

# COLUMBINE LOGGING

Scale: 5" / 100'  
Measured Depth Log

**Well Name** Reliance E23-69HN

**Location** NWNW SEC23, T6N, R65W, 6 PM

**State** COLORADO

**County** WELD

**Country** USA

**Rig Number** H&P 326

**API Number** 05-123-38143

**Field** GREELEY

**Region** DJ BASIN

**Drilling Completed** 2/16/2015

**Spud Date** 2/10/2015

**Surface Coordinates** 1235' FNL, 755' FWL  
40.47541/-104.63728

**Bottom Hole Coordinates** (PROJ)  
75' FFNLL, 150' FFELL  
40.47856/-104.62144

**Ground Elevation** 4733'

**K.B. Elevation** 4763'

**Logged Interval** 792' To 6239'

**Total Depth** 11,732'

**Formation** NIOBRARA C-CHALK

**Type of Drilling Fluid** LSND

## Other Symbols

### Oil Show

- DEAD
- EVEN
- QUESTIONABLE
- SPOTTED STAINING

### Porosity

- E EARTHY
- F FENESTRAL
- F FRACTURE
- X INTERCRYSTALLINE
- Q INTEROOLITIC

- MOLDIC
- ORGANIC
- PINPOINT
- VUGGY

### Engineering

- BIT
- CONNECTION (LEFT)
- CONNECTION (RIGHT)
- CONNECTION GAS
- CORE - LOST
- CORE - RECOVERED
- DST INTERVAL

- FAULT
- FORMATION TOP
- GAS SHOW
- MINDEPTH MN DEPTH
- NORMAL FAULT
- OIL SHOW
- OVERTURNED STRATA
- REVERSE FAULT
- SIDEWALL CORE (LEFT)
- SIDEWALL CORE (RIGHT)
- SLIDE
- SURVEY
- TRIP GAS

- WIRELINE TESTED - LEFT
- WIRELINE TESTED - RT
- FINELYXLN
- GRAINSTONE
- L LITHOGRAPHIC
- MX MICROXLN
- MS MUDSTONE
- PS PACKSTONE
- WS WACKESTONE

### Rounding

- ANGULAR
- ROUNDED
- SUBANG
- SUBRND

### Textures

- BOUNDSTONE
- CHALKY
- CRYPTOXLN

## Zone Color Coding

- Oil
- Condensate
- Gas
- Note
- Core
- Pressure
- Error
- Water
- Seal

### Sorting

- MODERATE
- POOR
- WELL

## Accessories

### Fossils

- FOSSIL
- GASTROPOD
- INOCERAMUS
- ALGAE
- ANHYDRITIC
- ARGILLACEOUS
- ARGILLITE GRAIN

- FERRUGINOUS
- GLAUCONITE
- GYPSIFEROUS

- TUFFACEOUS

### Stringer

ALGAL  
AMPHIPORA  
BELEMNITE  
BIOCLASTIC  
BRACHIOPOD  
BRYOZOA  
CEPHALOPOD  
CORAL  
CRINOID  
ECHINOID  
FISH  
FORAMINIFERA

INOCERAMUS  
OOLITE  
OSTRACOD  
PELECYPOD  
PELLET  
PISOLITE  
PLANT REMAINS  
PLANT SPORES  
SCAPHOPOD  
STROMATOPOROID

## Minerals

ARGILLITE GRAIN  
BENTONITE  
BITUMENOUS SUBSTANCE  
BRECCIA FRAGMENTS  
CALCAREOUS  
CARBONACEOUS FLAKES  
CHTDK  
CHTLT  
COAL - THIN BEDS  
DOLOMITIC  
FELDSPAR  
FERRUGINOUS PELLET

CHL SILICEOUS  
HEAVY MINERAL  
KAOLIN  
MARLSTONE  
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

## Rock Types

UNKNOWN  
ANHYDRITE  
BENTONITE  
BRECCIA  
CEMENT  
CHALK  
CHERT  
CLAY CHOKE SAND  
CLAYSTONE

COAL  
CONGLOMERATE  
DOLOMITE  
GRANITE  
GYPSUM  
IGNEOUS  
LIMESTONE  
SIDERITE or LIMONITE  
MARLSTONE

METAMORPHIC  
NO SAMPLE  
SALT  
SALT- PEPPER SAND  
SANDSTONE  
SHALE  
SHALE COLORED  
SHALE GRAY  
SHALY SANDSTONE

SHALY SILTSTONE  
SILTSTONE  
SILTY SHALE  
TILL  
TUFF  
WELDED TUFF

## Operator

**Company** NOBLE ENERGY INC.

**Address** 1625 Broadway Suite 2200  
Denver, CO 80202

## Geologist

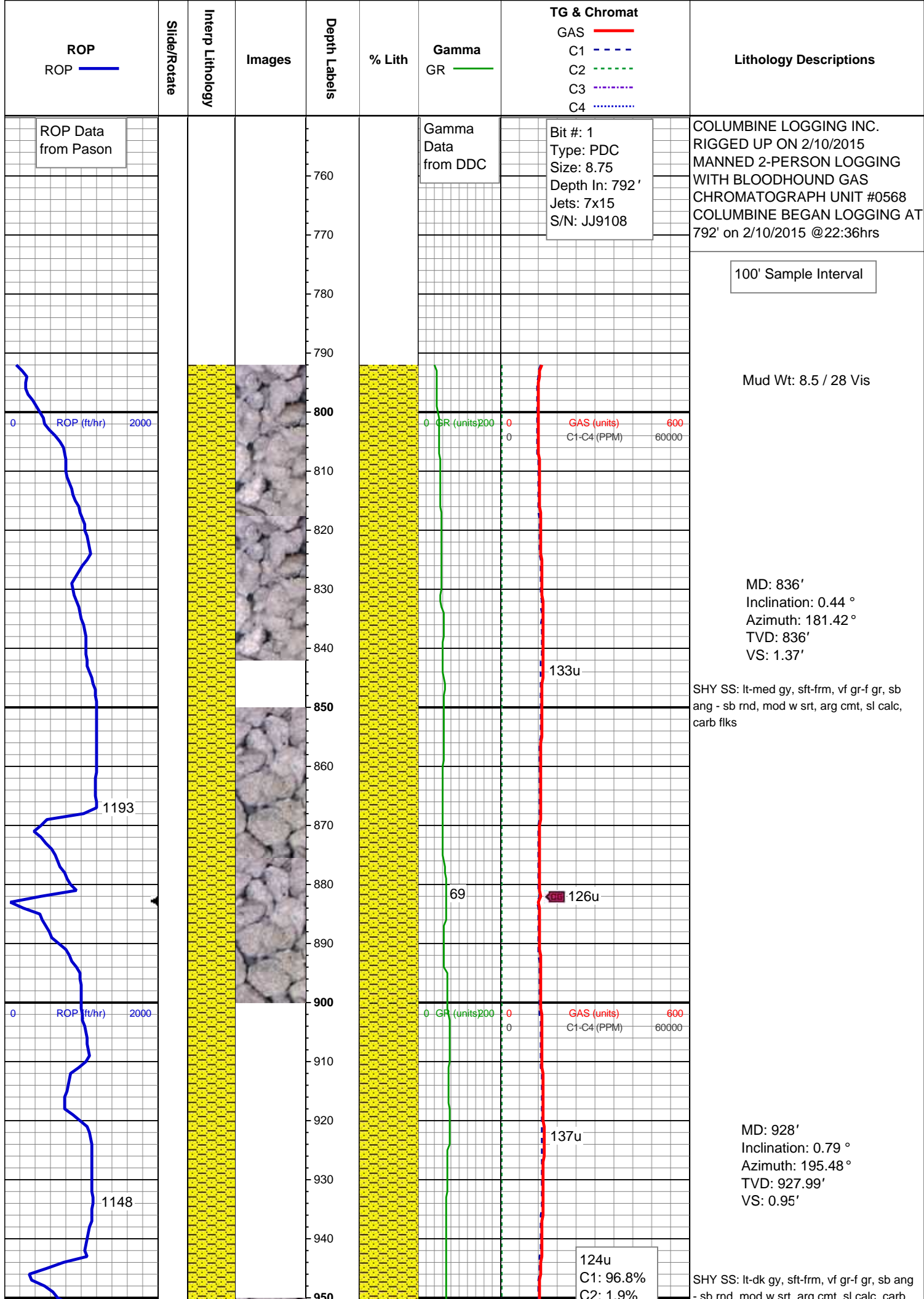
**Name** HOLLY DUNCAN

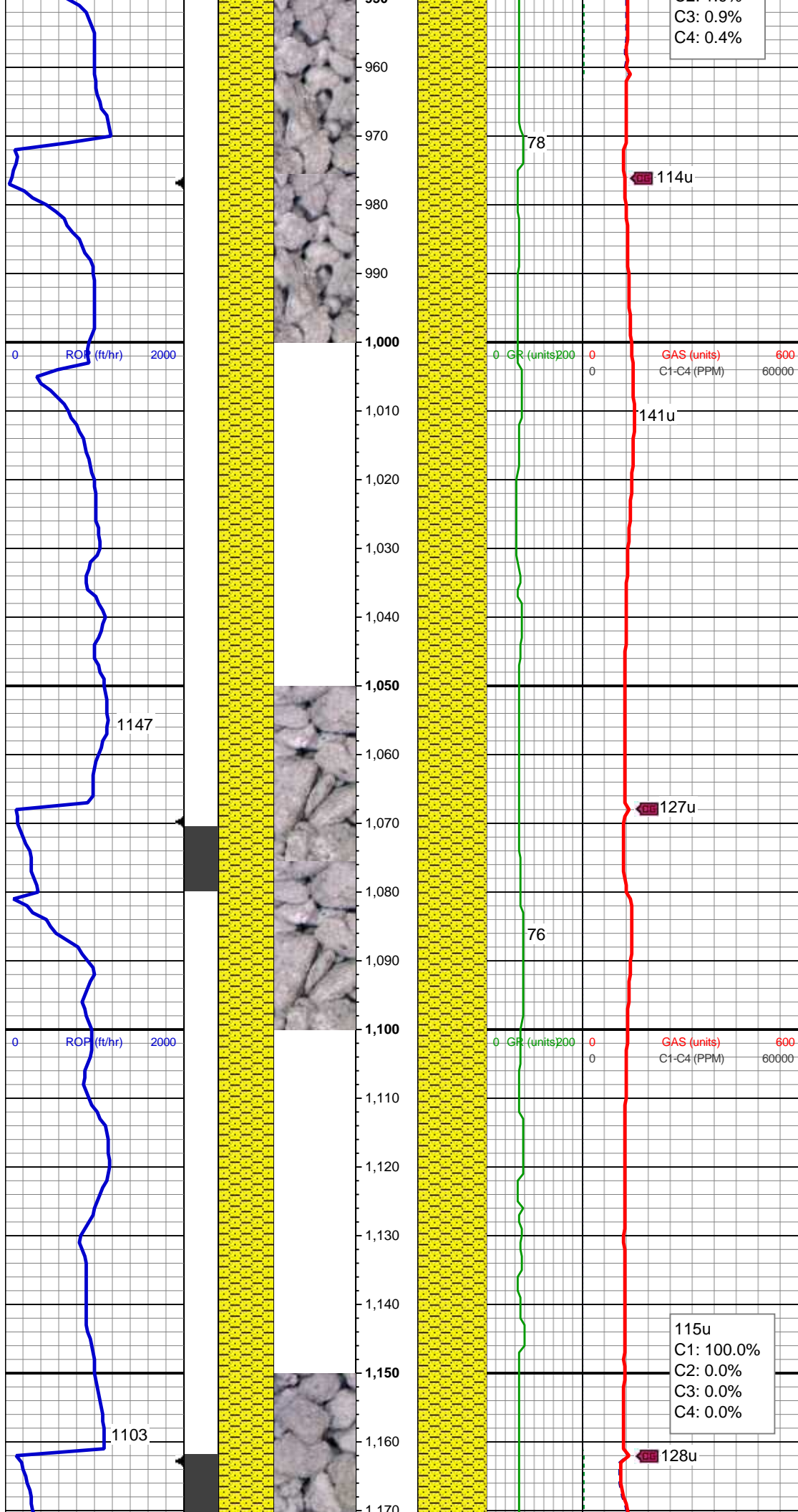
**Company** NOBLE ENERGY INC.

