

# COLUMBINE LOGGING

Scale: 5" / 100'  
Measured Depth Log

**Well Name** Mahalo State AA09-74-1BHNB

**Location** Sec. 4 T6N R63W

**State** Colorado

**County** Weld

**Country** USA

**Rig Number** PD 829

**API Number** 05-123-39014

**AFE #** 200332

**Region** DJ Basin

**Field** Wattenberg

**Spud Date** 1/4/2015

**Drilling Completed** 1/11/2015

**Surface Coordinates** 325 FSL ; 2303 FEL  
40.50949000 ; -104.44045000

**Bottom Hole Coordinates** 30 FNL ; 1510 FEL

**Ground Elevation** 4695'

**K.B. Elevation** 4711'

**Logged Interval** 846' **To** 5955'

**Total Depth** 11824'

**Formation** Niobrara B chalk

**Type of Drilling Fluid** FW LSND

## Operator

**Company** Noble Energy Inc

**Address** 1625 BROADWAY  
DENVER, CO 80202

## Geologist

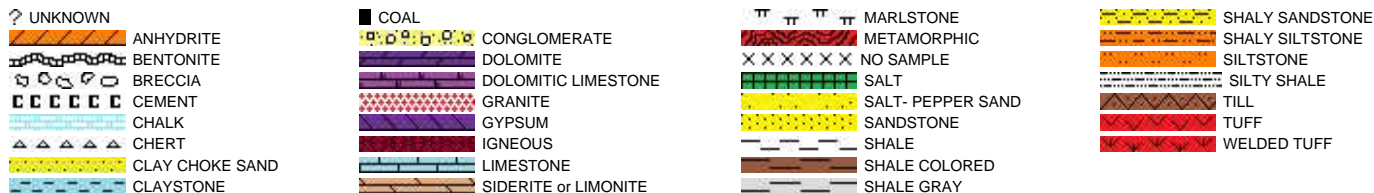
**Name** Holly Duncan

**Company** Noble Energy, Inc.

**Address** 1625 BROADWAY  
DENVER, CO 80202

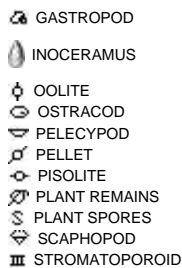
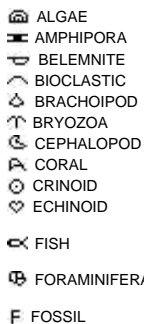
## Other

## Rock Types

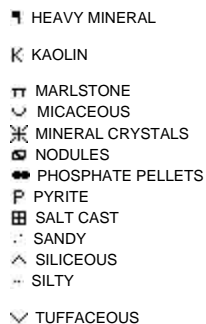
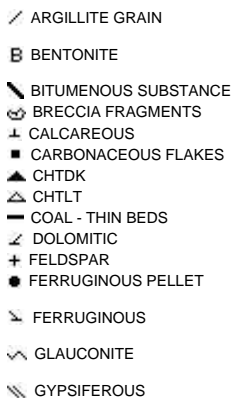
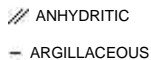


## Accessories

### Fossils



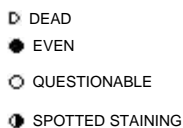
### Minerals



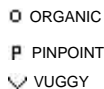
### Stringer

## Other Symbols

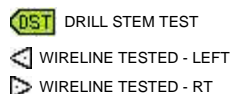
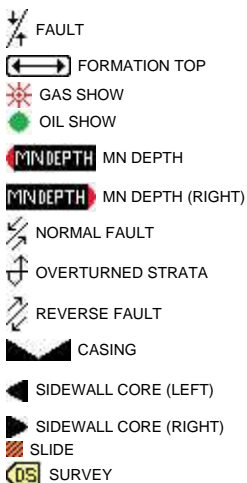
### Oil Show



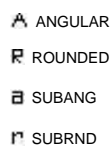
### Porosity



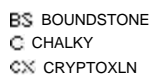
### Engineering



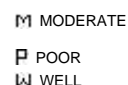
### Rounding

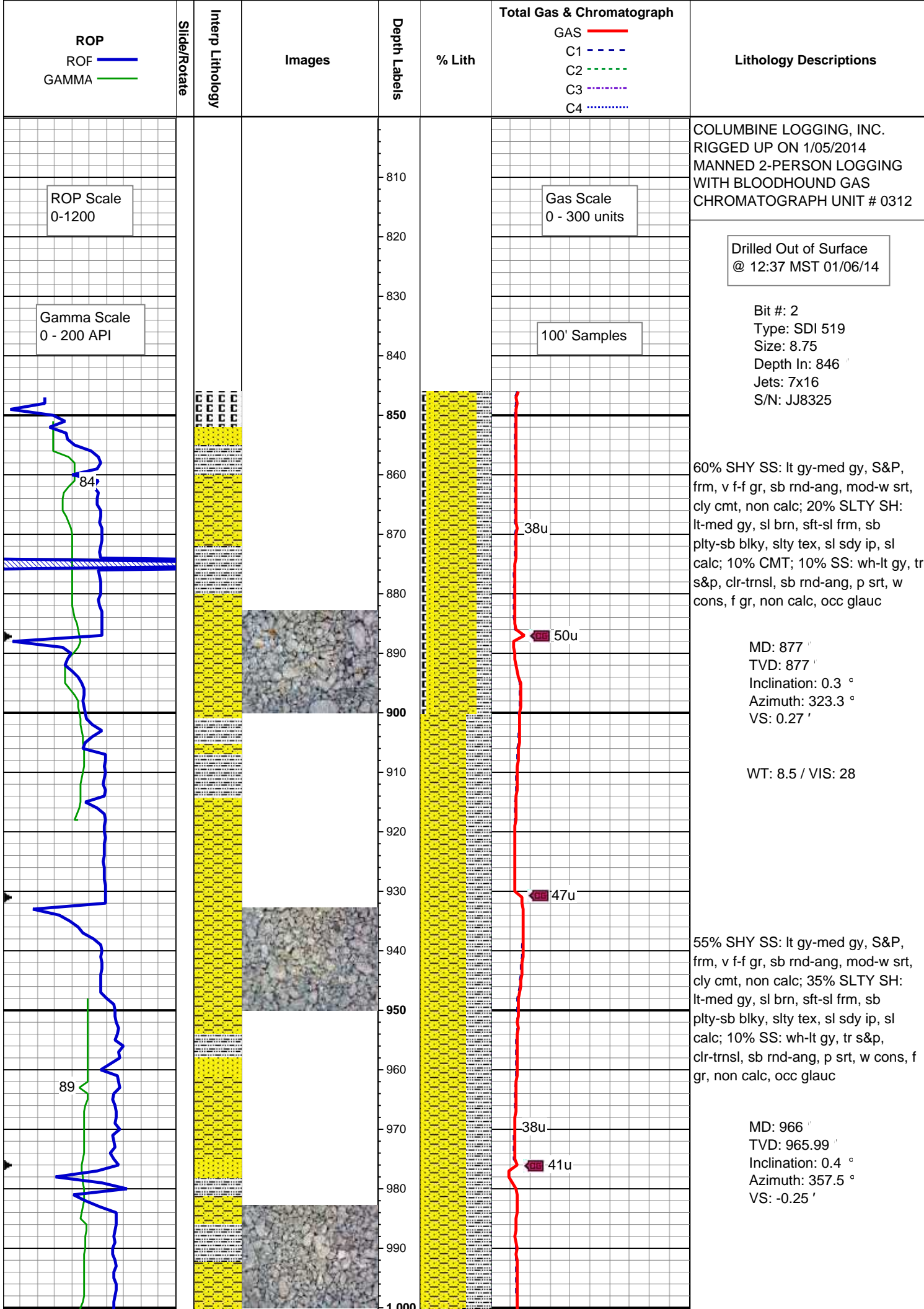


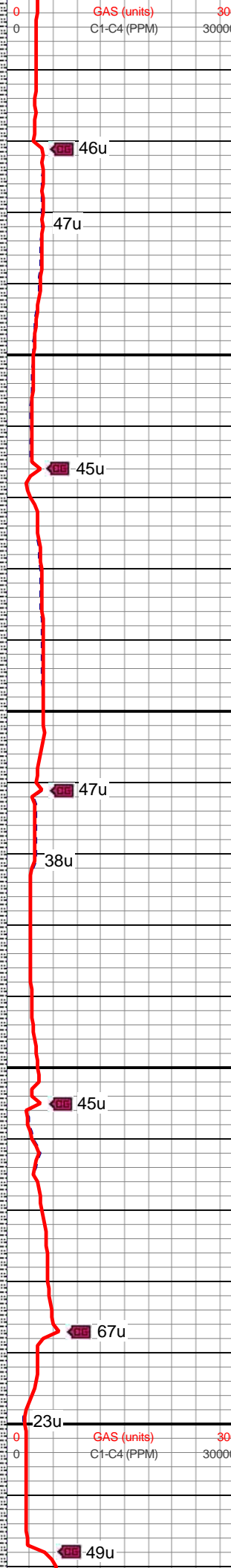
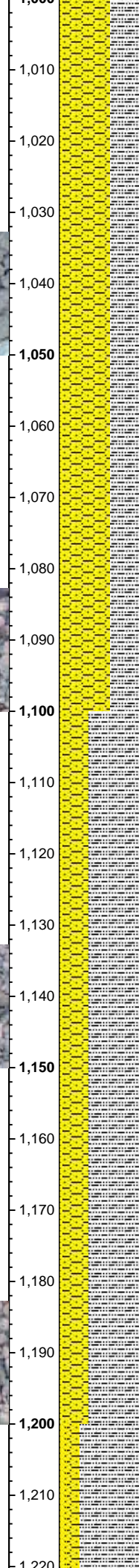
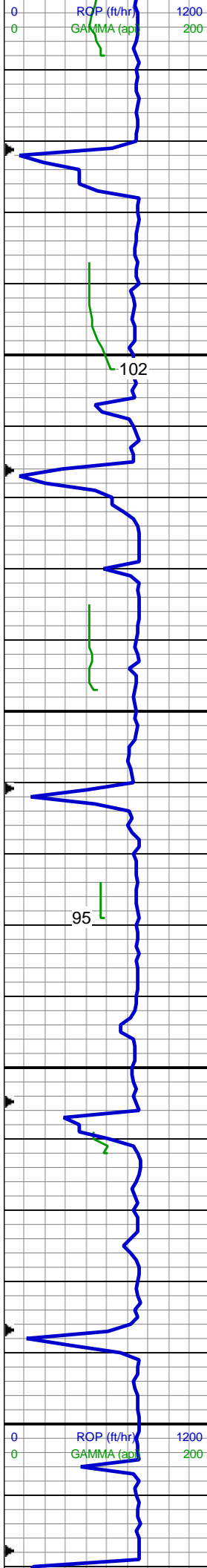
### Textures



### Sorting







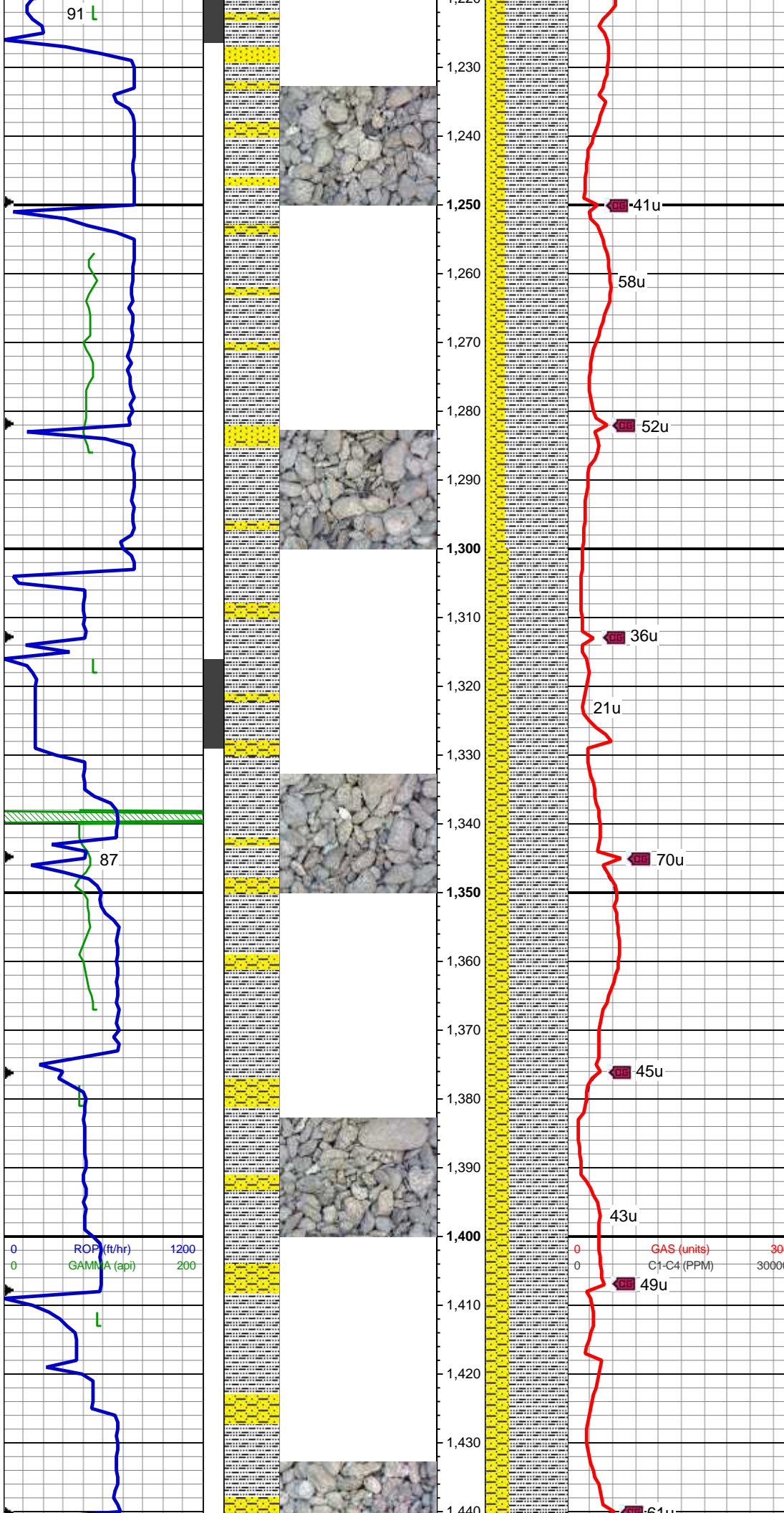
55% SHY SS: lt gy-med gy, S&P, frm, v f-f gr, sb rnd-ang, mod-w srt, cly cmt, non calc; 40% SLTY SH: lt-med gy, sl brn, sft-sl frm, sb plty-sb blk, slty tex, sl sdy ip, sl calc; 5% SS: wh-lt gy, tr s&p, clr-trnsl, sb rnd-ang, p srt, w cons, f gr, non calc, occ glauc

