

# COLUMBINE LOGGING

Scale: 5" / 100'  
Measured Depth Log

**Well Name** Reliance E23-79HN

**Location** Sec. 14 T6N R64W

**State** Colorado

**County** Weld

**Country** USA`

**Rig Number** PD 829

**API Number** 05-123-38868

**AFE #** 139629

**Region** DJ Basin

**Field** Wattenberg

**Spud Date** 5/19/2014

**Drilling Completed** 5/25/2014

**Surface Coordinates** 270' FSL ; 530' FWL  
40.47954 ; -104.63816

**Bottom Hole Coordinates** 225' FSL ; 75' FWL  
40.46479 ; -104.63960

**Ground Elevation** 4737'

**K.B. Elevation** 4753'

**Logged Interval** 700' **To** 6202'

**Total Depth** 6202'

**Formation** Nio 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

Columbine Logging, INC.

2385 S. LIPAN STREET  
DENVER, CO 80223

Well site Geologists

Ryan Shilling  
Adam Neumann  
Whitney Jacks

## 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  
 BRACHIOIPOD  
 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

TUFFACEOUS

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

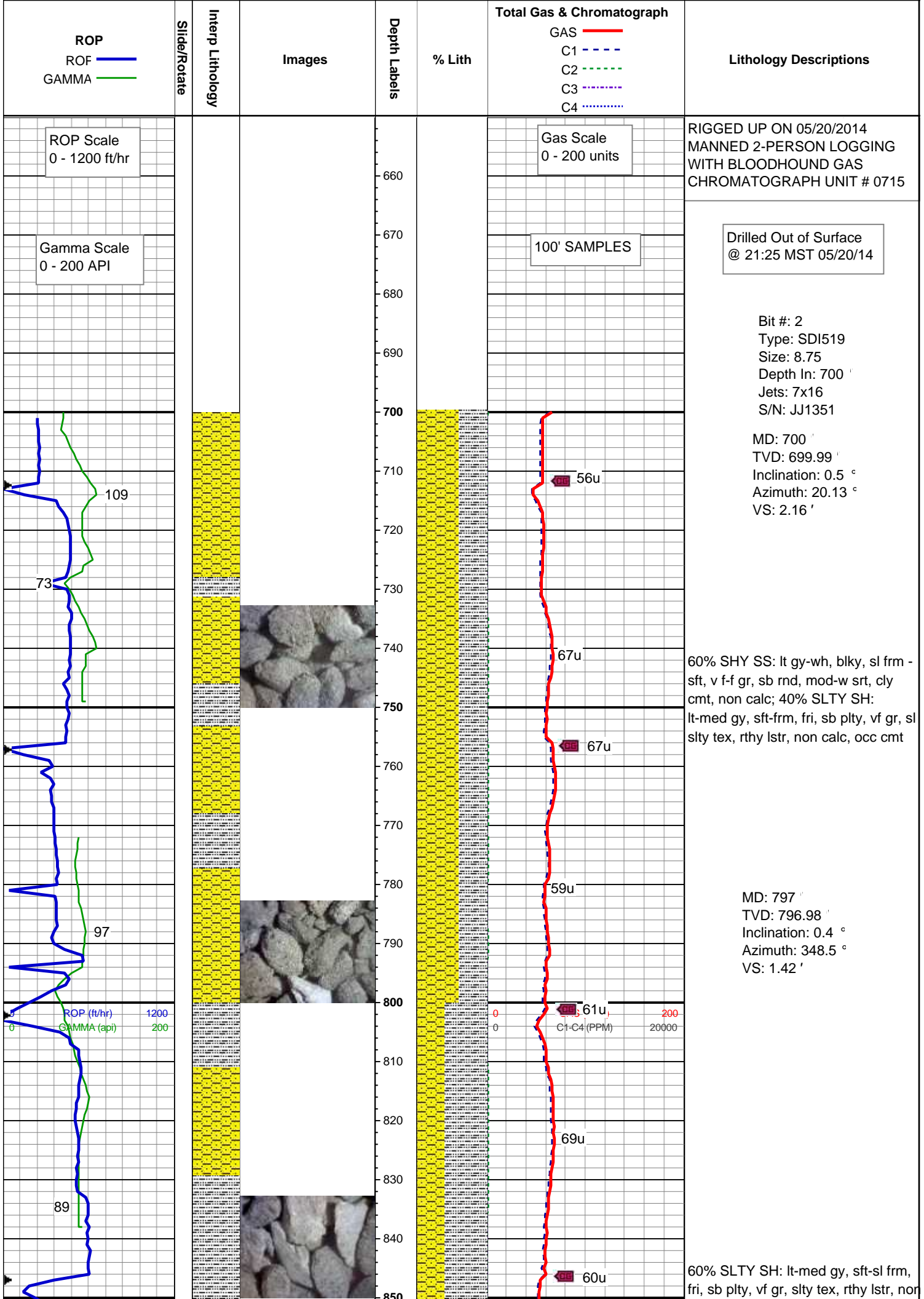
W WACKESTONE

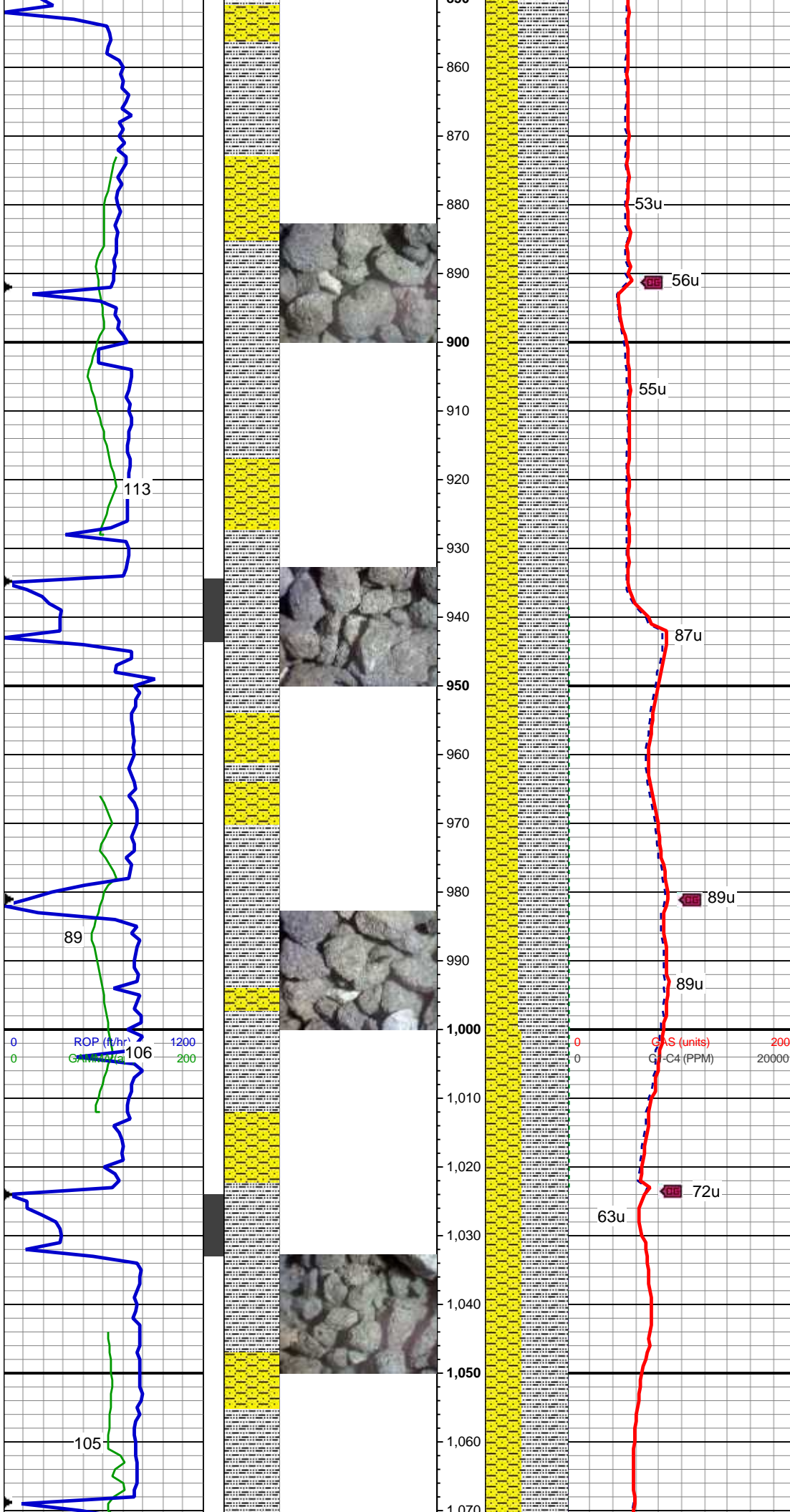
### Sorting

M MODERATE

P POOR

W WELL





calc; 40% SHY SS: lt-med gy, blkly, frm, v f-f gr, sb rnd, mod-w srt, cly cmt, non calc, tr cmt

MD: 886 '  
TVD: 885.97 '  
Inclination: 1.5 °  
Azimuth: 289.6 °  
VS: 0.81 '

60% SLTY SH: lt-med gy, sft-sl frm, fri, sb plty, vf gr, slty tex, rthy lstr, non calc; 40% SHY SS: lt-med gy, blkly, frm, v f-f gr, sb rnd, mod-w srt, cly cmt, non calc,

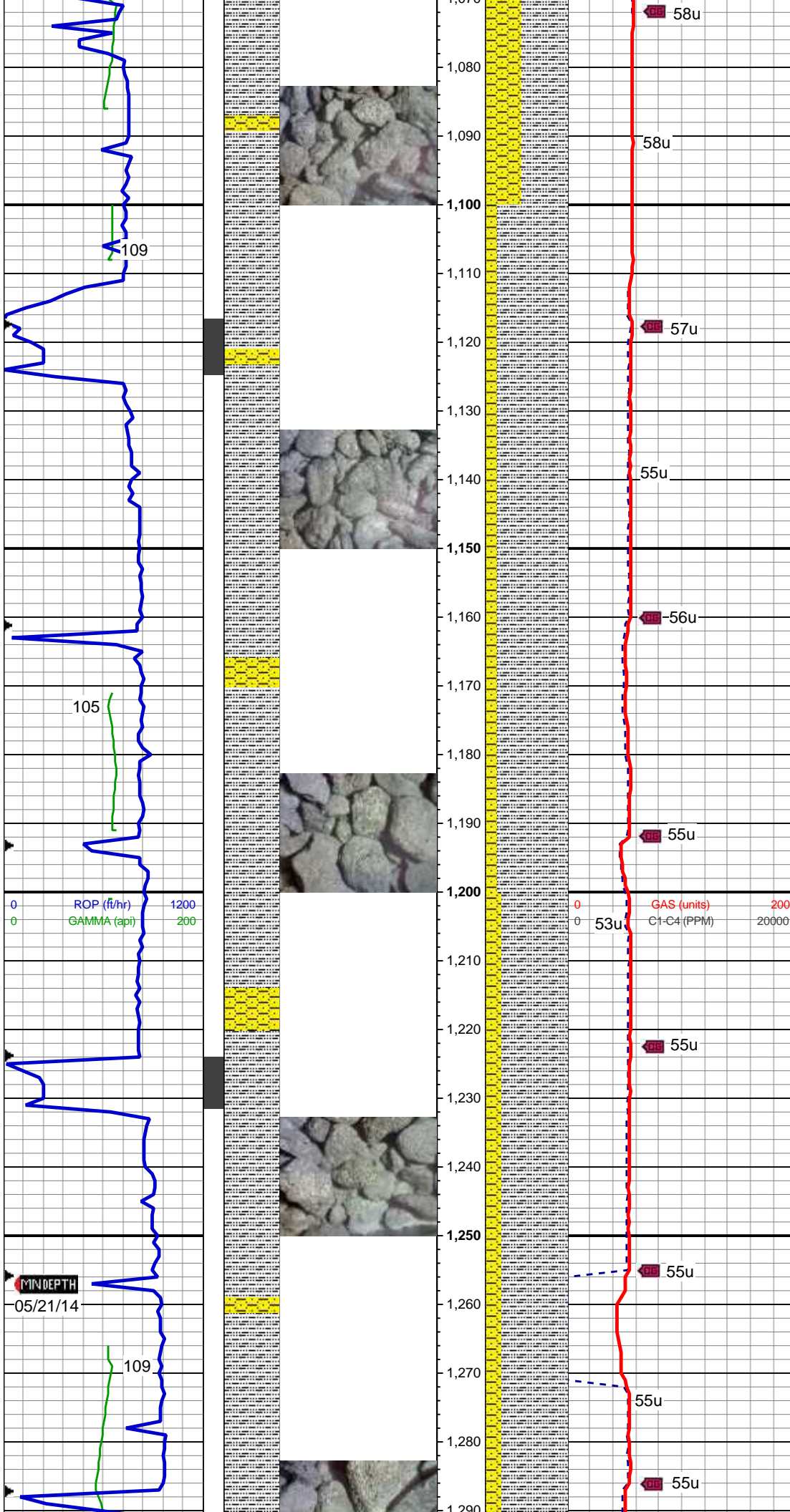
MD: 976 '  
TVD: 975.95 '  
Inclination: 1.6 °  
Azimuth: 199.1 °  
VS: 1.69 '

WT: 8.5 / VIS: 27

55% SLTY SH: lt-med gy, wh, v sft-sl frm, fri, sb plty, vf gr, slty tex, rthy lstr, non calc; 45% SHY SS: lt-med gy, blkly, frm - sl sft, v f-f gr, sb rnd, mod-w srt, cly cmt, non calc