**Address** 1625 Broadway Suite 2200  
Denver, CO 80202

## Other

**COLUMBINE LOGGING** MATT HOPKINS  
ANDREW MARTENS



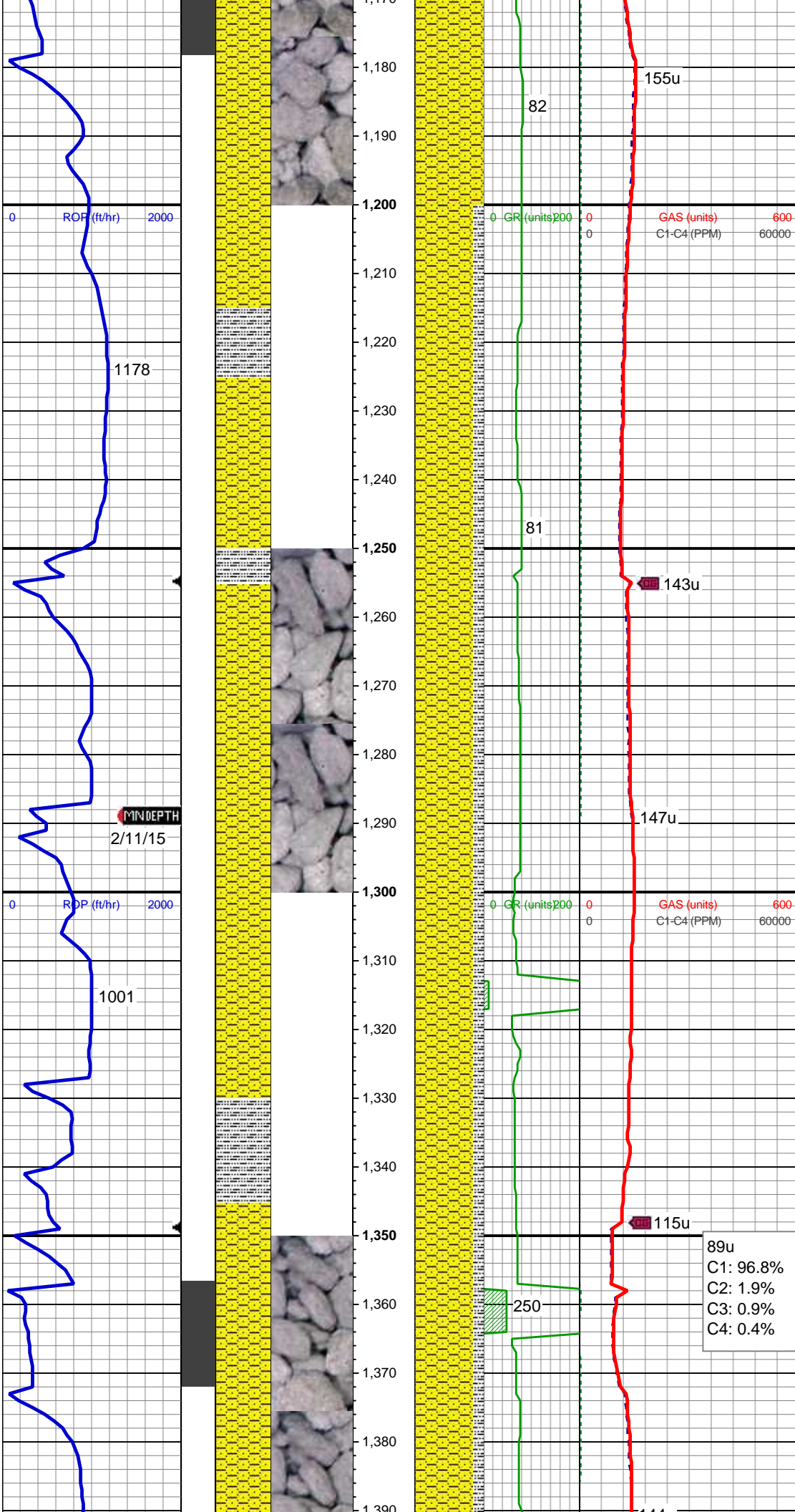


MD: 1,022'  
Inclination: 0.62 °  
Azimuth: 195.48 °  
TVD: 1,021.98'  
VS: 0.36'

SHY SS: lt-dk gy, sft-firm, vf gr-f gr, sb ang  
- sb rnd, mod w srt, arg cmt, sl calc, carb  
flks

MD: 1,115'  
Inclination: 1.58 °  
Azimuth: 315.54 °  
TVD: 1,114.97'  
VS: -0.53'

SHY SS: lt-med gy, sft-firm, vf gr-f gr, sb  
ang - sb rnd, mod w srt, arg cmt, sl calc,  
carb flks



MD: 1,208'  
Inclination: 4.84 °  
Azimuth: 336.64 °  
TVD: 1,207.82'  
VS: -1.71'

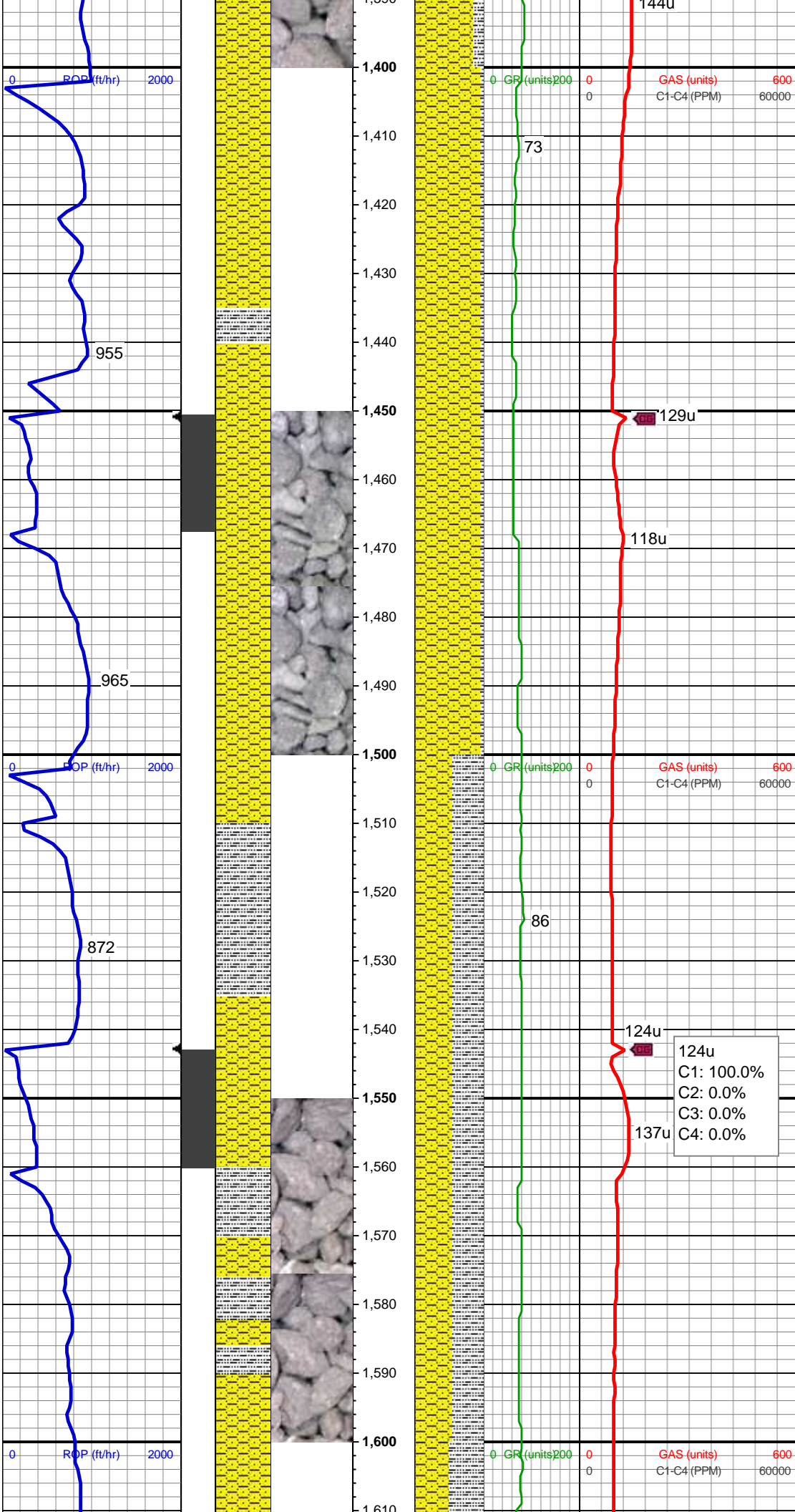
Mud Wt: 8.55 / 28 Vis

SHY SS: lt-med gy, sft frm, vf gr-f gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc, carb flks, tr glauc, SLTY SH: lt-dk gy, sft-mod frm, sb blk-y-sb plty, gritty, abnt cly

MD: 1,301'  
Inclination: 4.4 °  
Azimuth: 345.25 °  
TVD: 1,300.51'  
VS: -2.25'

SHY SS: lt-med gy, sft frm, vf gr-f gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc, carb flks, tr glauc, SLTY SH: lt-dk gy, sft-mod frm, sb blk-y-sb plty, gritty, abnt cly

Mud Wt: 8.5 / 28 Vis



MD: 1,403'  
Inclination: 6.24 °  
Azimuth: 350 °  
TVD: 1,402.07'  
VS: -1.72'