MD: 1,056 '  
TVD: 1,055.99 '  
Inclination: 0.4 °  
Azimuth: 32.2 °  
VS: -0.8 '

65% SLTY SH: lt-med gy, sl brn, sft-sl frm, sb plty-sb blk, slty tex, sl sdy ip, sl calc; 30% SHY SS: lt gy-med gy, S&P, frm, v f-f gr, sb rnd-ang, mod-w srt, cly cmt, non calc; 5% SS: wh-lt gy, tr s&p, clr-trnsl, sb rnd-ang, p srt, w cons, f gr, non calc

MD: 1,164 '  
TVD: 1,163.99 '  
Inclination: 0.4 °  
Azimuth: 25.8 °  
VS: -1.41 '





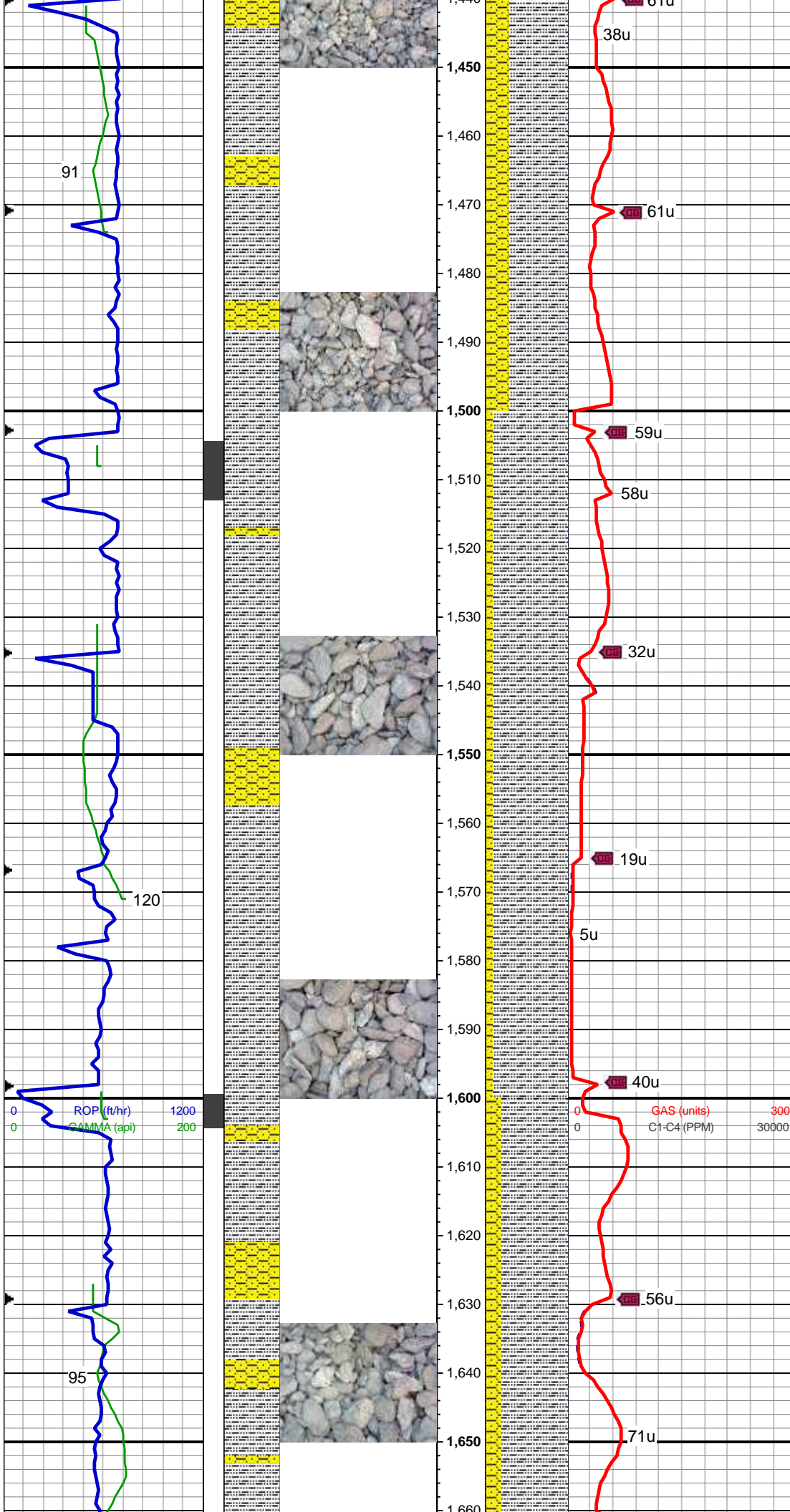
75% SLTY SH: lt-med gy, sl brn, sft-sl frm, sb plty-sb blk, slty tex, sl sdy ip, sl calc; 15% SHY SS: lt gy-med gy, S&P, frm, v f-f gr, sb rnd-ang, mod-w srt, cly cmt, non calc; 10% SS: wh-lt gy, tr s&p, clr-trnsl, sb rnd-ang, p srt, w cons, f gr, non calc

MD: 1,258 '  
TVD: 1,257.99 '  
Inclination: 0.7 °  
Azimuth: 88.2 °  
VS: -1.62 '

MD: 1,353 '  
TVD: 1,352.92 '  
Inclination: 3.3 °  
Azimuth: 115.3 °  
VS: -0.07 '

70% SLTY SH: lt-med gy, sl brn, sft-sl frm, sb plty-sb blk, slty tex, sl sdy ip, sl calc; 25% SHY SS: lt gy-med gy, S&P, frm, v f-f gr, sb rnd-ang, mod-w srt, cly cmt, non calc; 5% SS: wh-lt gy, tr s&p, clr-trnsl, sb rnd-ang, p srt, w cons, f gr, non calc

MD: 1,448 '  
TVD: 1,447.68 '  
Inclination: 4.9 °  
Azimuth: 141.7 °  
VS: 4.91 '



70% SLTY SH: lt-med gy, sl brn, sft-sl frm, sb plty-sb blk, slty tex, sl sdy ip, sl calc; 30% SHY SS: lt gy-med gy, S&P, frm, v f-f gr, sb rnd-ang, mod-w srt, cly cmt, non calc, occ ss

MD: 1,543 '  
TVD: 1,542.13 '  
Inclination: 7.4 °  
Azimuth: 134.7 °  
VS: 13.25 '

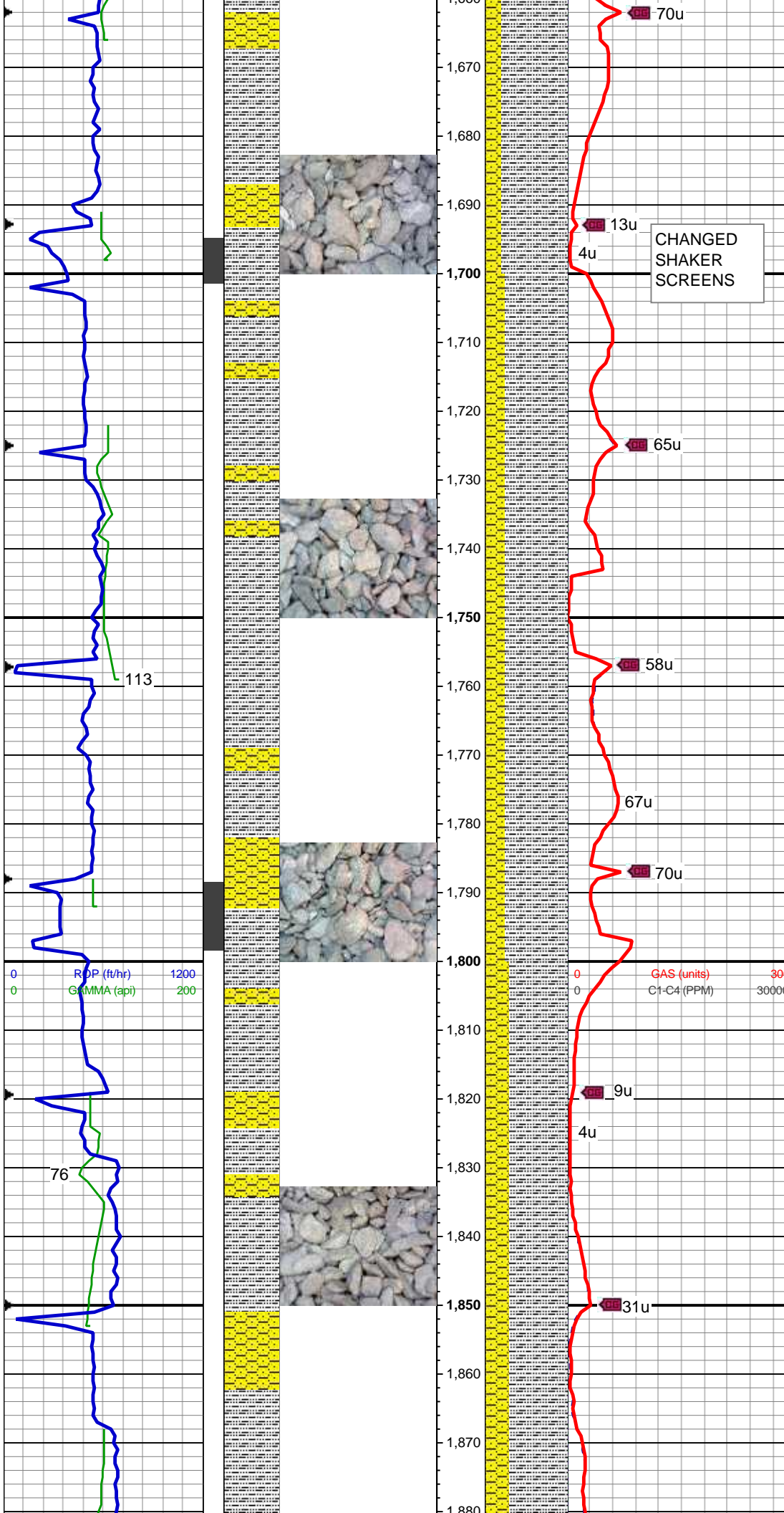
90% SLTY SH: lt-med gy, sl brn, sft-sl frm, sb plty-sb blk, slty tex, sl sdy ip, sl calc; 10% SHY SS: lt gy-med gy, S&P, frm, v f-f gr, sb rnd-ang, mod-w srt, cly cmt, non calc, tr glauc, occ ss

WT: 8.6 / VIS: 27

MD: 1,638 '  
TVD: 1,636.29 '  
Inclination: 7.9 °  
Azimuth: 122.5 °  
VS: 22.3 '

80% SLTY SH: lt-med gy, sl brn, sft-sl frm, sb plty-sb blk, slty tex, sl sdy ip, sl calc; 20% SHY SS: lt gy-med gy, S&P, frm, v f-f gr, sb rnd-ang, mod-w srt, cly cmt, non calc, tr glauc, occ ss





MD: 1,733 '  
TVD: 1,730.19 '  
Inclination: 9.5 °  
Azimuth: 118.8 °  
VS: 31.17 '

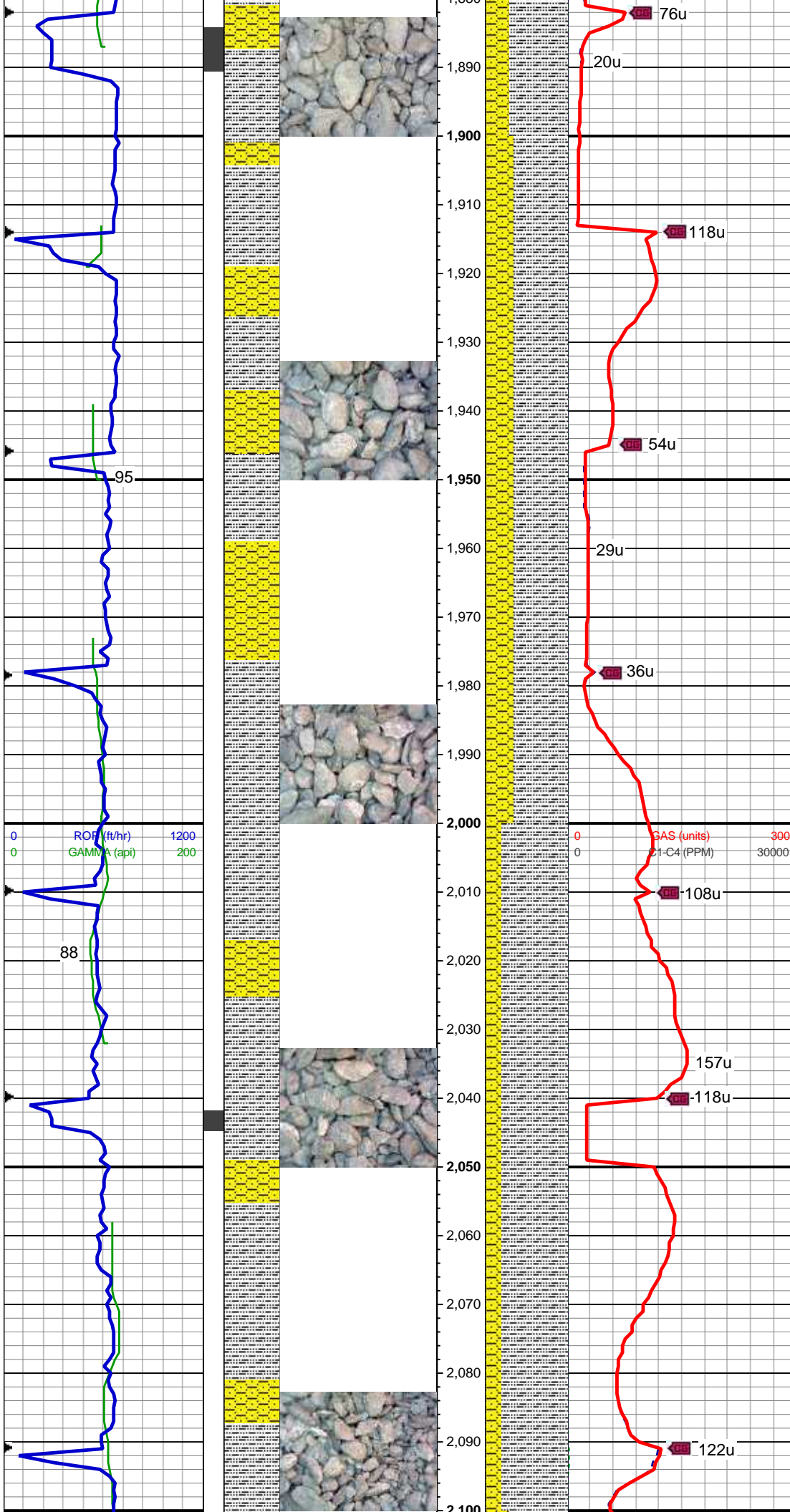
75% SLTY SH: lt-med gy, sl brn, sft-sl frm, sb plty-sb blk, slty tex, sl sdy ip, sl calc; 25% SHY SS: lt gy-med gy, S&P, frm, v f-f gr, sb rnd-ang, mod-w srt, cly cmt, non calc, tr glauc, occ ss

