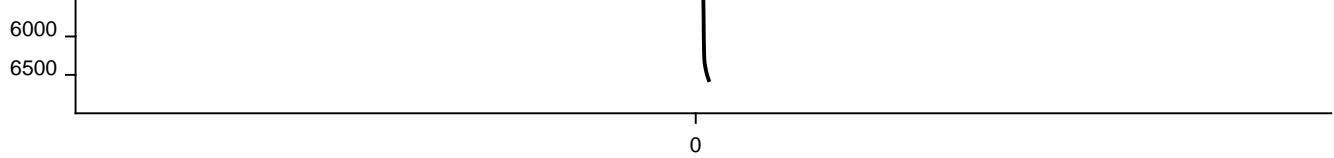
- CONNECTION (RIGHT)
- CONNECTION GAS
- MN DEPTH MN DEPTH

# Survey Plan

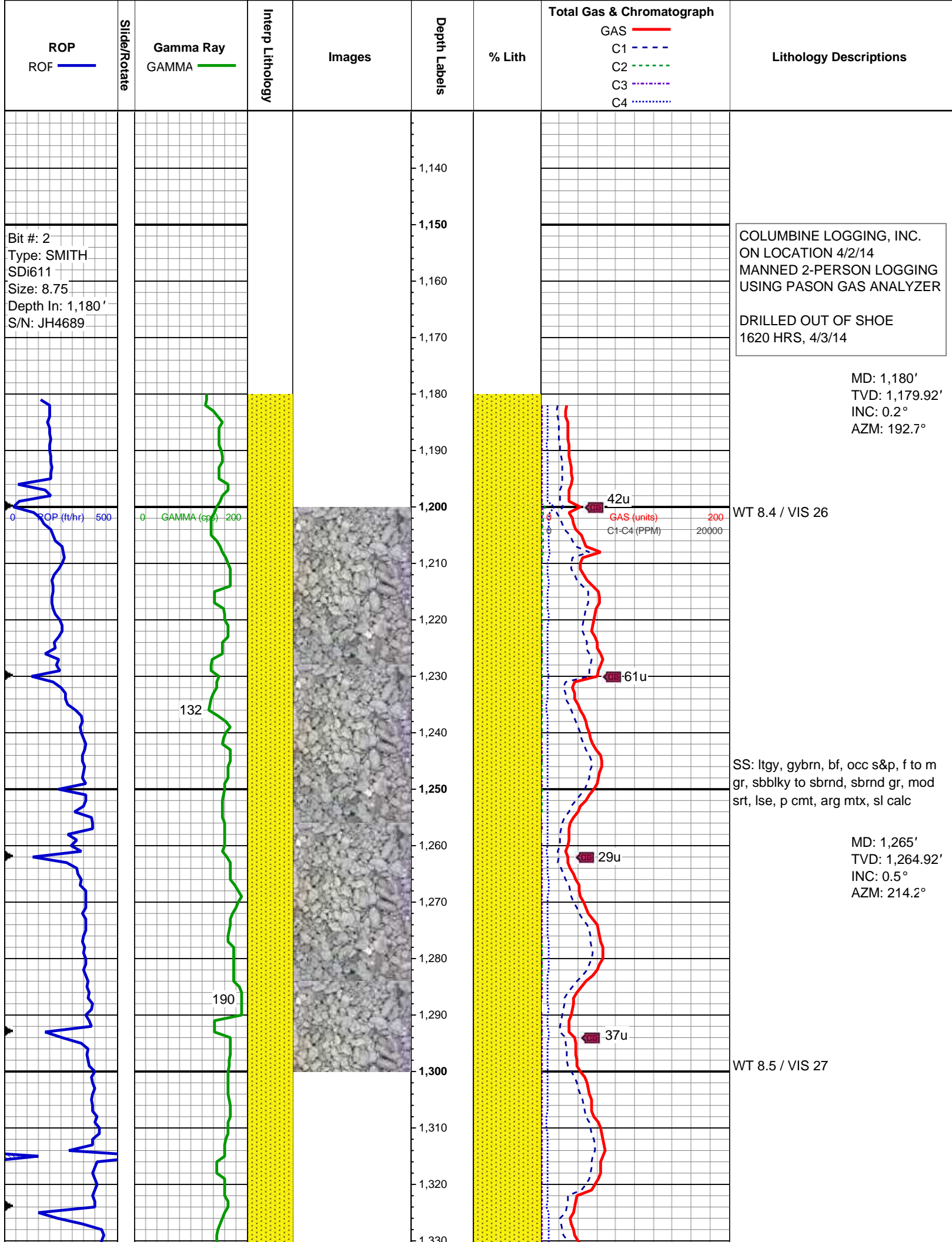


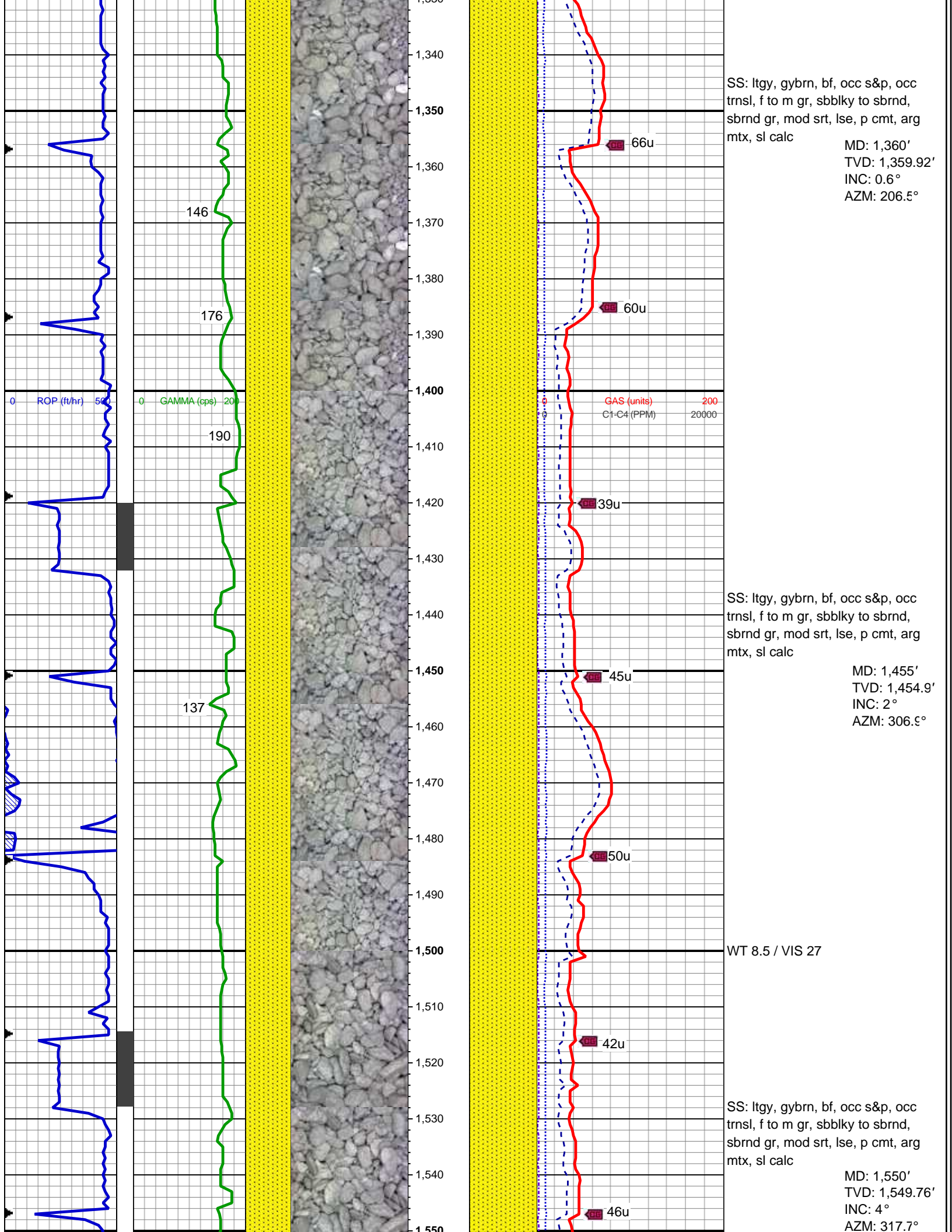
# Survey Elevation



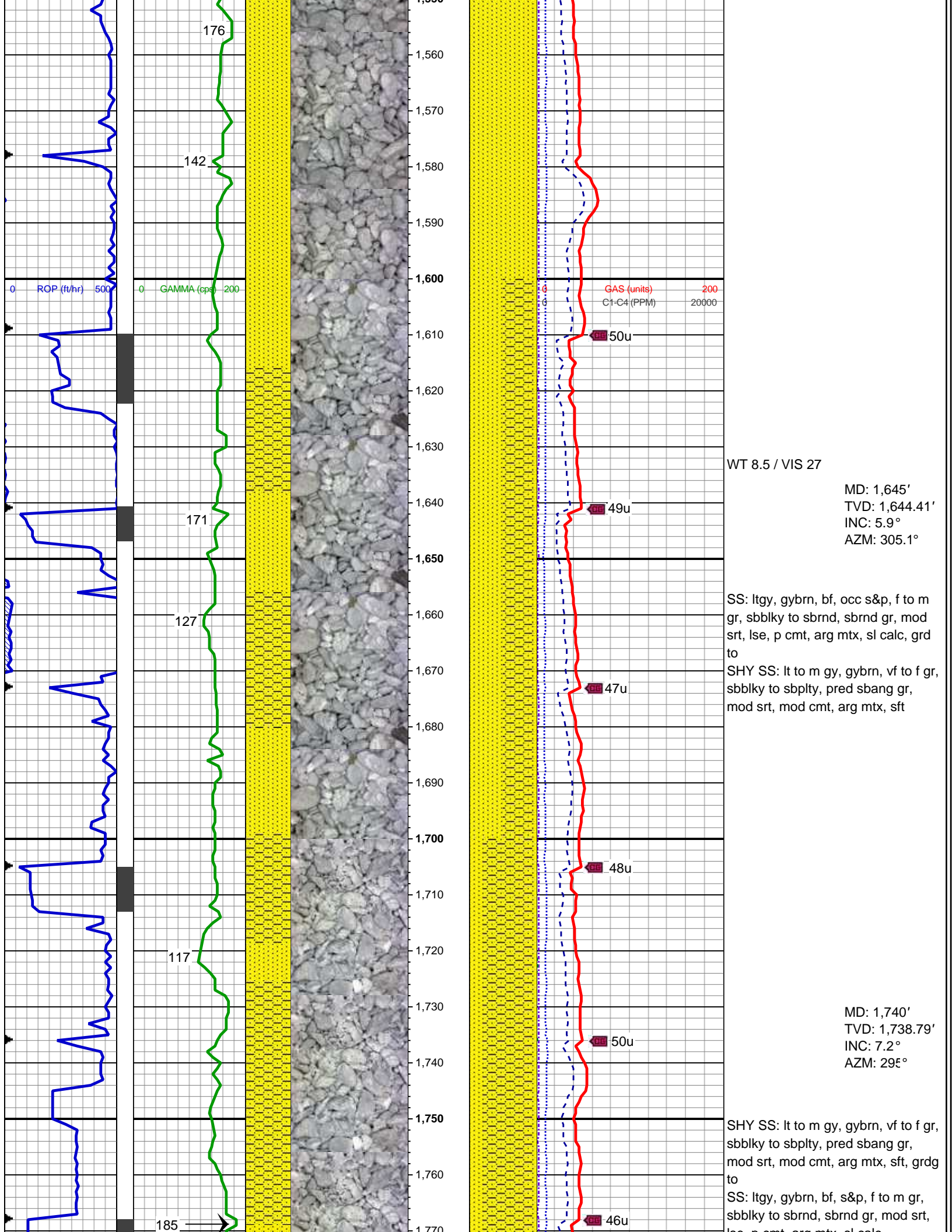


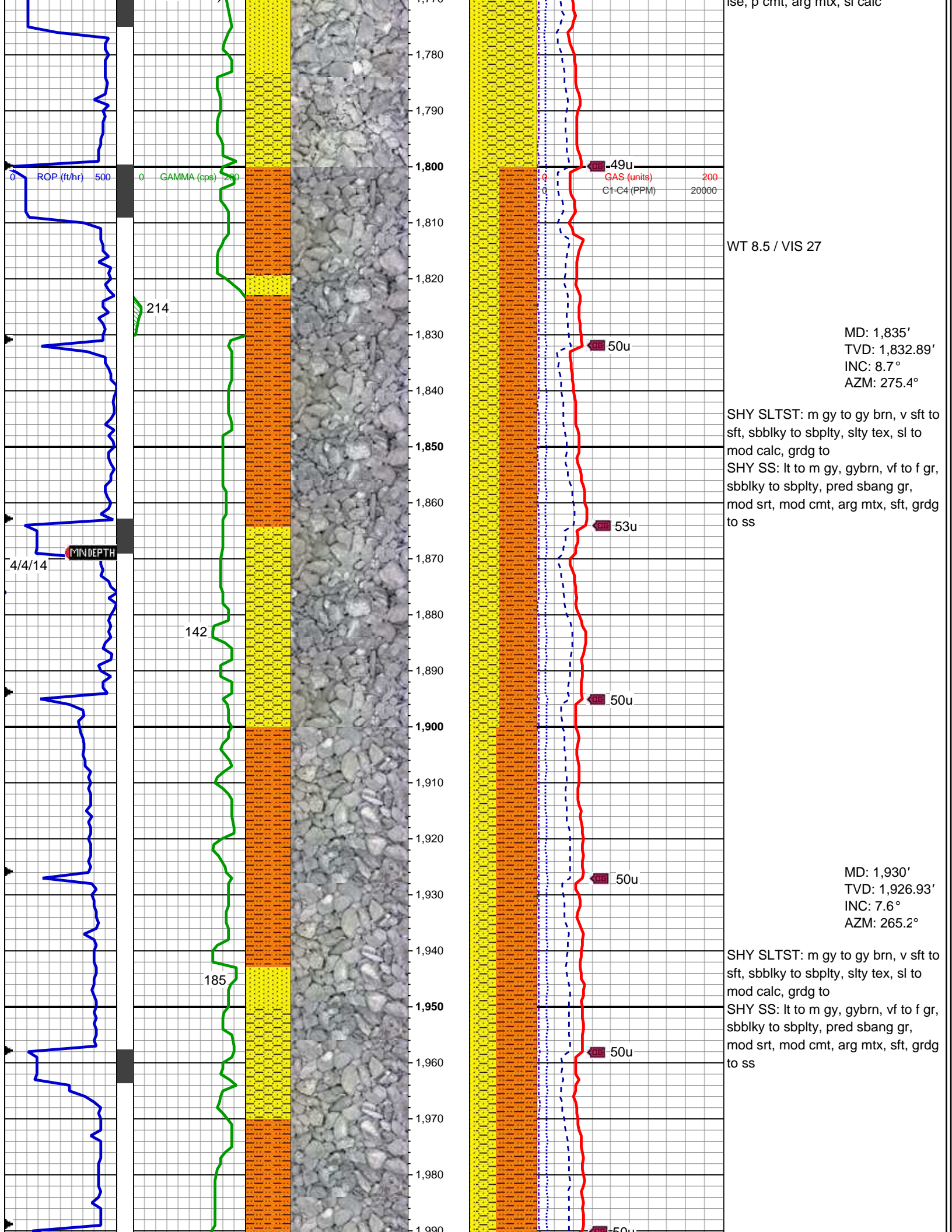
Vertical Section



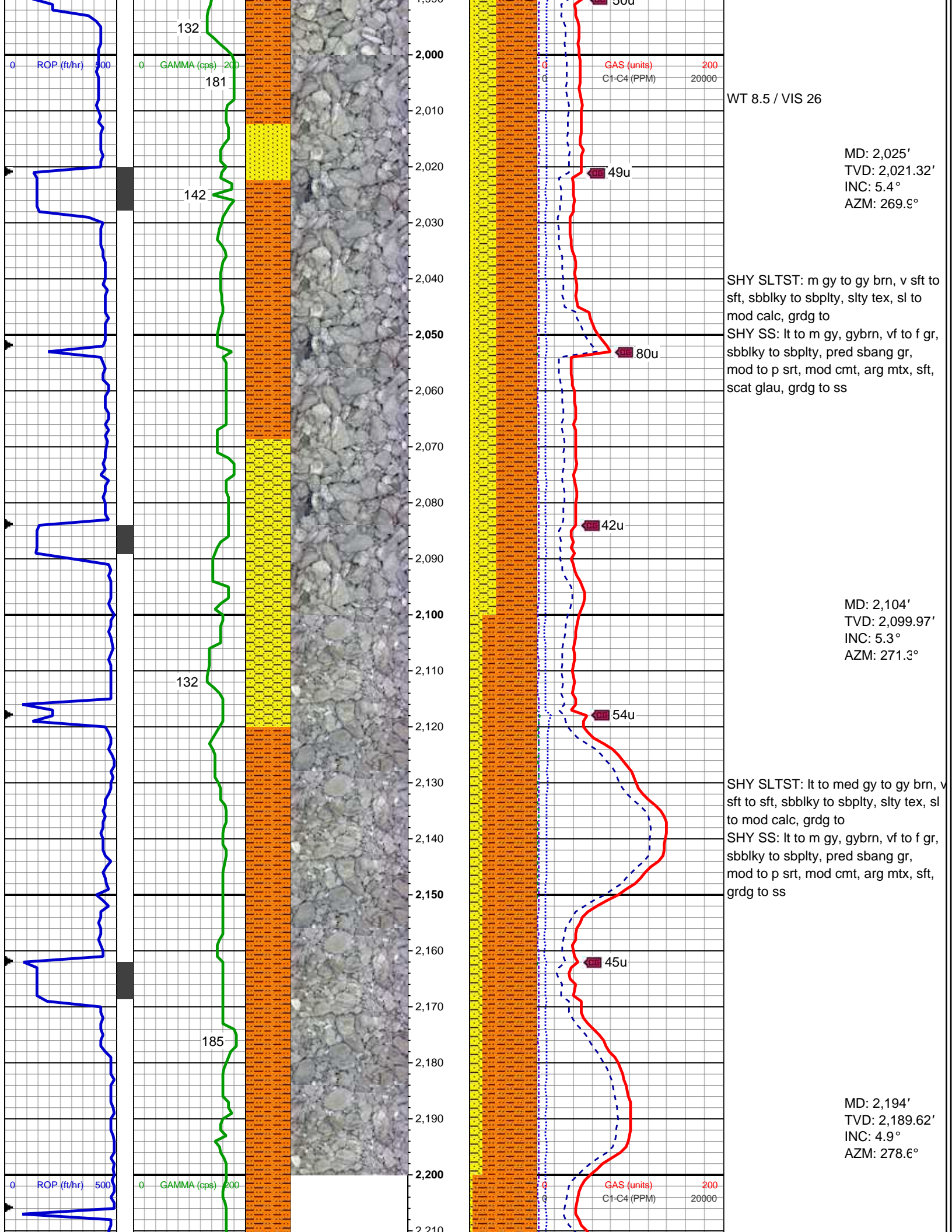