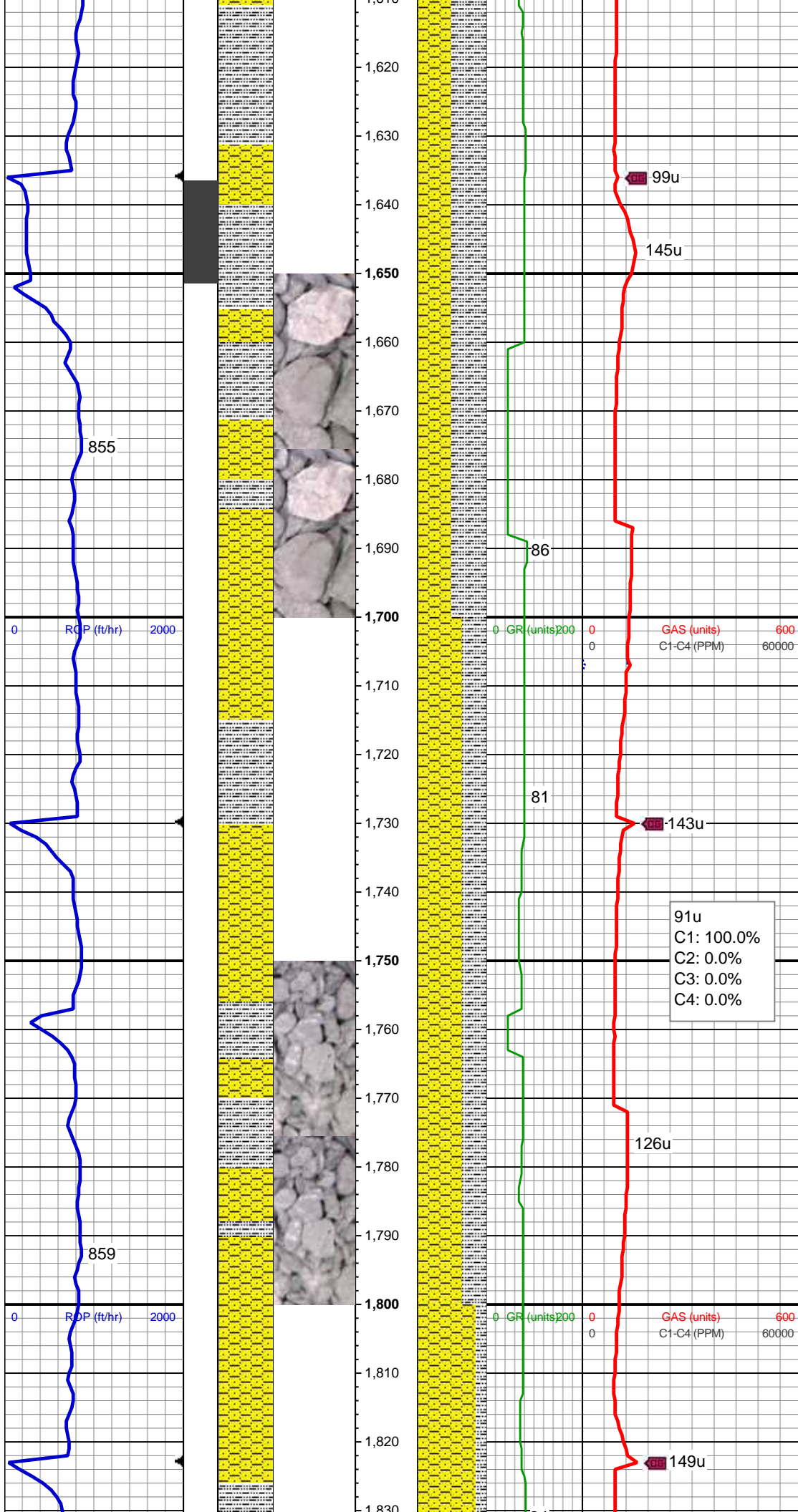
SHY SS: lt-med gy, sft frm, vf gr-f gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc, carb flks, tr glauc, SLTY SH: lt-dk gy, sft-mod frm, sb blk-y-sb plty, gritty, abnt cly

MD: 1,495'  
Inclination: 8 °  
Azimuth: 349.82 °  
TVD: 1,493.36'  
VS: -0.72'

SHY SS: lt-med gy, sft frm, vf gr-f gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc, carb flks, tr glauc, SLTY SH: lt-dk gy, sft-mod frm, sb blk-y-sb plty, gritty, abnt cly

MD: 1,589'  
Inclination: 10.29 °  
Azimuth: 333.12 °  
TVD: 1,586.17'  
VS: -1.85'

124u  
C1: 100.0%  
C2: 0.0%  
C3: 0.0%  
C4: 0.0%



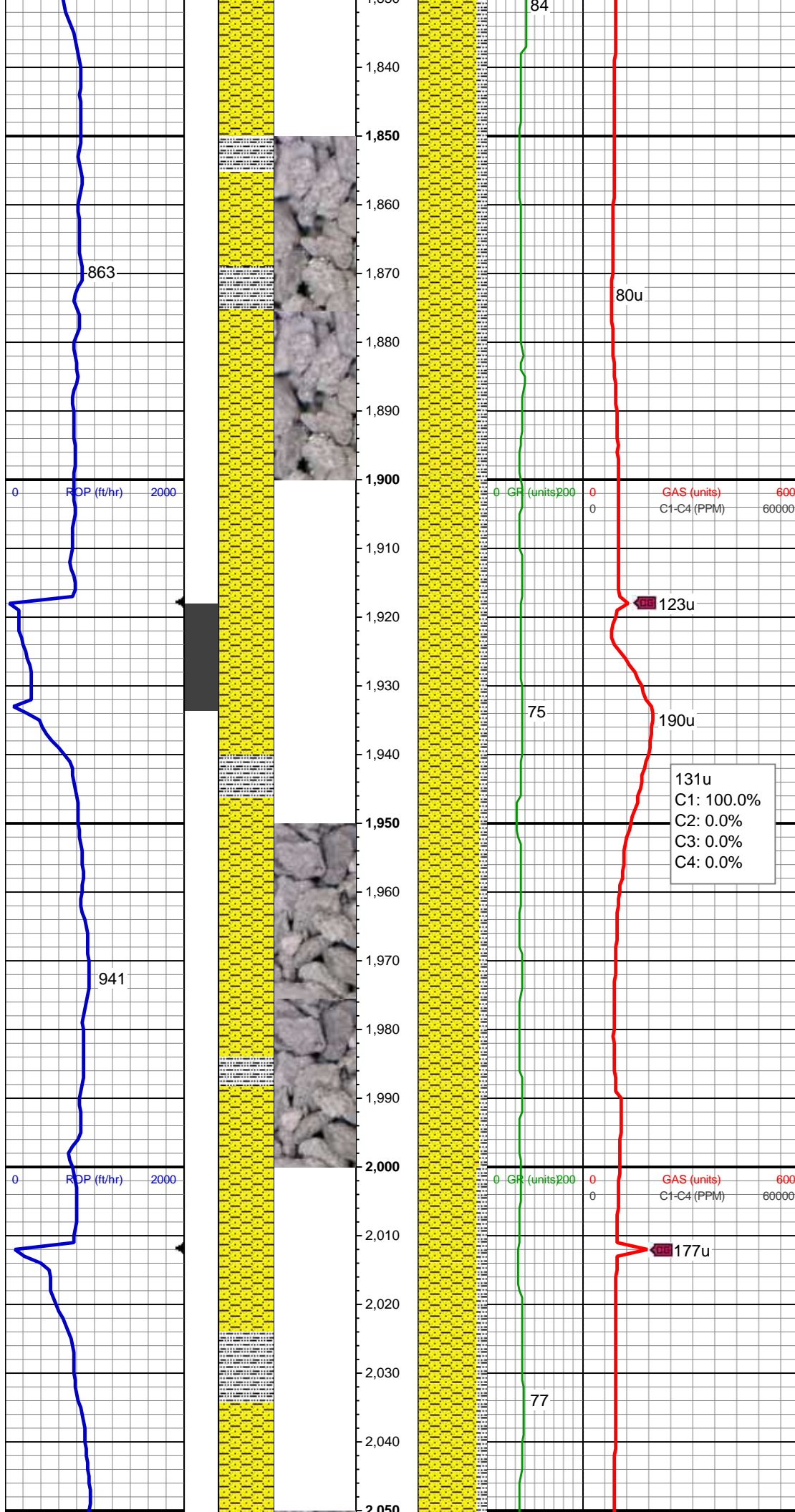
Mud Wt: 8.45 / 28 Vis

SHY SS: lt-med gy, sft-frm, vf gr-f gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc, carb flks, tr glauc, SLTY SH: lt-dk gy, sft-mod frm, sb blk-y-sb plty, gritty, abnt cly

MD: 1,682'  
Inclination: 11.7 °  
Azimuth: 324.16 °  
TVD: 1,677.47'  
VS: -6.87'

SHY SS: lt-med gy, sft-frm, vf gr-f gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc, carb flks, tr glauc, SLTY SH: lt-dk gy, sft-mod frm, sb blk-y-sb plty, gritty, abnt cly

MD: 1,775'  
Inclination: 10.99 °  
Azimuth: 324.86 °  
TVD: 1,768.65'  
VS: -13.23'



SHY SS: lt-med gy, sft-frm, vf gr-f gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc, carb flks, tr glauc, SLTY SH: lt-dk gy, sft-mod frm, sb blk-y-sb plty, gritty, abnt cly

MD: 1,868'  
Inclination: 10.99 °  
Azimuth: 322.05 °  
TVD: 1,859.95'  
VS: -19.69'