WT: 8.55 / VIS: 27

MD: 1,828 '  
TVD: 1,823.66 '  
Inclination: 11.1 °  
Azimuth: 113.6 °  
VS: 40.58 '

70% SLTY SH: lt-med gy, sl brn, sft-sl frm, sb plty-sb blk, slty tex, sl sdy ip, sl calc; 30% SHY SS: lt gy-med gy, S&P, frm, v f-f gr, sb rnd-ang, mod-w srt, cly cmt, non calc, tr glauc, occ ss

WT: 8.55 / VIS: 27



MD: 1,923 '  
TVD: 1,916.87 '  
Inclination: 11.2 °  
Azimuth: 106.2 °  
VS: 49.06 '

65% SLTY SH: lt-med gy, sl brn, sft-sl frm, sb plty-sb blk, slty tex, sl sdy ip, sl calc; 35% SHY SS: lt gy-med gy, S&P, frm, v f-f gr, sb rnd-ang, mod-w srt, cly cmt, non calc, tr glauc, occ ss

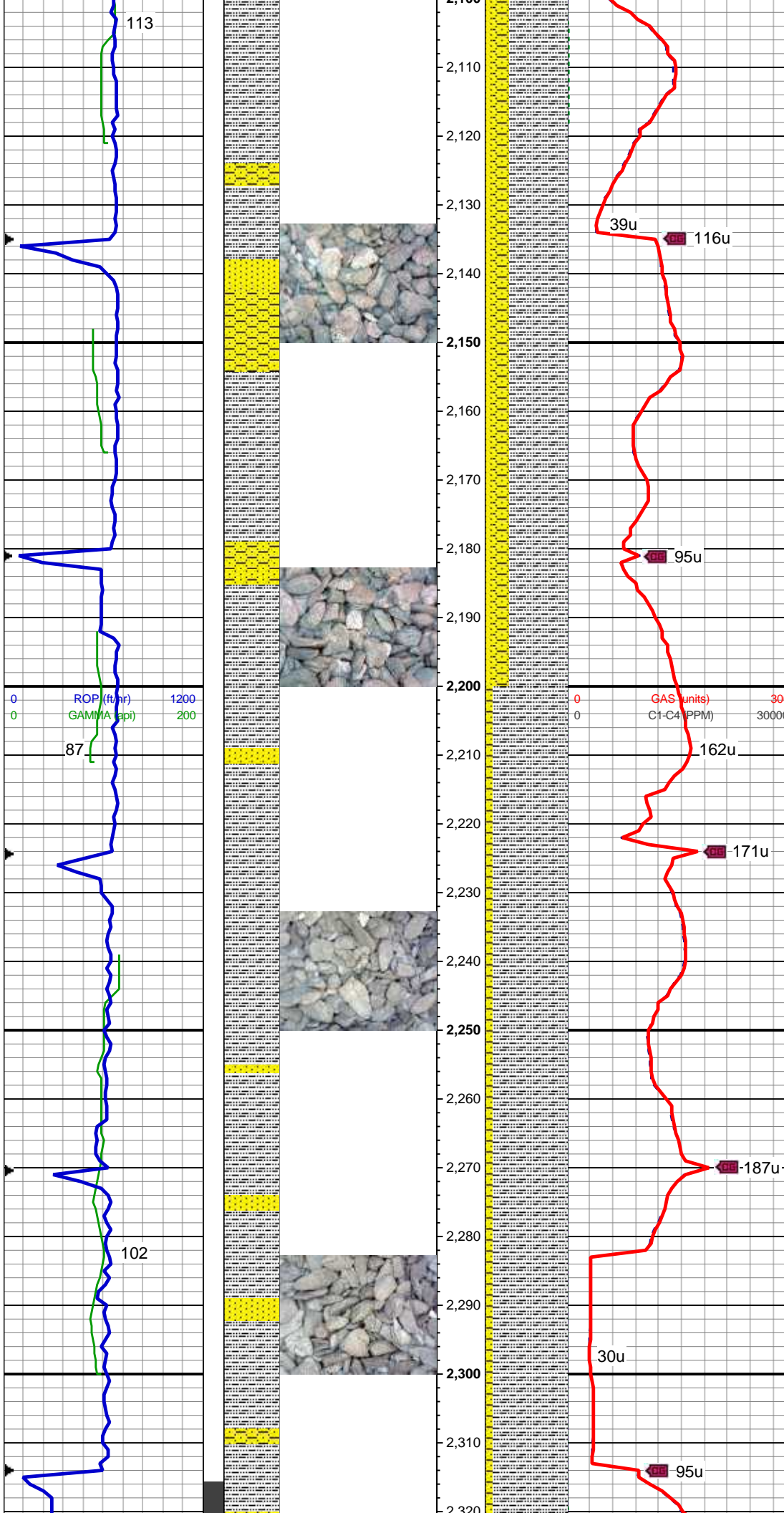
MD: 1,991 '  
TVD: 1,983.6 '  
Inclination: 11 °  
Azimuth: 106.4 °  
VS: 54.38 '

WT: 8.55 / VIS: 27

80% SLTY SH: lt-med gy, sl brn, sft-sl frm, sb plty-sb blk, slty tex, sl sdy ip, sl calc; 20% SHY SS: lt gy-med gy, S&P, frm, v f-f gr, sb rnd-ang, mod-w srt, cly cmt, non calc, tr glauc, occ ss

MD: 2,081 '  
TVD: 2,072.05 '  
Inclination: 10.3 °  
Azimuth: 99.9 °  
VS: 60.31 '





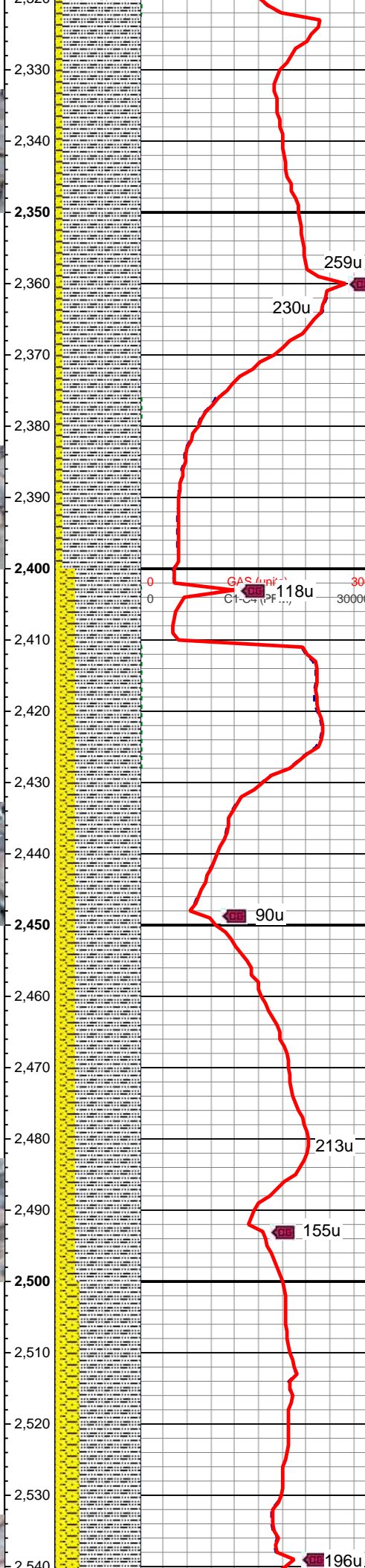
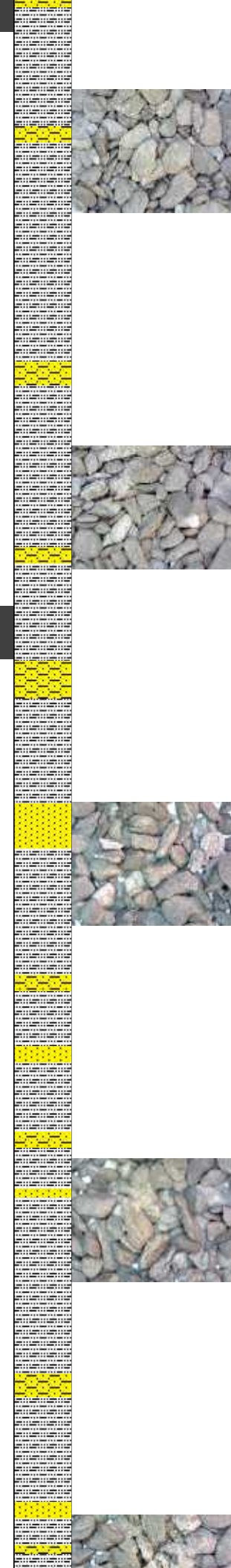
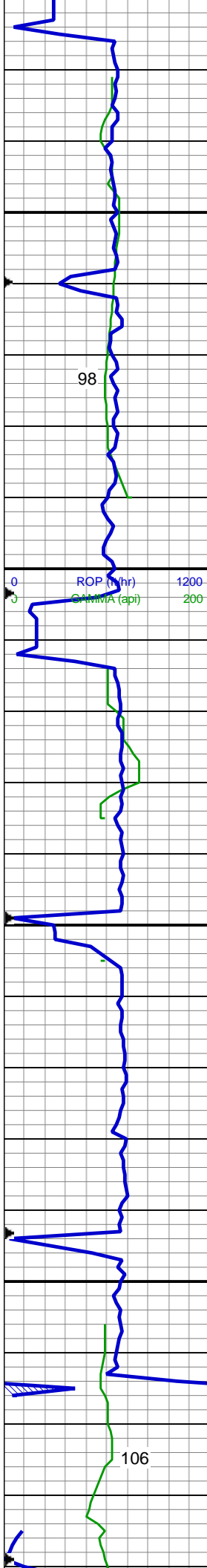
70% SLTY SH: lt-med gy, sl brn, sft-sl frm, sb plty-sb blk, slty tex, sl sdy ip, sl calc; 20% SHY SS: lt gy-med gy, S&P, frm, v f-f gr, sb rnd-ang, mod-w srt, cly cmt, non calc, tr glauc, occ ss; 10% SS: wh-lt gy, tr s&p, clr-trnsl, sb rnd-ang, p srt, w cons, f gr, non calc, occ glauc

MD: 2,170 '  
TVD: 2,159.66 '  
Inclination: 10 °  
Azimuth: 96.8 °  
VS: 64.64 '

90% SLTY SH: lt-med gy, sl brn, sft-sl frm, sb plty-sb blk, slty tex, sl sdy ip, sl calc; 10% SHY SS: lt gy-med gy, S&P, frm, v f-f gr, sb rnd-ang, mod-w srt, cly cmt, non calc, tr glauc

MD: 2,260 '  
TVD: 2,248.31 '  
Inclination: 9.9 °  
Azimuth: 93.1 °  
VS: 68.04 '

WT: 8.4 / VIS: 27



MD: 2,349 '  
TVD: 2,335.88 '  
Inclination: 10.7 °  
Azimuth: 97.2 °  
VS: 71.59 '

90% SLTY SH: lt-med gy, sl brn, sft-sl frm, sb plty-sb blk, slty tex, sl sdy ip, sl calc; 10% SHY SS: lt gy-med gy, S&P, frm, v f-f gr, sb rnd-ang, mod-w srt, cly cmt, non calc, tr glauc

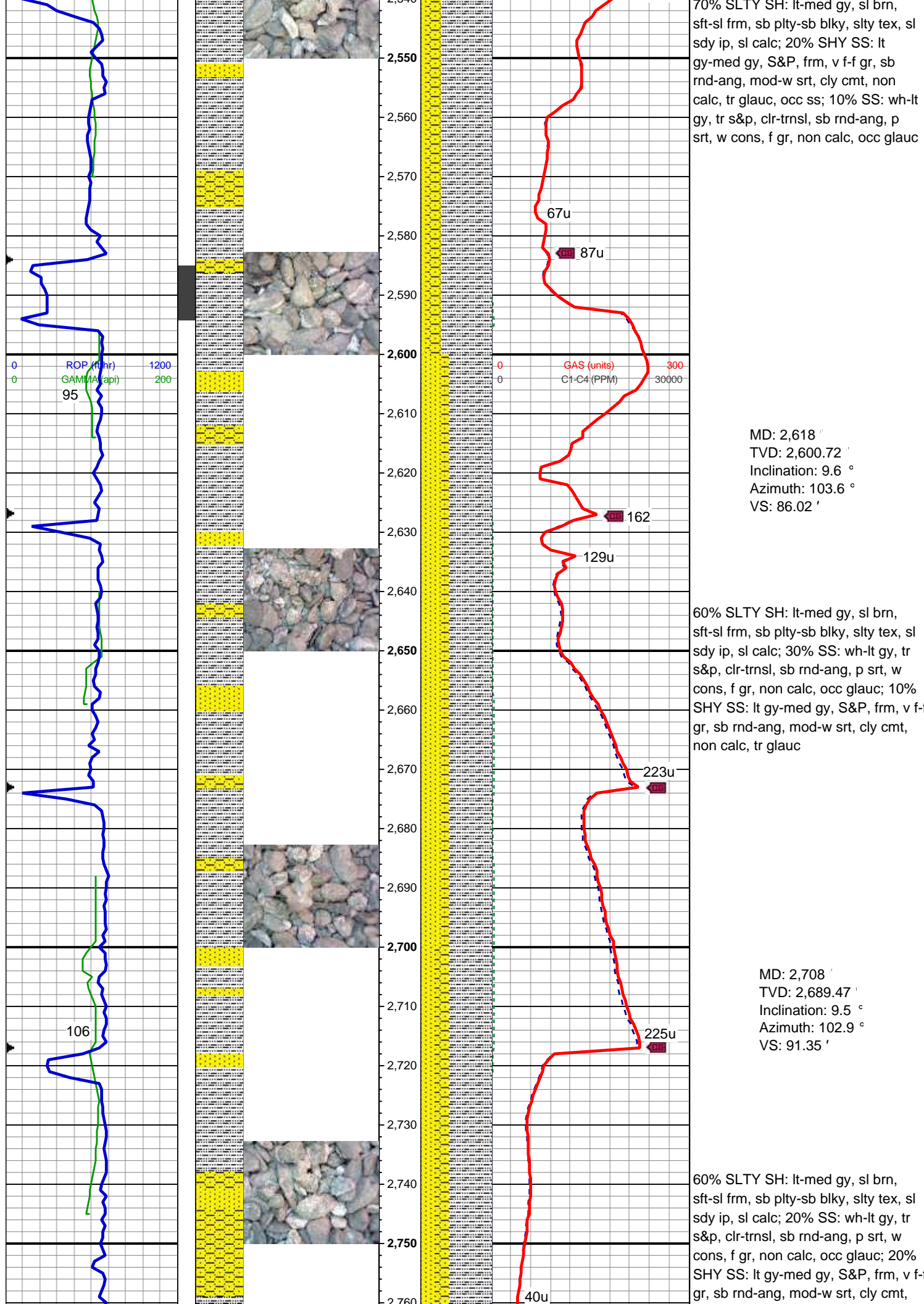
WT: 8.4 / VIS: 27

MD: 2,439 '  
TVD: 2,424.41 '  
Inclination: 10 °  
Azimuth: 100.5 °  
VS: 76.17 '