MD: 1,066 '  
TVD: 1,065.85 '  
Inclination: 3.6 °





Inclination: 3.0 °  
Azimuth: 210.7 °  
VS: 5.42 '

58u

58u

57u

55u

56u

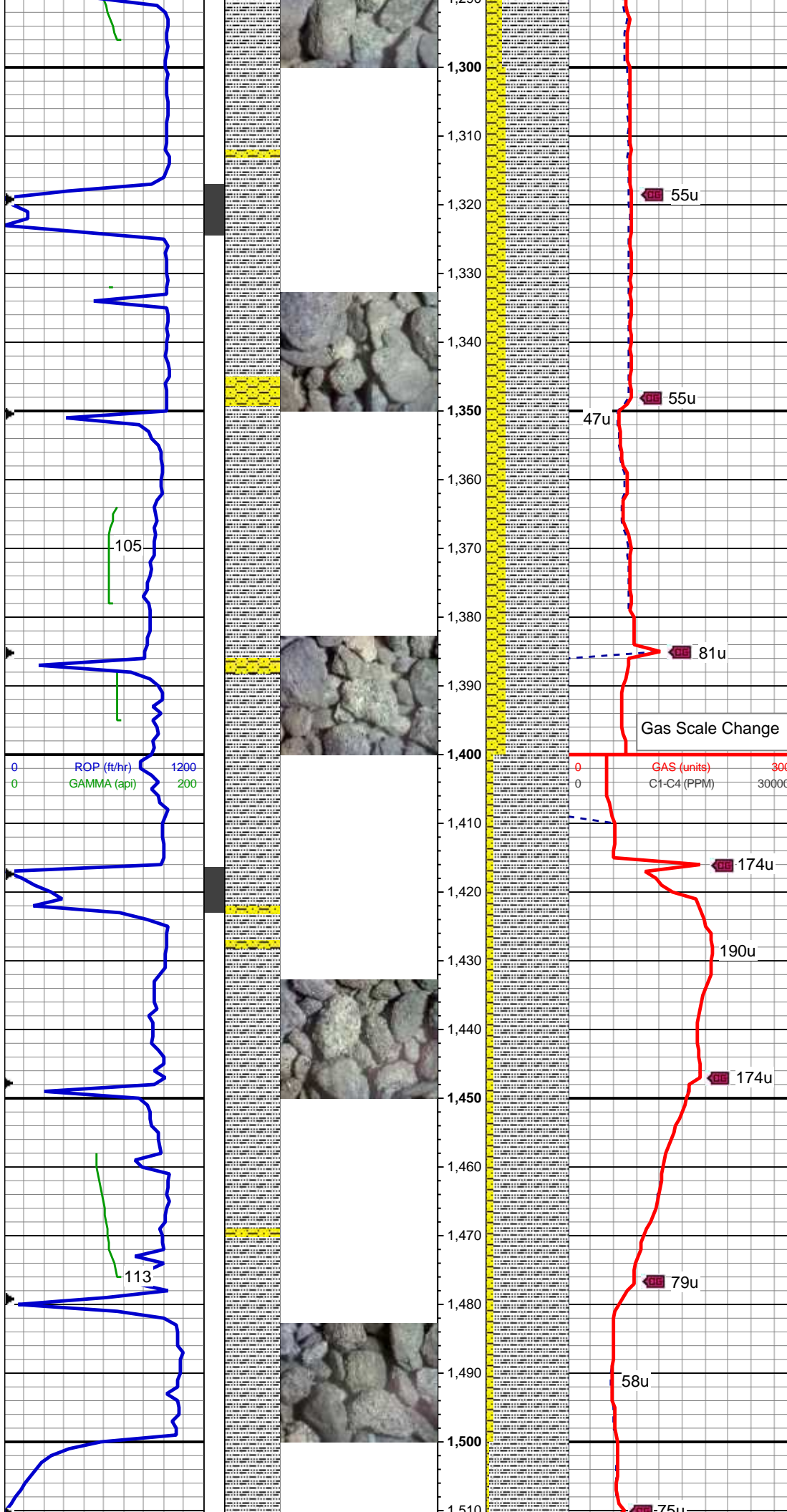
55u

53u

55u

55u

55u



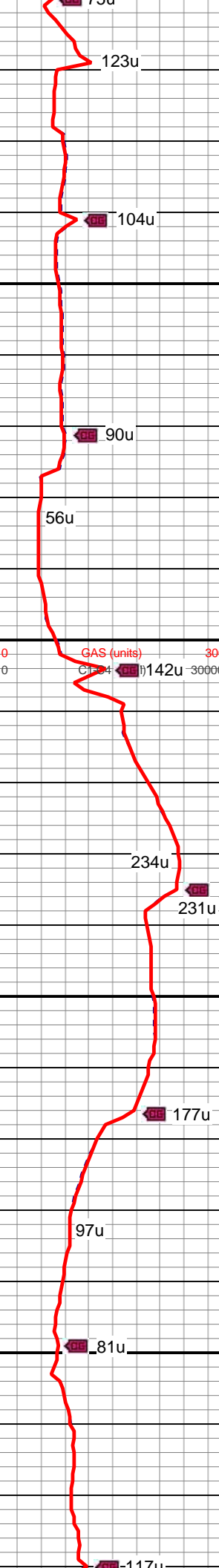
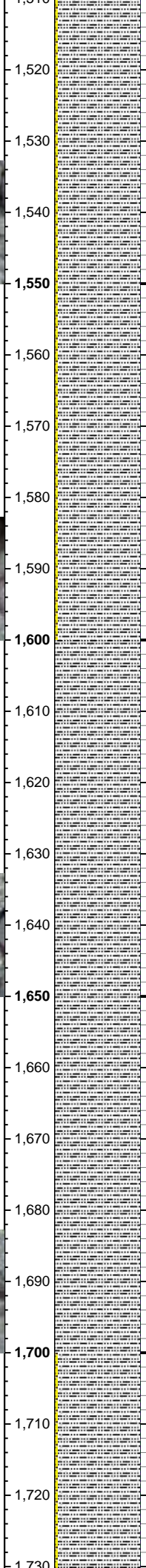
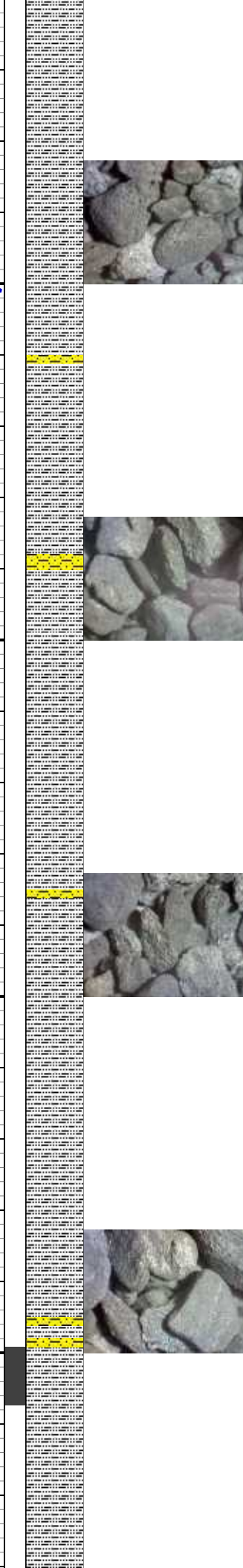
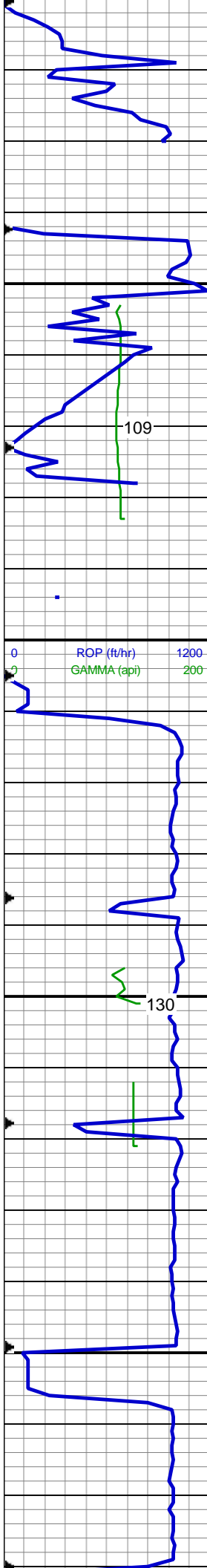
75% SLTY SH: lt-med gy, wh, sft-sl  
frm, fri, sb plty, vf gr, slty tex, rthy lstr  
non calc; 25% SHY SS: lt-med gy,  
blky, frm, v f-f gr, sb rnd, mod-w srt,  
cly cmt, non calc, tr glau, rr pyr

MD: 1,366 '  
TVD: 1,364.77 '  
Inclination: 5.5 °  
Azimuth: 221.3 °  
VS: 27.08 '

90% SLTY SH: lt-med gy, wh, sft-sl  
frm, fri, sb plty, vf gr, slty tex, rthy lstr  
non calc; 10% SHY SS: lt-med gy,  
blky, frm, v f-f gr, sb rnd, mod-w srt,  
cly cmt, non calc

MD: 1,460 '  
TVD: 1,458.2 '  
Inclination: 7.1 °  
Azimuth: 225.5 °  
VS: 34.98 '





MD: 1,554 '  
TVD: 1,551.36 '  
Inclination: 8.2 °  
Azimuth: 227.2 °  
VS: 44.18 '

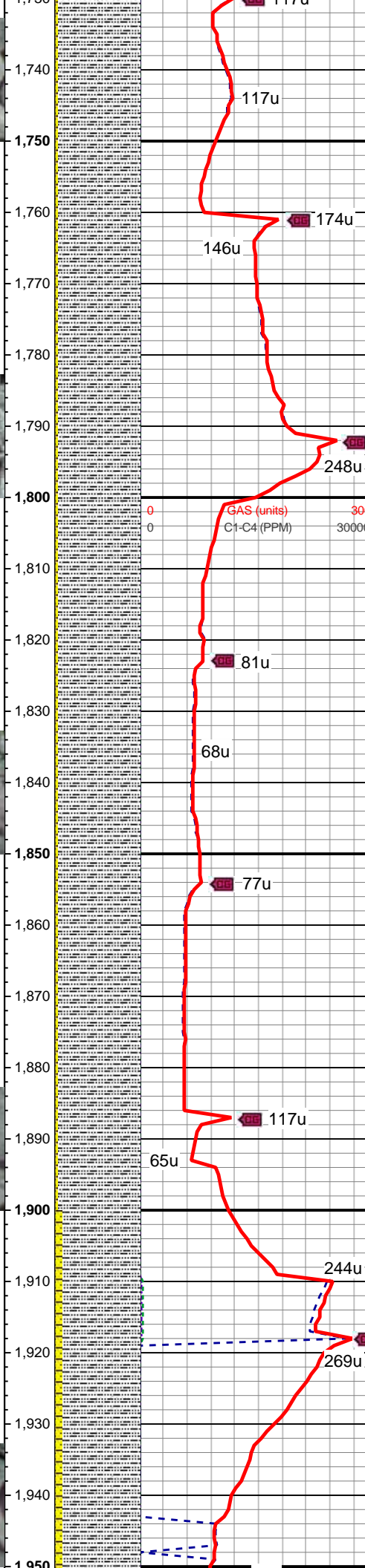
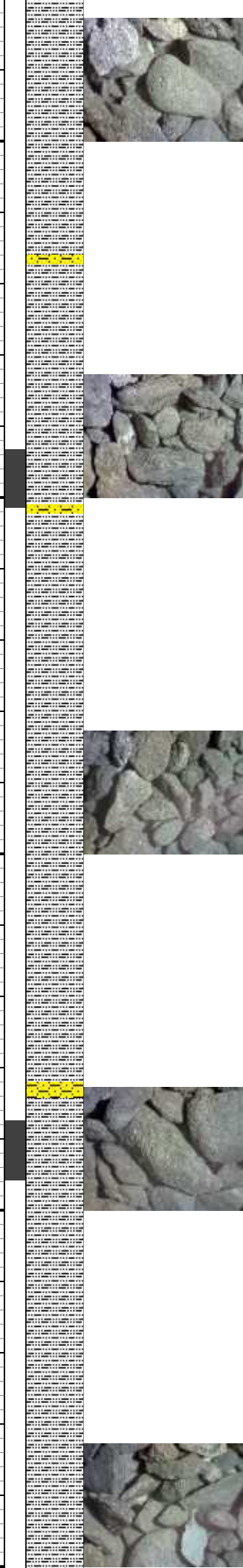
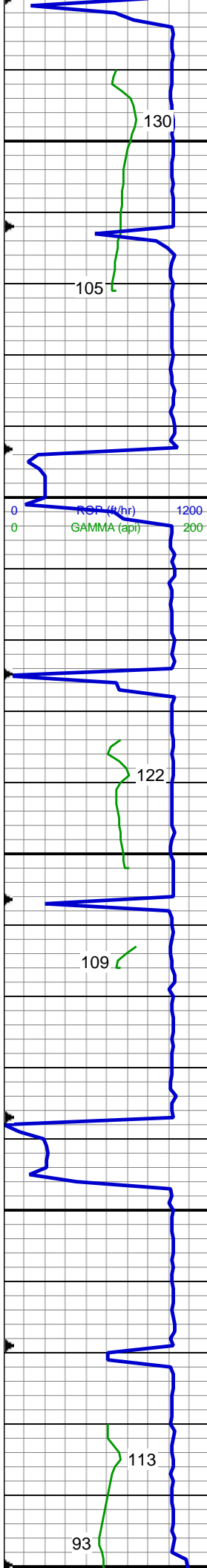
95% SLTY SH: lt-med gy, wh, sft-sl  
frm, fri, sb plty, vf gr, slty tex, rthy lstr  
non calc; 5% SHY SS: lt-med gy,  
blky, frm, v f-f gr, sb rnd, mod-w srt,  
cly cmt, non calc