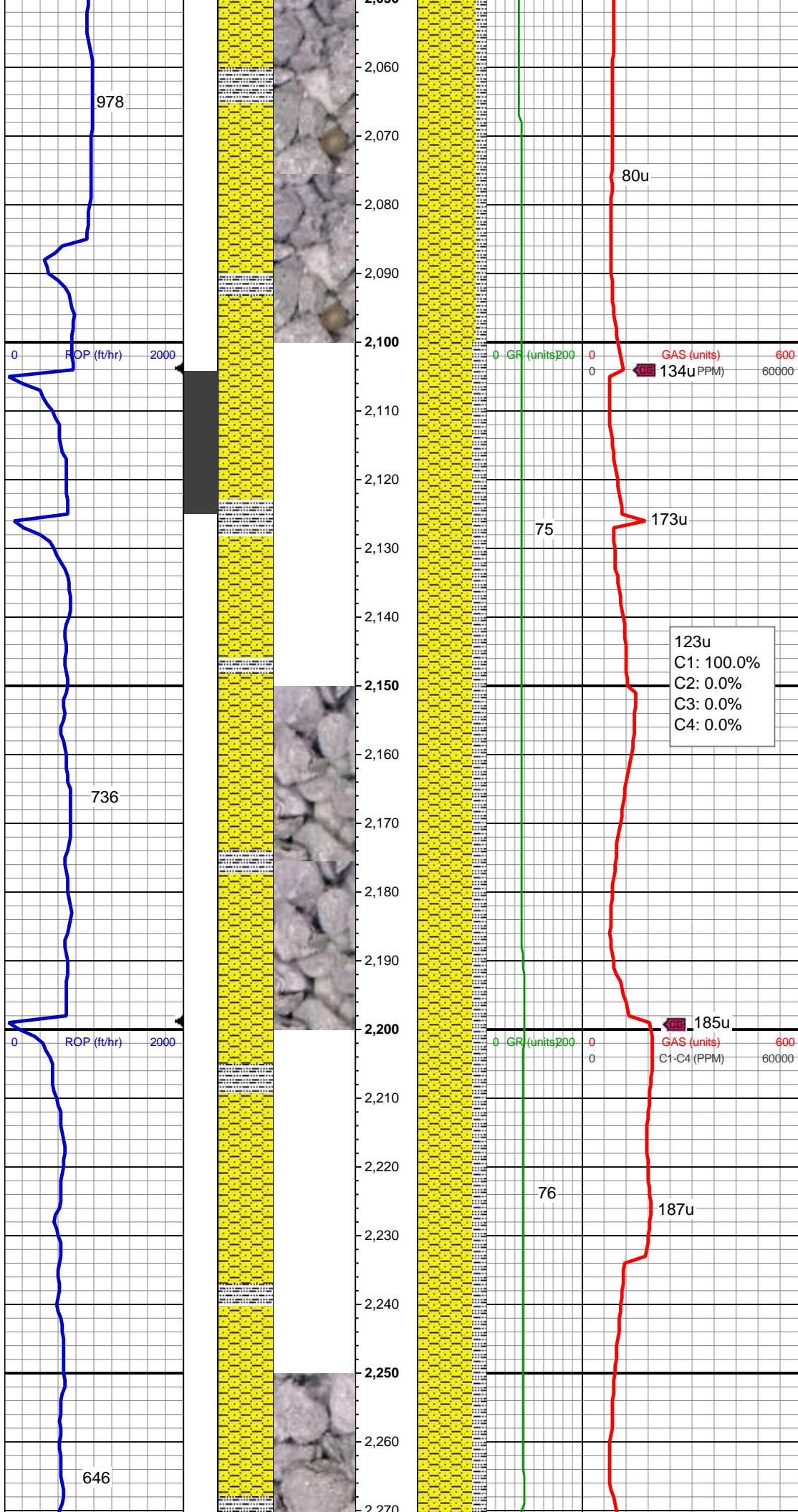
Mud Wt: 8.45 / 28 Vis

MD: 1,916'  
Inclination: 13.28 °  
Azimuth: 316.07 °  
TVD: 1,906.87'  
VS: -24.12'

SHY SS: lt-med gy, sft-frm, vf gr-f gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc, carb flks, tr glauc, SLTY SH: lt-dk gy, sft-mod frm, sb blk-y-sb plty, gritty, abnt cly

SHY SS: lt-med gy, sft-frm, vf gr-f gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc, carb flks, tr glauc, SLTY SH: lt-dk gy, sft-mod frm, sb blk-y-sb plty, gritty, abnt cly

MD: 2,054'



Inclination: 12.22 °  
Azimuth: 313.26 °  
TVD: 2,041.57'  
VS: -38.57'

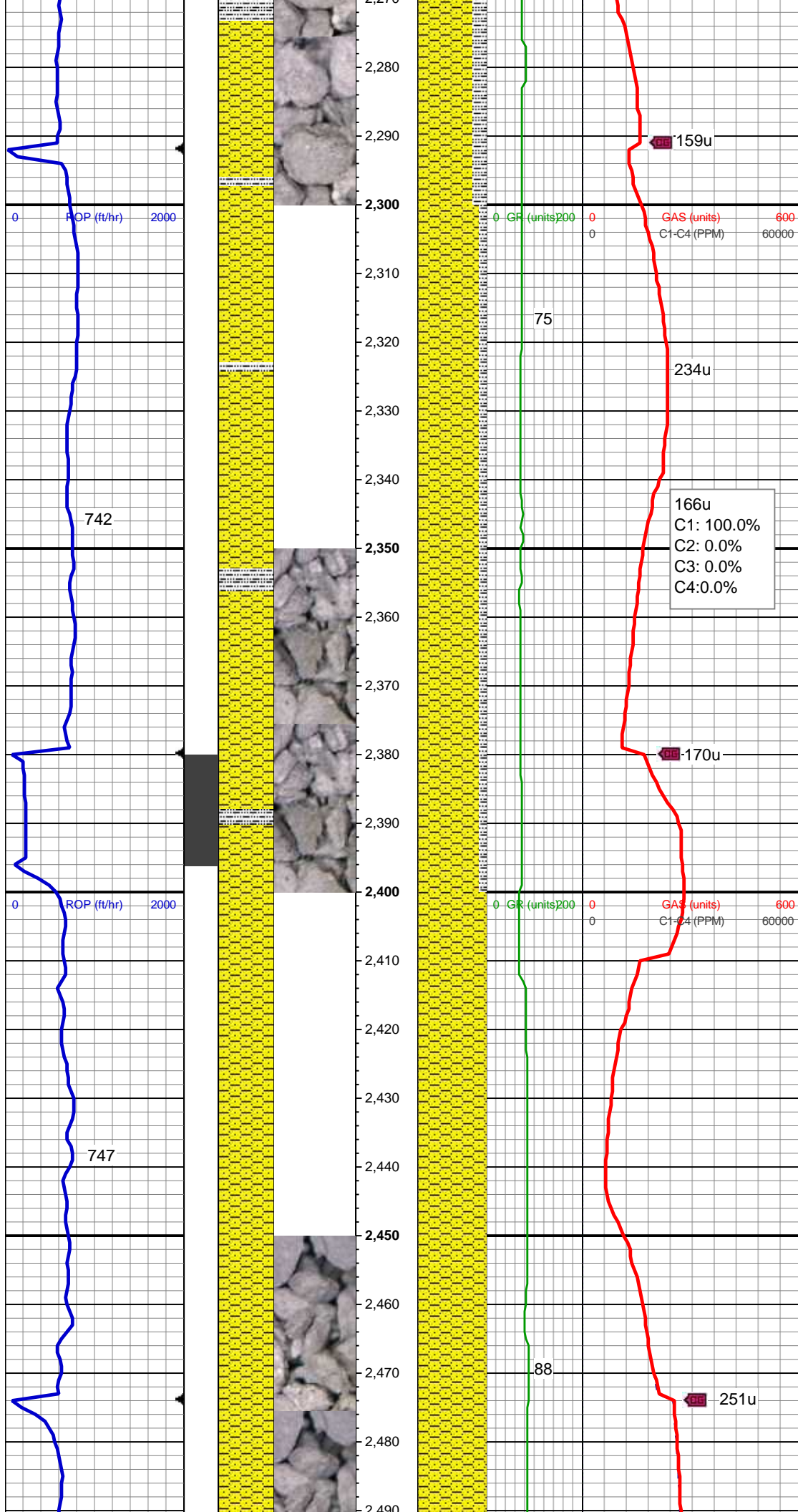
MD: 2,147'  
Inclination: 12.22 °  
Azimuth: 312.55 °  
TVD: 2,132.47'  
VS: -48.98'

SHY SS: lt-med gy, sft frm, vf gr-f gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc, carb flks, tr glauc, SLTY SH: lt-dk gy, sft-mod frm, sb blk-y-sb plty, gritty, abnt cly

Mud Wt: 8.45 / 28 Vis

MD: 2,240'  
Inclination: 12.49 °  
Azimuth: 310.97 °  
TVD: 2,223.31'  
VS: -59.84'

SHY SS: lt-med gy, sft frm, vf gr-f gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc, carb flks, tr glauc, SLTY SH: lt-dk gy, sft-mod frm, sb blk-y-sb plty, gritty, abnt cly



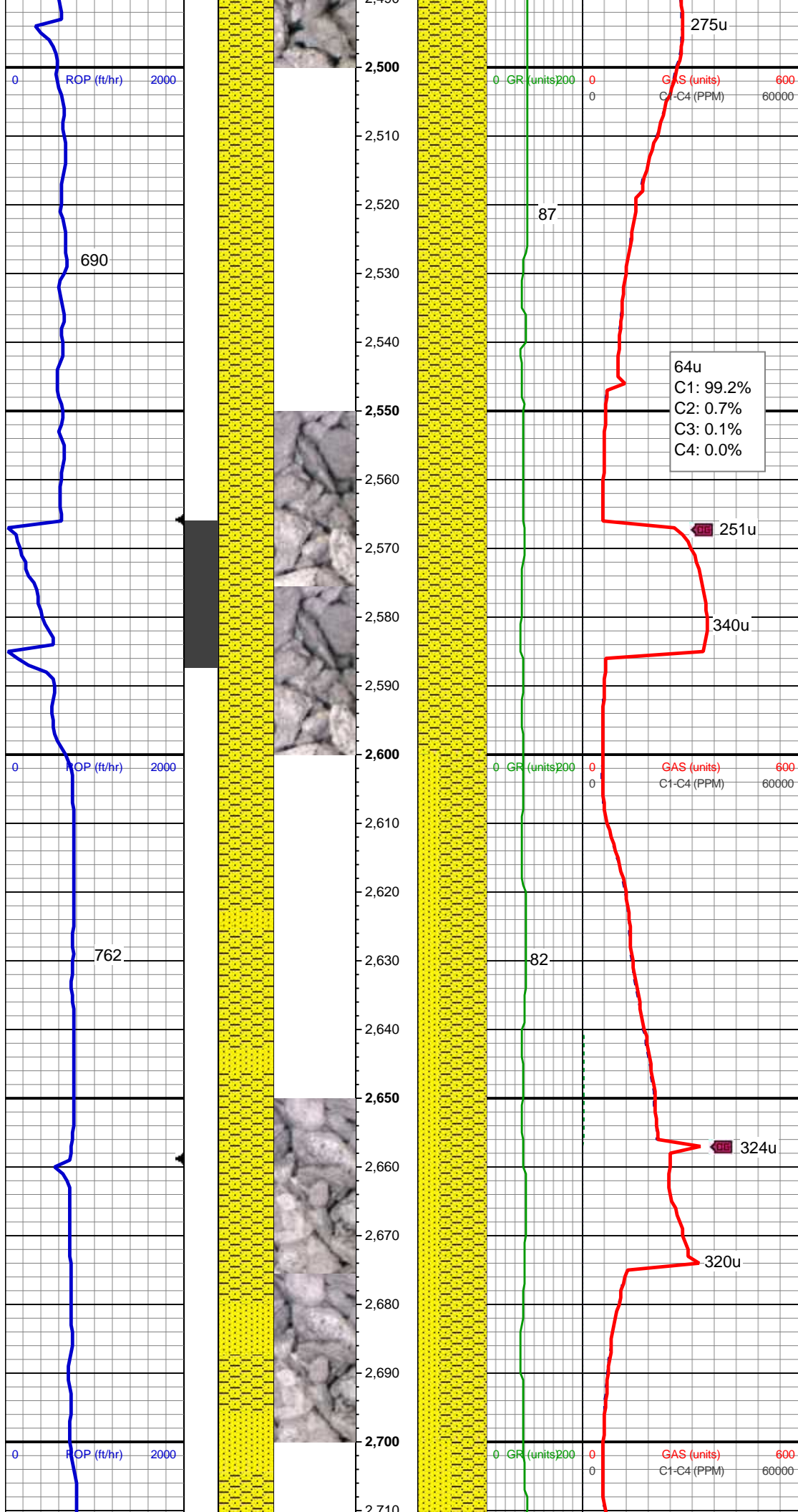
MD: 2,333'  
Inclination: 12.13 °  
Azimuth: 309.07 °  
TVD: 2,314.18'  
VS: -71.16'