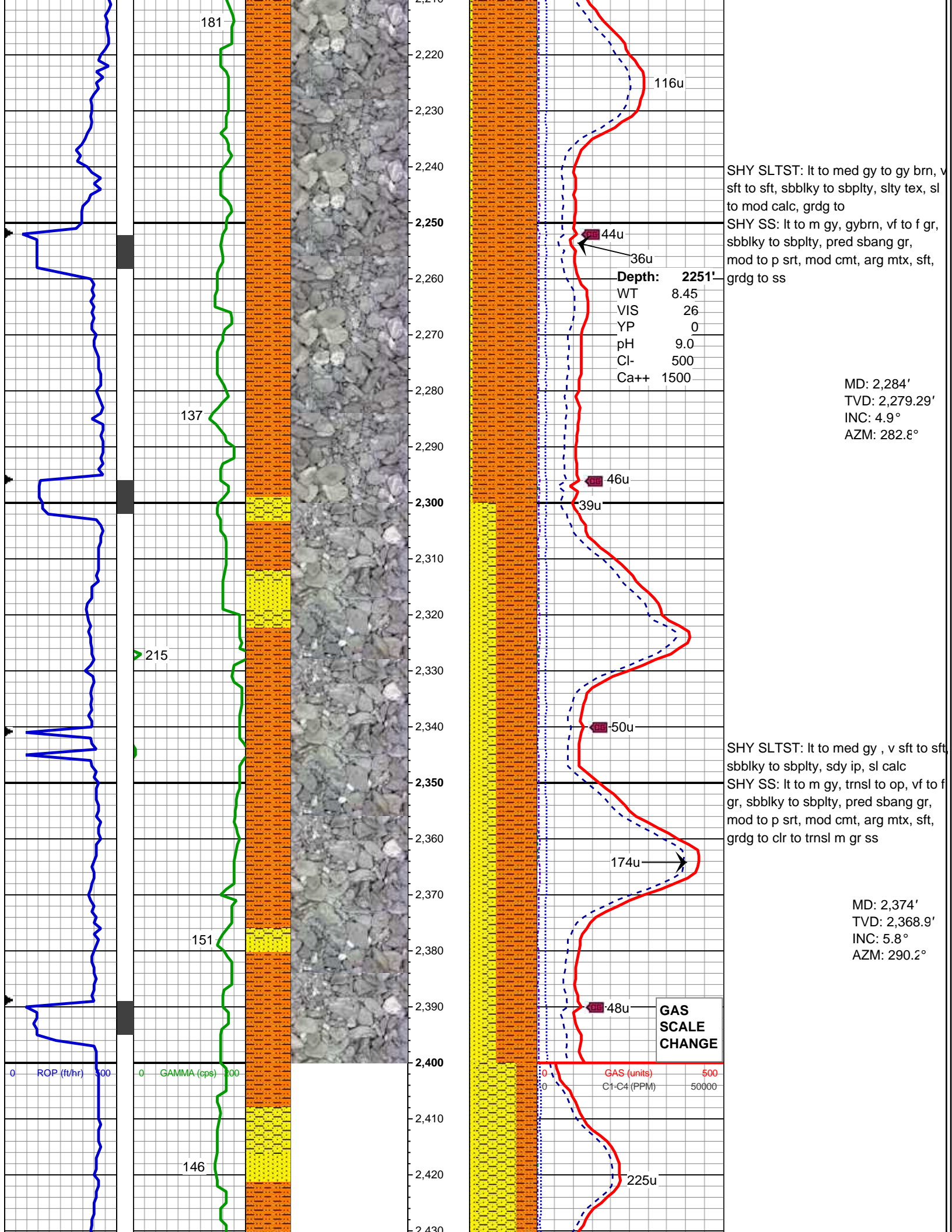


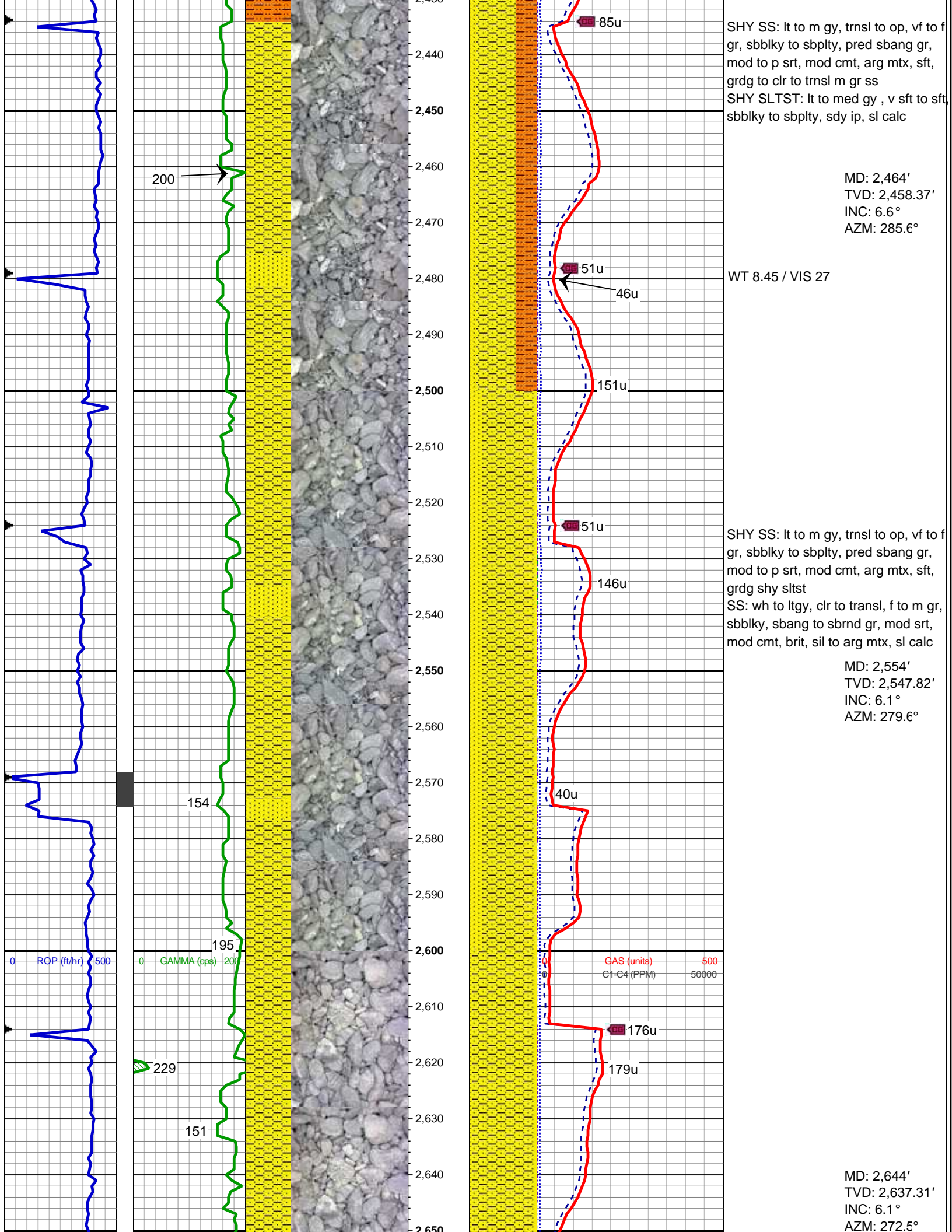




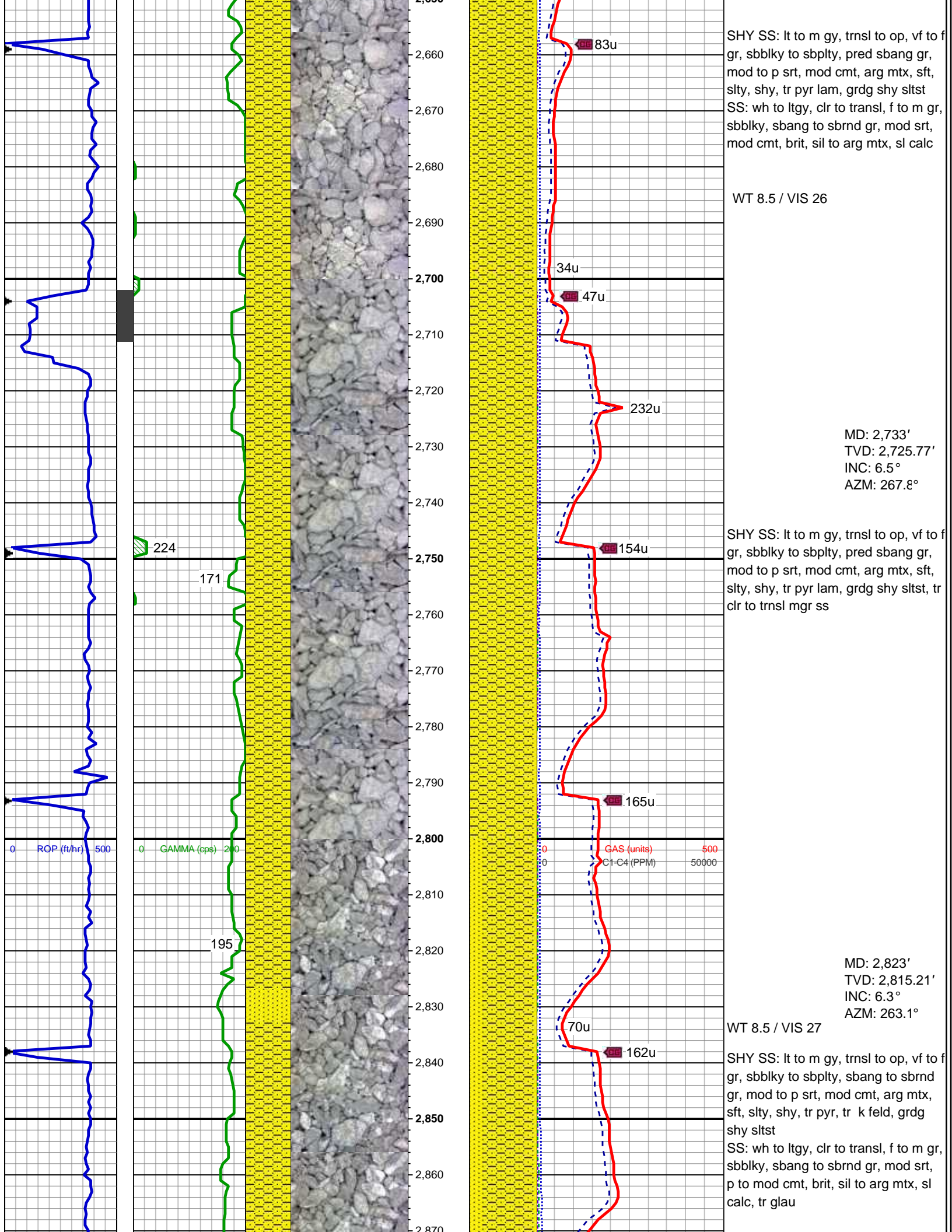












SHY SS: lt to m gy, trnsf to op, vf to f gr, sbbiky to sbply, pred sbang gr, mod to p srt, mod cmt, arg mtx, sft, slty, shy, tr pyr lam, grdg shy sltst SS: wh to ltgy, clr to transl, f to m gr, sbbiky, sbang to sbrnd gr, mod srt, mod cmt, brit, sil to arg mtx, sl calc