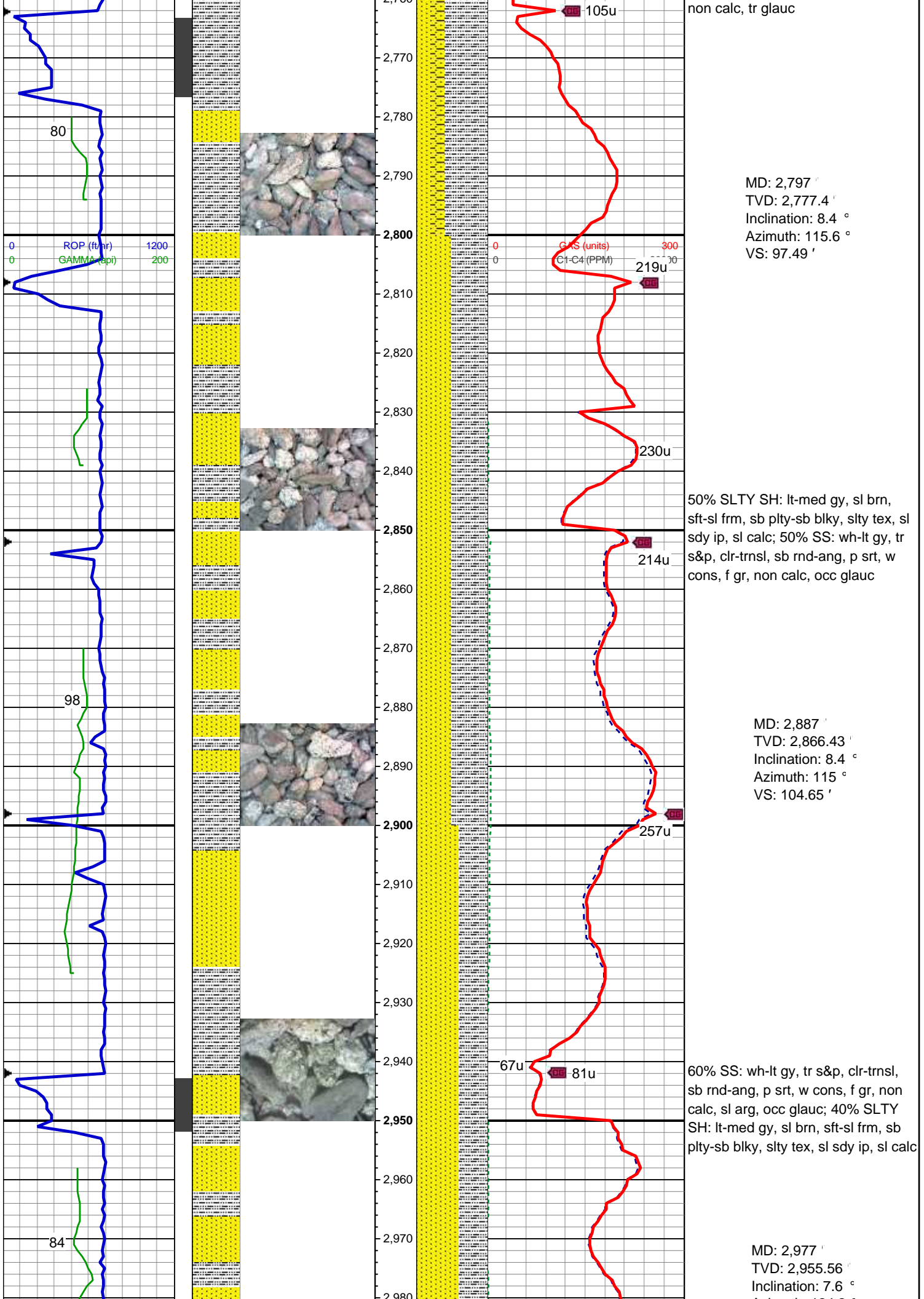
75% SLTY SH: lt-med gy, sl brn, sft-sl frm, sb plty-sb blk, slty tex, sl sdy ip, sl calc; 15% SHY SS: lt gy-med gy, S&P, frm, v f-f gr, sb rnd-ang, mod-w srt, cly cmt, non calc, tr glauc, occ ss; 10% SS: wh-lt gy, tr s&p, clr-trnsl, sb rnd-ang, p srt, w cons, f gr, non calc, occ glauc

MD: 2,529 '  
TVD: 2,513.03 '  
Inclination: 10.1 °  
Azimuth: 99.8 °  
VS: 80.98 '









MD: 2,797 '  
TVD: 2,777.4 '  
Inclination: 8.4 °  
Azimuth: 115.6 °  
VS: 97.49 '

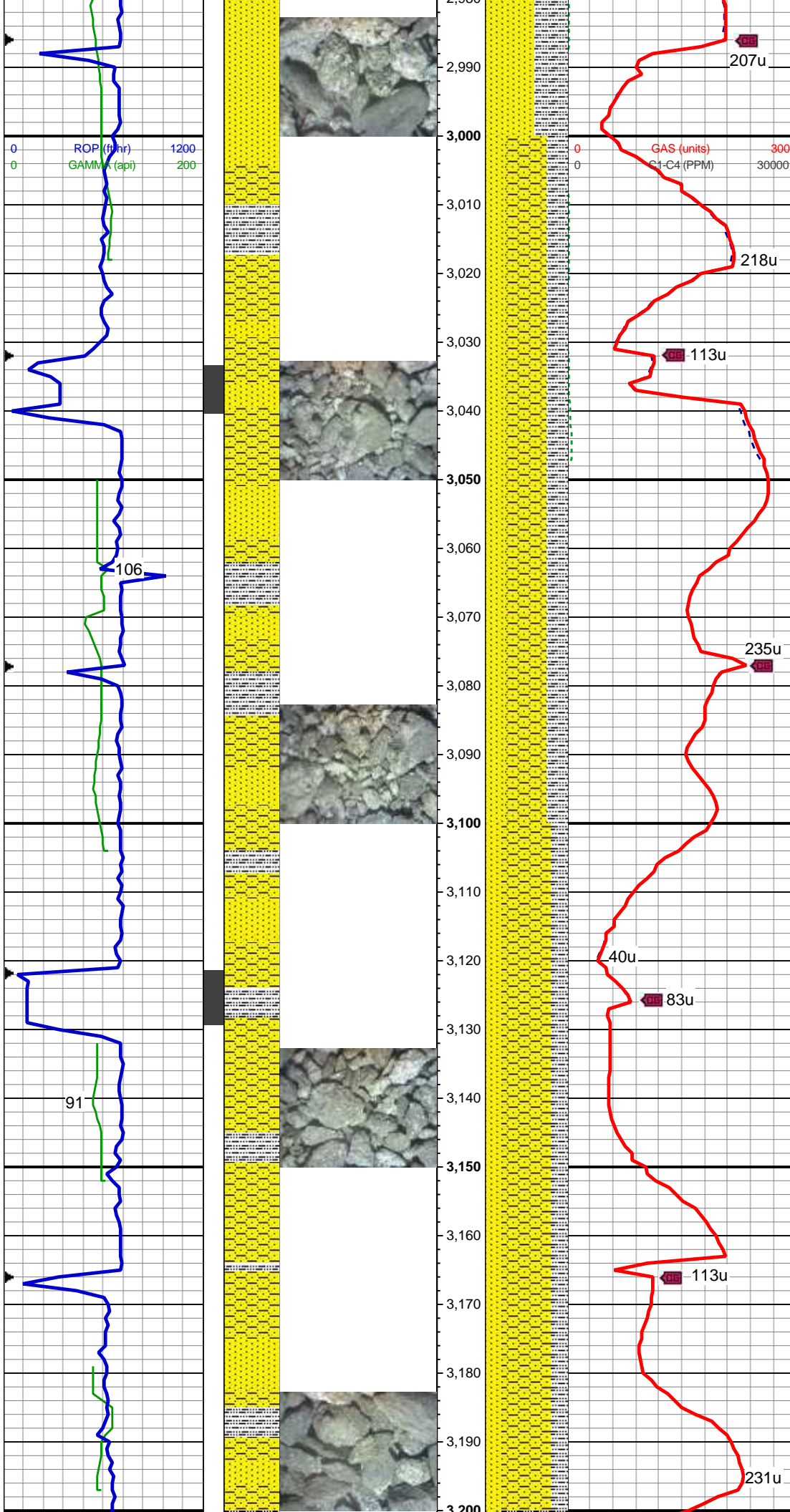
50% SLTY SH: lt-med gy, sl brn, sft-sl frm, sb plty-sb blk, slty tex, sl sdy ip, sl calc; 50% SS: wh-lt gy, tr s&p, clr-trnsl, sb rnd-ang, p srt, w cons, f gr, non calc, occ glauc

MD: 2,887 '  
TVD: 2,866.43 '  
Inclination: 8.4 °  
Azimuth: 115 °  
VS: 104.65 '

60% SS: wh-lt gy, tr s&p, clr-trnsl, sb rnd-ang, p srt, w cons, f gr, non calc, sl arg, occ glauc; 40% SLTY SH: lt-med gy, sl brn, sft-sl frm, sb plty-sb blk, slty tex, sl sdy ip, sl calc

MD: 2,977 '  
TVD: 2,955.56 '  
Inclination: 7.6 °

Azimuth: 124.2 °  
VS: 112.17 '



50% SHY SS: lt gy-med gy, S&P, frm, v f-f gr, sb rnd-ang, mod-w srt, cly cmt, non calc, tr glauc; 25% SLTY SH: lt-med gy, sl brn, sft-sl frm, sb plty-sb blkly, slty tex, sl sdy ip, sl calc; 25% SS: wh-lt gy, tr s&p, clr-trnsl, sb rnd-ang, p srt, w cons, f gr, non calc, occ glauc

MD: 3,067 '

TVD: 3,044.69 '

Inclination: 8.3 °

Azimuth: 120.8 °

VS: 120.18 '

60% SHY SS: lt gy-med gy, S&P, frm, v f-f gr, sb rnd-ang, mod-w srt, cly cmt, non calc, tr glauc; 20% SLTY SH: lt-med gy, sl brn, sft-sl frm, sb plty-sb blkly, slty tex, sl sdy ip, sl calc; 20% SS: wh-lt gy, tr s&p, clr-trnsl, sb rnd-ang, p srt, w cons, f gr, non calc, occ glauc

MD: 3,156 '

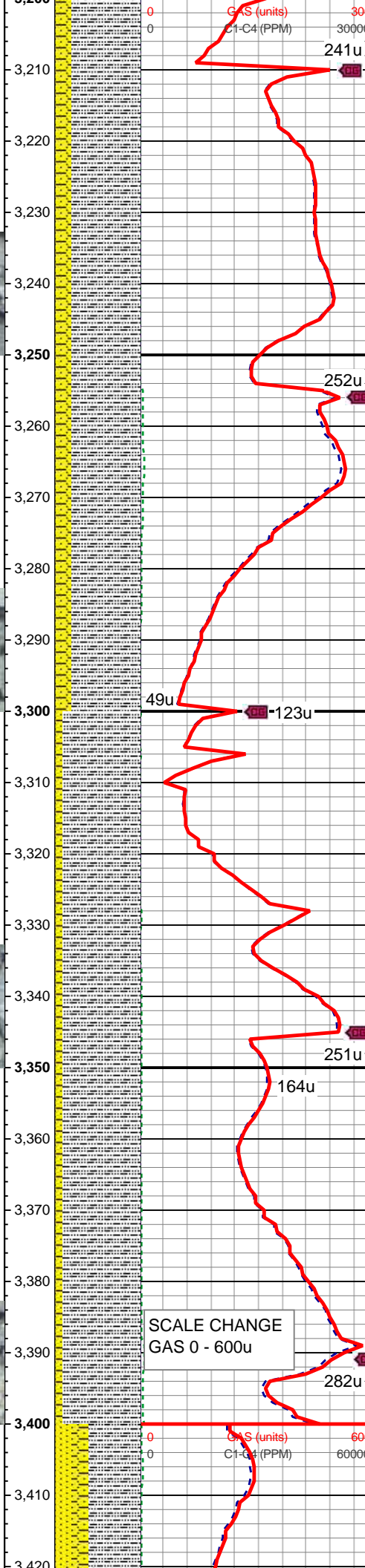
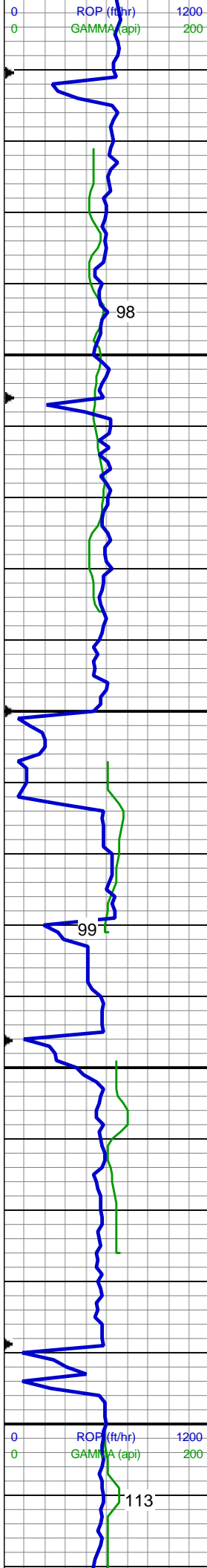
TVD: 3,132.69 '