SHY SS: lt-med gy, sft-frm, vf gr-f gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc, carb flks, tr glauc, SLTY SH: lt-dk gy, sft-mod frm, sb blk-y-sb plty, gritty, abnt cly

MD: 2,425'  
Inclination: 12.4 °  
Azimuth: 319.76 °  
TVD: 2,404.09'  
VS: -81'

SHY SS: lt-med gy, sft-frm, vf gr-f gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc, carb flks, tr glauc

Mud Wt: 8.40 / 28 Vis



MD: 2,516'  
Inclination: 12.57 °  
Azimuth: 315.72 °  
TVD: 2,492.94'  
VS: -89.96'

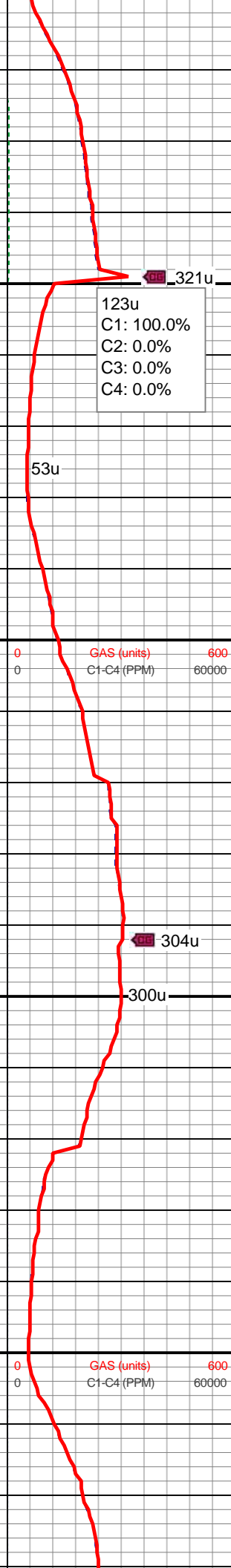
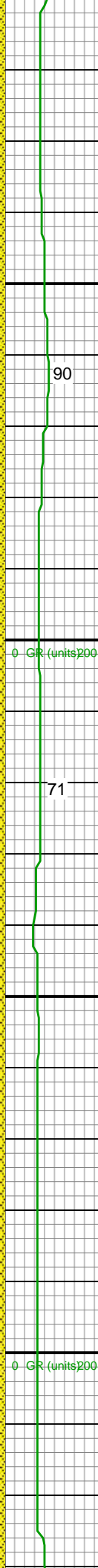
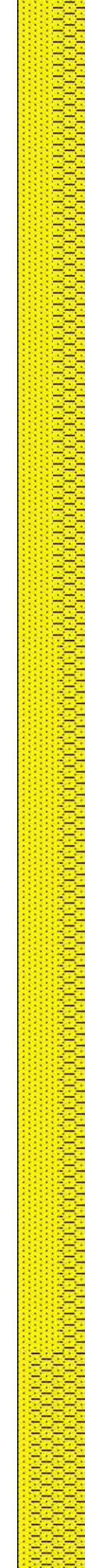
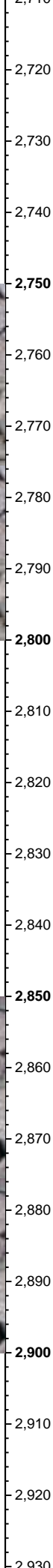
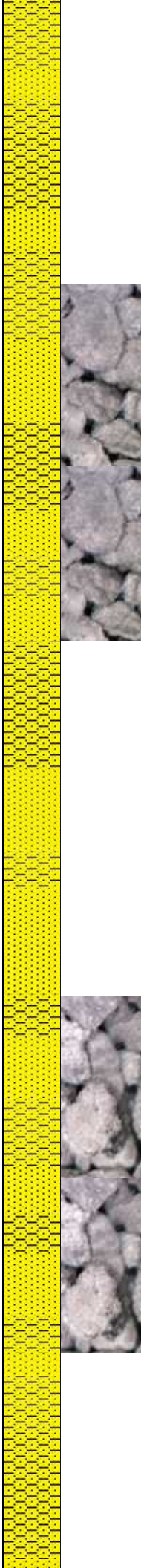
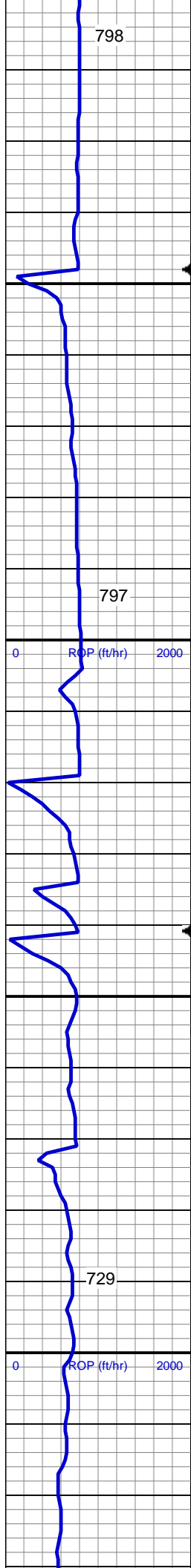
SHY SS: lt-med gy, sft-firm, vf gr-f gr, sb  
ang - sb rnd, mod w srt, arg cmt, sl calc,  
carb flks, tr glauc

MD: 2,608'  
Inclination: 10.02 °  
Azimuth: 324.33 °  
TVD: 2,583.15'  
VS: -97.64'

SHY SS: lt-med gy, sft-firm, vf gr-f gr, sb  
ang - sb rnd, mod w srt, arg cmt, sl calc,  
carb flks, SS: wh-lt gy, occ s&p, sb rd-sb  
ang, mod srt, f-med gr, silc & calc cmt,  
ply-mod cons, tr glau, tr SLTY SH

Mud Wt: 8.55 / 28 Vis

MD: 2,700'  
Inclination: 10.46 °  
Azimuth: 327.32 °  
TVD: 2,673.69'  
VS: -102.96'

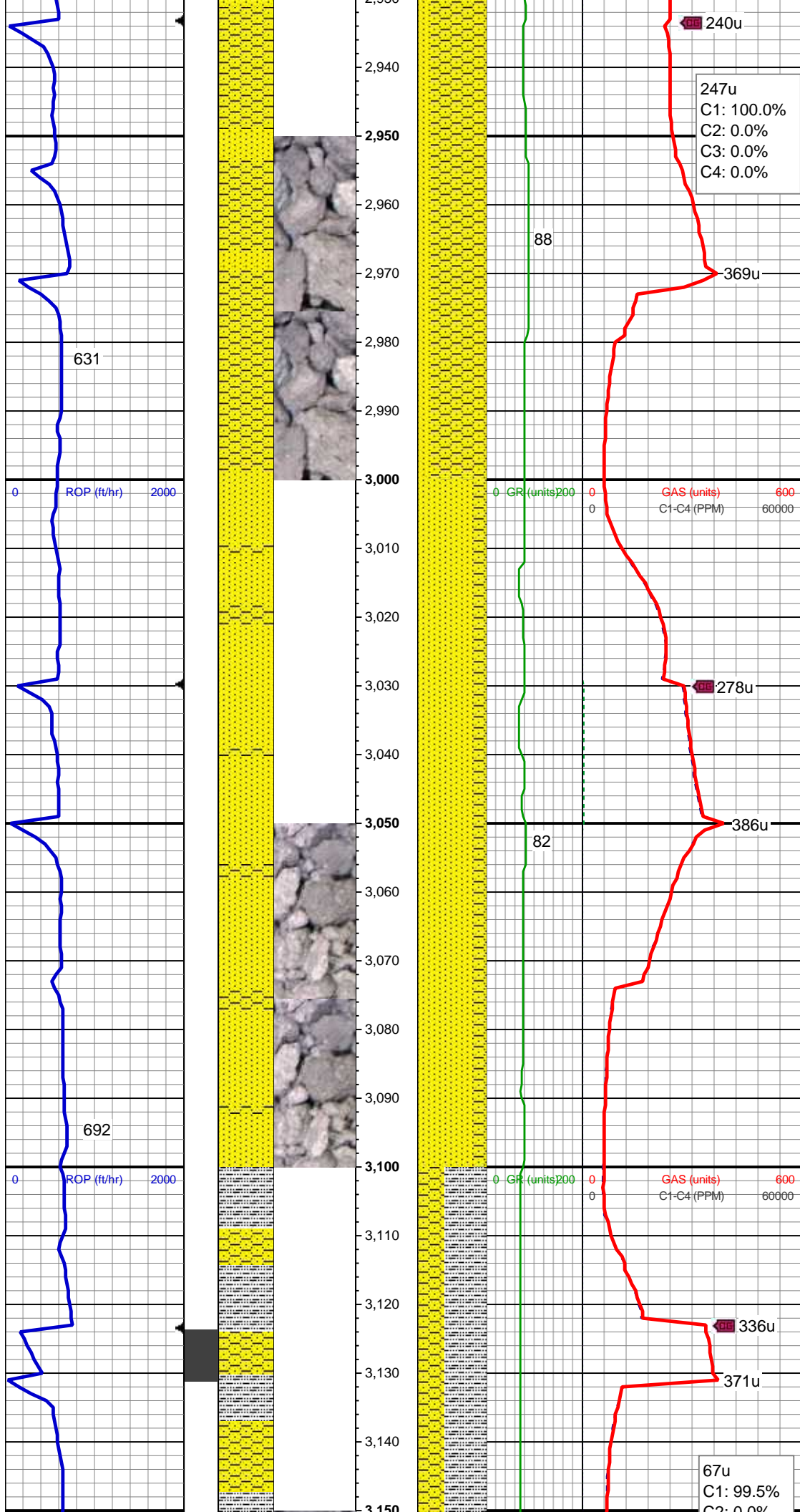


SS: wh-lt gy, occ s&p, sb rd-sb ang, mod srt, f-med gr, silc & calc cmt, ply-mod cons, tr glau, SHY SS: lt-med gy, sft-frn, vf gr-f gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc, carb flks

MD: 2,792'  
Inclination: 10.02 °  
Azimuth: 321.7 °  
TVD: 2,764.23'  
VS: -108.62'

SS: wh-lt gy, occ s&p, sb rd-sb ang, mod srt, f-med gr, silc & calc cmt, ply-mod cons, tr glau, SHY SS: lt-med gy, sft-frn, vf gr-f gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc, carb flks

MD: 2,884'  
Inclination: 10.55 °  
Azimuth: 321.34 °  
TVD: 2,854.75'  
VS: -115.12'