WT 8.5 / VIS 26

MD: 2,733'  
TVD: 2,725.77'  
INC: 6.5°  
AZM: 267.8°

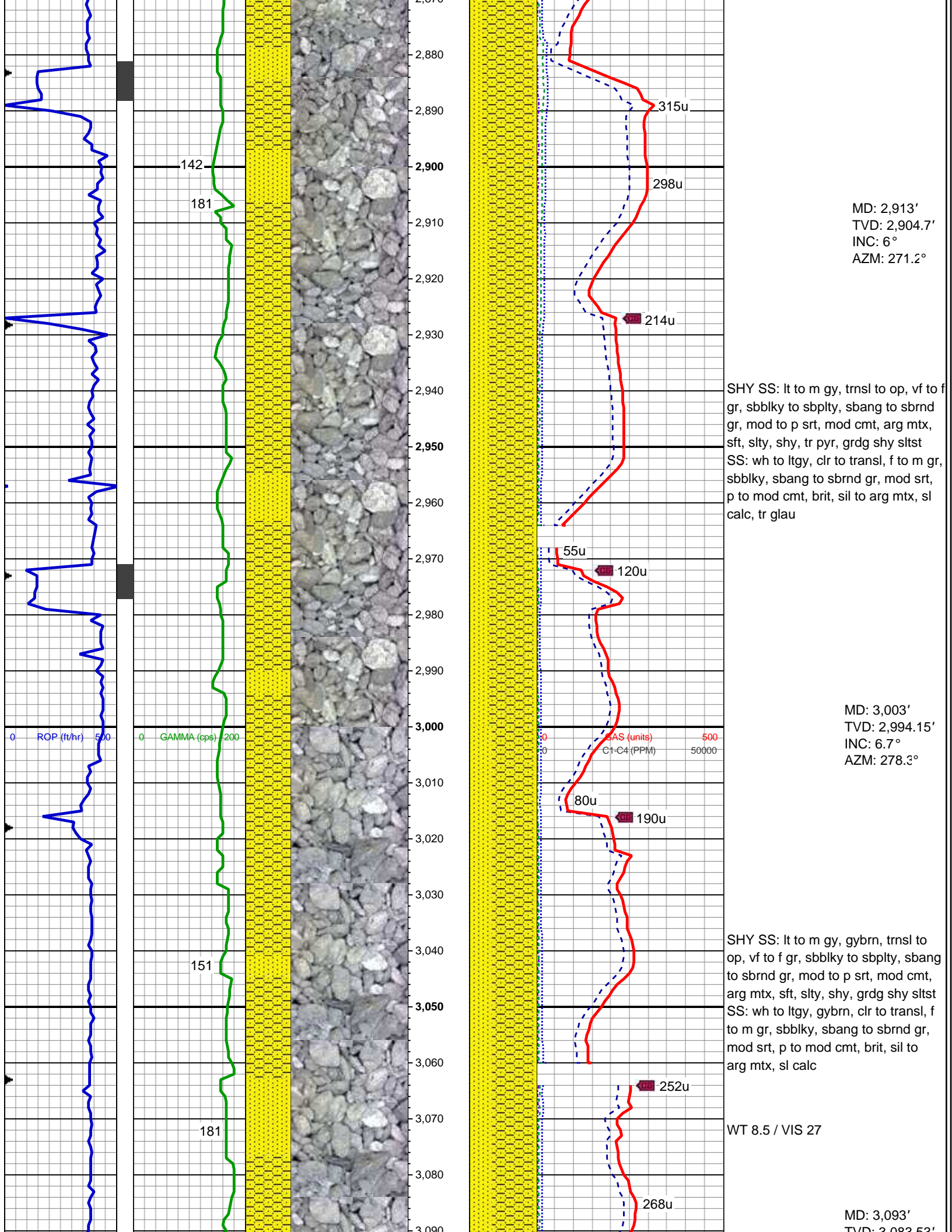
SHY SS: lt to m gy, trnsf to op, vf to f gr, sbbiky to sbply, pred sbang gr, mod to p srt, mod cmt, arg mtx, sft, slty, shy, tr pyr lam, grdg shy sltst, tr clr to transl mgr ss

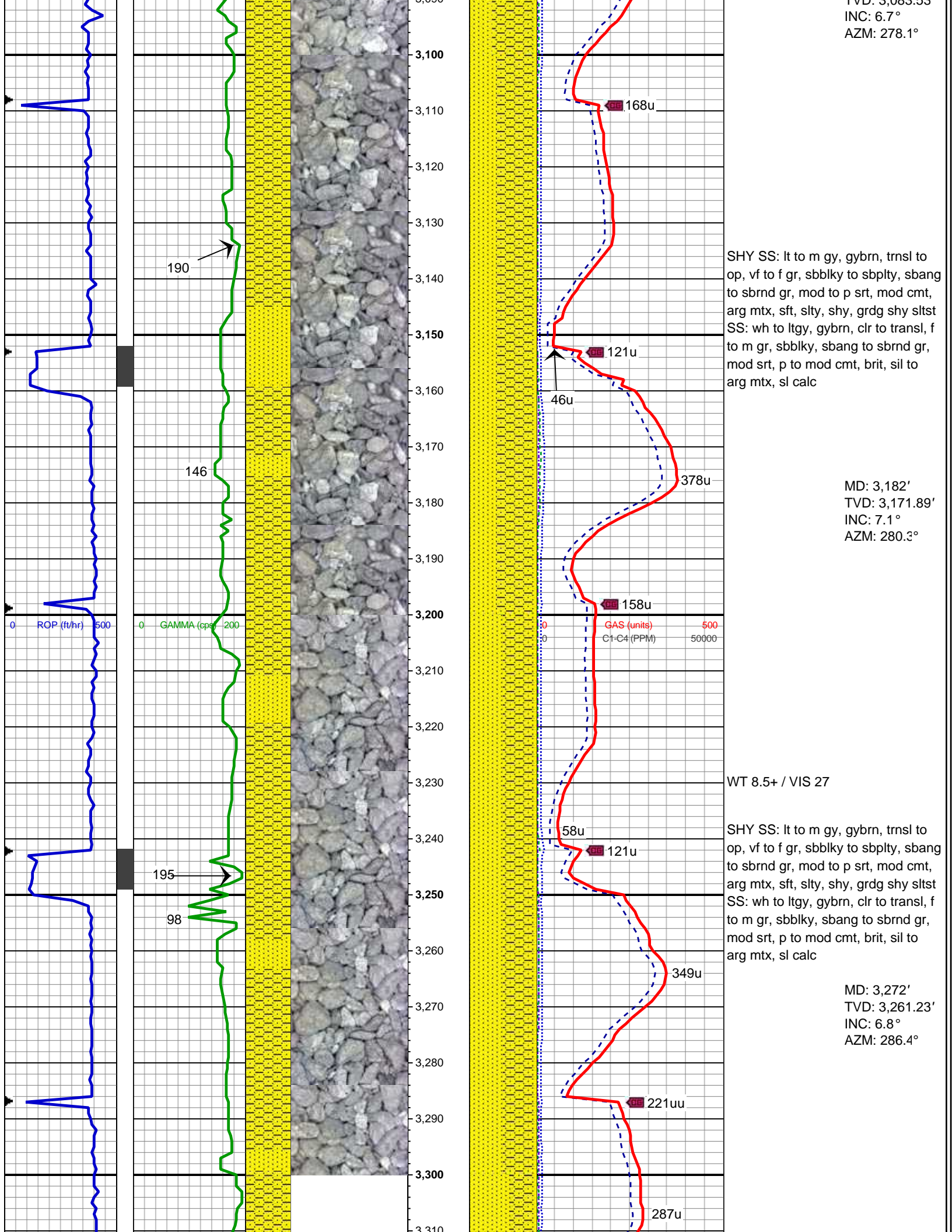
MD: 2,823'  
TVD: 2,815.21'  
INC: 6.3°  
AZM: 263.1°