Inclination: 8.9 °

Azimuth: 122.6 °

VS: 128.63 '





MD: 3,246 '  
TVD: 3,221.63 '  
Inclination: 8.7 °  
Azimuth: 120.9 °  
VS: 137.37 '

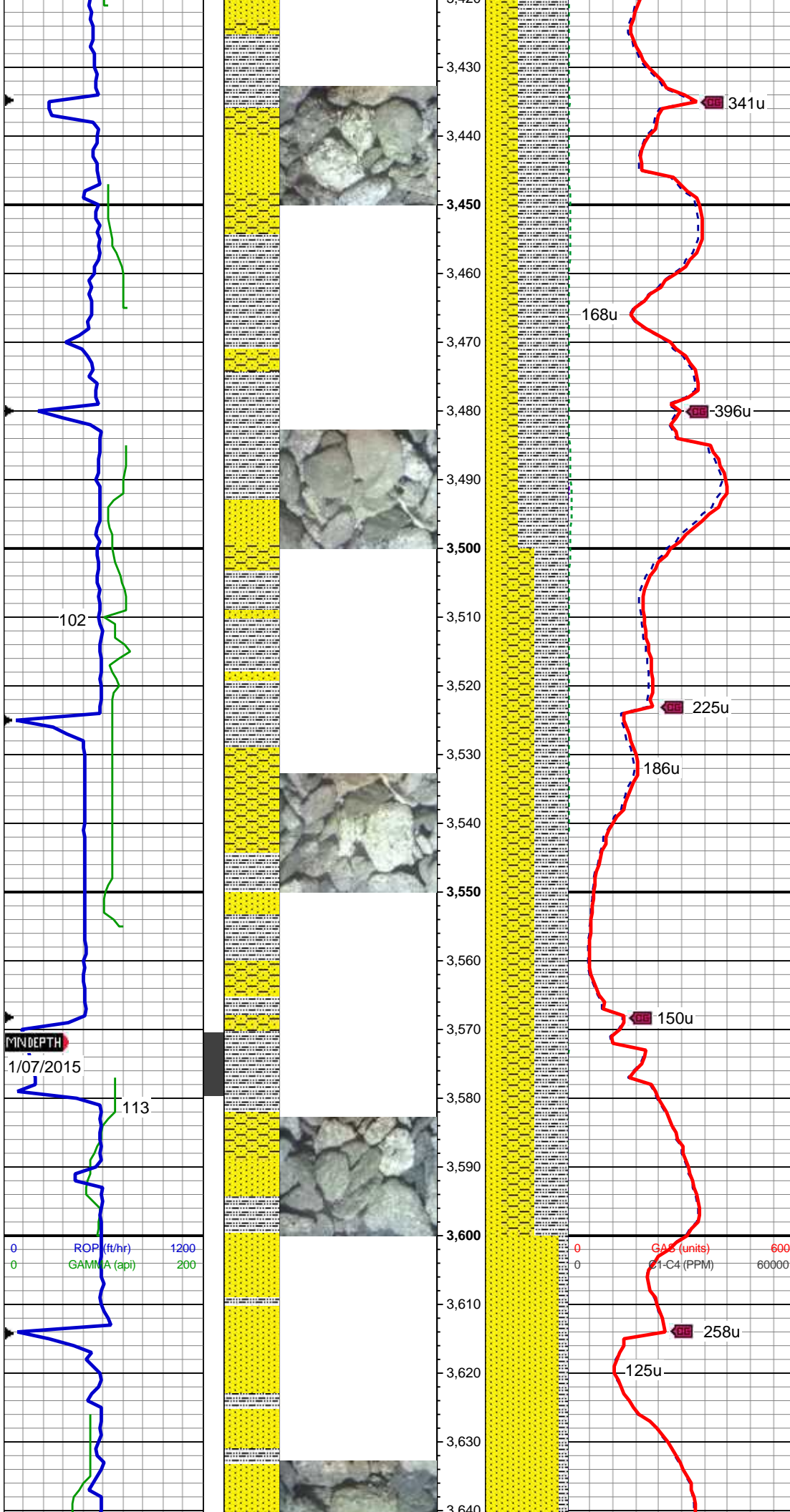
80% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-sb blk, slty tex, tr sl sdy ip, sl calc; 20% SHY SS: lt gy-med gy, S&P, frm, v f-f gr, sb rnd-ang, mod-w srt, cly cmt, non calc

MD: 3,335 '  
TVD: 3,309.6 '  
Inclination: 8.8 °  
Azimuth: 116.2 °  
VS: 145.37 '

90% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-sb blk, slty tex, tr sl sdy ip, sl calc; 10% SHY SS: lt gy-med gy, S&P, frm, v f-f gr, sb rnd-ang, mod-w srt, cly cmt, non calc

MD: 3,425 '  
TVD: 3,398.56 '





Inclination: 8.6 °  
Azimuth: 114.1 °  
VS: 152.75 '

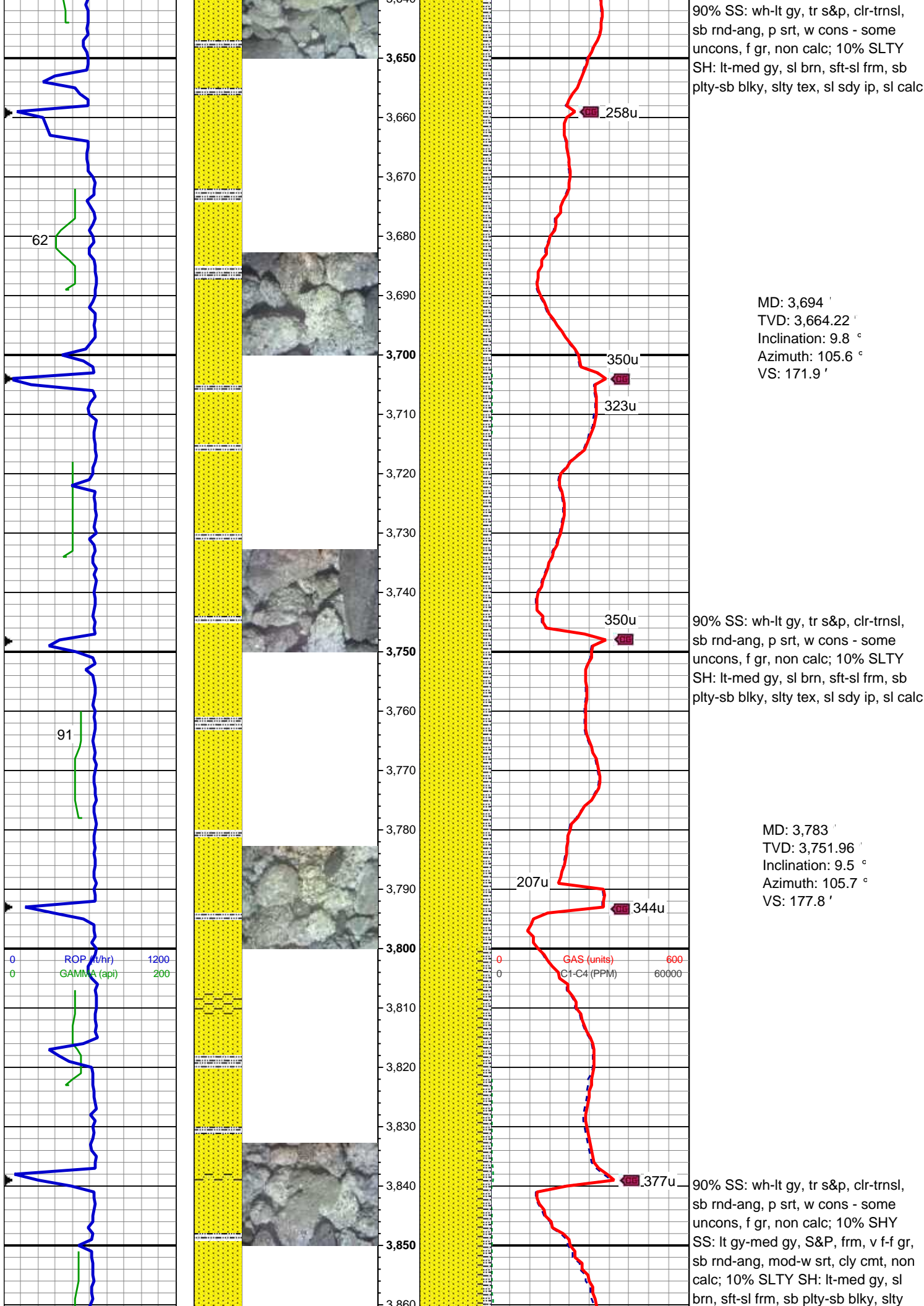
60% SLTY SH: lt-med gy, sl brn, sft-sl frm, sb plty-sb blkly, slty tex, sl sdy ip, sl calc; 20% SHY SS: lt gy-med gy, S&P, frm, v f-f gr, sb rnd-ang, mod-w srt, cly cmt, non calc; 20% SS: wh-lt gy, tr s&p, clr-trnsl, sb rnd-ang, p srt, w cons, f gr, non calc

MD: 3,515 '  
TVD: 3,487.57 '  
Inclination: 8.4 °  
Azimuth: 112.2 °  
VS: 159.56 '

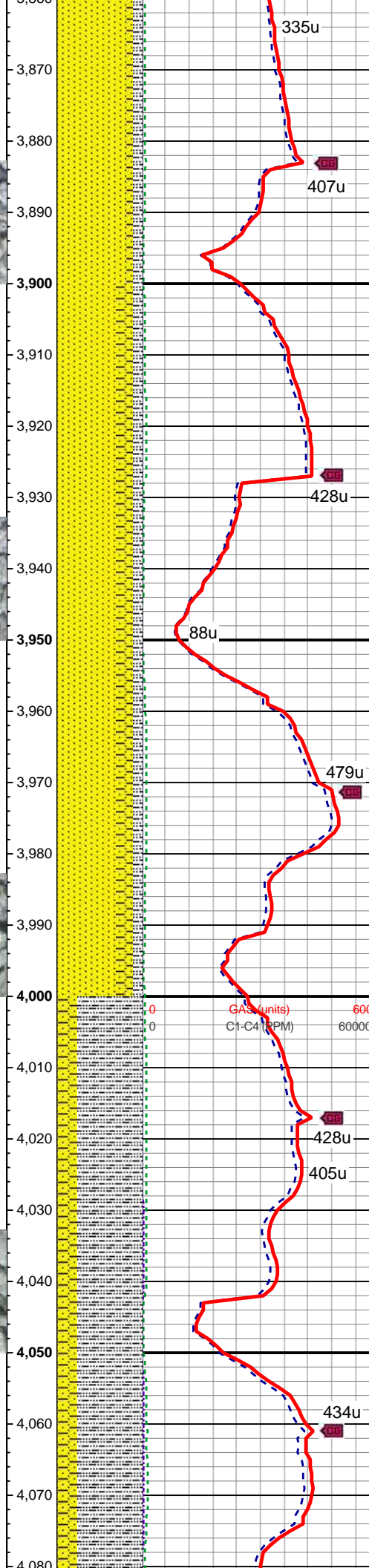
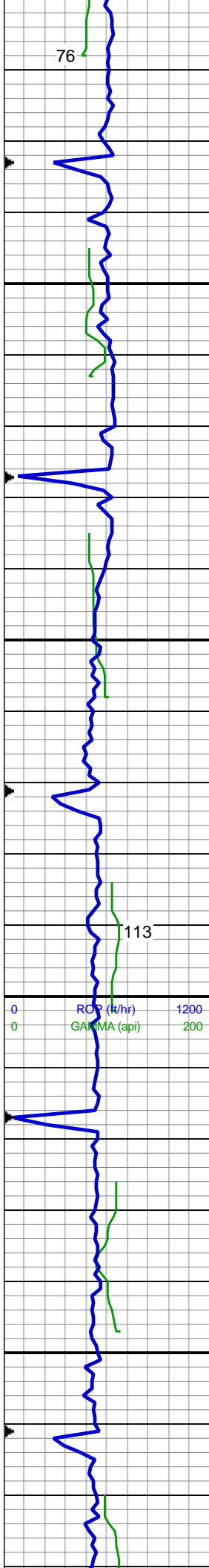
40% SLTY SH: lt-med gy, sl brn, sft-sl frm, sb plty-sb blkly, slty tex, sl sdy ip, sl calc; 40% SHY SS: lt gy-med gy, S&P, frm, v f-f gr, sb rnd-ang, mod-w srt, cly cmt, non calc; 20% SS: wh-lt gy, tr s&p, clr-trnsl, sb rnd-ang, p srt, w cons, f gr, non calc

WT: 8.45 / VIS: 27

MD: 3,604 '  
TVD: 3,575.49 '  
Inclination: 9.5 °  
Azimuth: 106.6 °  
VS: 165.82 '







tex, sl sdy ip, sl calc

MD: 3,873 '  
TVD: 3,840.74 '  
Inclination: 9.4 °  
Azimuth: 105.2 °  
VS: 183.61 '