WT: 8.35 / VIS: 26

MD: 1,648 '  
TVD: 1,644.3 '  
Inclination: 9 °  
Azimuth: 222 °  
VS: 54.81 '

100% SLTY SH: lt-med gy, sft-sl  
frm, fri, sb plty, vf gr, slty tex, rthy lstr  
non calc, tr shy ss

MD: 1,743 '  
TVD: 1,738.11 '



Inclination: 9.2 °  
Azimuth: 222 °  
VS: 66.6 '

95% SLTY SH: lt-med gy, wh, sft-sl  
frm, fri, sb plty-sb blkly, vf gr, slty tex,  
rthy lstr, non calc; 5% SHY SS:  
lt-med gy, blkly, frm, v f-f gr, sb rnd,  
mod-w srt, cly cmt, non calc

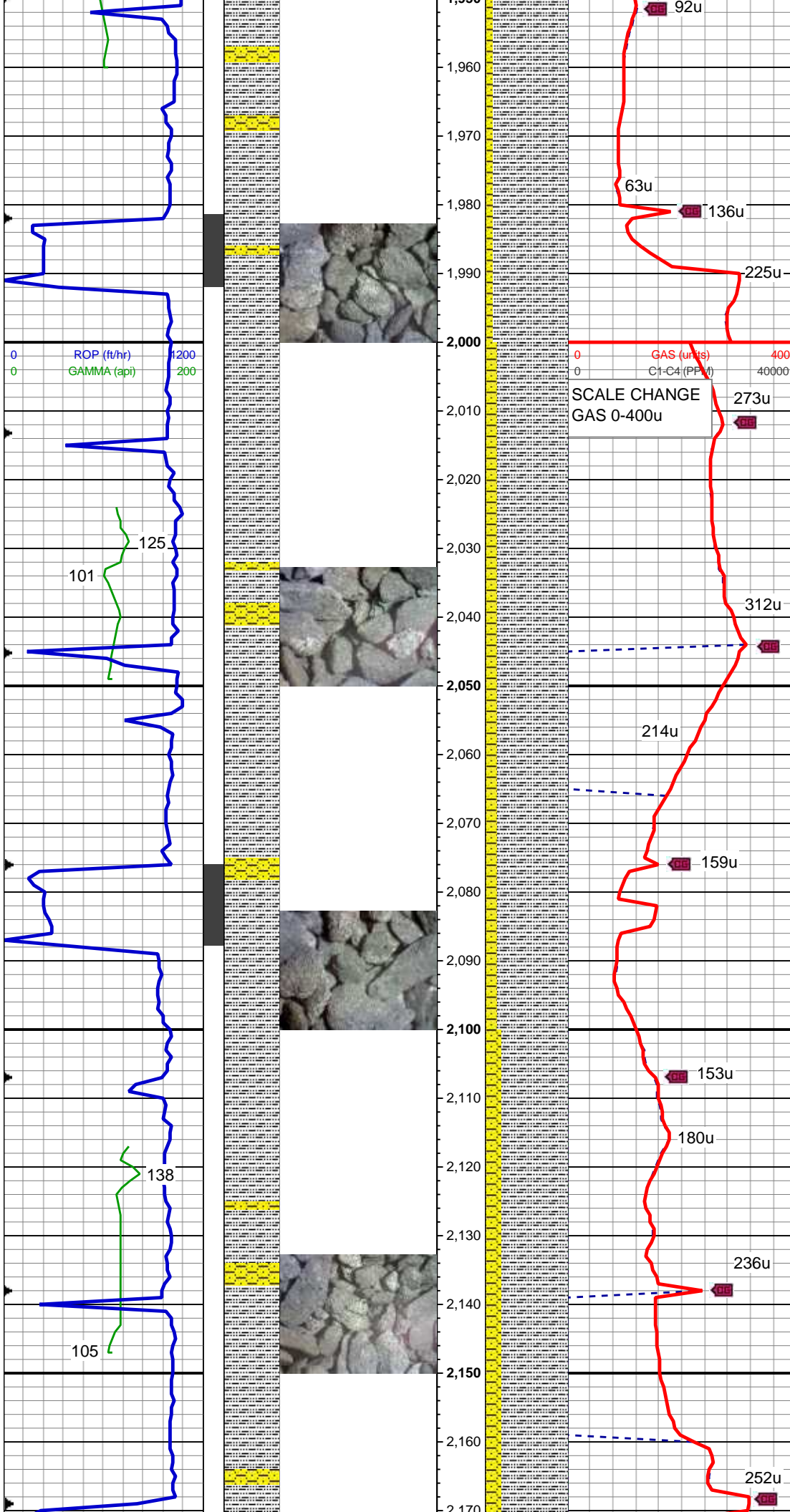
MD: 1,837 '  
TVD: 1,830.82 '  
Inclination: 9.8 °  
Azimuth: 225.1 °  
VS: 78.5 '

95% SLTY SH: lt-med gy, wh, sft-sl  
frm, fri, sb plty-sb blkly, vf gr, slty tex,  
rthy lstr, non calc; 5% SHY SS:  
lt-med gy, blkly, frm, v f-f gr, sb rnd,  
mod-w srt, cly cmt, non calc

MD: 1,931 '  
TVD: 1,923.59 '  
Inclination: 8.7 °  
Azimuth: 224.1 °  
VS: 89.92 '

90% SLTY SH: lt-med gy, wh, sft-sl  
frm, fri, sb plty-sb blkly, vf gr, slty tex,  
rthy lstr, non calc; 10% SHY SS:





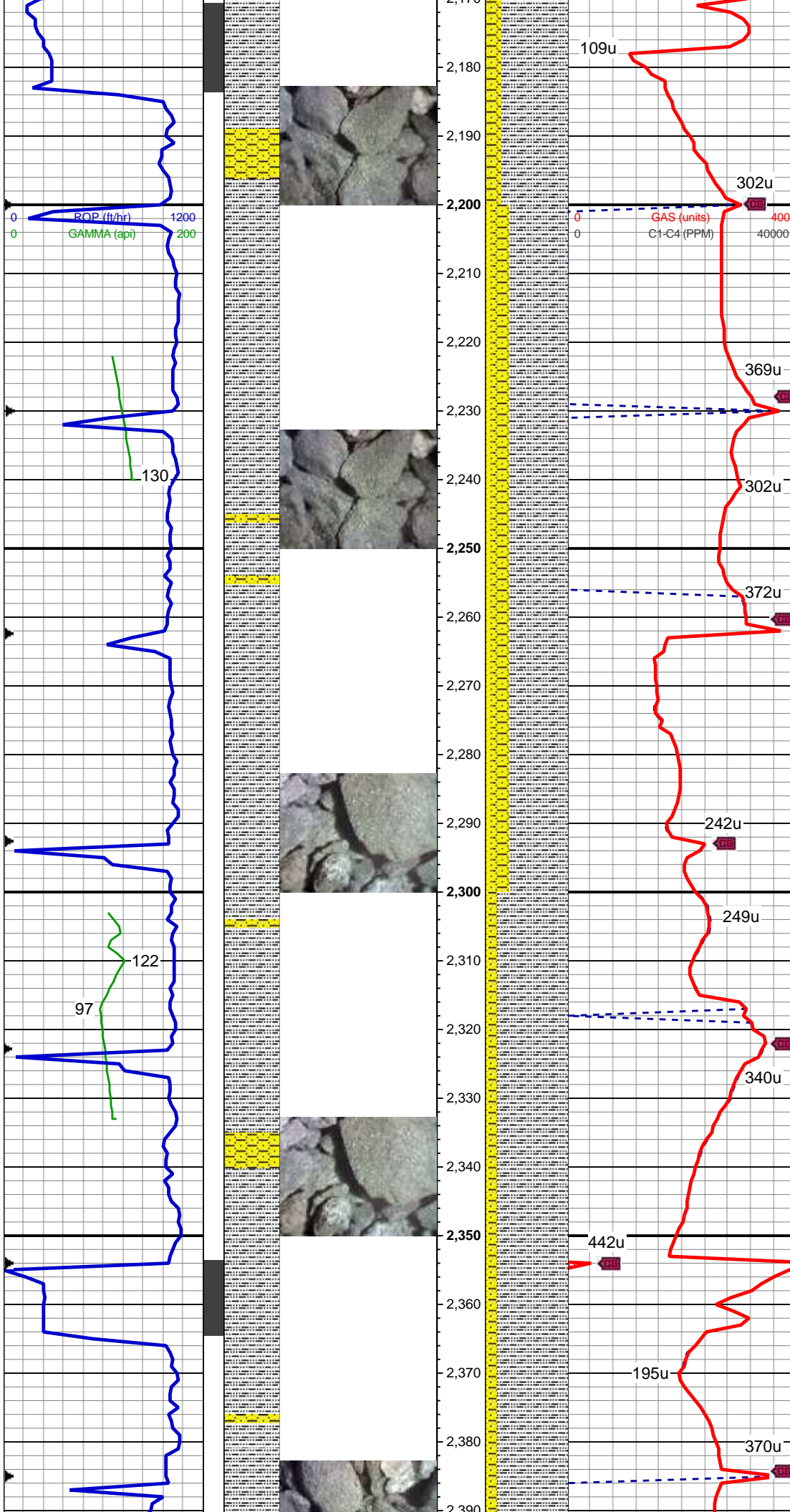
lt-med gy, blkly, frm, v f-f gr, sb rnd, mod-w srt, cly cmt, non calc

MD: 2,026 '  
TVD: 2,017.45 '  
Inclination: 9.1 °  
Azimuth: 224.4 °  
VS: 101.09 '

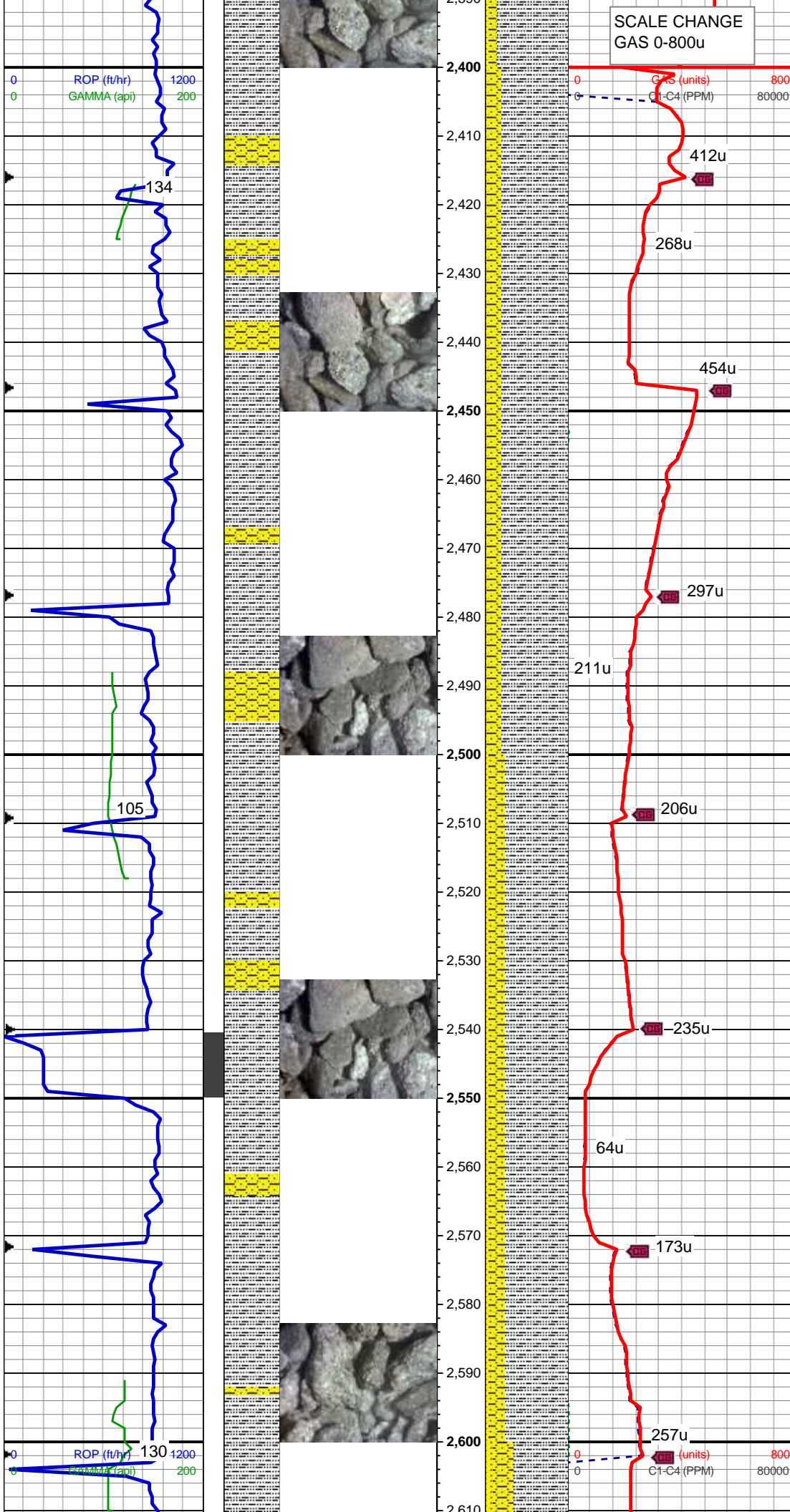
85% SLTY SH: lt-med gy, sft-sl frm, fri, sb plty, vf gr, slty tex, rthy lstr, non calc; 15% SHY SS: lt-med gy, blkly, frm, v f-f gr, sb rnd, mod-w srt, cly cmt, non calc