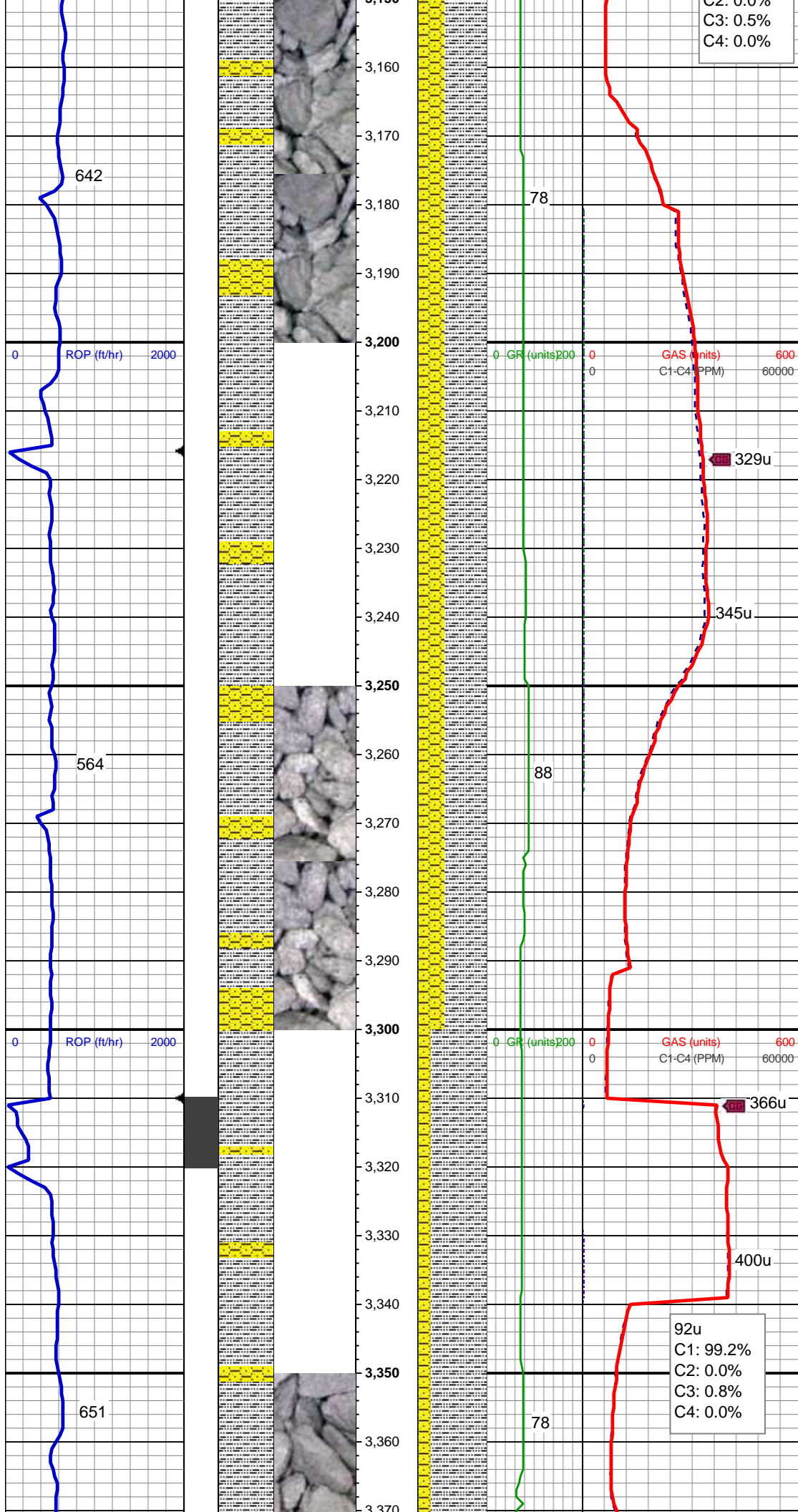
SHY SS: lt-med gy, sft-firm, vf gr-f gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc, carb flks, SS: wh-lt gy, occ s&p, sb rd-sb ang, mod srt, f-med gr, silc & calc cmt, ply-mod cons, tr glau, tr SLTY SH

MD: 2,979'  
Inclination: 10.29 °  
Azimuth: 319.06 °  
TVD: 2,948.18'  
VS: -122.28'

SS: wh-lt gy, occ s&p, sb rd-sb ang, mod srt, f-med gr, silc & calc cmt, ply-mod cons, tr glau, SHY SS: lt-med gy, sft-firm, vf gr-f gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc, carb flks

MD: 3,073'  
Inclination: 10.29 °  
Azimuth: 316.95 °  
TVD: 3,040.67'  
VS: -129.86'

SLTY SH: lt-dk gy, sft-mod frm, sb blk-y-sb pty, gritty, SHY SS: lt-med gy, sft-firm, vf



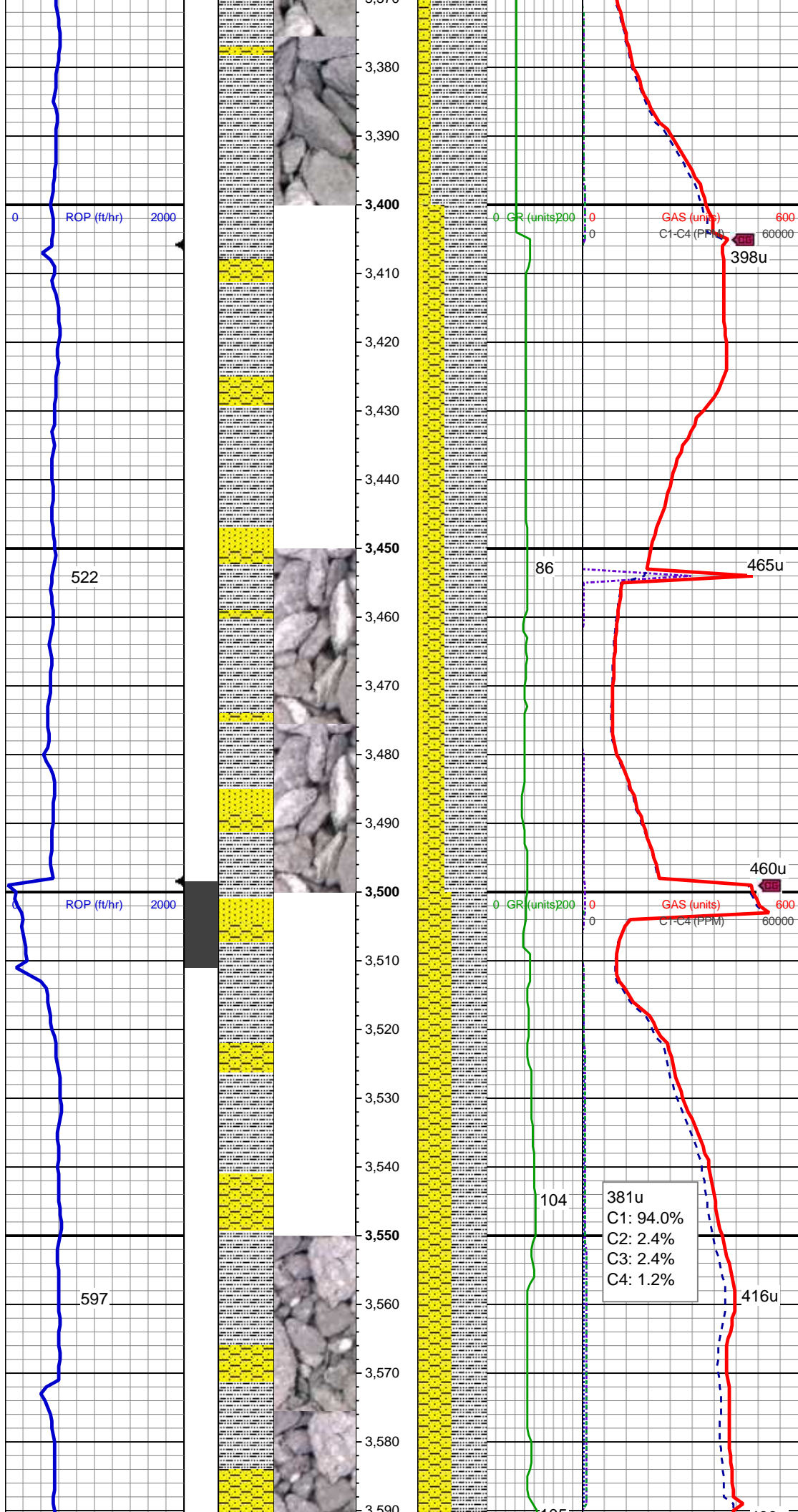
gr-f gr, sb ang - sb rnd, mod w srt, arg  
cmt, sl calc, carb flks

SLTY SH: lt-dk gy, sft-mod frm, sb blkly-sb  
plty, gritty, SHY SS: lt-med gy, sft-frm, vf  
gr-f gr, sb ang - sb rnd, mod w srt, arg  
cmt, sl calc, carb flks

MD: 3,262'  
Inclination: 10.9 °  
Azimuth: 321.52 °  
TVD: 3,226.45'  
VS: -144.83'

SLTY SH: lt-dk gy, sft-mod frm, sb blkly-sb  
plty, gritty, SHY SS: lt-med gy, sft-frm, vf  
gr-f gr, sb ang - sb rnd, mod w srt, arg  
cmt, sl calc, carb flks

MD: 3,356'  
Inclination: 11.87 °  
Azimuth: 325.21 °  
TVD: 3,318.6'  
VS: -151.6'



SLTY SH: lt-dk gy, sft-mod frm, sb blkly-sb plty, gritty, SHY SS: lt-med gy, sft-frm, vf gr-f gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc, carb flks, SS: wh-lt gy, occ s&p, sb rd-sb ang, mod srt, f-med gr, silc & calc cmt, ply-mod cons