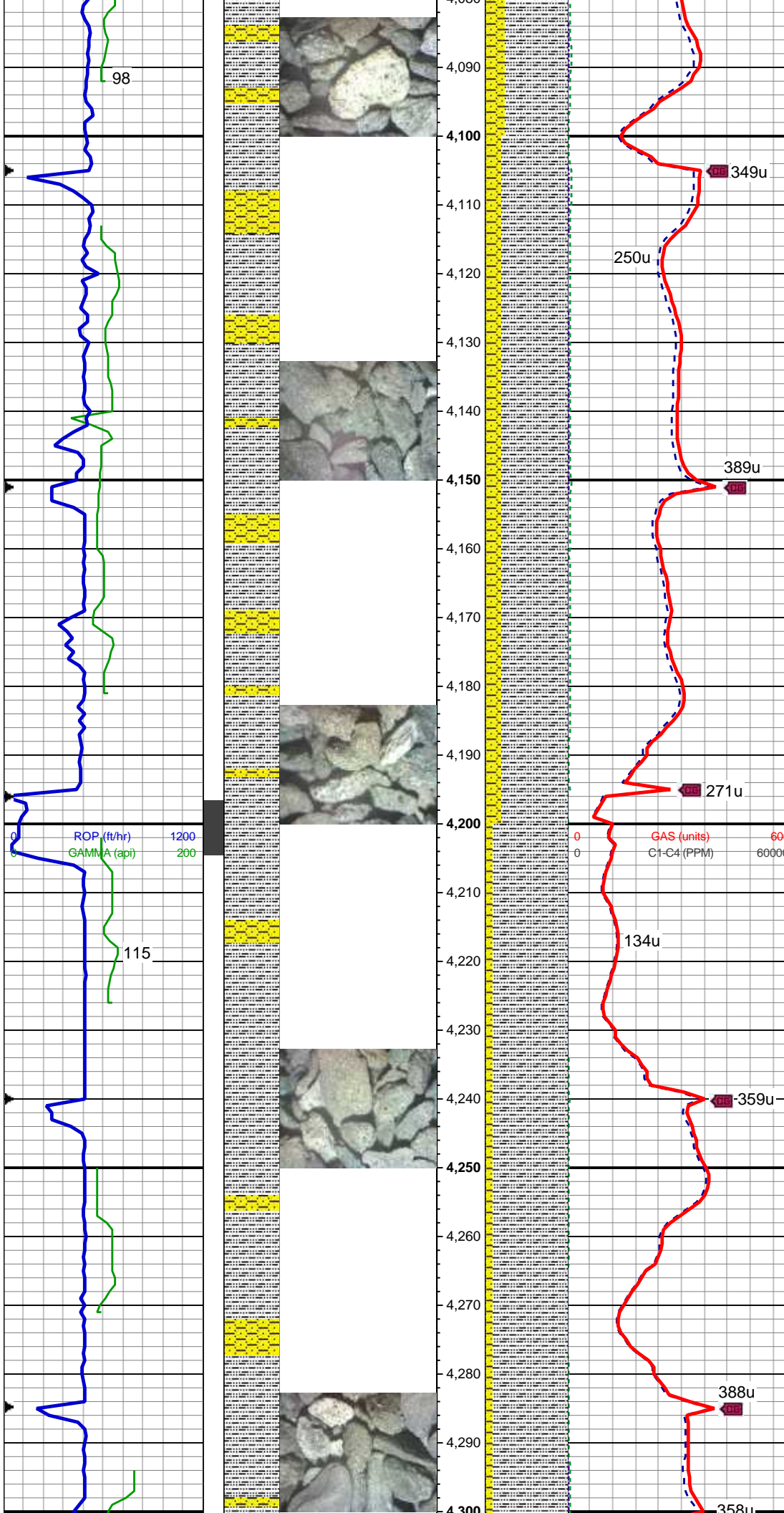
80% SS: wh-lt gy, tr s&p, clr-trnsl, sb rnd-ang, p srt, w cons - some uncons, f gr, non calc; 20% SHY SS: lt gy-med gy, S&P, frm, v f-f gr, sb rnd-ang, mod-w srt, cly cmt, non calc; 10% SLTY SH: lt-med gy, sl brn, sft-sl frm, sb plty-sb blk, slty tex, sl sdy ip, sl calc

MD: 3,963 '  
TVD: 3,929.55 '  
Inclination: 9.2 °  
Azimuth: 104.3 °  
VS: 189.15 '

75% SLTY SH: lt-med gy, sl brn, sft-sl frm, sb plty-sb blk, slty tex, sl sdy ip, sl calc, scat glauc; 25% SHY SS: lt gy-med gy, S&P, frm, v f-f gr, sb rnd-ang, mod-w srt, cly cmt, non calc

MD: 4,052 '  
TVD: 4,017.43 '  
Inclination: 9 °  
Azimuth: 103.2 °  
VS: 194.3 '



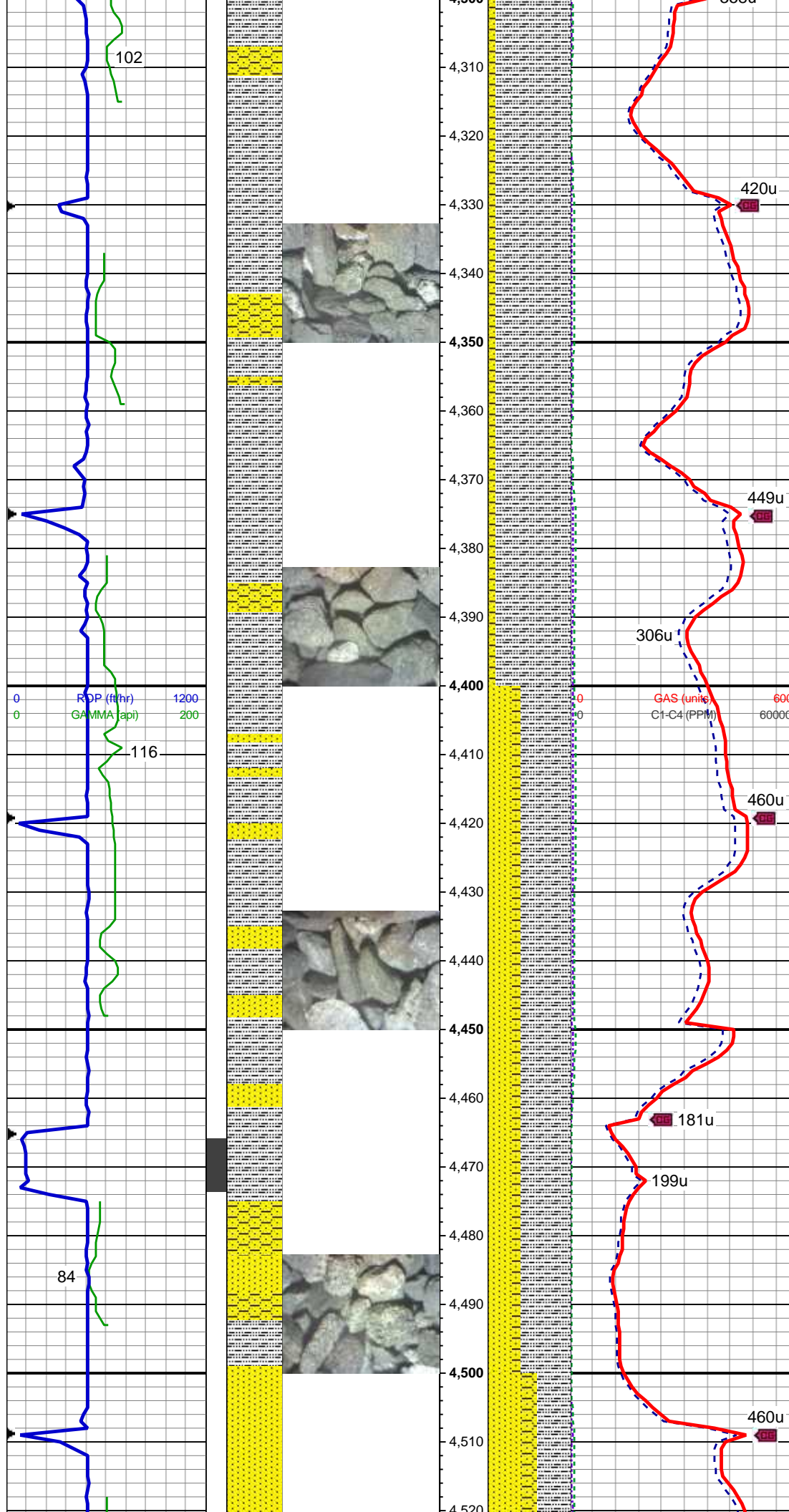


MD: 4,142 '  
TVD: 4,106.31 '  
Inclination: 9.1 °  
Azimuth: 103.4 °  
VS: 199.36 '

80% SLTY SH: lt-med gy, sl brn, sft-sl frm, sb plty-sb blk, slty tex, sl sdy ip, sl calc, scat glauc; 20% SHY SS: lt gy-med gy, S&P, frm, v f-f gr, sb rnd-ang, mod-w srt, cly cmt, non calc

MD: 4,231 '  
TVD: 4,194.19 '  
Inclination: 9.1 °  
Azimuth: 104.5 °  
VS: 204.55 '

90% SLTY SH: lt-med gy, sl brn, sft-sl frm, sb plty-sb blk, slty tex, sl sdy ip, sl calc, scat glauc; 10% SHY SS: lt gy-med gy, S&P, frm, v f-f gr, sb rnd-ang, mod-w srt, cly cmt, non calc



MD: 4,321 '  
TVD: 4,283.08 '  
Inclination: 8.9 °  
Azimuth: 104.2 °  
VS: 209.83 '

90% SLTY SH: lt-med gy, sl brn, sft-sl frm, sb plty-sb blkly, slty tex, sl sdy ip, sl calc, scat glauc; 10% SHY SS: lt gy-med gy, S&P, frm, v f-f gr, sb rnd-ang, mod-w srt, cly cmt, non calc, tr wh ss

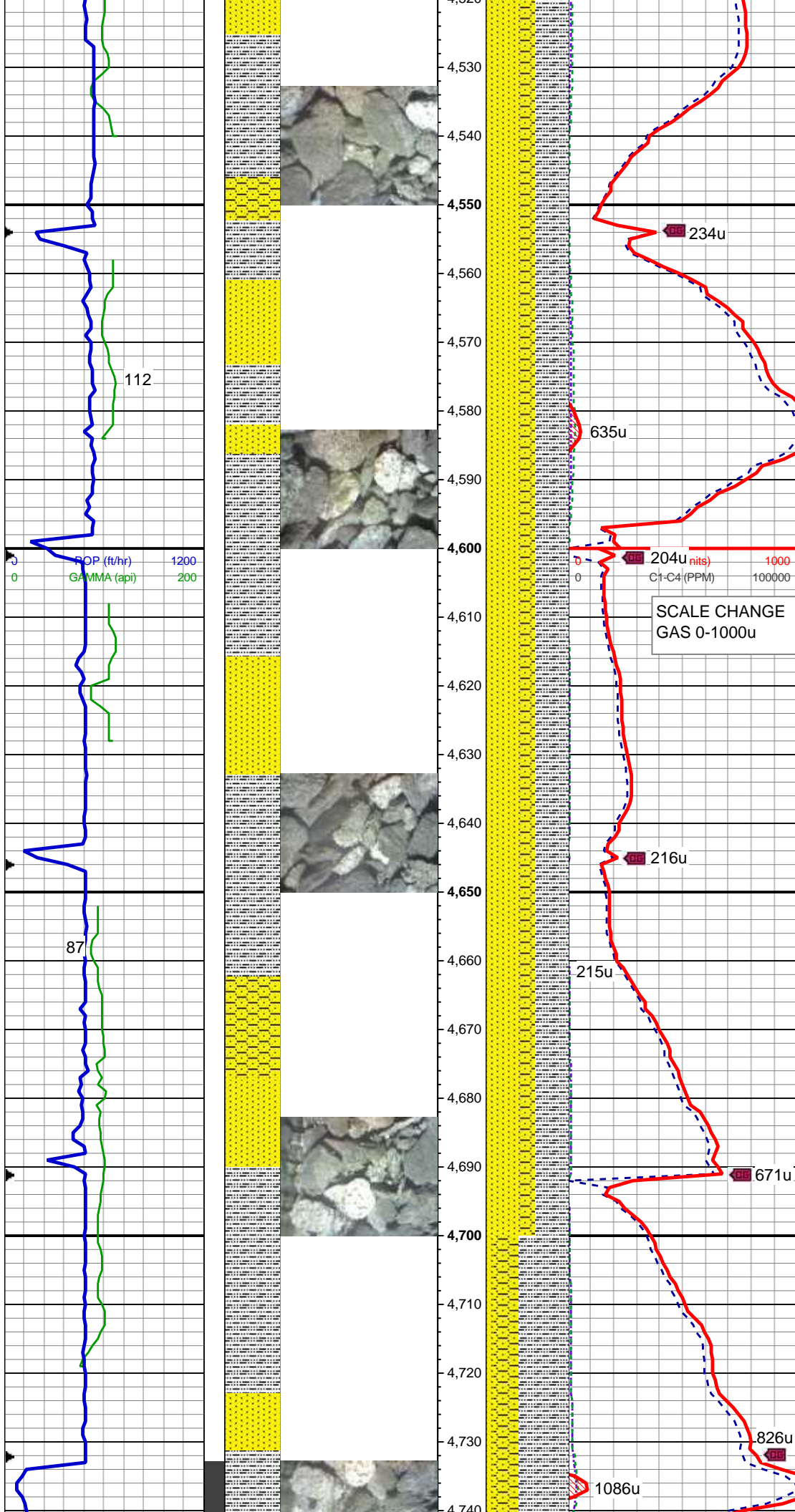
MD: 4,411 '  
TVD: 4,372.03 '  
Inclination: 8.7 °  
Azimuth: 102.7 °  
VS: 214.79 '

WT: 8.6 / VIS: 27

60% SLTY SH: lt-med gy, sl brn, sft-sl frm, sb plty-sb blkly, slty tex, sl sdy ip, sl calc, scat glauc; 30% SS: wh-lt gy, tr s&p, clr-trnsl, sb rnd-ang, p srt, w cons, f gr, non calc, tr glauc; 10% SHY SS: lt gy-med gy, S&P, frm, v f-f gr, sb rnd-ang, mod-w srt, cly cmt, non calc

MD: 4,500 '  
TVD: 4,459.98 '  
Inclination: 8.9 °  
Azimuth: 108.7 °  
VS: 220.19 '





40% SLTY SH: lt-med gy, sl brn, sft-sl frm, sb plty-sb blk, slty tex, sl sdy ip, sl calc, scat glauc; 40% SS: wh-lt gy, tr s&p, clr-trnsl, sb rnd-ang, p srt, w cons, f gr, non calc, tr glauc; 20% SHY SS: lt gy-med gy, S&P, frm, v f-f gr, sb rnd-ang, mod-w srt, cly cmt, non calc

MD: 4,590 '  
TVD: 4,548.92 '  
Inclination: 8.7 °  
Azimuth: 108.4 °  
VS: 226.27 '