MD: 2,118 '  
TVD: 2,108.25 '  
Inclination: 9.4 °  
Azimuth: 226.4 °  
VS: 112.13 '

80% SLTY SH: lt-med gy, sft-sl frm, fri, sb plty, vf gr, slty tex, rthy lstr, non calc; 20% SHY SS: lt-med gy, blkly, frm, v f-f gr, sb rnd, mod-w srt, cly cmt, non calc







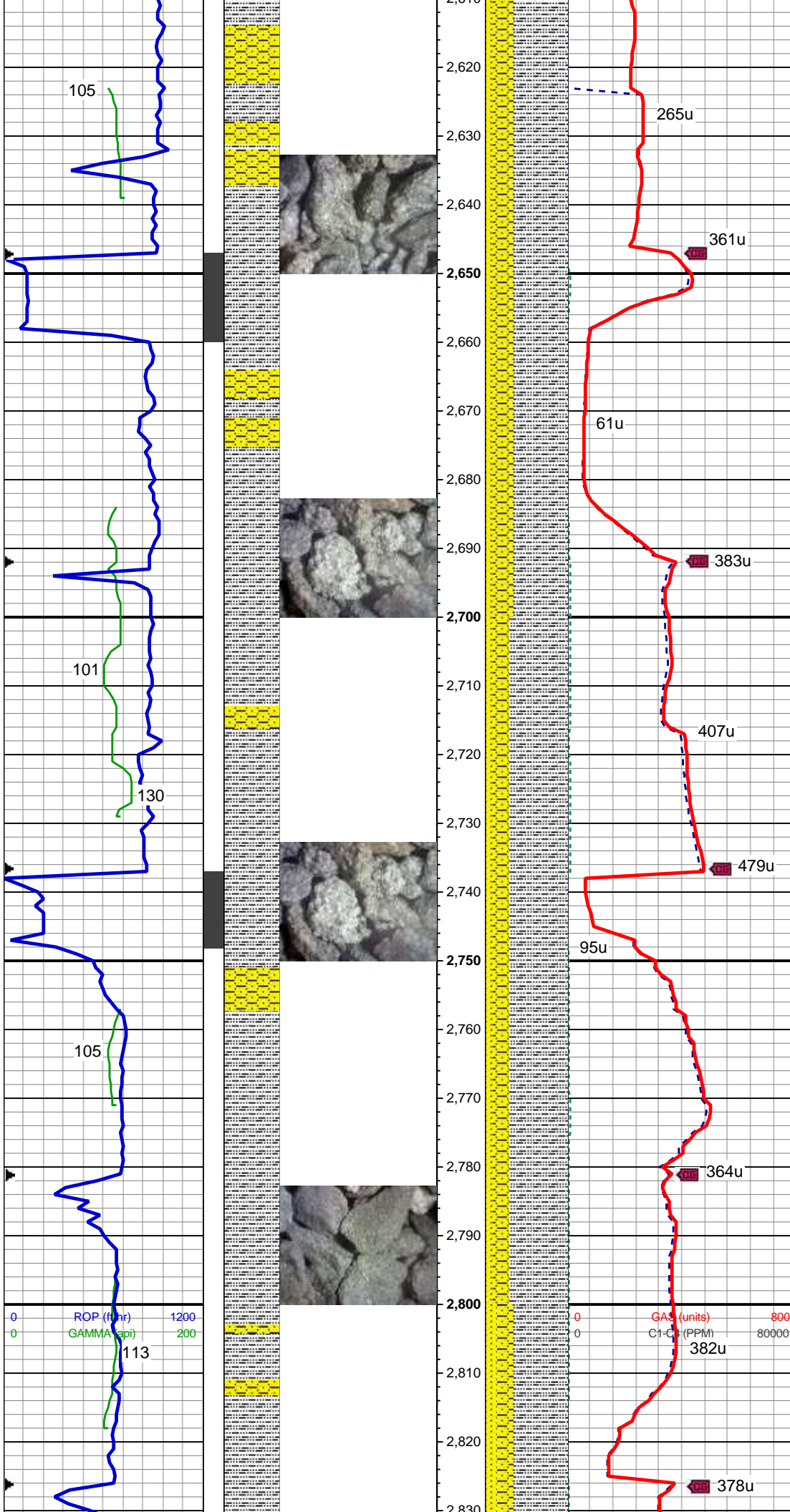
80% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl cacI; 20% SHY SS: wh-lt gy, s&p, blky, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc, tr ss

MD: 2,490 '  
TVD: 2,475.43 '  
Inclination: 8.9 °  
Azimuth: 232.2 °  
VS: 151.28 '

75% 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, 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: 2,597 '  
TVD: 2,581.01 '  
Inclination: 9.8 °  
Azimuth: 228.8 °  
VS: 163.19 '





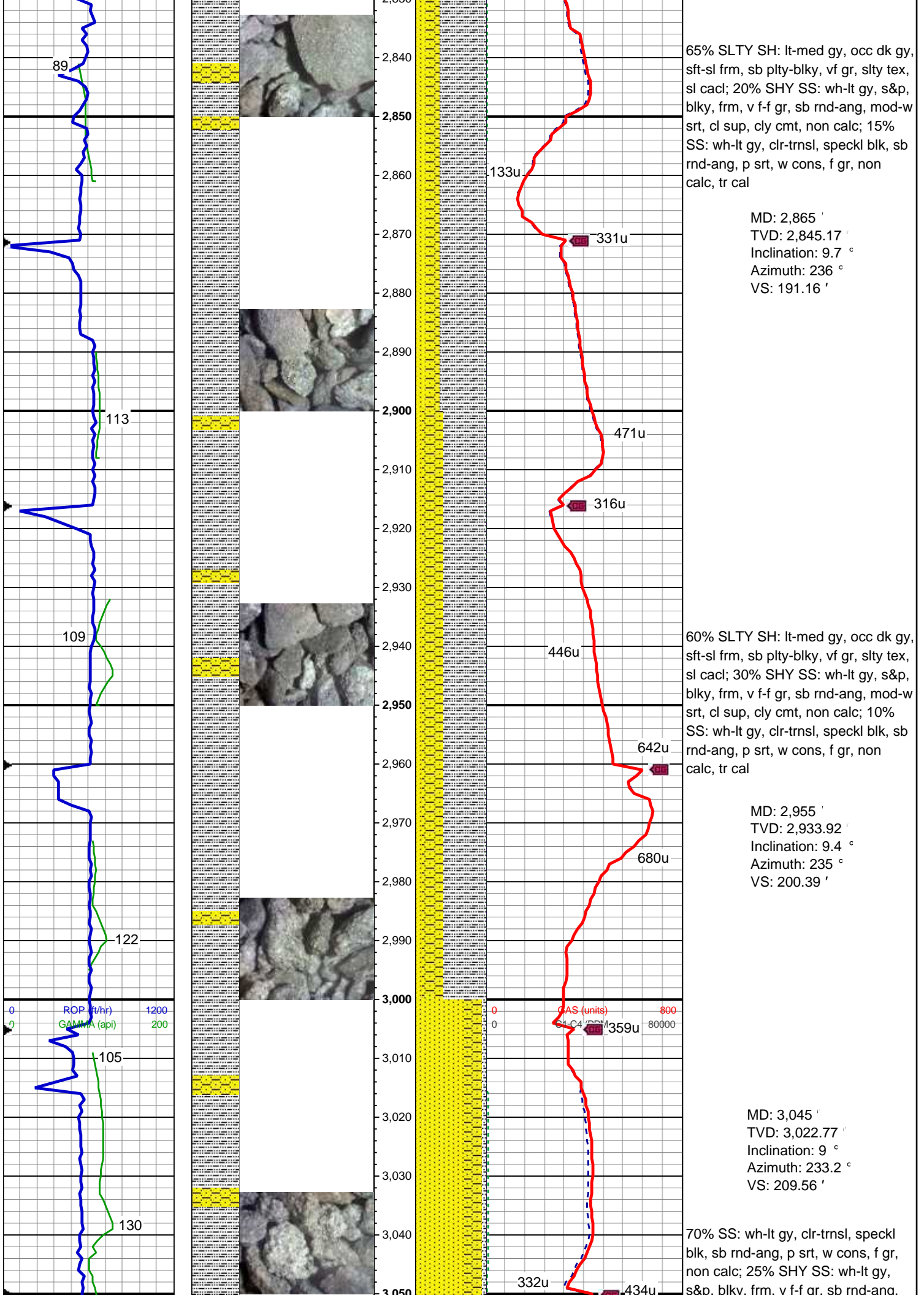
65% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl clac; 25% SHY SS: wh-lt gy, s&p, blky, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc; 10% SS: wh-lt gy, clr-trnsl, speckl blk, sb rnd-ang, p srt, w cons, f gr, non calc, tr cal

MD: 2,686 '  
TVD: 2,668.72 '  
Inclination: 9.8 °  
Azimuth: 235.3 °  
VS: 173.25 '

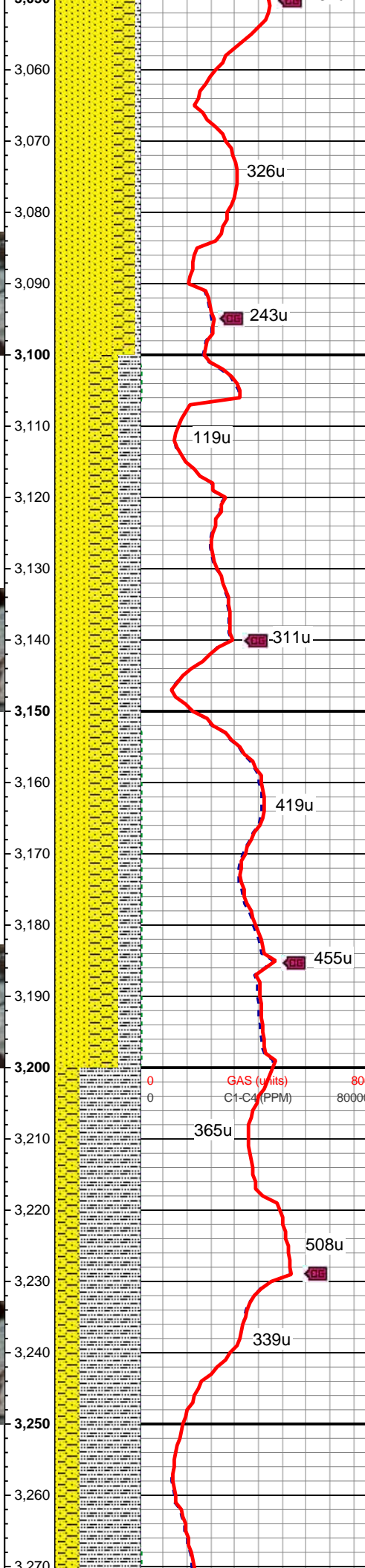
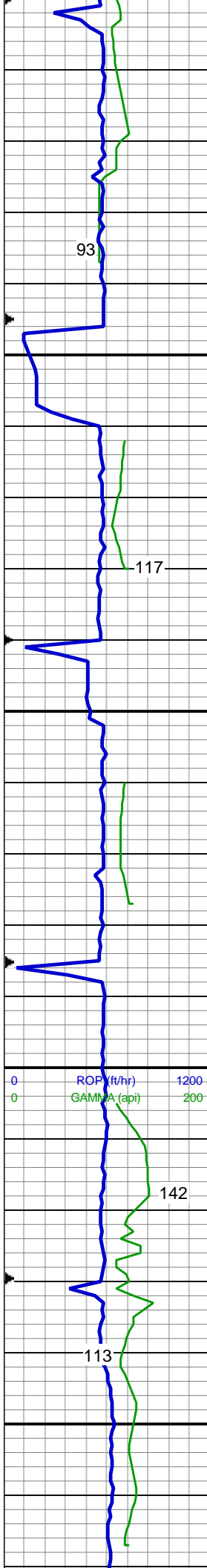
70% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl clac; 20% SHY SS: wh-lt gy, s&p, blky, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc; 10% SS: wh-lt gy, clr-trnsl, speckl blk, sb rnd-ang, p srt, w cons, f gr, non calc, tr cal

MD: 2,776 '  
TVD: 2,757.43 '  
Inclination: 9.6 °  
Azimuth: 238.7 °  
VS: 182.31 '

WT: 8.6 / VIS: 27







mod-w srt, cl sup, cly cmt, non calc;  
5% SLTY SH: lt-med gy, occ dk gy,  
sft-sl frm, sb plty-blky, vf gr, slty tex,  
sl cacl

WT: 8.7 / VIS: 27

MD: 3,135 '  
TVD: 3,111.56 '  
Inclination: 9.8 °  
Azimuth: 235.3 °  
VS: 218.89 '