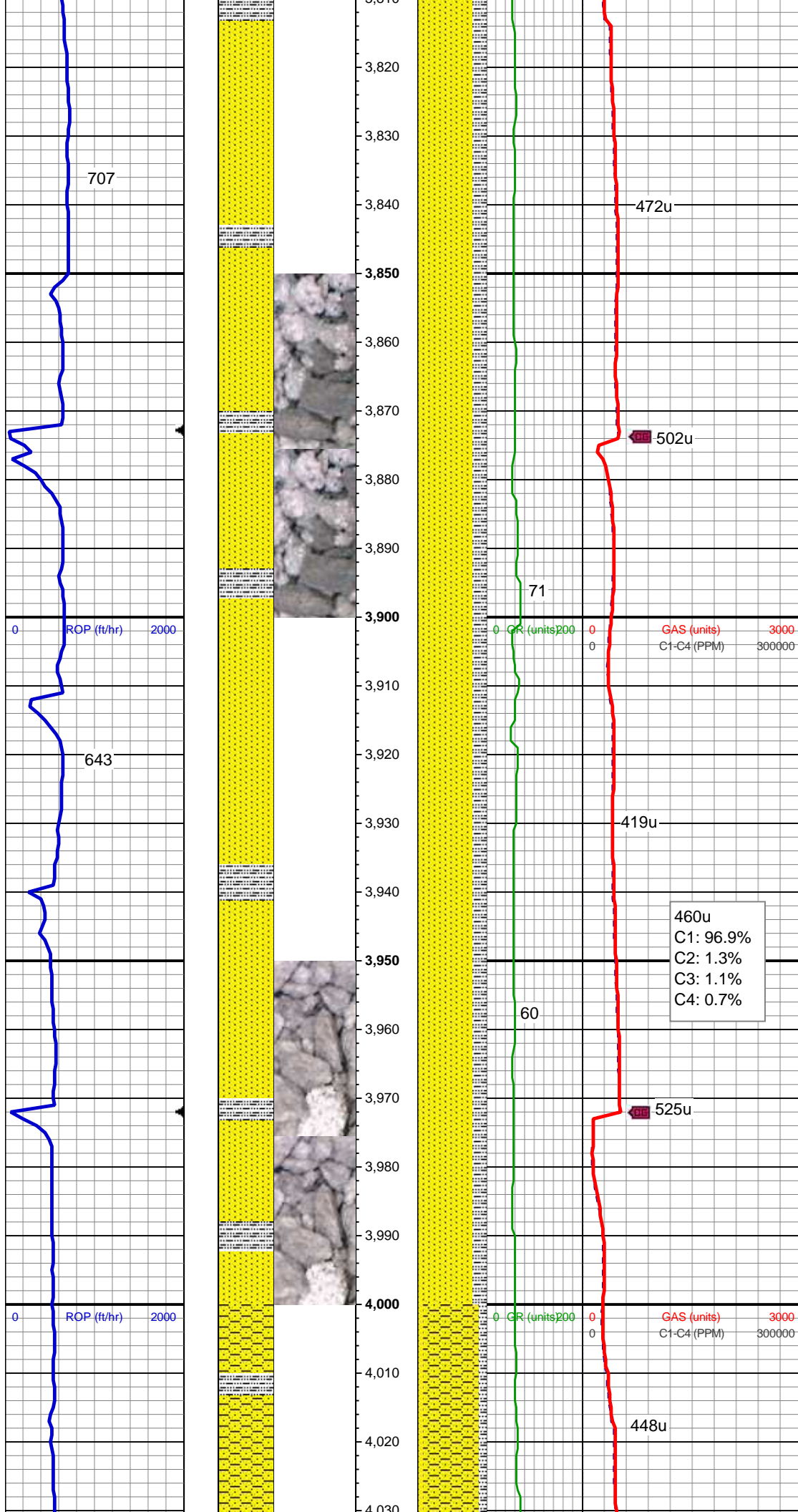
MD: 3,450'  
Inclination: 11.26 °  
Azimuth: 320.99 °  
TVD: 3,410.69'  
VS: -158.56'

Mud Wt: 8.70 / 29 Vis

MD: 3,545'  
Inclination: 10.55 °  
Azimuth: 328.9 °  
TVD: 3,503.98'  
VS: -164.69'

SLTY SH: lt-dk gy, sft-mod frm, sb blkly-sb plty, gritty, sl calc, SHY SS: lt-med gy, sft-frm, vf gr-f gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc, carb flks, tr SS





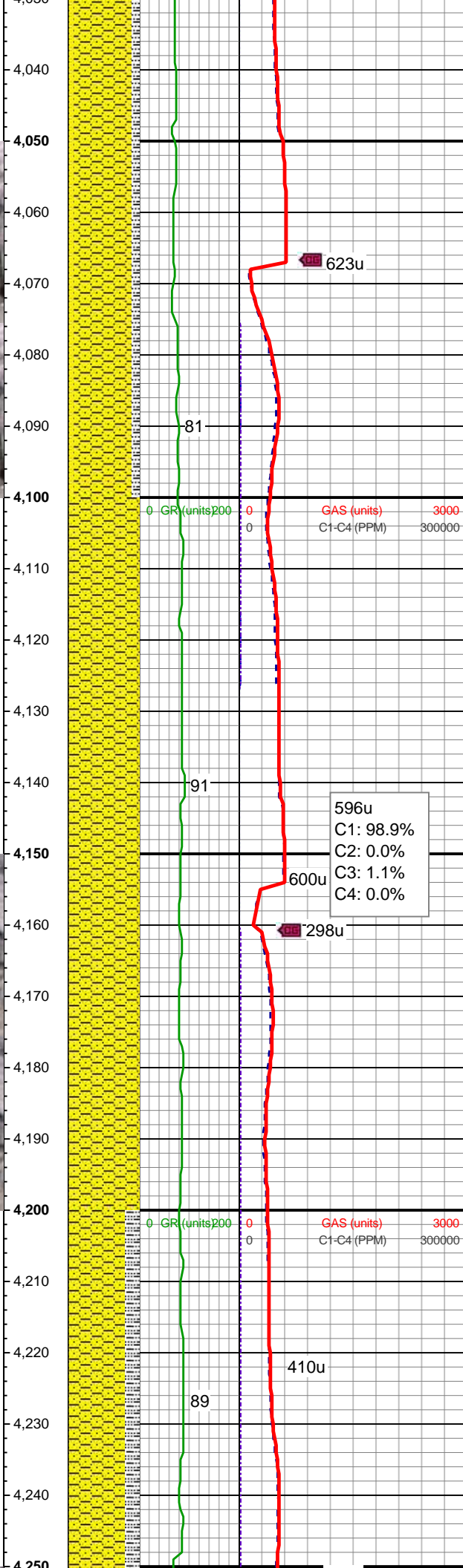
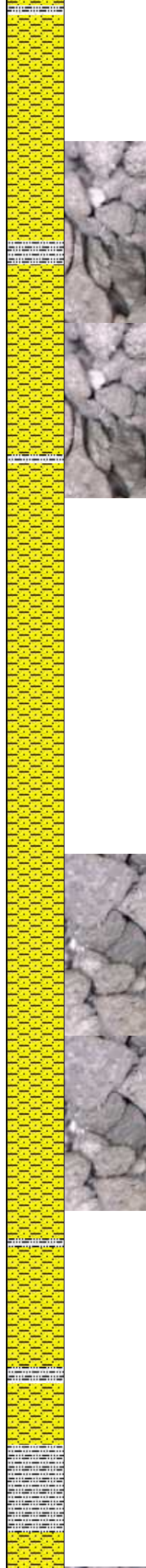
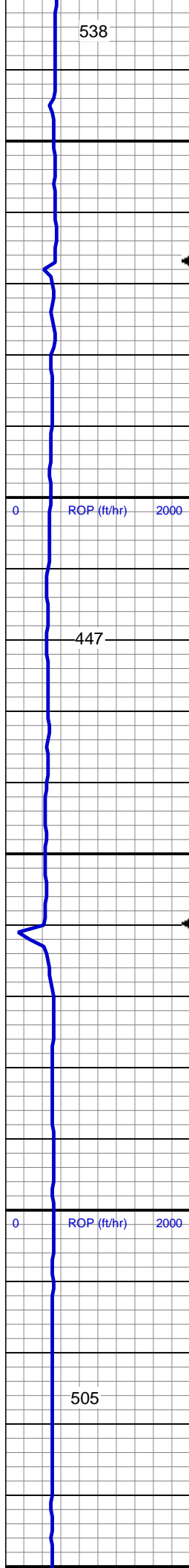
MD: 3,828'  
Inclination: 11.17 °  
Azimuth: 330.31 °  
TVD: 3,782.37'  
VS: -181.24'

SS: wh-lt gy, occ s&p, sb rd-sb ang, mod  
srt, f-med gr, silc & calc cmt, ply-mod  
cons, v abnt glau, SLTY SH: lt-dk gy,  
sft-mod frm, sb blk-y-sb plty, gritty, sl calc,  
tr SHY SS

MD: 3,923'  
Inclination: 11.26 °  
Azimuth: 329.25 °  
TVD: 3,875.56'  
VS: -186.04'

SS: wh-lt gy, occ s&p, sb rd-sb ang, mod  
srt, f-med gr, silc & calc cmt, ply-mod  
cons, v abnt glau, SLTY SH: lt-dk gy,  
sft-mod frm, sb blk-y-sb plty, gritty, sl calc,  
tr SHY SS

MD: 4,017'  
Inclination: 11.61 °  
Azimuth: 328.02 °  
TVD: 3,967.69'  
VS: -191.24'



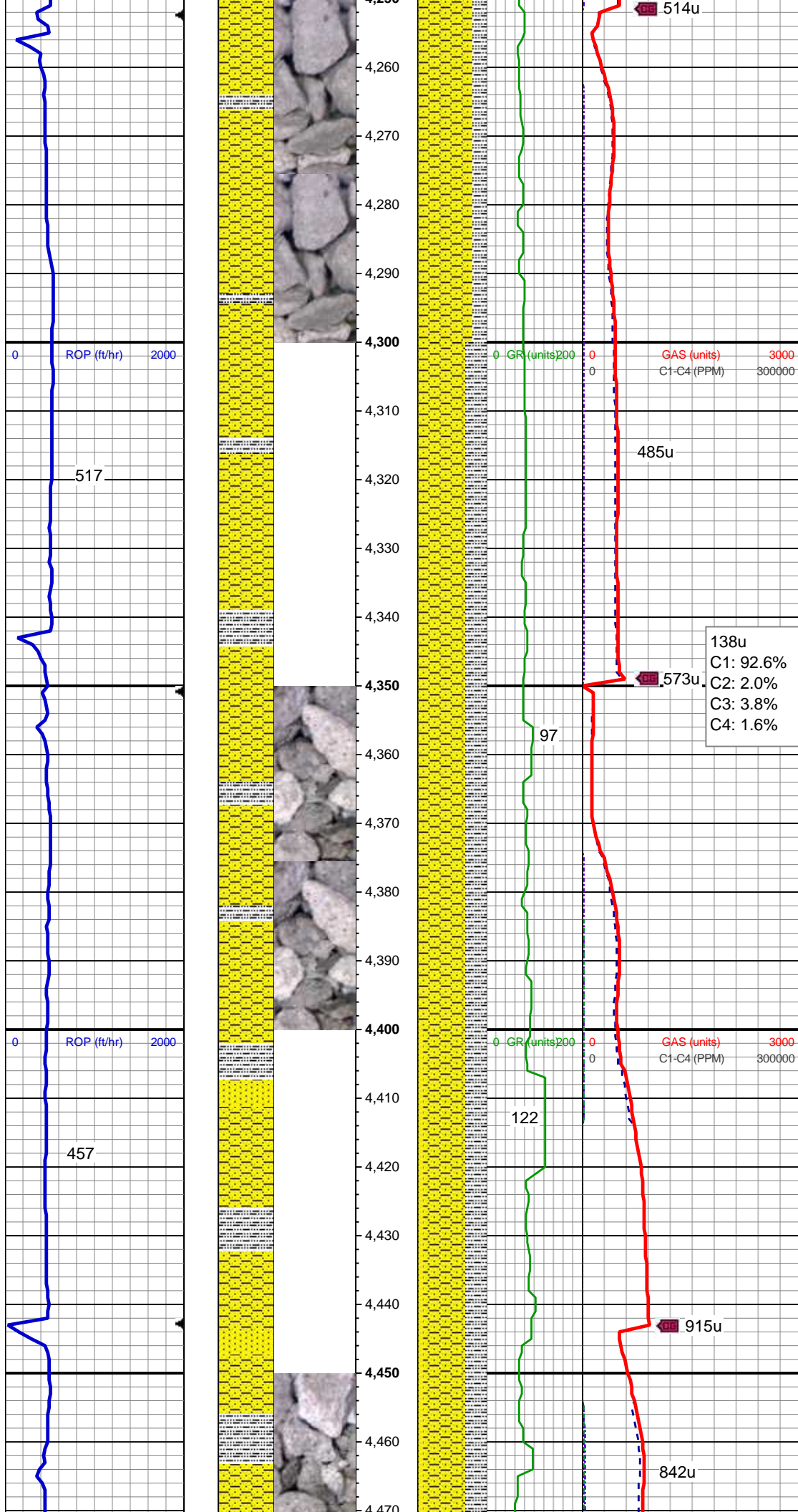
SHY SS: lt-med gy, sft frm, vf gr-f gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc, carb flks, SLTY SH: lt-dk gy, sft-mod frm, sb blk-y-sb plty, gritty, sl calc, SS: wh-lt gy, occ s&p, sb rd-sb ang, mod srt, f-med gr, silc & calc cmt, ply-mod cons, v abnt glau