WT 8.5 / VIS 27

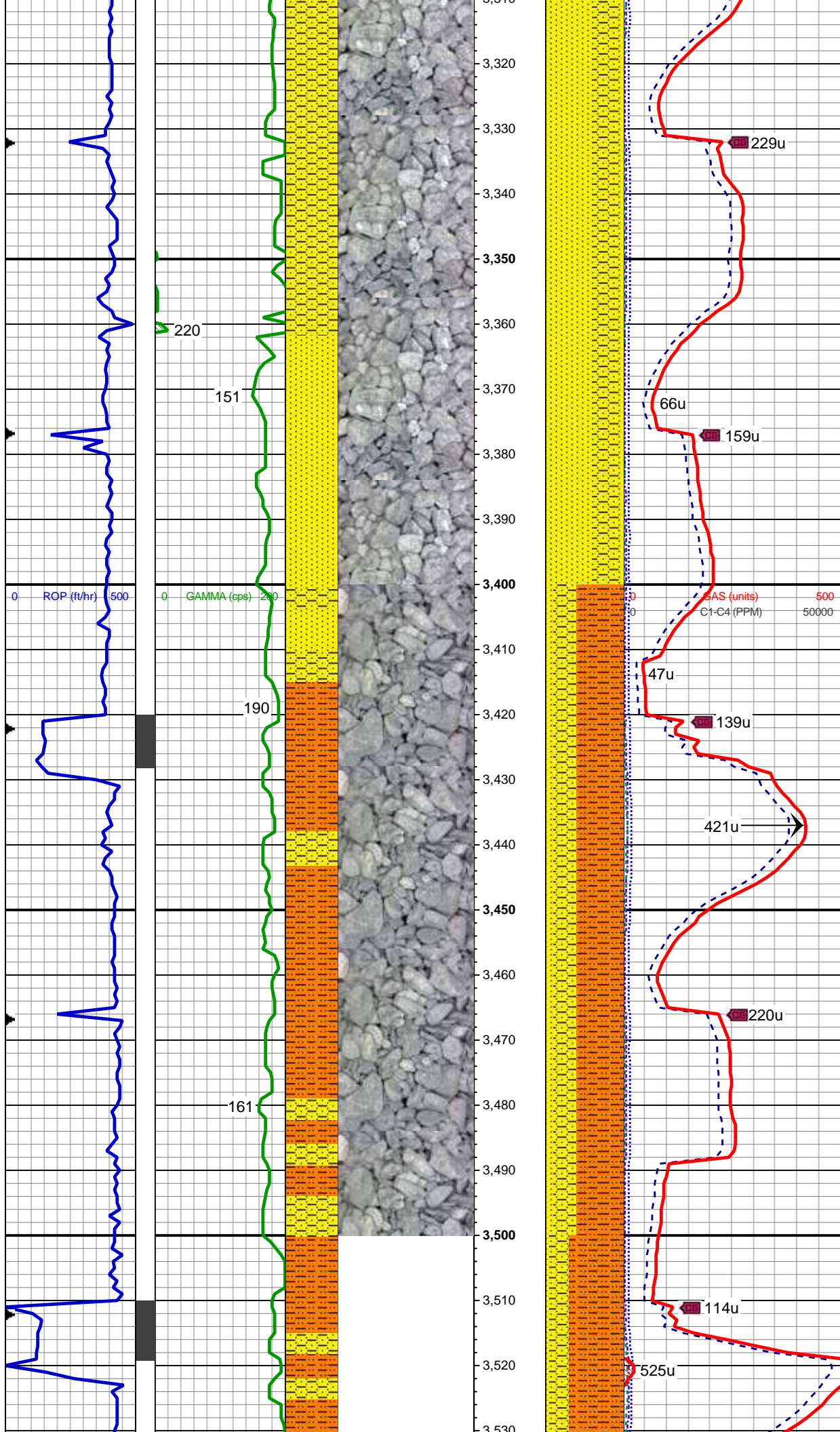
SHY SS: lt to m gy, trnsf to op, vf to f gr, sbbiky to sbply, sbang to sbrnd gr, mod to p srt, mod cmt, arg mtx, sft, slty, shy, tr pyr, tr k feld, grdg shy sltst SS: wh to ltgy, clr to transl, f to m gr, sbbiky, sbang to sbrnd gr, mod srt, p to mod cmt, brit, sil to arg mtx, sl calc, tr glau











SS: wh to ltgy, gybrn, clr to transl, f  
to m gr, sbblky, sbang to sbrnd gr,  
mod srt, p to mod cmt, brit, sil to  
arg mtx, sl calc  
SHY SS: lt to m gy, gybrn, trnsl to  
op, vf to f gr, sbblky to sbply, sbang  
to sbrnd gr, mod to p srt, mod cmt,  
arg mtx, sft, slty, shy, grdg shy sltst

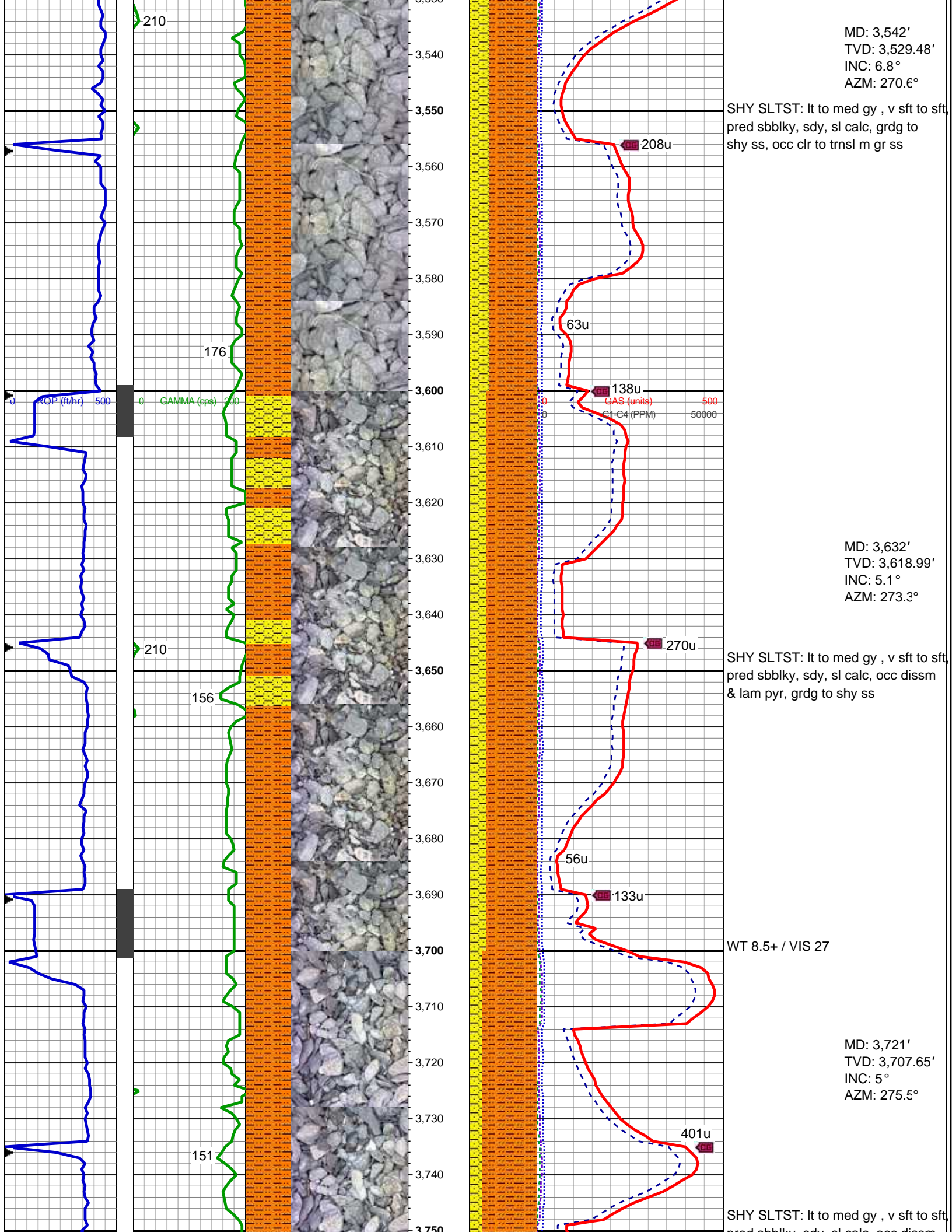
MD: 3,362'  
TVD: 3,350.64'  
INC: 6.3°  
AZM: 281.9°