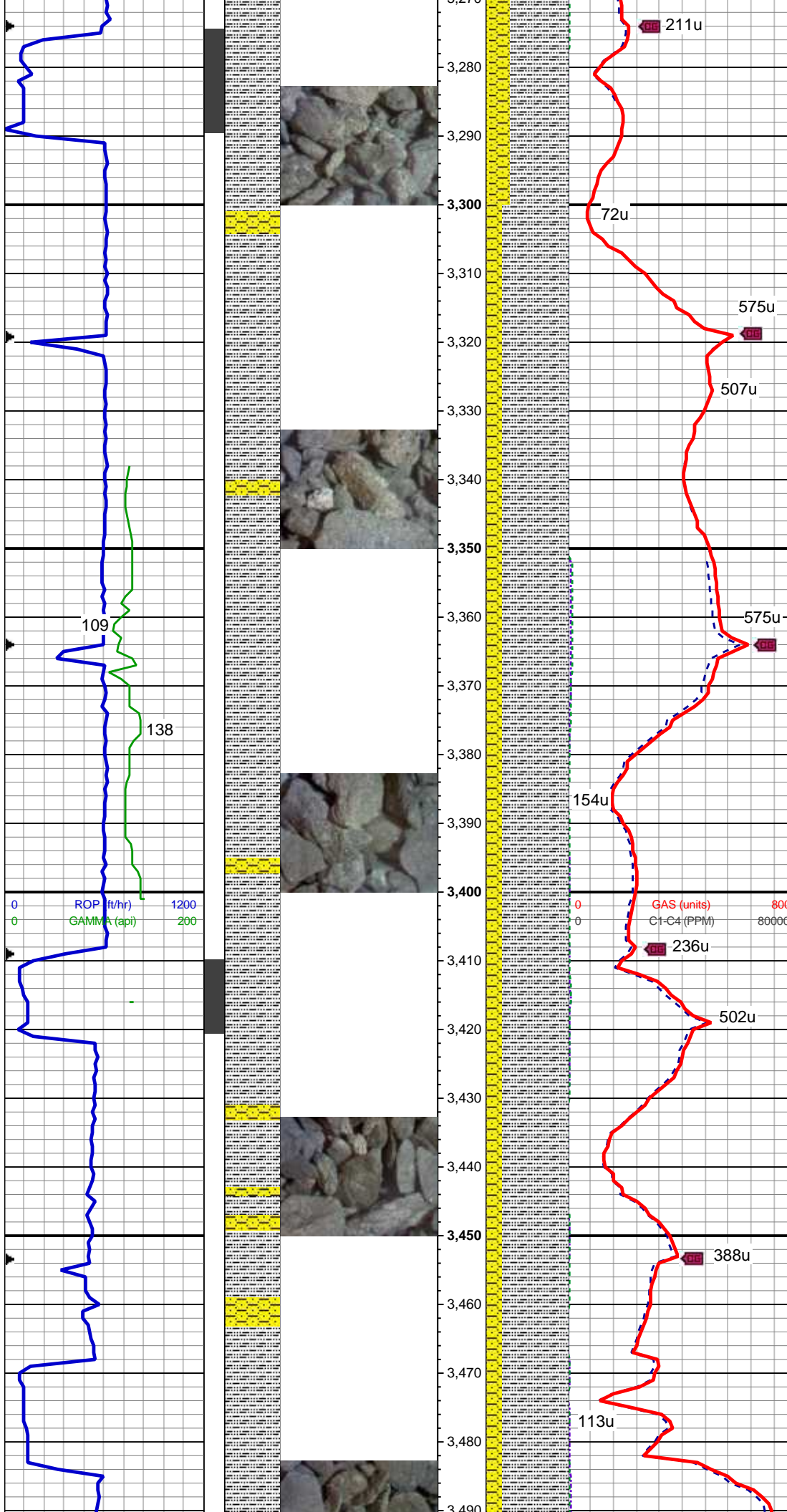
40% SS: wh-lt gy, clr-trnsl, speckl  
blk, sb rnd-ang, p srt, w cons, f gr,  
non calc; 35% SHY SS: wh-lt gy,  
s&p, blk, frm, v f-f gr, sb rnd-ang,  
mod-w srt, cl sup, cly cmt, non calc;  
25% SLTY SH: lt-med gy, occ dk gy,  
sft-sl frm, sb plty-blky, vf gr, slty tex,  
sl cacl

GAS (units) 800  
C1-C4 (PPM) 80000

MD: 3,224 '  
TVD: 3,199.43 '  
Inclination: 8.4 °  
Azimuth: 232.7 °  
VS: 227.86 '

70% SLTY SH: lt-med gy, occ dk gy,  
sft-sl frm, sb plty-blky, vf gr, slty tex,  
sl cacl; 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, tr cal





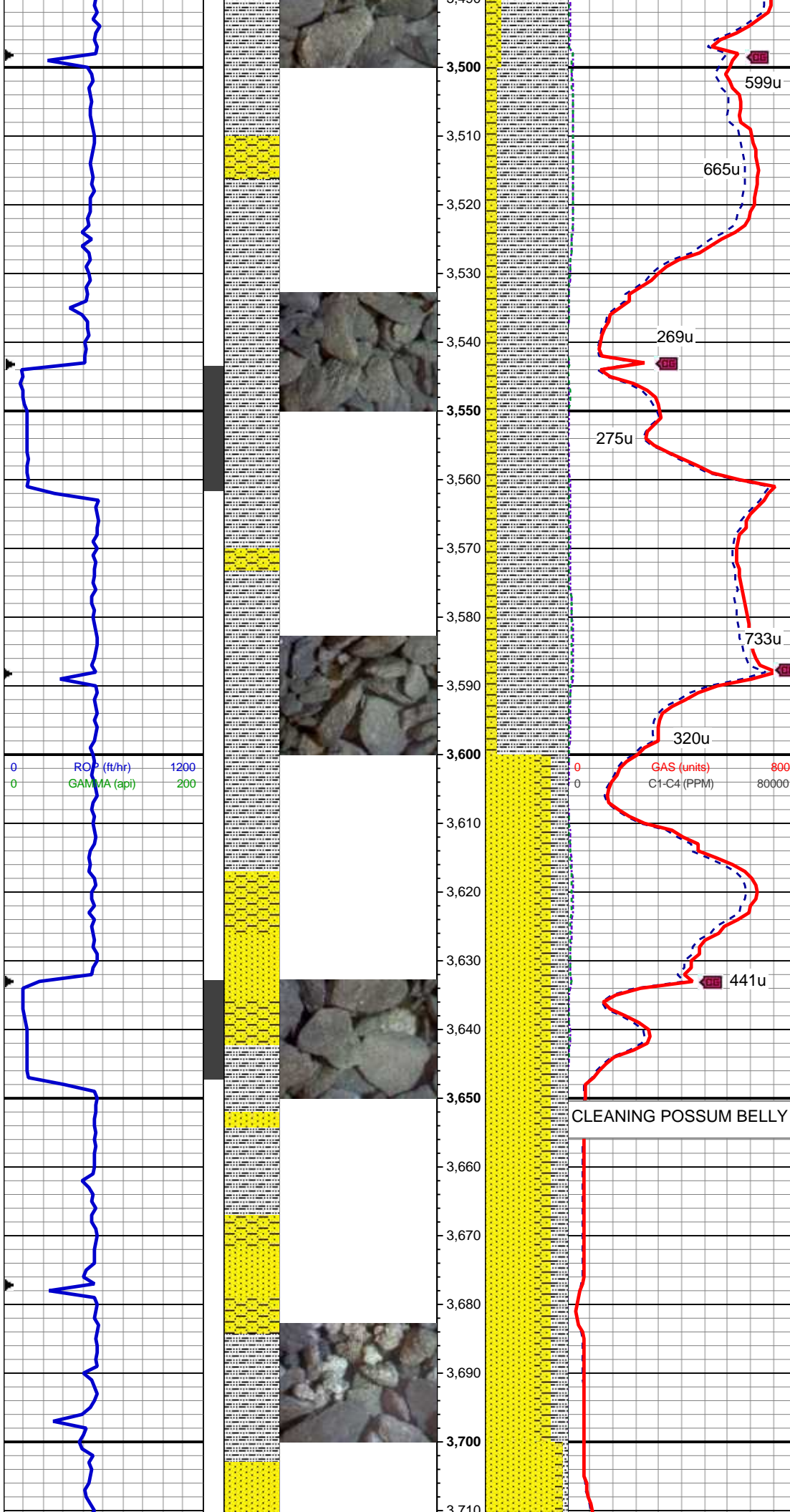
MD: 3,314 '  
TVD: 3,288.44 '  
Inclination: 8.7 °  
Azimuth: 228.1 °  
VS: 237.04 '

80% 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, tr ss

MD: 3,403 '  
TVD: 3,376.59 '  
Inclination: 7.1 °  
Azimuth: 225.8 °  
VS: 245.93 '

80% 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, tr ss

WT: 8.8 / VIS: 27



MD: 3,493 '  
TVD: 3,465.74 '  
Inclination: 8.6 °  
Azimuth: 233.2 °  
VS: 254.43 '

85% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl cac; 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, tr ss

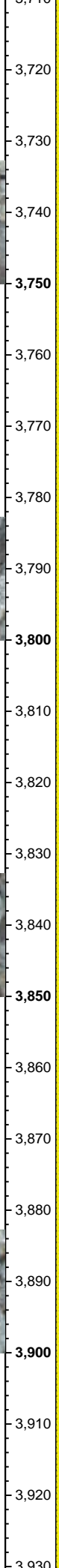
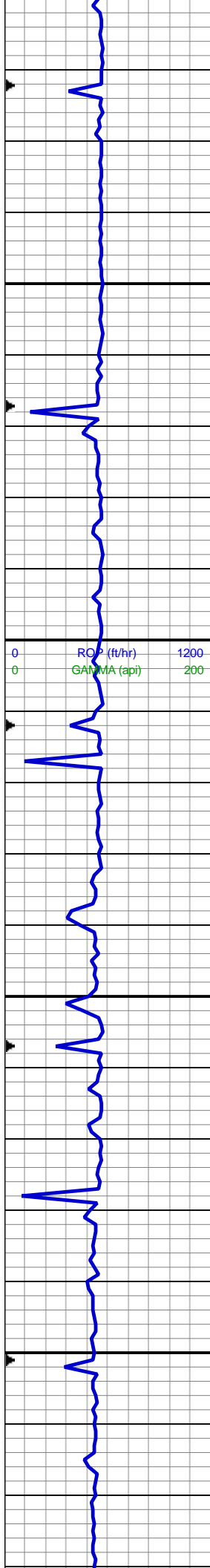
MD: 3,583 '  
TVD: 3,554.64 '  
Inclination: 9.4 °  
Azimuth: 238.7 °  
VS: 263.02 '

60% 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, blky, 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 cac

WT: 8.9 / VIS: 27

MD: 3,672 '  
TVD: 3,642.34 '  
Inclination: 10.2 °  
Azimuth: 234.1 °  
VS: 272.21 '





CLEANING POSSUM BELLY

GAS (units) 800  
C1-C4 (PPM) 80000

CLEANING POSSUM BELLY

196u

402u

85% 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; 5% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl cacl

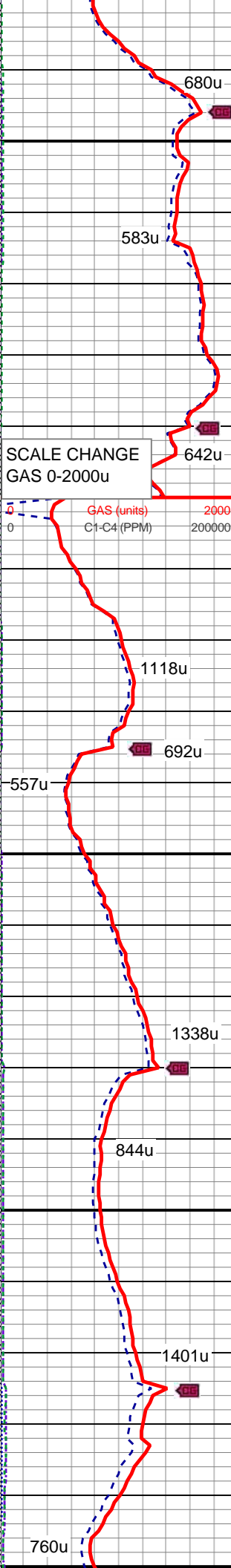
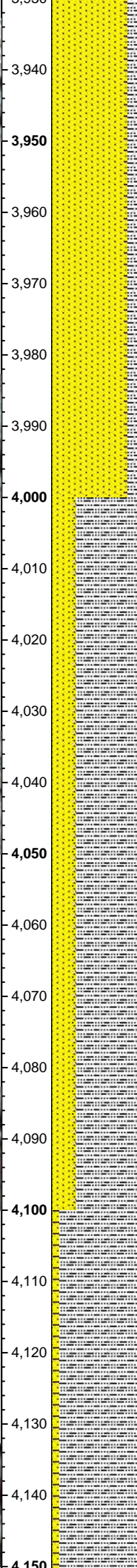
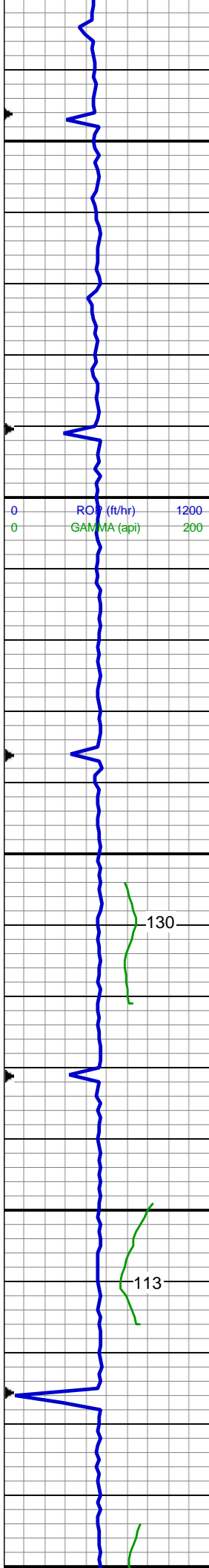
MD: 3,762 '  
TVD: 3,730.85 '  
Inclination: 10.7 °  
Azimuth: 233.4 °  
VS: 282.7 '