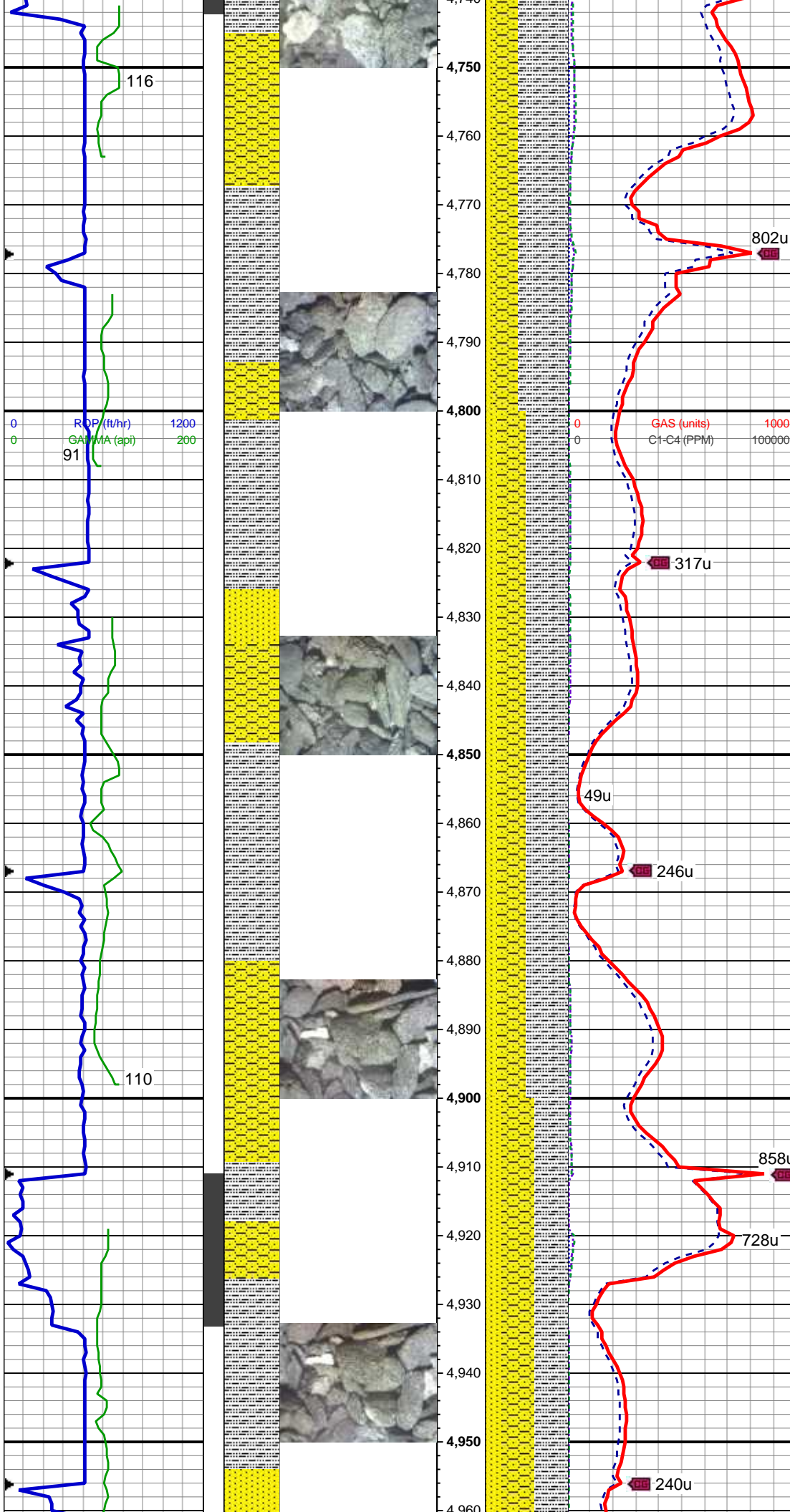
40% SLTY SH: lt-med gy, sl brn, sft-sl frm, sb plty-sb blk, slty tex, sl sdy ip, sl calc, scat glauc; 40% SS: wh-lt gy, tr s&p, clr-trnsl, sb rnd-ang, p srt, w cons, f gr, non calc, tr glauc; 20% SHY SS: lt gy-med gy, S&P, frm, v f-f gr, sb rnd-ang, mod-w srt, cly cmt, non calc

MD: 4,680 '  
TVD: 4,637.92 '  
Inclination: 8.4 °  
Azimuth: 107.2 °  
VS: 232.03 '

WT: 8.6 / VIS: 27

60% SLTY SH: lt-med gy, sl brn,





sft-sl frm, sb plty-sb blk, slty tex, sl  
sdy ip, sl calc; 30% SHY SS: lt  
gy-med gy, S&P, frm, v f-f gr, sb  
rnd-ang, mod-w srt, cly cmt, non  
calc; 20% SS: wh-lt gy, tr s&p,  
clr-trnsl, sb rnd-ang, p srt, w cons, f  
gr, non calc

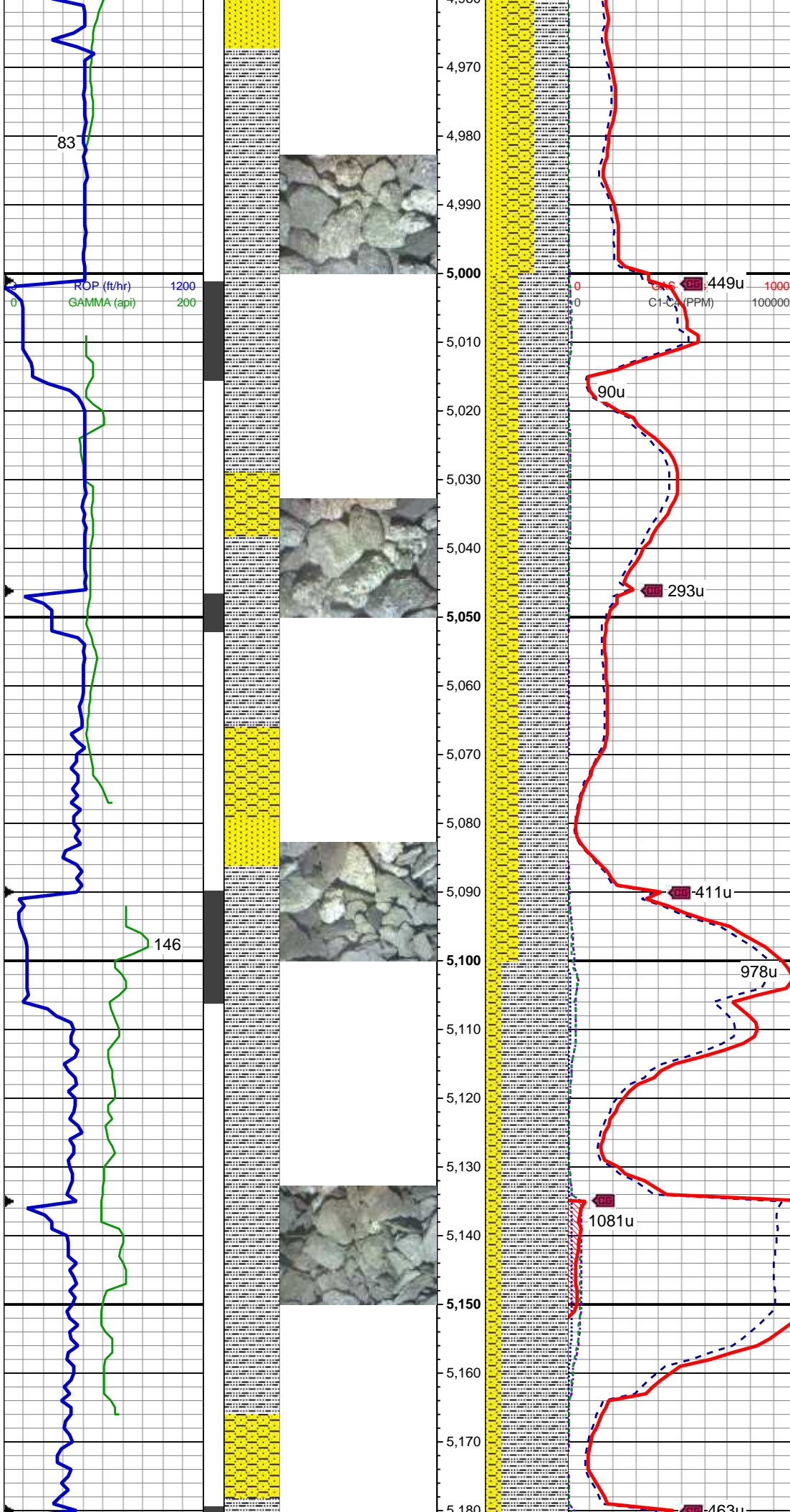
MD: 4,769 '  
TVD: 4,725.98 '  
Inclination: 8.3 °  
Azimuth: 106.6 °  
VS: 237.41 '

50% SLTY SH: lt-med gy, sl brn,  
sft-sl frm, sb plty-sb blk, slty tex, sl  
sdy ip, sl calc; 35% SHY SS: lt  
gy-med gy, S&P, frm, v f-f gr, sb  
rnd-ang, mod-w srt, cly cmt, non  
calc; 15% SS: wh-lt gy, tr s&p,  
clr-trnsl, sb rnd-ang, p srt, w cons, f  
gr, non calc

MD: 4,859 '  
TVD: 4,815.08 '  
Inclination: 7.9 °  
Azimuth: 108.1 °  
VS: 242.76 '

MD: 4,949 '  
TVD: 4,904.23 '  
Inclination: 7.9 °  
Azimuth: 116.5 °  
VS: 248.93 '

40% SLTY SH: lt-med gy, sl brn,  
sft-sl frm, sb plty-sb blk, slty tex, sl  
sdy ip, sl calc; 40% SHY SS: lt  
gy-med gy, S&P, frm, v f-f gr, sb  
rnd-ang, mod-w srt, cly cmt, non  
calc; 20% SS: wh-lt gy, tr s&p,  
clr-trnsl, sb rnd-ang, p srt, w cons, f



gr, non calc

WT: 8.7 / VIS: 27

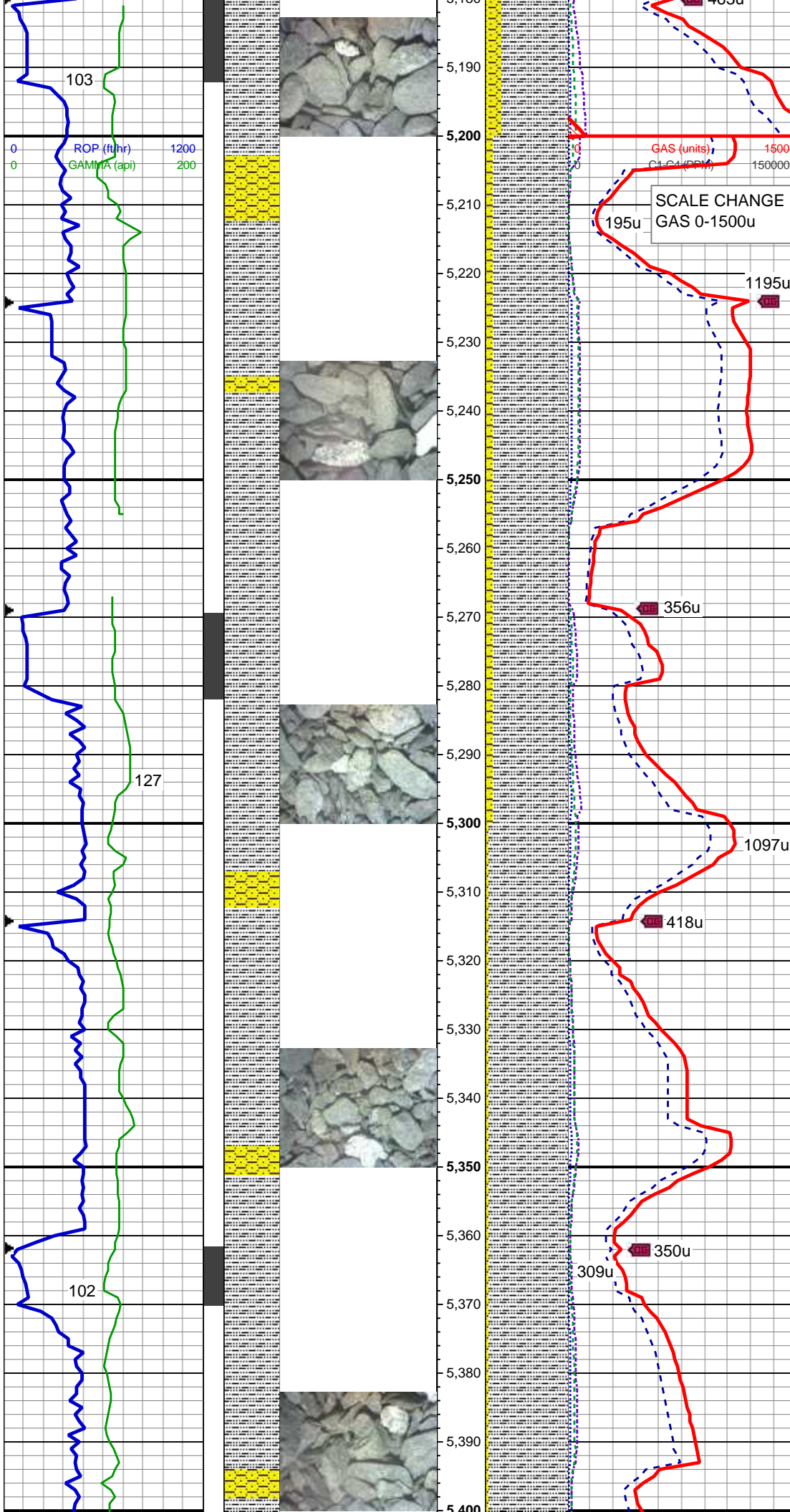
MD: 5,038 '  
TVD: 4,992.35 '  
Inclination: 8.2 °  
Azimuth: 116.8 °  
VS: 255.95 '

60% SLTY SH: lt-med gy, sl brn, sft-sl frm, sb plty-sb blk, slty tex, sl sdy ip, sl calc; 30% SHY SS: lt gy-med gy, S&P, frm, v f-f gr, sb rnd-ang, mod-w srt, cly cmt, non calc; 10% SS: wh-lt gy, tr s&p, clr-trnsl, sb rnd-ang, p srt, w cons, f gr, non calc

MD: 5,128 '  
TVD: 5,081.32 '  
Inclination: 9.2 °  
Azimuth: 108.5 °  
VS: 262.76 '

80% SLTY SH: lt-med gy, sl brn, sft-sl frm, sb plty-sb blk, slty tex, sl sdy ip, sl calc; 15% SHY SS: lt gy-med gy, S&P, frm, v f-f gr, sb rnd-ang, mod-w srt, cly cmt, non calc; 5% SS: wh-lt gy, tr s&p, clr-trnsl, sb rnd-ang, p srt, w cons, f gr, non calc





MD: 5,217 '  
TVD: 5,169.18 '  
Inclination: 9.2 °  
Azimuth: 99.1 °  
VS: 267.95 '