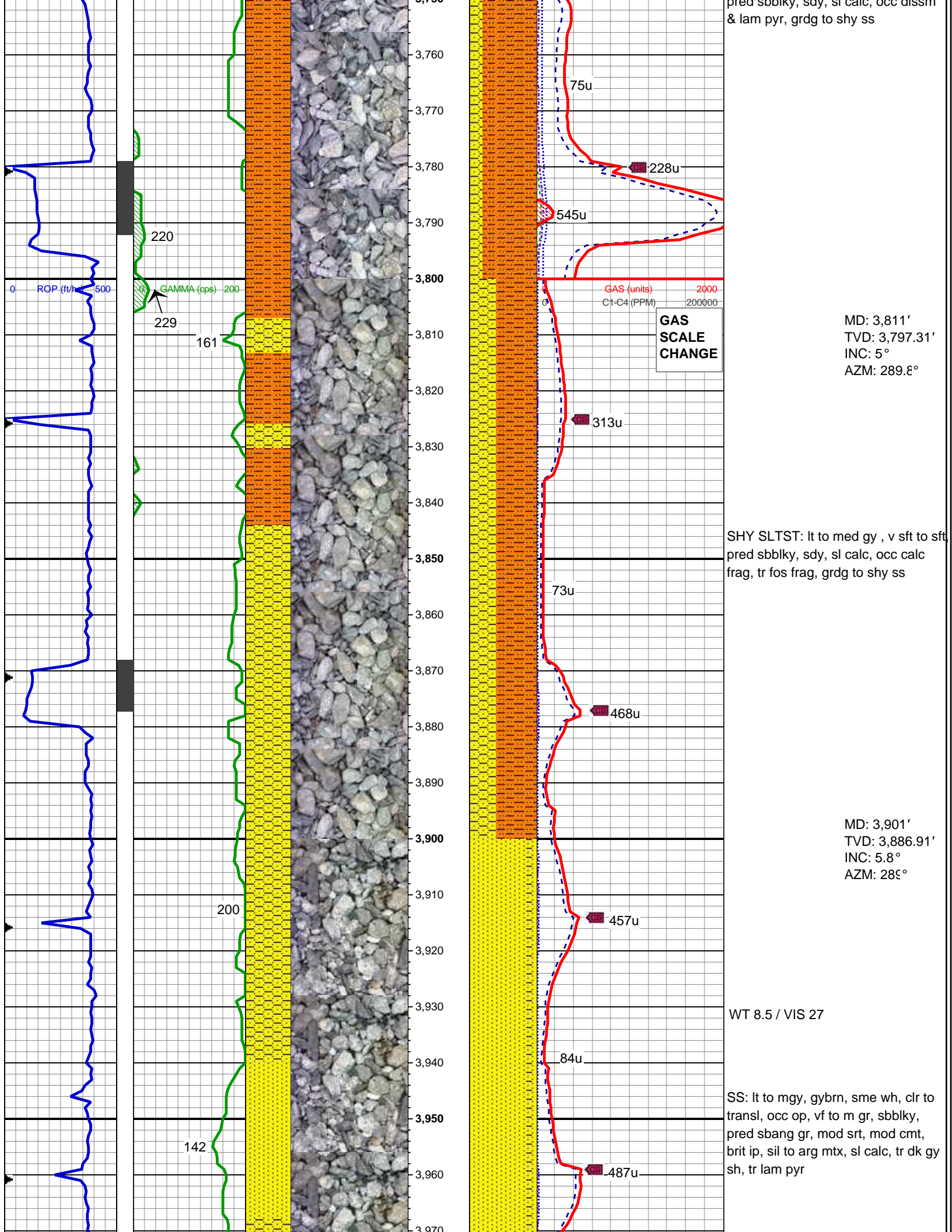
WT 8.5+ / VIS 27

MD: 3,452'  
TVD: 3,440.08'  
INC: 6.5°  
AZM: 268°

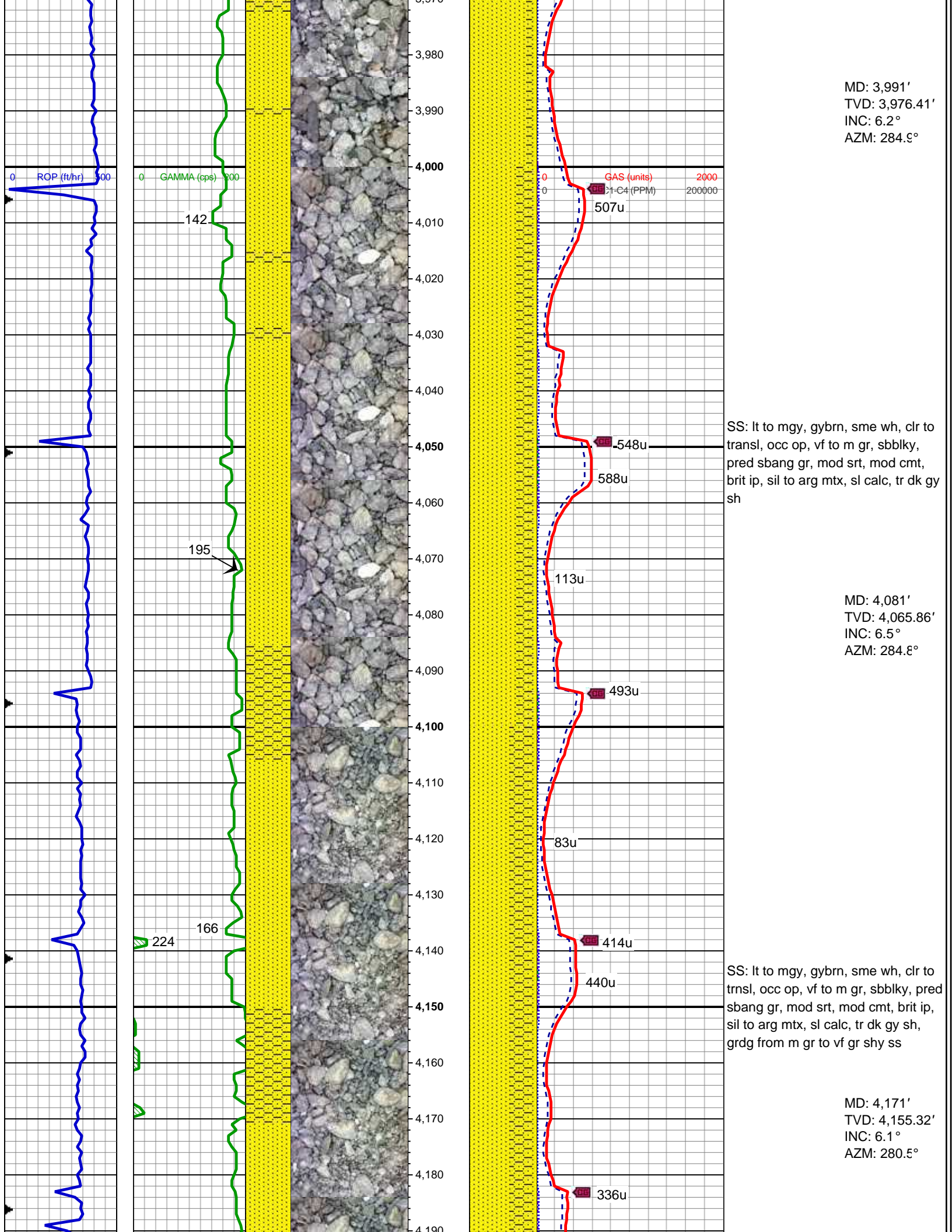
SHY SLTST: lt to med gy, v sft to sft,  
pred sbblky, sdy, sl calc, grdg to  
shy ss, occ clr to trnsl m gr ss











MD: 3,991'  
TVD: 3,976.41'  
INC: 6.2°  
AZM: 284.9°

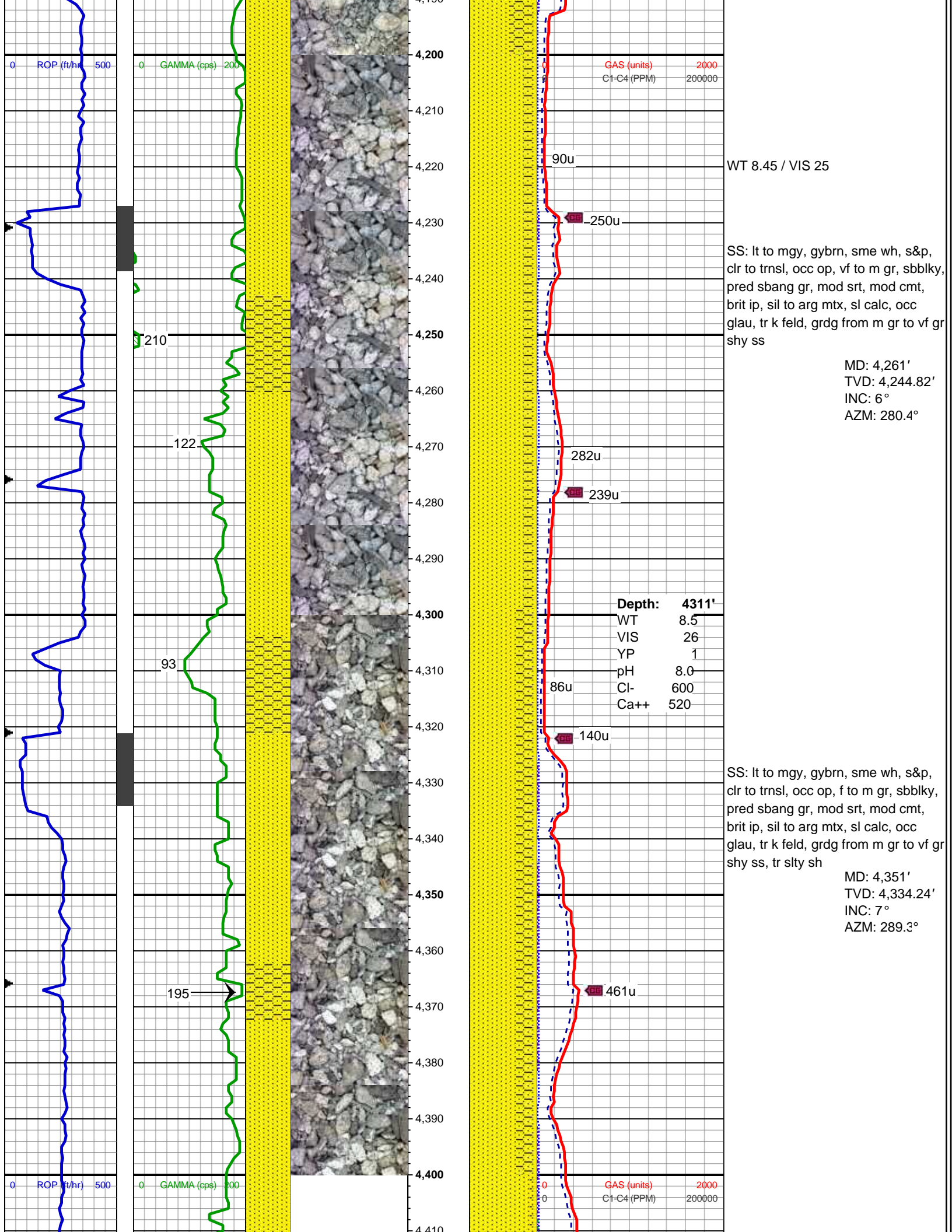
SS: lt to mgy, gybrn, sme wh, clr to transl, occ op, vf to m gr, sbbkly, pred sbang gr, mod srt, mod cmt, brit ip, sil to arg mtx, sl calc, tr dk gy sh

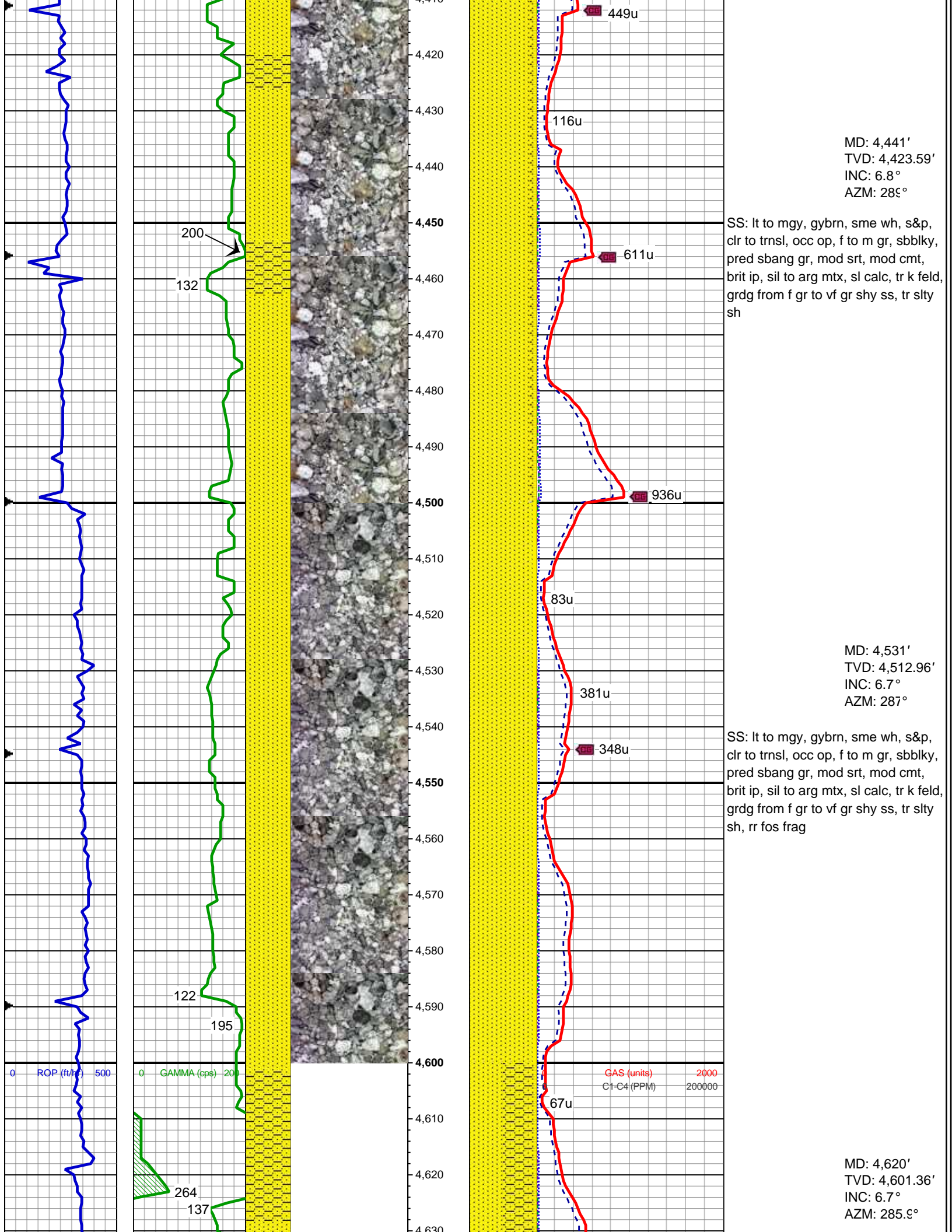
MD: 4,081'  
TVD: 4,065.86'  
INC: 6.5°  
AZM: 284.8°