MD: 3,851 '  
TVD: 3,818.21 '  
Inclination: 11.3 °  
Azimuth: 232.3 °  
VS: 293.81 '

85% 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; 5% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl cacl

MD: 3,941 '  
TVD: 3,906.39 '  
Inclination: 11.8 °  
Azimuth: 231.6 °





VS: 305.82 '

85% SS: wh-lt gy, clr-trnsl, speckl blk, sb rnd-ang, p srt, w cons, f gr, non calc; 10% 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, blk, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc

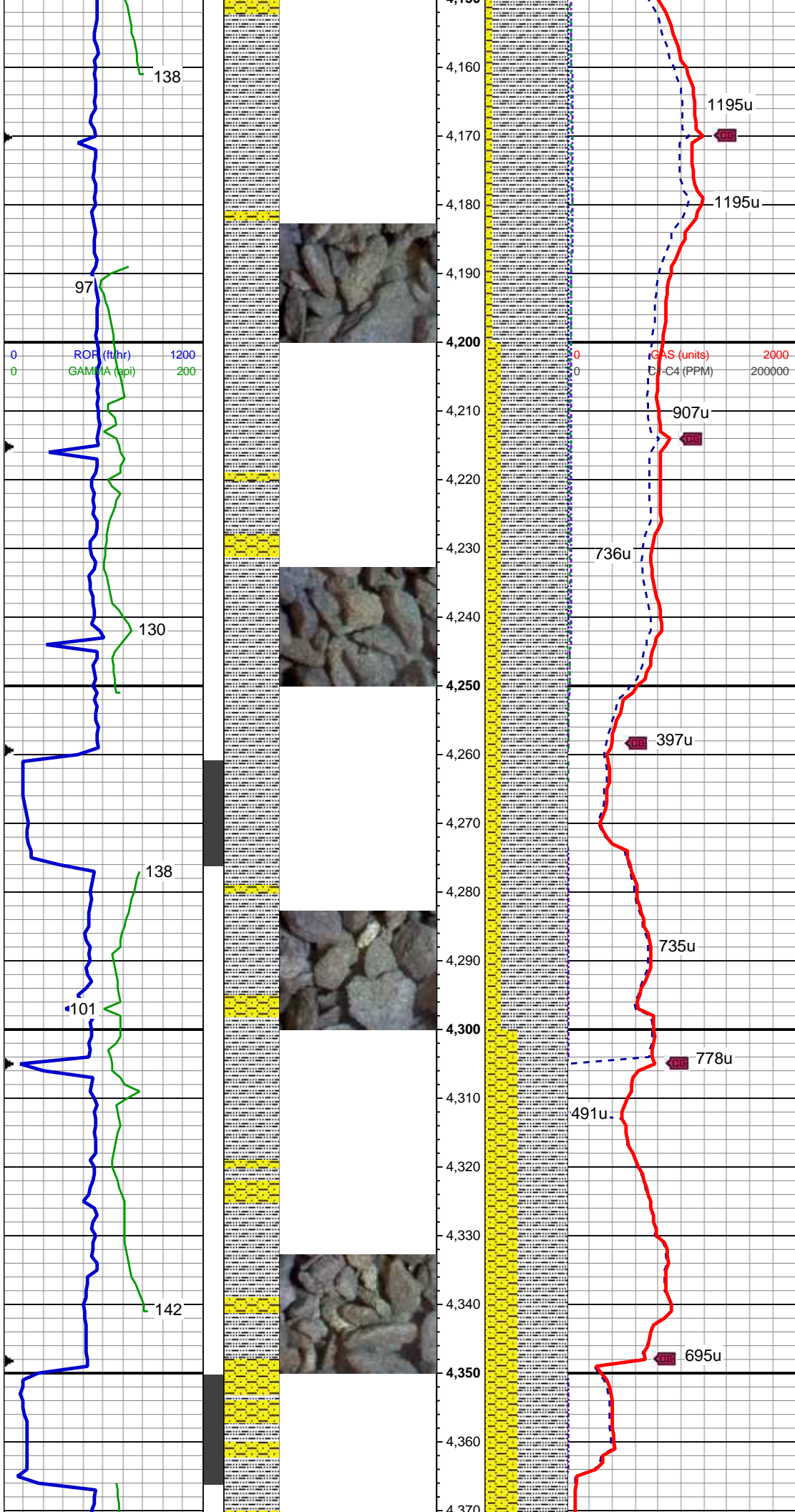
WT: 8.8 / VIS: 26

MD: 4,031 '  
TVD: 3,994.45 '  
Inclination: 12 °  
Azimuth: 229.5 °  
VS: 318.51 '

70% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl cac; 25% SS: wh-lt gy, clr-trnsl, speckl blk, sb rnd-ang, p srt, w cons, f gr, non calc; 5% 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 cal, tr lse foss

MD: 4,120 '  
TVD: 4,081.77 '  
Inclination: 10.3 °  
Azimuth: 225.3 °  
VS: 330.91 '

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, tr cal, tr  
lse foss, tr ss

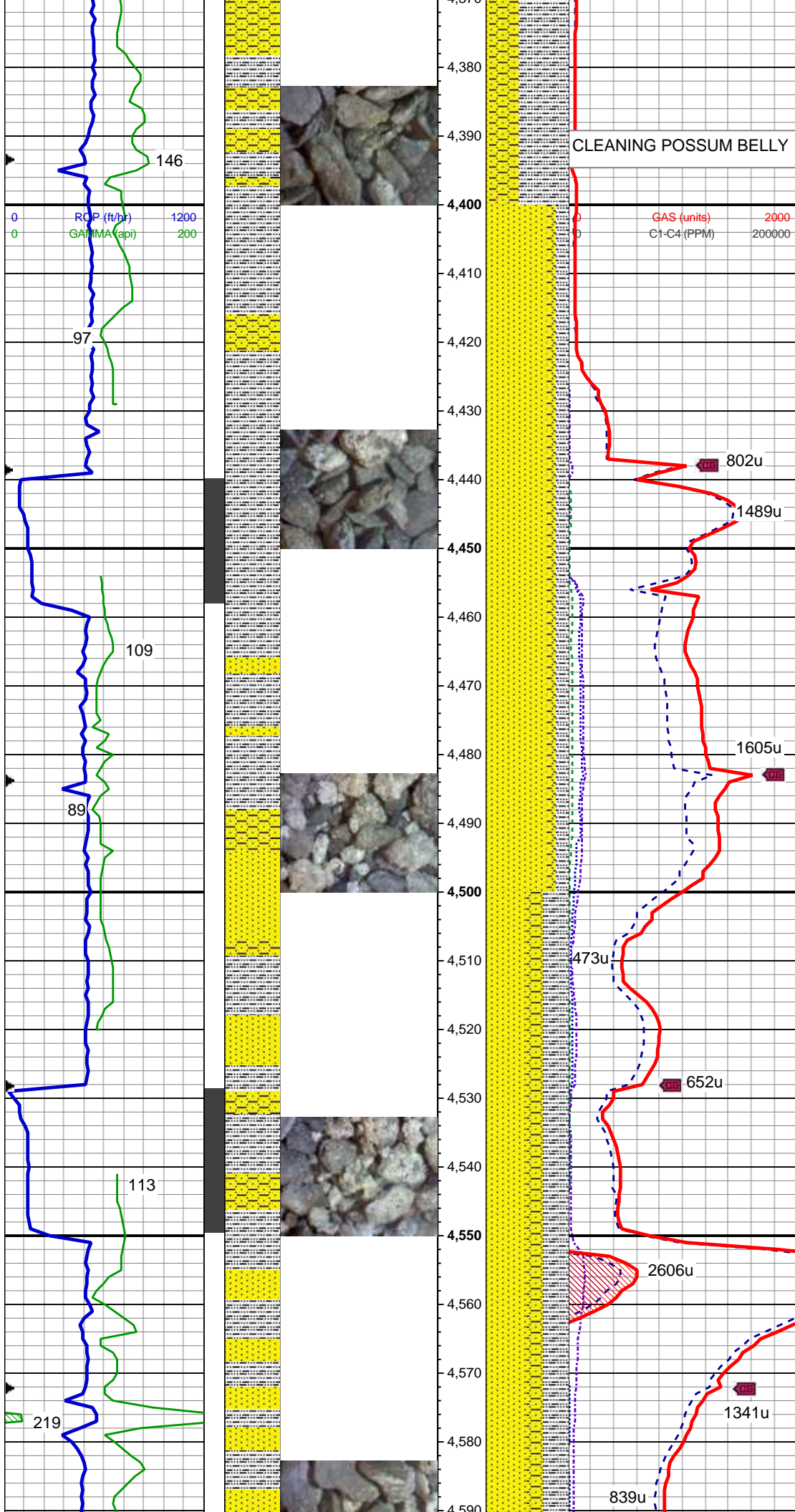
MD: 4,210 '  
TVD: 4,170.5 '  
Inclination: 9 °  
Azimuth: 221.8 °  
VS: 342.47 '

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, tr lse foss

MD: 4,299 '  
TVD: 4,258.38 '  
Inclination: 9.2 °  
Azimuth: 226.9 °  
VS: 353.14 '

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: 4,389 '  
TVD: 4,347.21 '  
Inclination: 9.3 °  
Azimuth: 225 °  
VS: 363.85 '

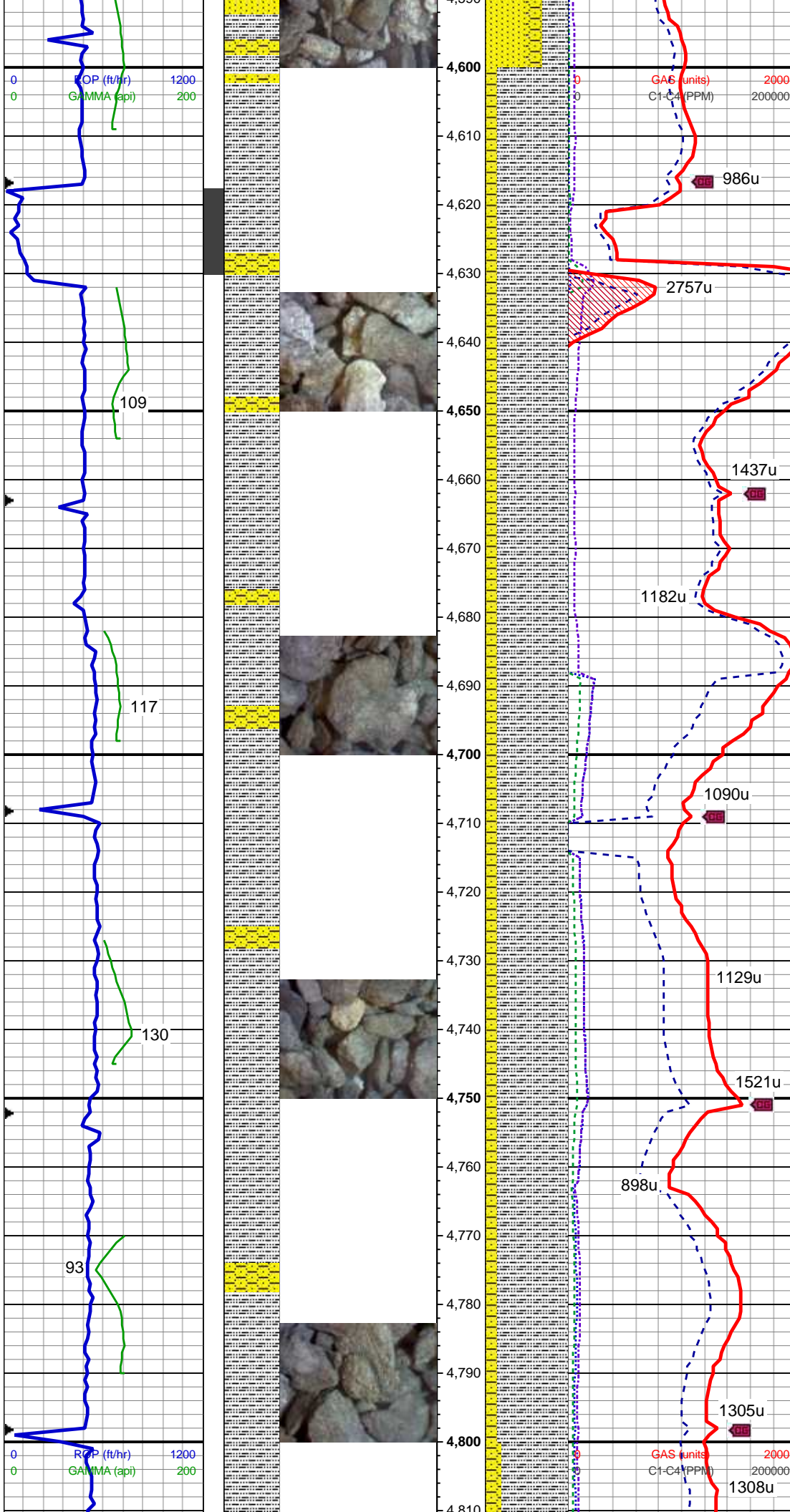
MD: 4,479 '  
TVD: 4,435.91 '  
Inclination: 10.2 °  
Azimuth: 224.1 °  
VS: 375.38 '