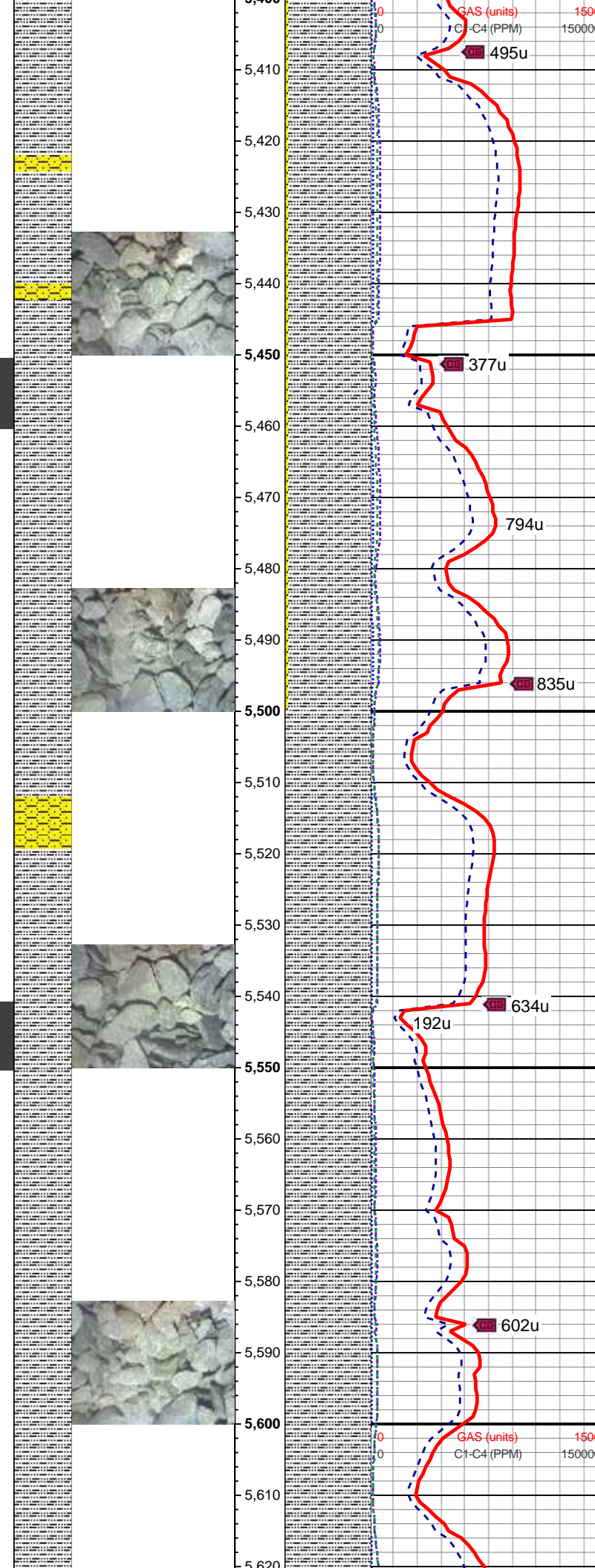
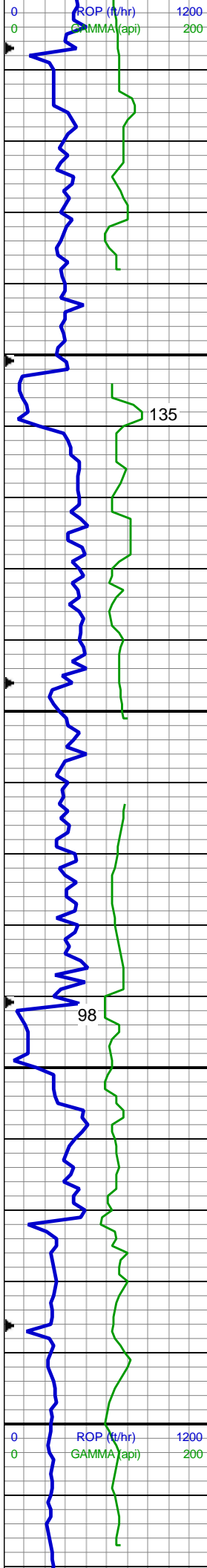
WT: 8.9 / VIS: 27

90% SLTY SH: lt-med gy, sl brn, sft-sl frm, sb plty-sb blk, slty tex, sl sdy ip, sl calc; 10% SHY SS: lt gy-med gy, S&P, frm, v f-f gr, sb rnd-ang, mod-w srt, cly cmt, non calc, occ ss, tr sh

MD: 5,307 '  
TVD: 5,257.89 '  
Inclination: 10.2 °  
Azimuth: 99.5 °  
VS: 272.38 '

95% SLTY SH: lt-med gy, sl brn, sft-sl frm, sb plty-sb blk, slty tex, sl sdy ip, sl calc; 5% SHY SS: lt gy-med gy, S&P, frm, v f-f gr, sb rnd-ang, mod-w srt, cly cmt, non calc, tr ss, tr sh

MD: 5,397 '  
TVD: 5,346.45 '  
Inclination: 10.3 °  
Azimuth: 100.5 °



GAS (units) 1500  
C1-C4 (PPM) 150000

VS: 277.24 ' 95% SLTY SH: lt-med gy, sl brn, sft-sl frm, sb plty-sb blk, slty tex, sl sdy ip, sl calc; 5% SHY SS: lt gy-med gy, S&P, frm, v f-f gr, sb rnd-ang, mod-w srt, cly cmt, non calc, tr ss, tr sh

MD: 5,486 ' TVD: 5,434.05 ' Inclination: 10.1 ° Azimuth: 104.9 ° VS: 282.72 '

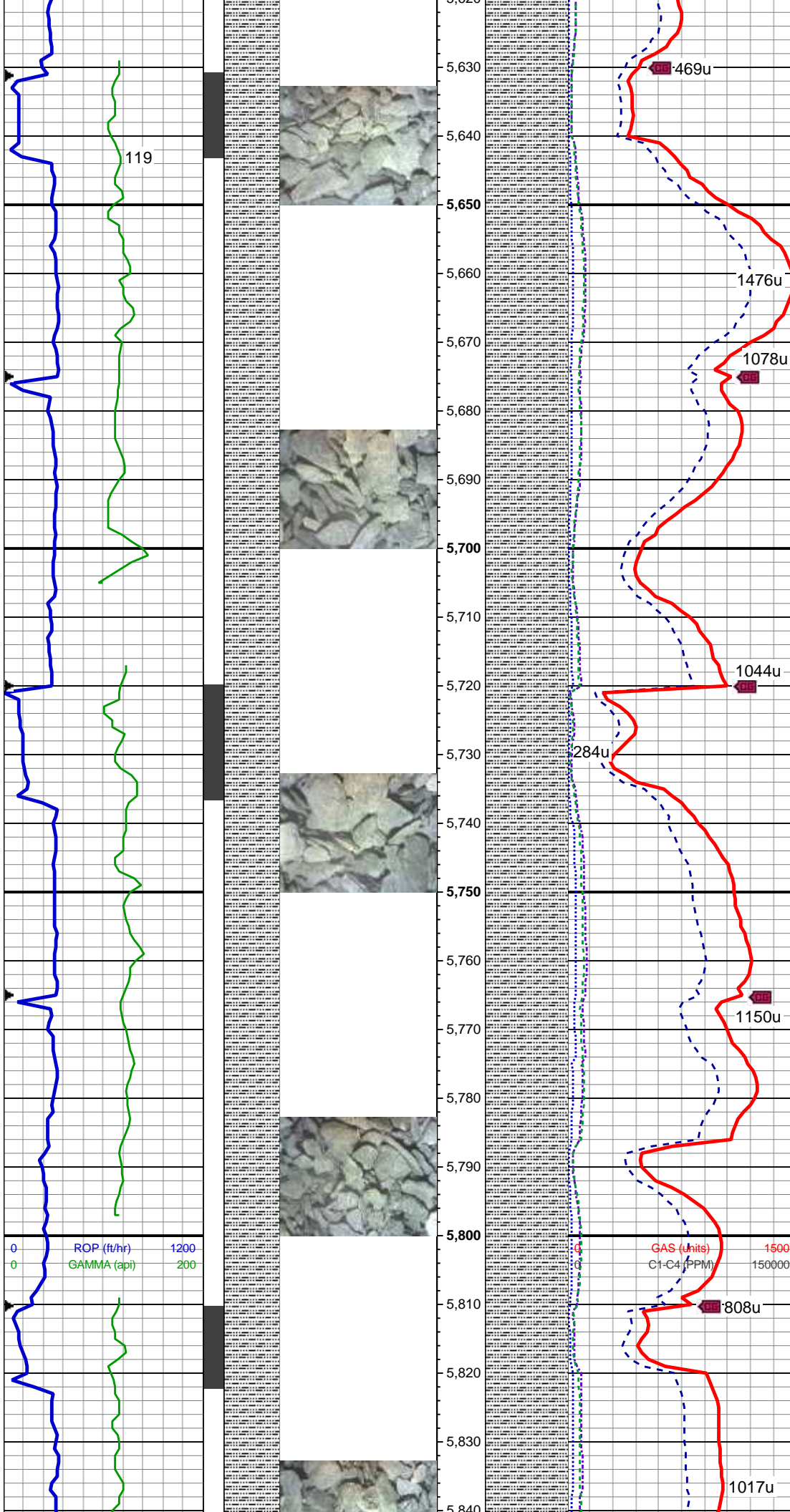
WT: 9.0 / VIS: 32

100% SLTY SH: lt-med gy, sl brn, sft-sl frm, sb plty-sb blk, slty tex, sl sdy ip, sl calc, tr shy ss, tr ss, tr sh

MD: 5,576 ' TVD: 5,522.73 ' Inclination: 9.5 ° Azimuth: 103.8 ° VS: 288.47 '

GAS (units) 1500  
C1-C4 (PPM) 150000





100% SLTY SH: lt-med gy, sl brn, sft-sl frm, sb plty-sb blk, slty tex, sl sdy ip, sl calc, tr shy ss

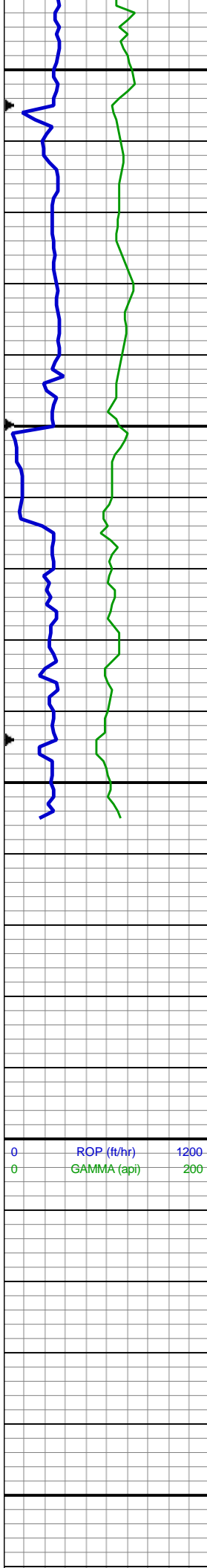
MD: 5,666 '  
TVD: 5,611.54 '  
Inclination: 9.2 °  
Azimuth: 98.7 °  
VS: 293.21 '

WT: 9.1 / VIS: 34

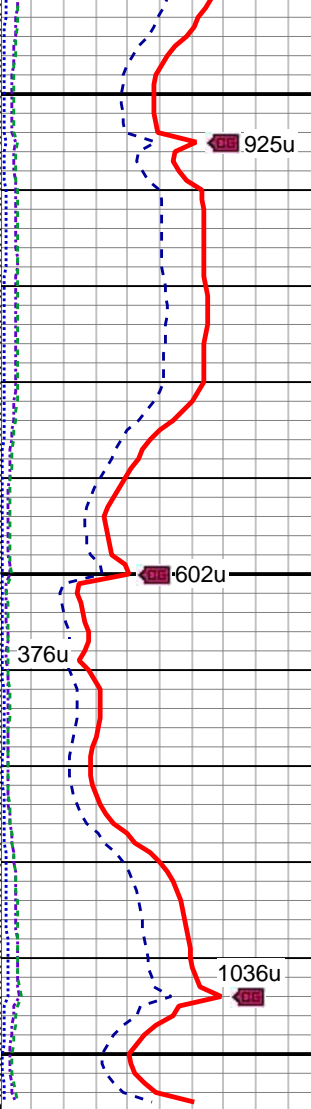
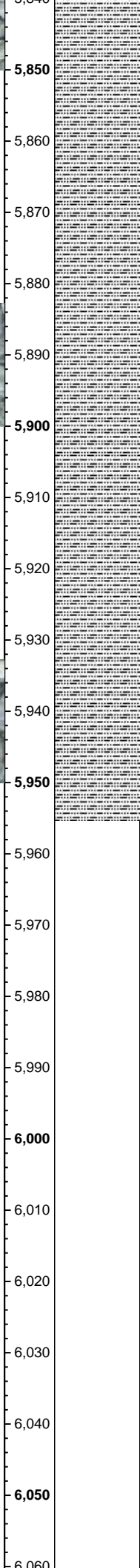
100% SLTY SH: lt-med gy, sl brn, sft-sl frm, sb plty-sb blk, slty tex, sl sdy ip, sl calc, tr shy ss

MD: 5,755 '  
TVD: 5,699.38 '  
Inclination: 9.3 °  
Azimuth: 103.2 °  
VS: 297.78 '

MD: 5,845 '  
TVD: 5,788.31 '  
Inclination: 8.4 °  
Azimuth: 102.7 °  
VS: 302.66 '



5,850  
5,860  
5,870  
5,880  
5,890  
5,900  
5,910  
5,920  
5,930  
5,940  
5,950  
5,960  
5,970  
5,980  
5,990  
6,000  
6,010  
6,020  
6,030  
6,040  
6,050  
6,060



100% SLTY SH: lt-med gy, sl brn, sft-sl frm, sb plty-sb blk, slty tex, sl sdy ip, sl calc, tr shy ss

WT: 9.35 / VIS: 38

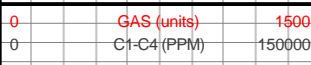
100% SLTY SH: lt-med gy, sl brn, sft-sl frm, sb plty-sb blk, slty tex, sl sdy ip, sl calc, tr shy ss

MD: 5,934 '  
TVD: 5,876.33 '  
Inclination: 8.6 °  
Azimuth: 106.3 °  
VS: 307.62 '

TD VERTICAL @ 5955' MD  
ON 1/7/15 @ 11:55 MST

Log Continues on Mahalo State  
AA09-74-1BHNH\_Horz

Thank you for using  
Columbine Logging, Inc.





[illegible]

6,070  
6,080  
6,090  
**6,100**  
6,110  
6,120  
6,130  
6,140  
**6,150**  
6,160  
6,170  
6,180  
6,190  
**6,200**  
6,210  
6,220  
6,230  
6,240  
**6,250**  
6,260  
6,270  
6,280

[illegible]