SS: lt to mgy, gybrn, sme wh, clr to trnsl, occ op, vf to m gr, sbbkly, pred sbang gr, mod srt, mod cmt, brit ip, sil to arg mtx, sl calc, tr dk gy sh, grdg from m gr to vf gr shy ss

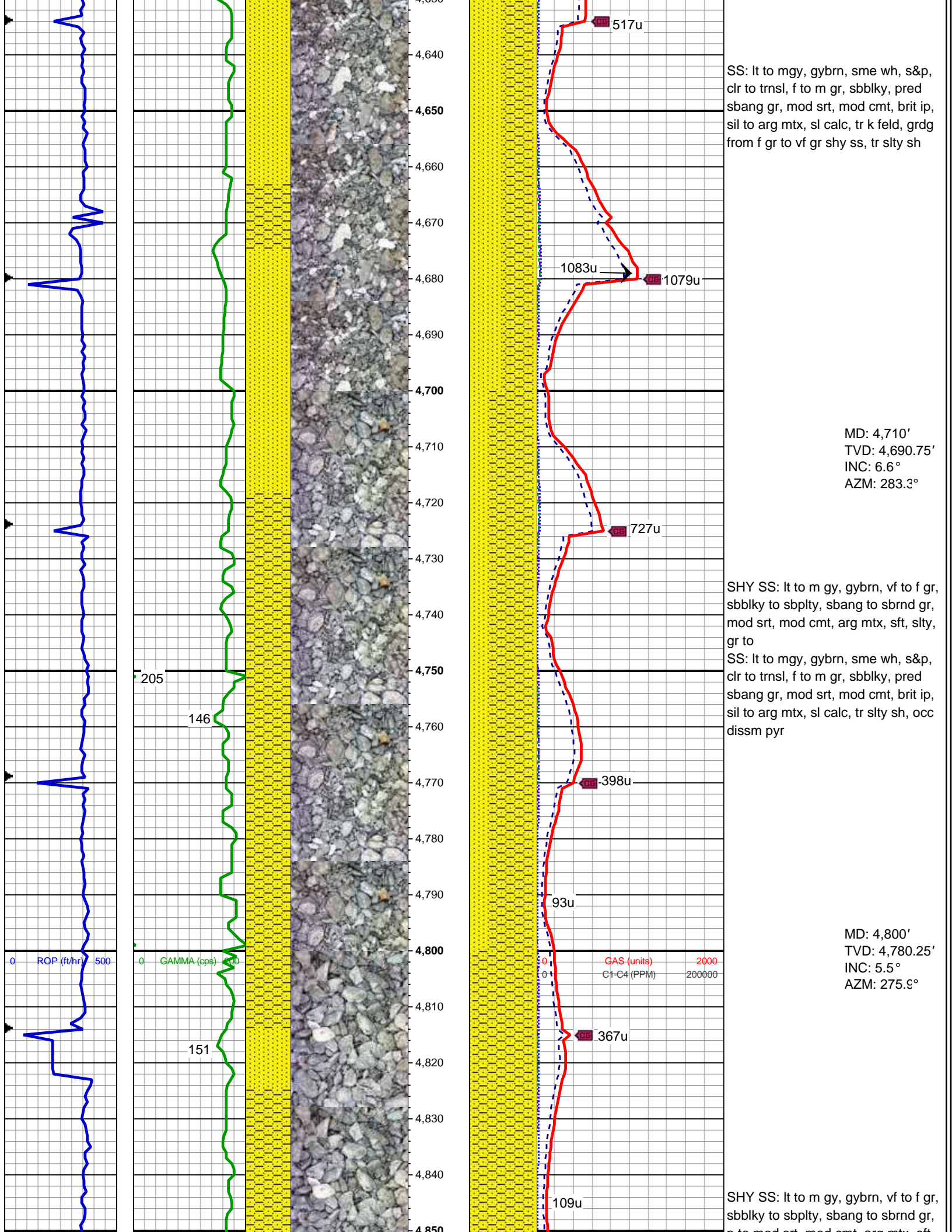
MD: 4,171'  
TVD: 4,155.32'  
INC: 6.1°  
AZM: 280.5°