75% SS: wh-lt gy, clr-trnsl, speckl blk, sb rnd-ang, p srt, w cons, f gr, non calc; 15% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl cacl; 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, mod bent

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 cacl; 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, mod cal

MD: 4,568 '  
TVD: 4,523.44 '  
Inclination: 10.7 °  
Azimuth: 232.3 °  
VS: 386.85 '





WT: 8.6 / VIS: 25

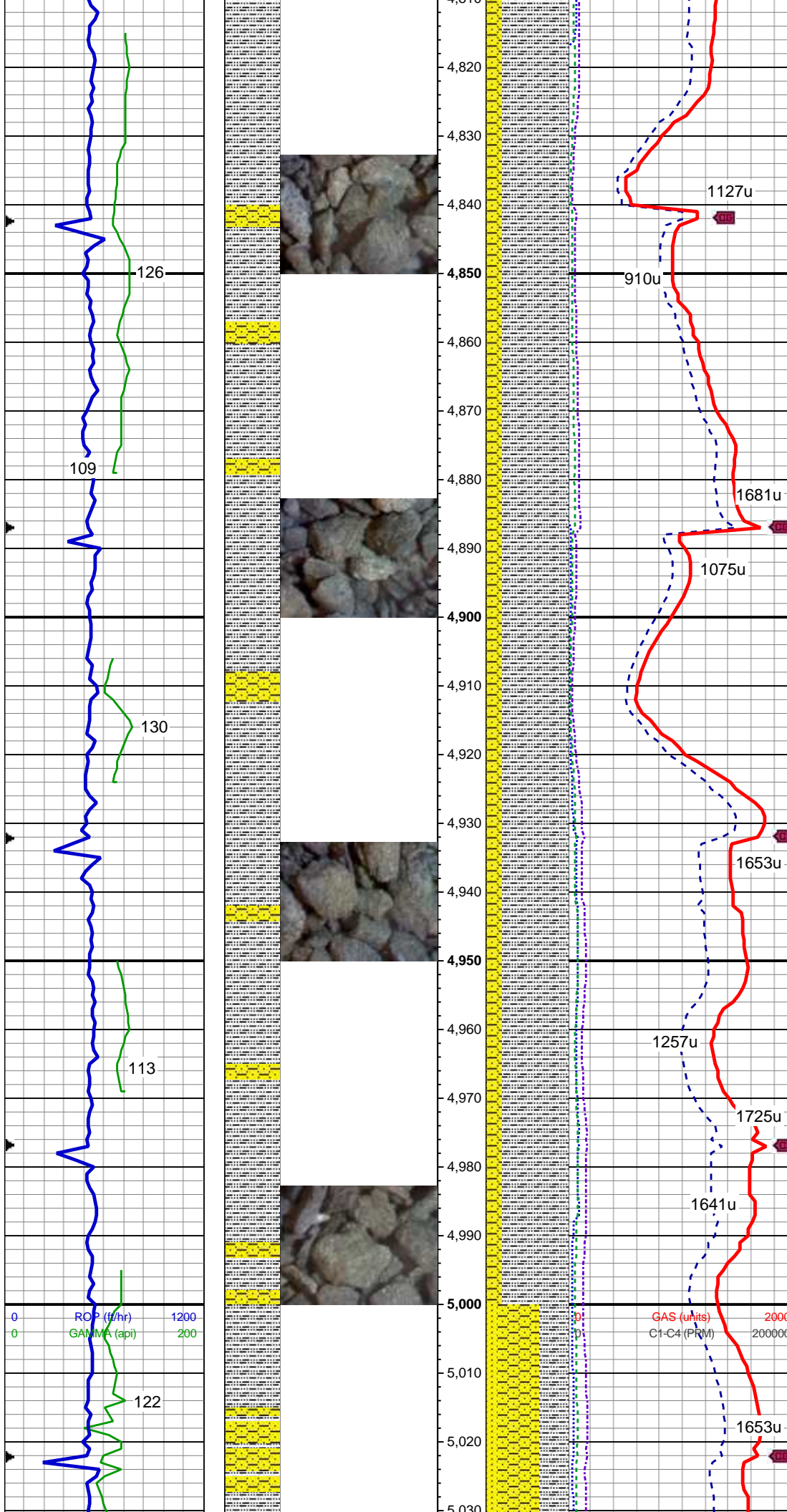
85% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl cac; 15% SHY SS: wh-lt gy, s&p, blky, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc, tr ss, tr lse foss

MD: 4,658 '  
TVD: 4,612.17 '  
Inclination: 8.5 °  
Azimuth: 228.5 °  
VS: 397.1 '

WT: 8.5 / VIS: 25

85% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl cac; 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, tr ss, tr lse foss

MD: 4,748 '  
TVD: 4,701.35 '  
Inclination: 7 °  
Azimuth: 221.6 °  
VS: 406.15 '



MD: 4,837 '  
TVD: 4,789.78 '  
Inclination: 6 °  
Azimuth: 222.3 °  
VS: 414.06 '

80% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl cacl; 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, tr ss

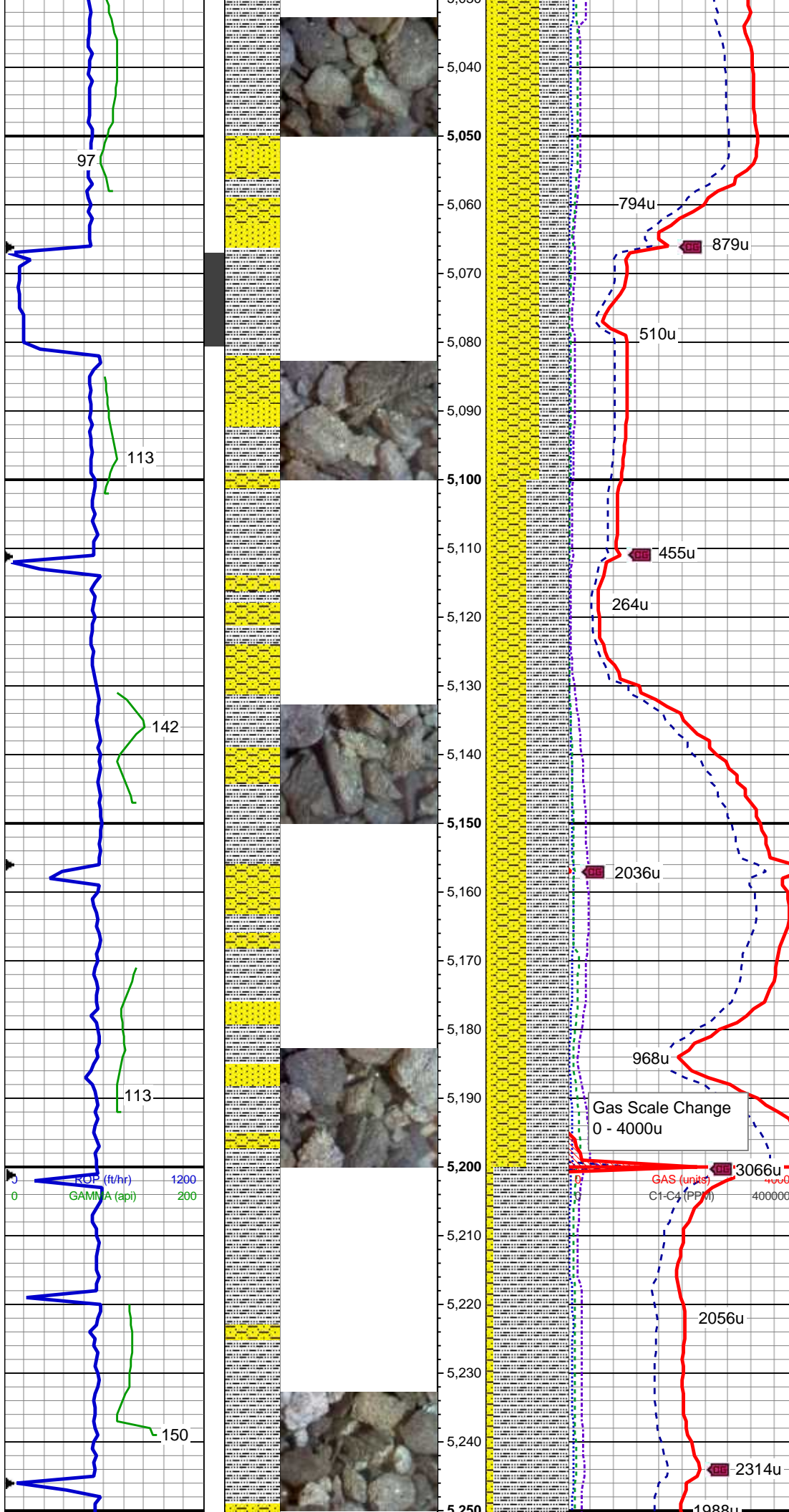
MD: 4,927 '  
TVD: 4,879.4 '  
Inclination: 4.5 °  
Azimuth: 218.8 °  
VS: 420.63 '

80% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl cacl; 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, tr ss

WT: 8.6 / VIS: 25

MD: 5,016 '  
TVD: 4,968.16 '  
Inclination: 3.9 °  
Azimuth: 220.9 °  
VS: 425.9 '





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; 35% SLTY SH: lt-med gy, occ dk gy, sft-sl frm, sb plty-blky, vf gr, slty tex, sl cac; 15% SS: wh-lt gy, clr-trnsl, speckl blk, sb rnd-ang, p srt, w cons, f gr, non calc

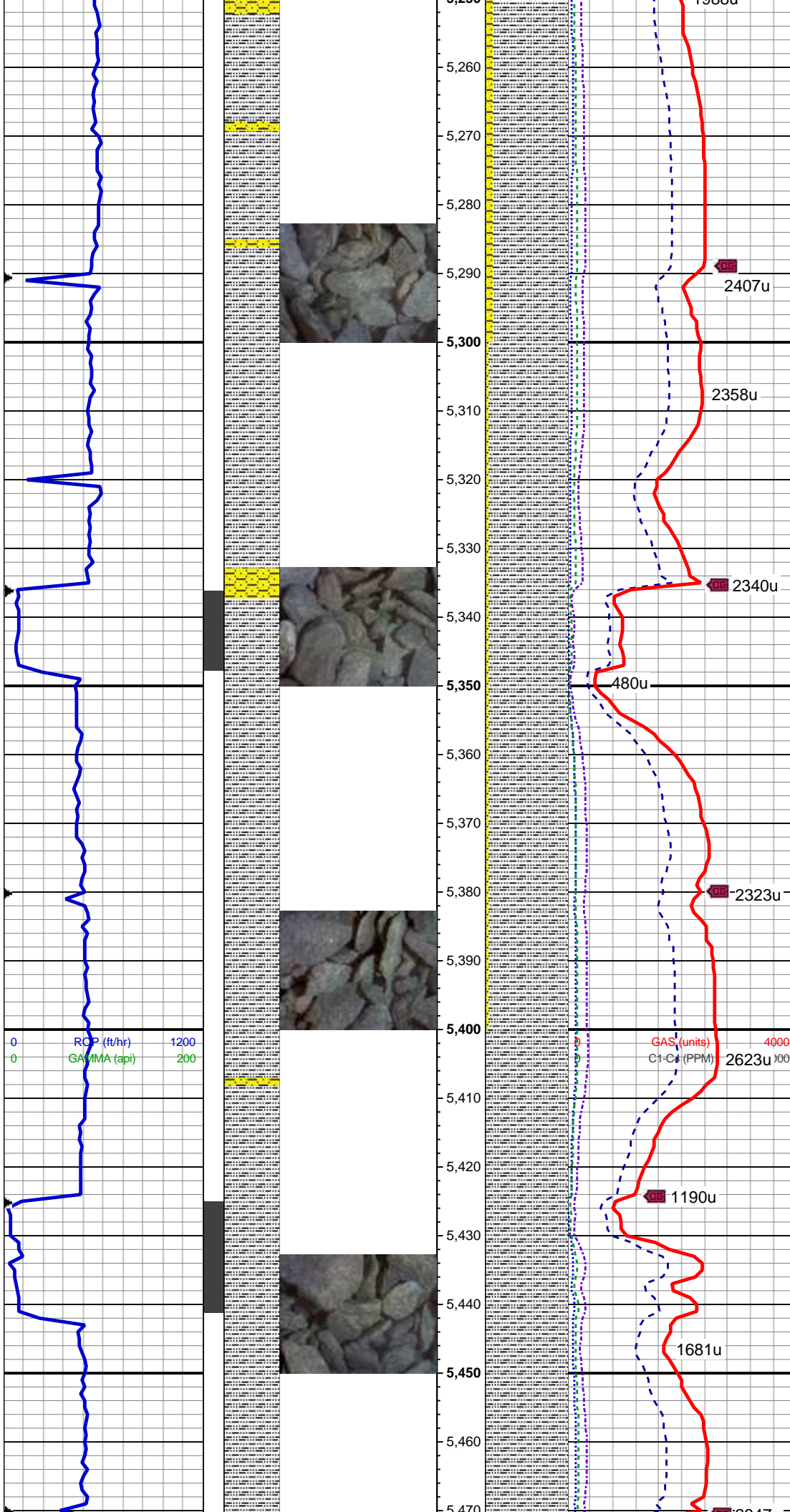
MD: 5,106 '  
TVD: 5,057.9 '  
Inclination: 4.8 °  
Azimuth: 232.7 °  
VS: 430.81 '