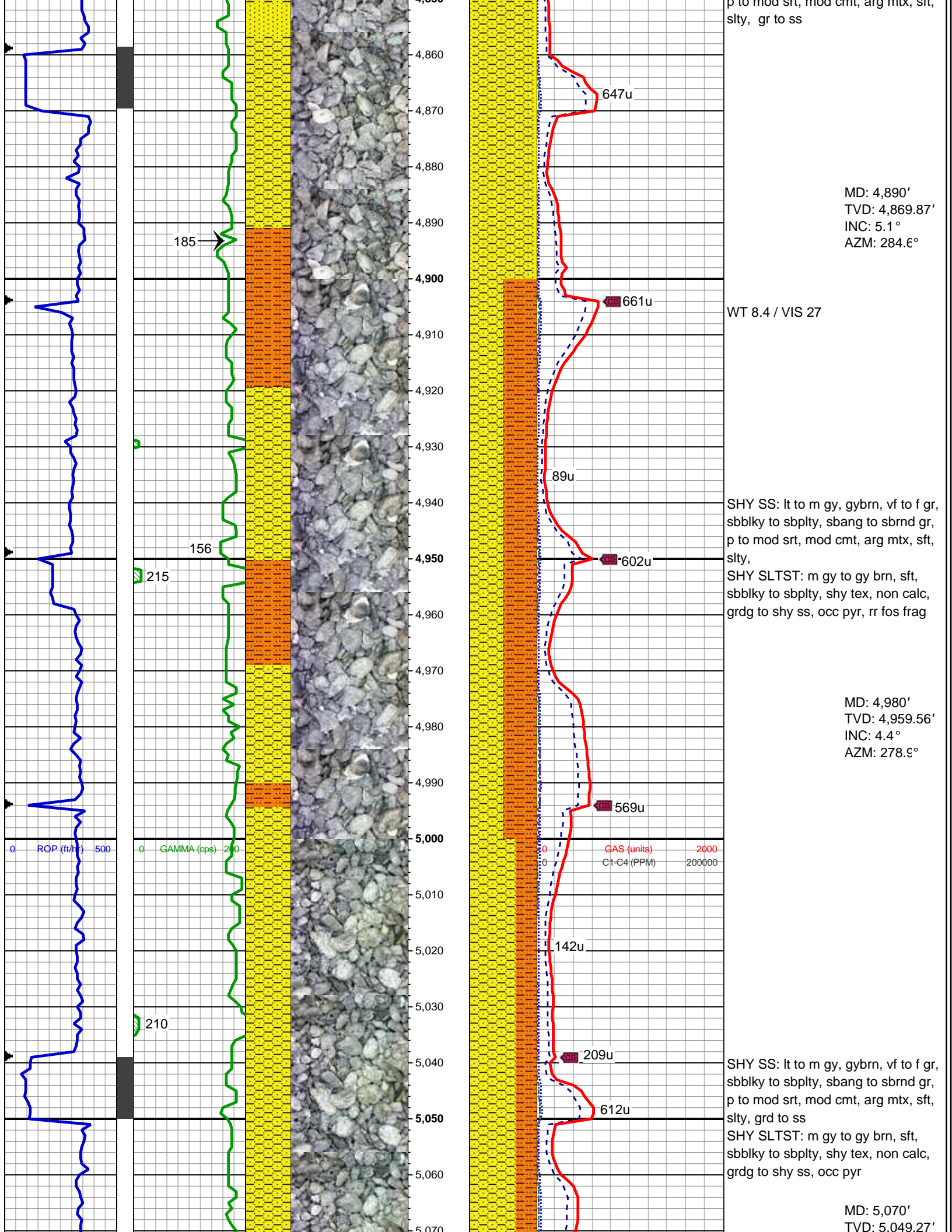


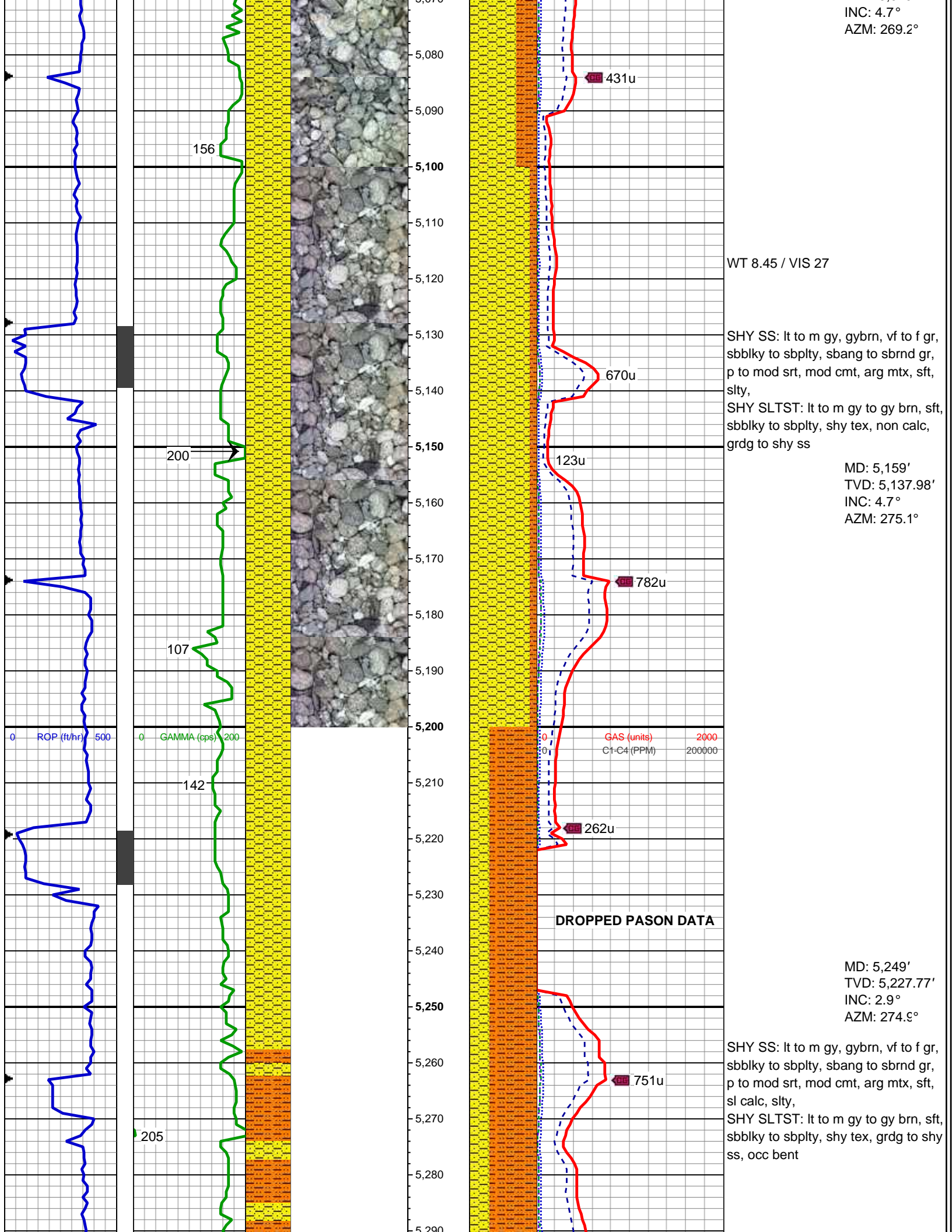




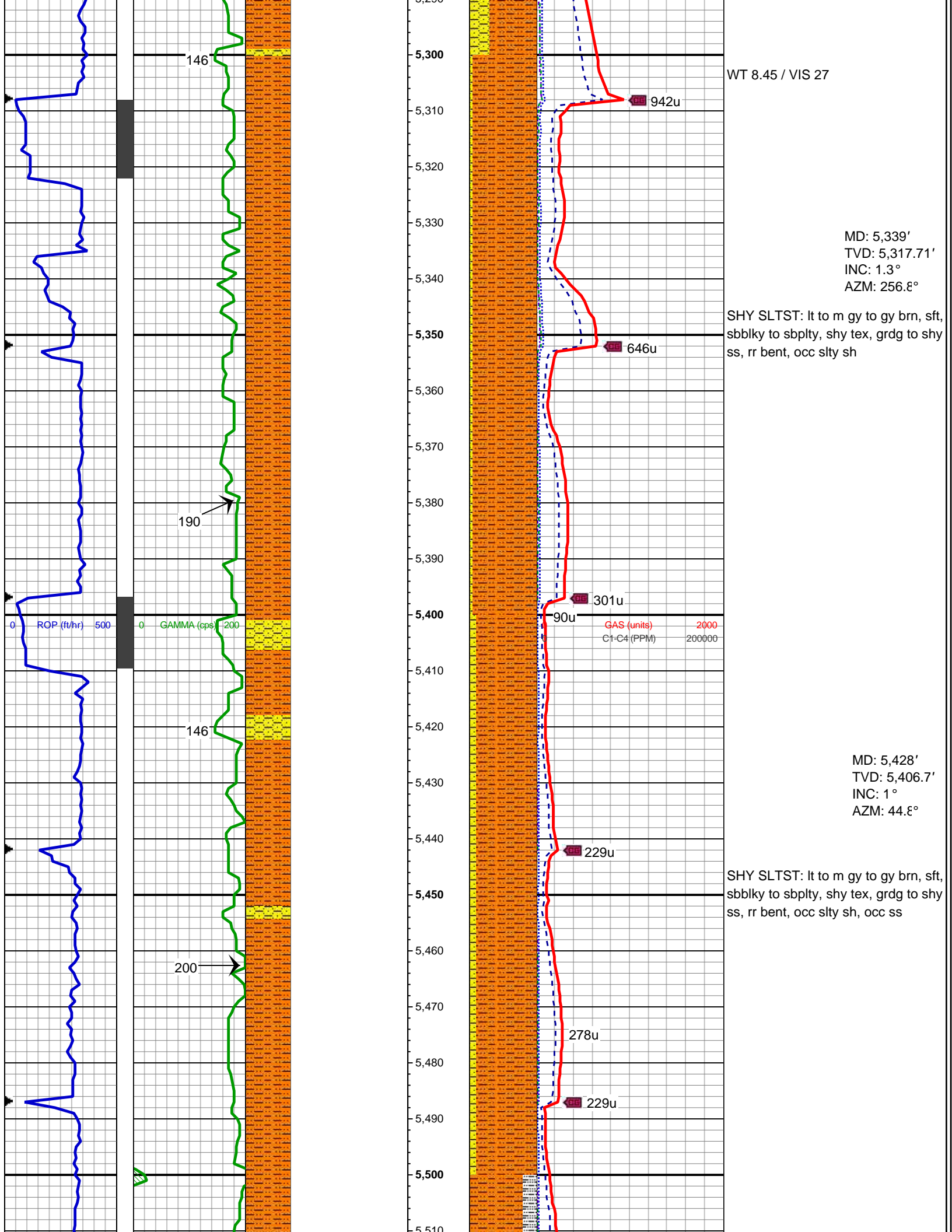


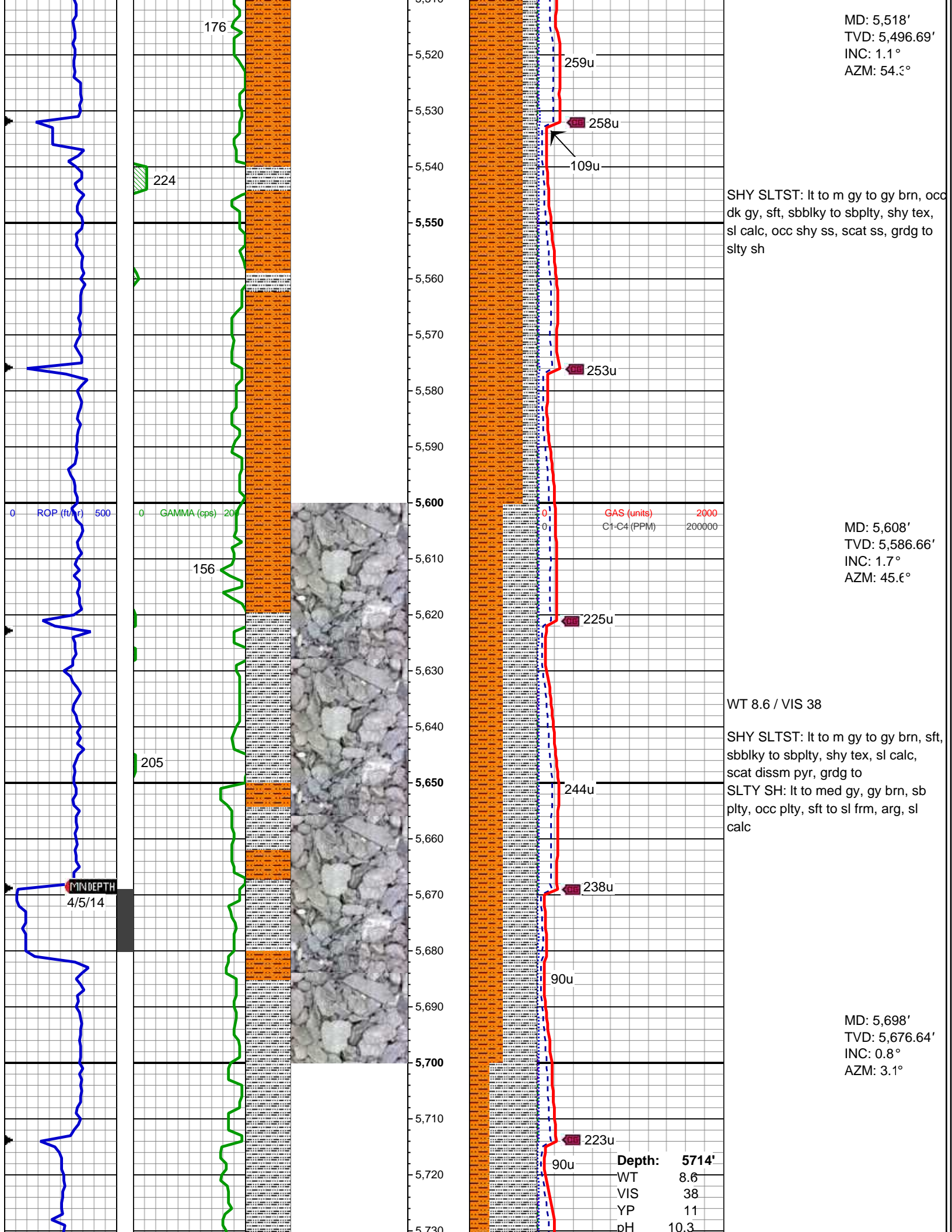




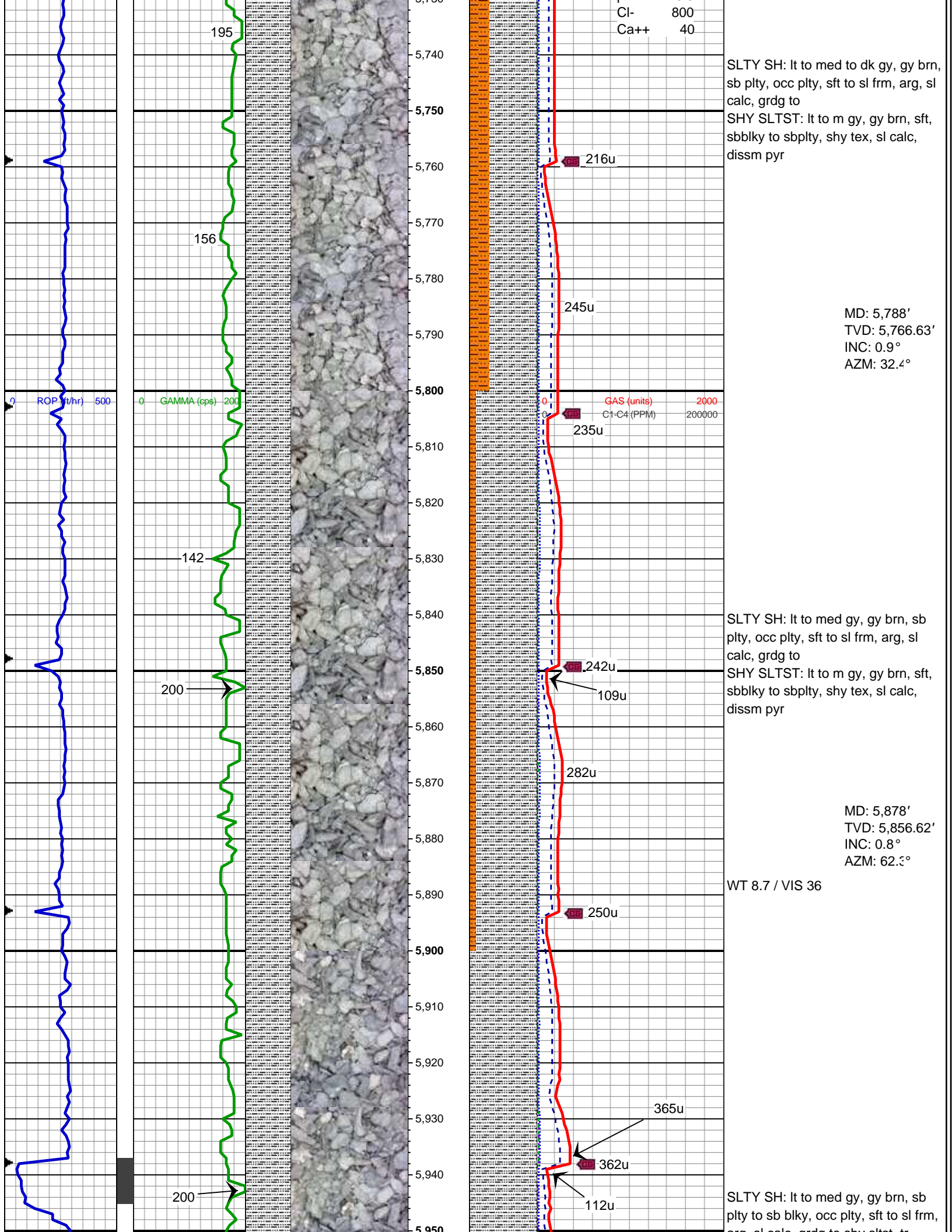


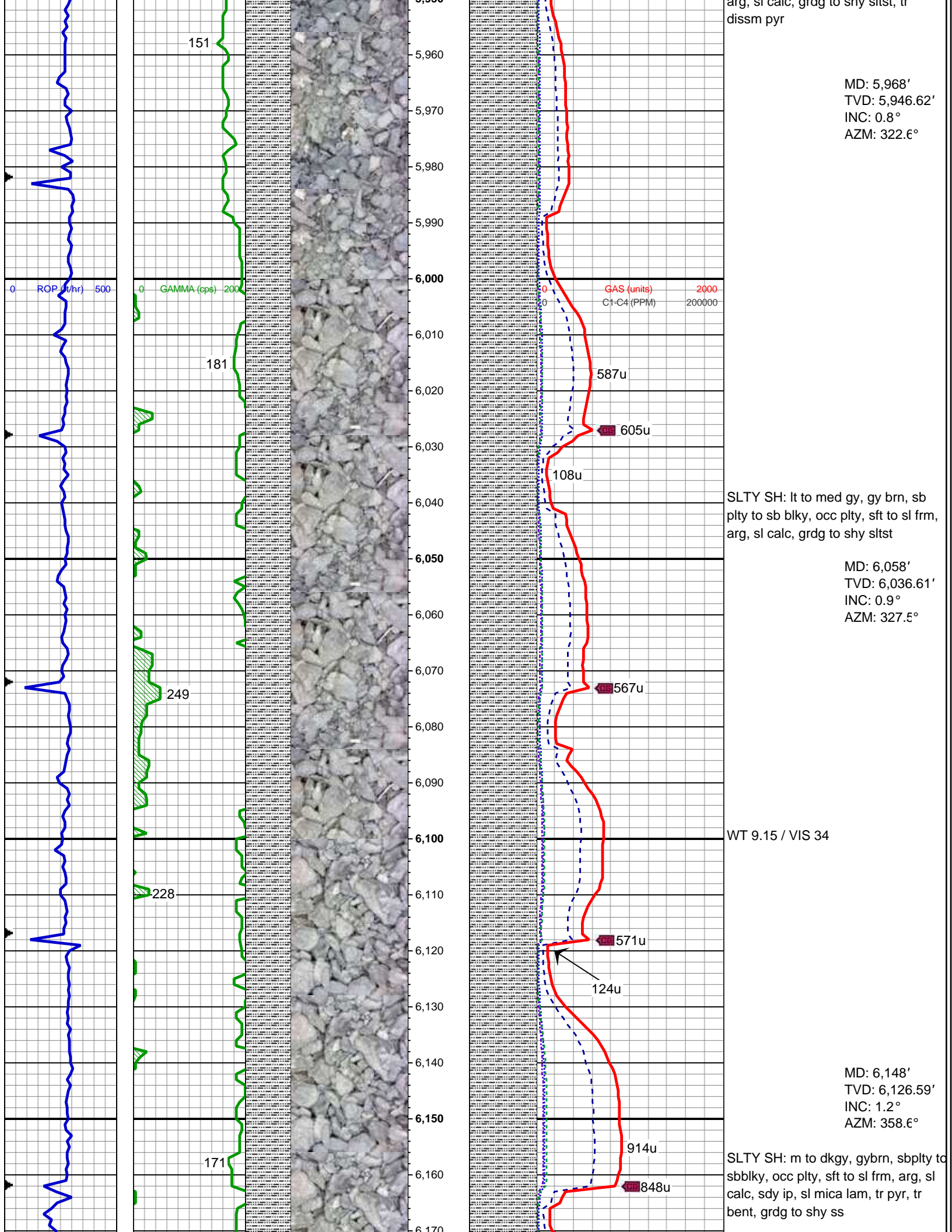




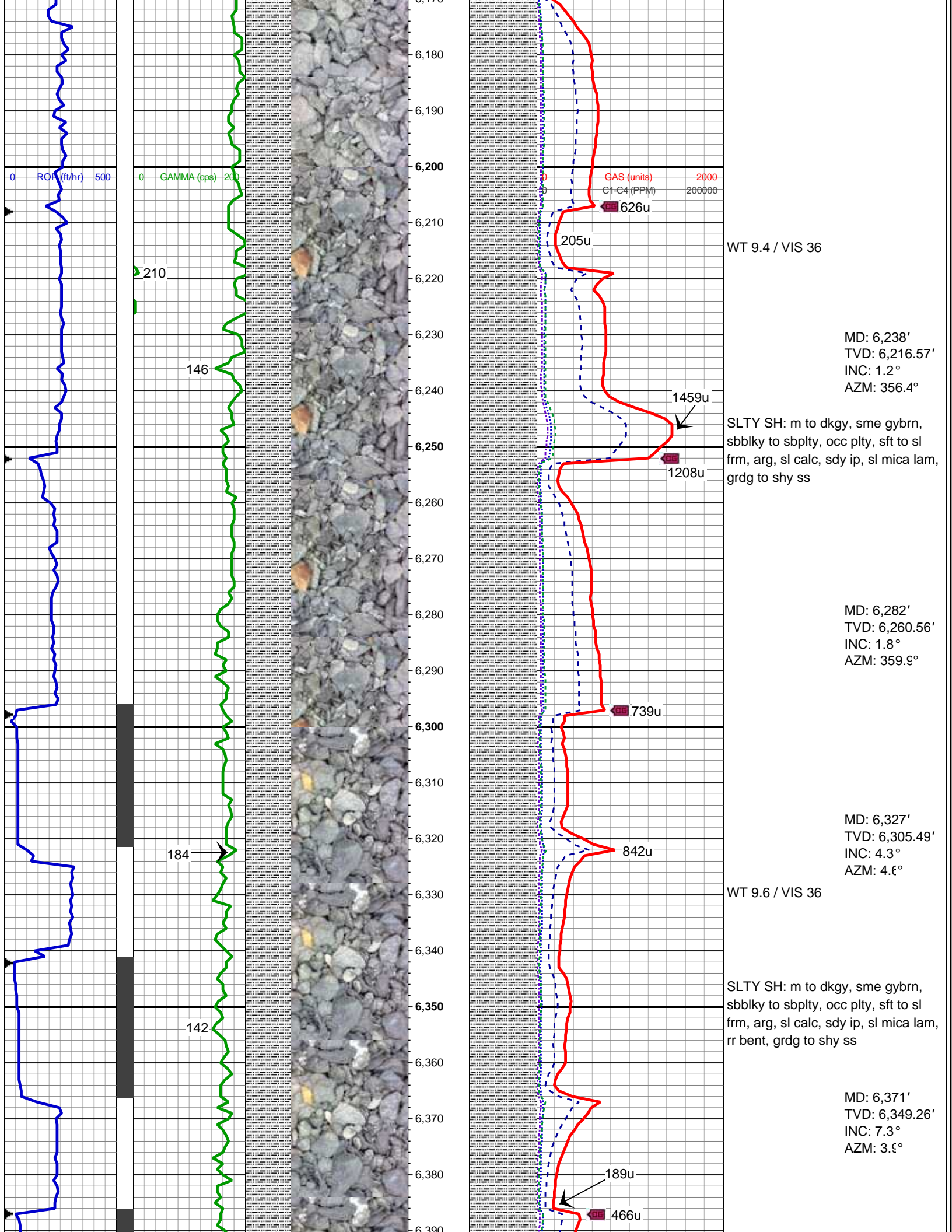


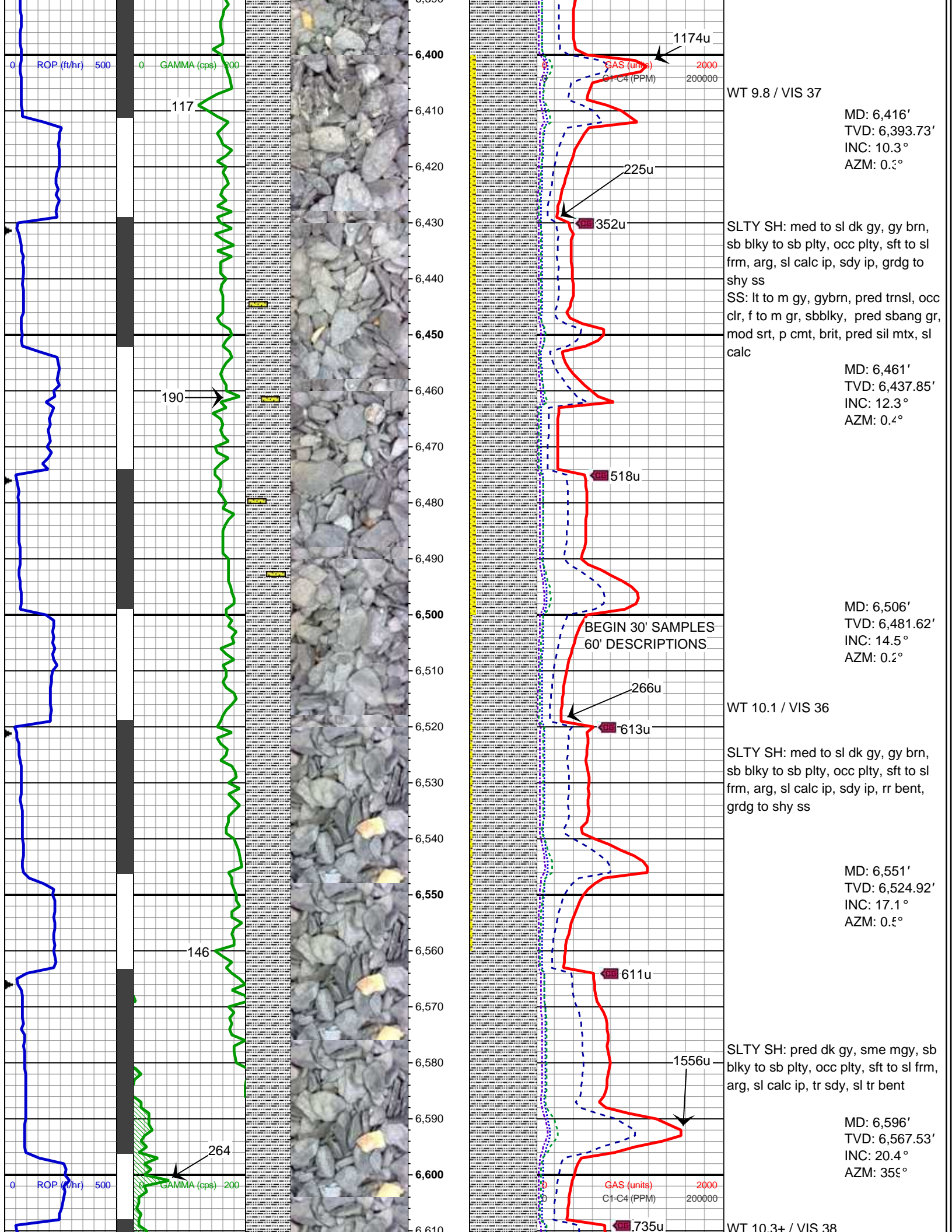












ROP (ft/hr)

GAMMA (cps)

117

190

146

264

ROP (ft/hr)

GAMMA (cps)

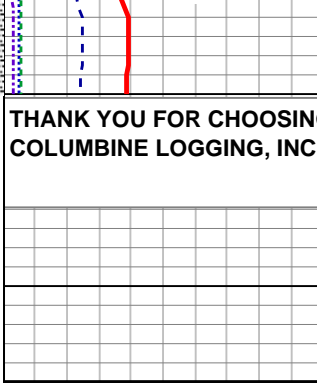
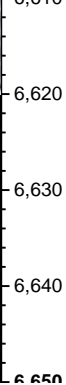
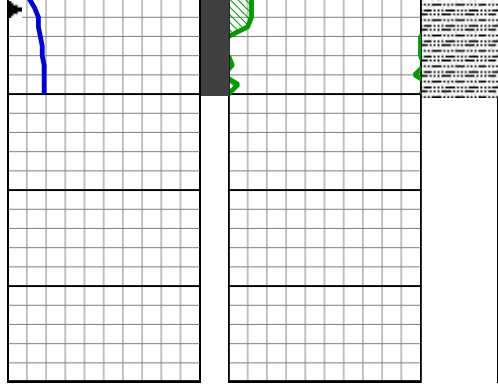
6,400  
6,410  
6,420  
6,430  
6,440  
6,450  
6,460  
6,470  
6,480  
6,490  
6,500  
6,510  
6,520  
6,530  
6,540  
6,550  
6,560  
6,570  
6,580  
6,590  
6,600  
6,610

1174u  
2000  
200000  
GAS (units)  
C1-C4 (PPM)  
225u  
352u  
518u  
266u  
613u  
611u  
1556u  
735u  
2000  
200000  
GAS (units)  
C1-C4 (PPM)

WT 9.8 / VIS 37  