50% 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, blk, 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, sl calc

MD: 5,196 '  
TVD: 5,147.63 '  
Inclination: 4.1 °  
Azimuth: 224.1 °  
VS: 435.73 '

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





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

MD: 5,285 '  
TVD: 5,236.44 '  
Inclination: 3.3 °  
Azimuth: 213 °  
VS: 440.39 '

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

MD: 5,375 '  
TVD: 5,326.29 '  
Inclination: 3.3 °  
Azimuth: 220.4 °  
VS: 444.72 '

WT: 8.8 / VIS: 26

100% SLTY SH: med - dk gy, occ lt gy, sft-sl frm, plty- sb blkly, vf gr, slty tex, v sl cacl, tr shy ss, rr bent

MD: 5,465 '  
TVD: 5,416.14 '  
Inclination: 3.3 °  
Azimuth: 210.5 °



Azimuth: 210.5 °  
VS: 449.11 '

WT: 8.9 / VIS: 29

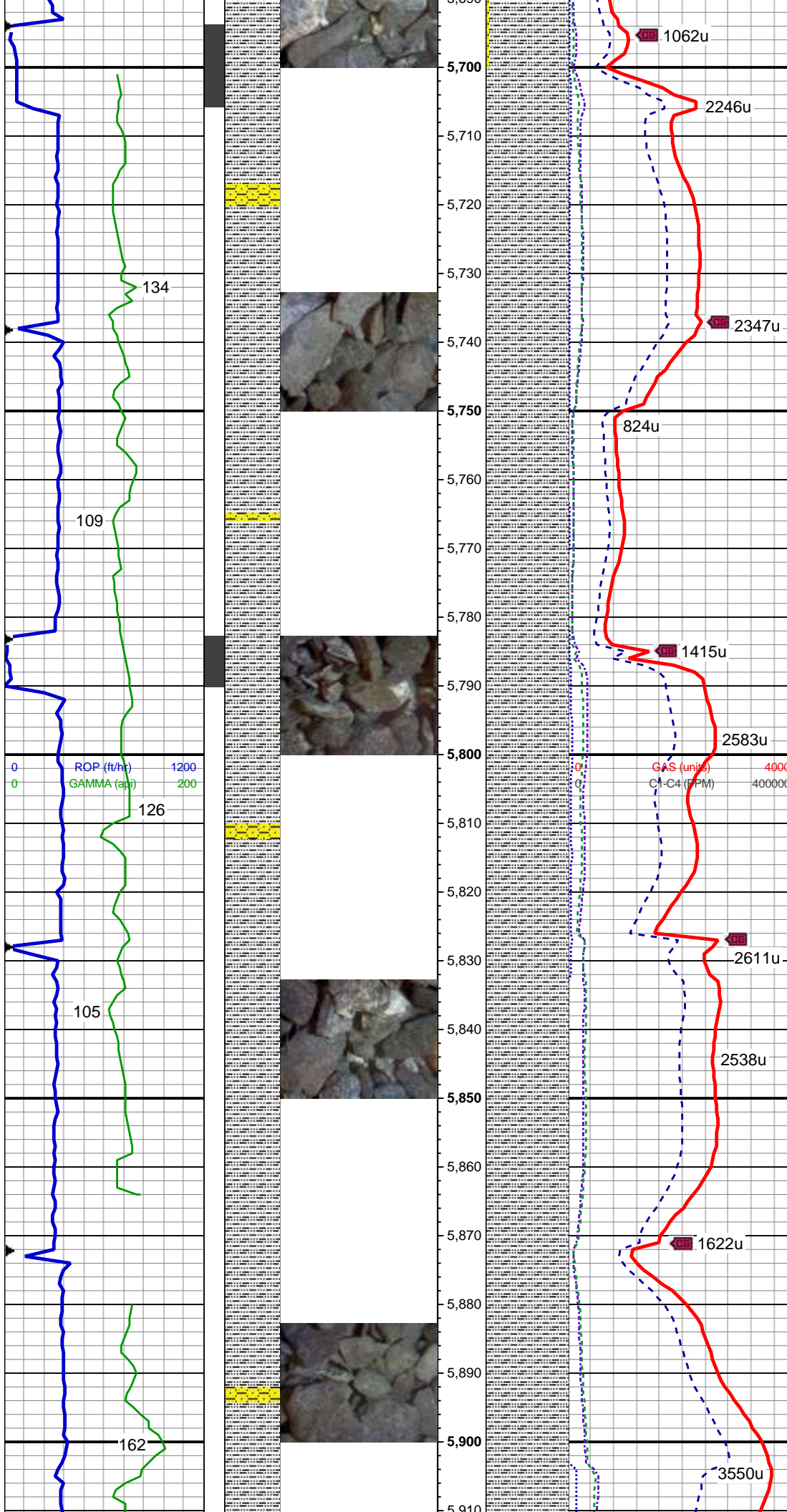
100% SLTY SH: med - dk gy, occ lt gy, sft-sl frm, plty- sb blkly, vf gr, slty tex, v sl cacl, tr shy ss, rr bent & pyr

MD: 5,554 '  
TVD: 5,505.07 '  
Inclination: 1.4 °  
Azimuth: 233.7 °  
VS: 452.1 '

MD: 5,643 '  
TVD: 5,594.06 '  
Inclination: 1.1 °  
Azimuth: 9.5 °  
VS: 451.95 '

95% SLTY SH: med gy, occ dk gy, mod sft-sl frm, plty- sb blkly, vf gr, slty tex, mod cacl, 5% SHY SS: lt gy, blkly, frm, v f-f gr, sb rnd-ang, mod-w srt, cl sup, cly cmt, non calc, rr bent & pyr





MD: 5,733 '  
TVD: 5,684.01 '  
Inclination: 2.4 °  
Azimuth: 21.6 °  
VS: 449.29 '

100% SLTY SH: med gy, occ dk gy,  
mod sft-sl frm, plty- sb blkly, vf gr,  
sly tex, mod cacl, occ shy ss, rr  
bent & pyr

WT: 9.2 / VIS: 34

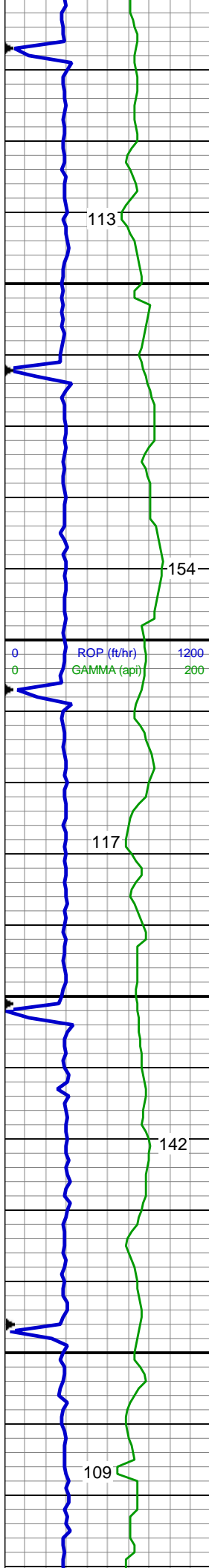
WT: 9.2 / VIS: 36

MD: 5,822 '  
TVD: 5,772.88 '  
Inclination: 2.8 °  
Azimuth: 35.3 °  
VS: 446.86 '

100% SLTY SH: med gy - dk gy,  
mod sft-sl frm, plty- sb blkly, vf gr,  
sly tex, non calc, tr shy ss, tr pyr

MD: 5,911 '  
TVD: 5,861.81 '

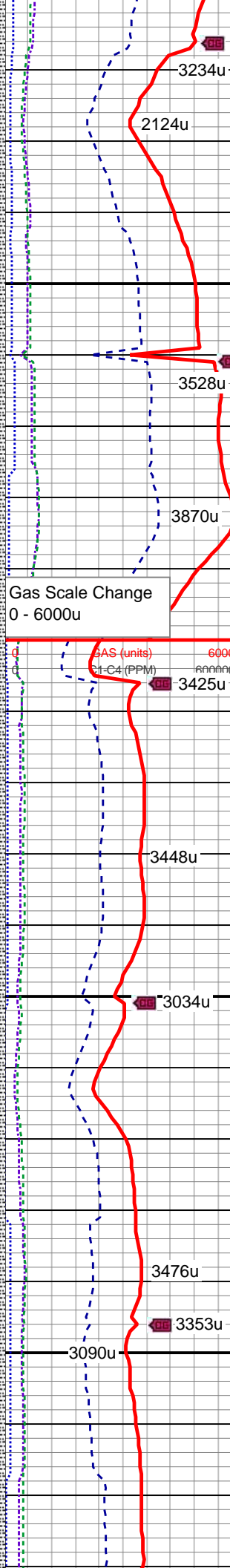




5,910  
5,920  
5,930  
5,940  
5,950  
5,960  
5,970  
5,980  
5,990  
6,000  
6,010  
6,020  
6,030  
6,040  
6,050  
6,060  
6,070  
6,080  
6,090  
6,100  
6,110  
6,120  
6,130



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  
6,070  
6,080  
6,090  
6,100  
6,110  
6,120  
6,130



Inclination: 1.5 °  
Azimuth: 26.2 °  
VS: 443.93 '

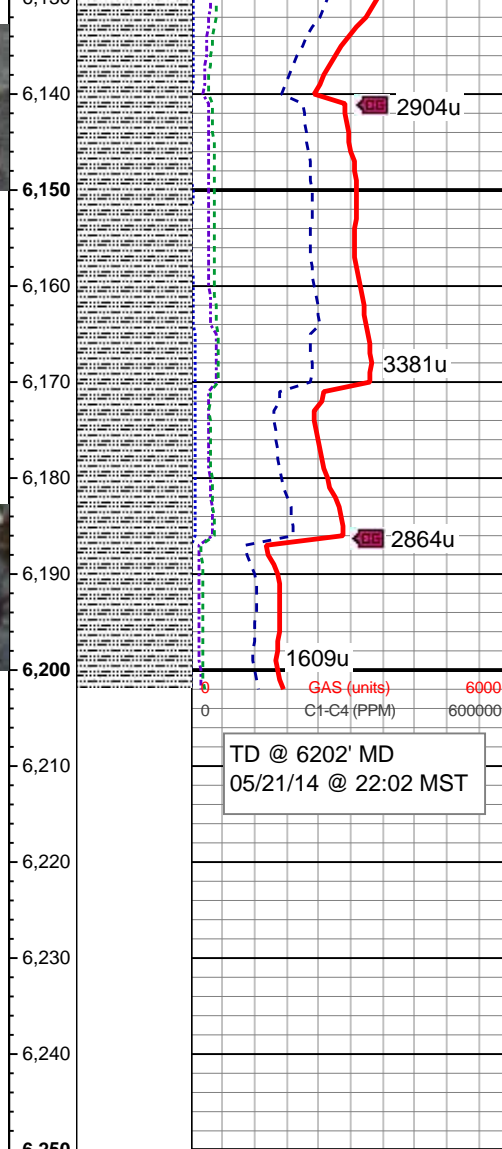
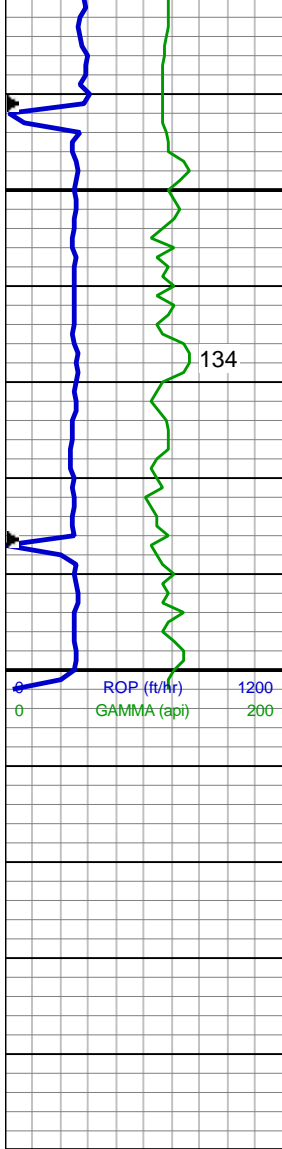
100% SLTY SH: med gy - dk gy,  
mod sft-sl frm, plty- sb blk, vf gr,  
sly tex, non calc, occ shy ss, tr pyr

MD: 6,001 '  
TVD: 5,951.79 '  
Inclination: 1.4 °  
Azimuth: 13.5 °  
VS: 441.76 '

WT: 9.25 / VIS:34

100% SLTY SH: med gy - dk gy,  
mod sft-sl frm, plty- sb blk, vf gr,  
sly tex, non calc, tr shy ss, tr pyr

MD: 6,090 '  
TVD: 6,040.77 '  
Inclination: 0.9 °  
Azimuth: 357.5 °  
VS: 439.99 '



100% SLTY SH: med gy - dk gy, sl -  
mod frm, sb plty- sb blkly, vf gr, slty  
tex, non calc, rr shy ss, tr pyr

MD: 6,180 '  
TVD: 6,130.76 '  
Inclination: 0.6 °  
Azimuth: 324.8 °  
VS: 438.92 '

Log Continues on  
Reliance E23-79HN\_Horizontal

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