MD: 6,416'  
TVD: 6,393.73'  
INC: 10.3°  
AZM: 0.3°  
SLTY SH: med to sl dk gy, gy brn, sb blk to sb plty, occ plty, sft to sl frm, arg, sl calc ip, sdy ip, grdg to shy ss  
SS: lt to m gy, gybrn, pred trnsl, occ clr, f to m gr, sbbkly, pred sbang gr, mod srt, p cmt, brit, pred sil mtx, sl calc  
MD: 6,461'  
TVD: 6,437.85'  
INC: 12.3°  
AZM: 0.4°  
MD: 6,506'  
TVD: 6,481.62'  
INC: 14.5°  
AZM: 0.2°  
WT 10.1 / VIS 36  
SLTY SH: med to sl dk gy, gy brn, sb blk to sb plty, occ plty, sft to sl frm, arg, sl calc ip, sdy ip, rr bent, grdg to shy ss  
MD: 6,551'  
TVD: 6,524.92'  
INC: 17.1°  
AZM: 0.5°  
SLTY SH: pred dk gy, sme mgly, sb blk to sb plty, occ plty, sft to sl frm, arg, sl calc ip, tr sdy, sl tr bent  
MD: 6,596'  
TVD: 6,567.53'  
INC: 20.4°  
AZM: 35.9°  
WT 10.3+ / VIS 38

BEGIN 30' SAMPLES  
60' DESCRIPTIONS





LOG CONTINUES ON FILE:  
Oscar Y10-77-1HN Horiz.mplot