MD: 4,111'  
Inclination: 11.61 °  
Azimuth: 327.14 °  
TVD: 4,059.77'  
VS: -196.86'

SHY SS: lt-med gy, sft frm, vf gr-f gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc, carb flks, tr SLTY SH

MD: 4,206'  
Inclination: 11.26 °  
Azimuth: 326.44 °  
TVD: 4,152.88'  
VS: -202.69'

SHY SS: lt-med gy, s&p ip, sft frm, vf gr-f gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc, carb flks, tr cal, SLTY SH: lt-dk gy,



sft-mod frm, sb blkly-sb plty, gritty, sl calc, tr SS

Mud Wt: 8.85 / 28 Vis

MD: 4,300'

Inclination: 10.9 °

Azimuth: 325.91 °

TVD: 4,245.13'

VS: -208.47'

SHY SS: lt-med gy, s&p ip, sft-frm, vf gr-f gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc, carb flks, tr cal, SLTY SH: lt-dk gy, sft-mod frm, sb blkly-sb plty, gritty, sl calc, tr SS

MD: 4,395'

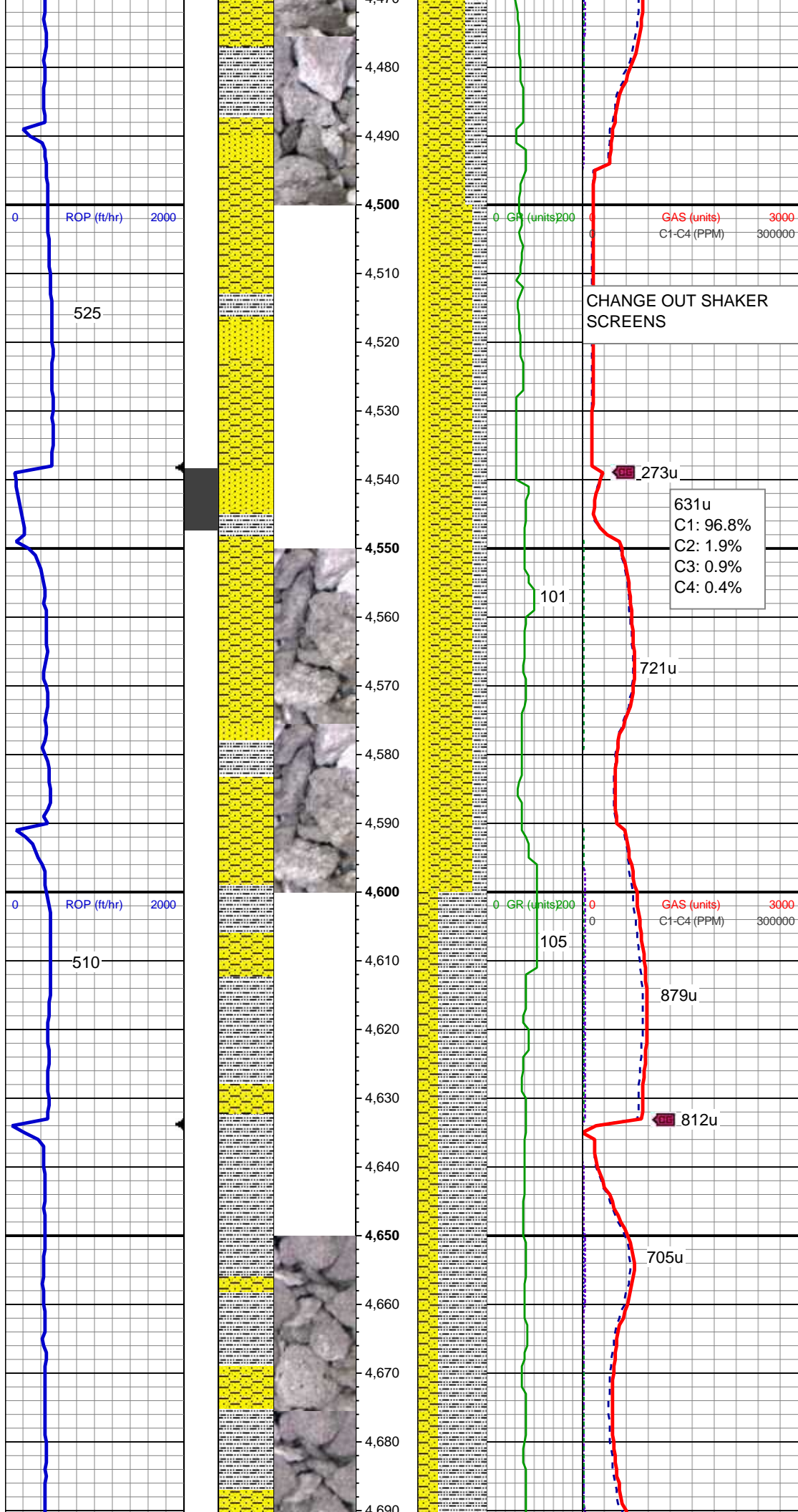
Inclination: 10.55 °

Azimuth: 323.98 °

TVD: 4,338.47'

VS: -214.48'

SHY SS: lt-med gy, sft-frm, vf gr-f gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc, carb flks, SLTY SH: lt-dk gy, sft-mod frm, sb blkly-sb plty, gritty, sl calc, SS: wh-lt gy, occ s&p, sb rd-sb ang, mod srt, f-med gr, silc & calc cmt, ply-mod cons, v abnt glau



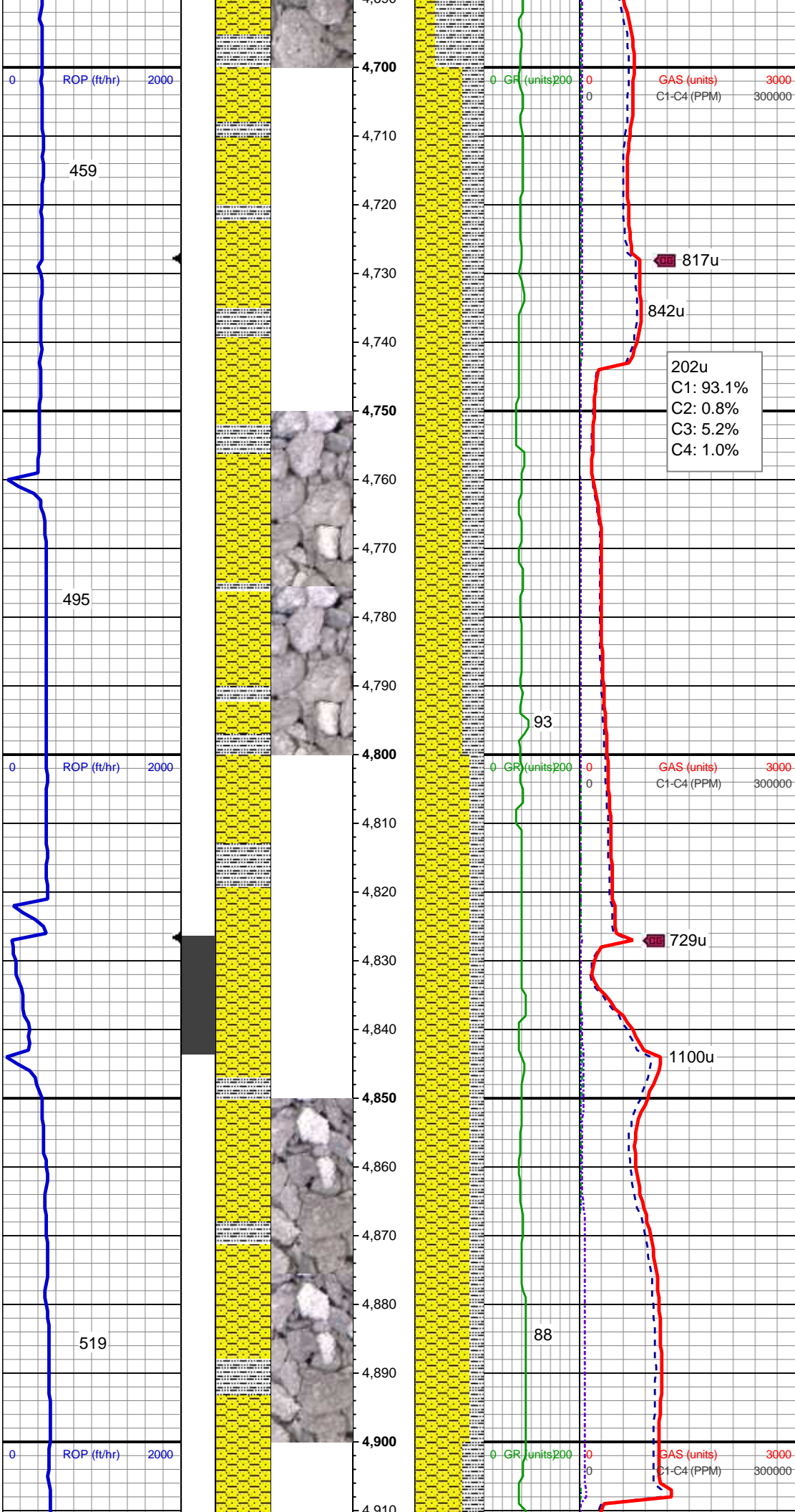
MD: 4,490'  
Inclination: 10.2 °  
Azimuth: 324.68 °  
TVD: 4,431.92'  
VS: -220.48'

SHY SS: lt-med gy, sft-frm, vf gr-f gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc, carb flks, SLTY SH: lt-dk gy, sft-mod frm, sb blk-y-sb pty, gritty, sl calc, SS: wh-lt gy, occ s&p, sb rd-sb ang, mod srt, f-med gr, silc & calc cmt, ply-mod cons, v abnt glau

MD: 4,584'  
Inclination: 10.99 °  
Azimuth: 329.25 °  
TVD: 4,524.32'  
VS: -225.75'

SLTY SH: lt-dk gy, sft-mod frm, sb blk-y-sb pty, gritty, SHY SS: lt-med gy, sft-frm, vf gr-f gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc

MD: 4,678'  
Inclination: 10.46 °  
Azimuth: 327.85 °  
TVD: 4,616.67'  
VS: -230.66'

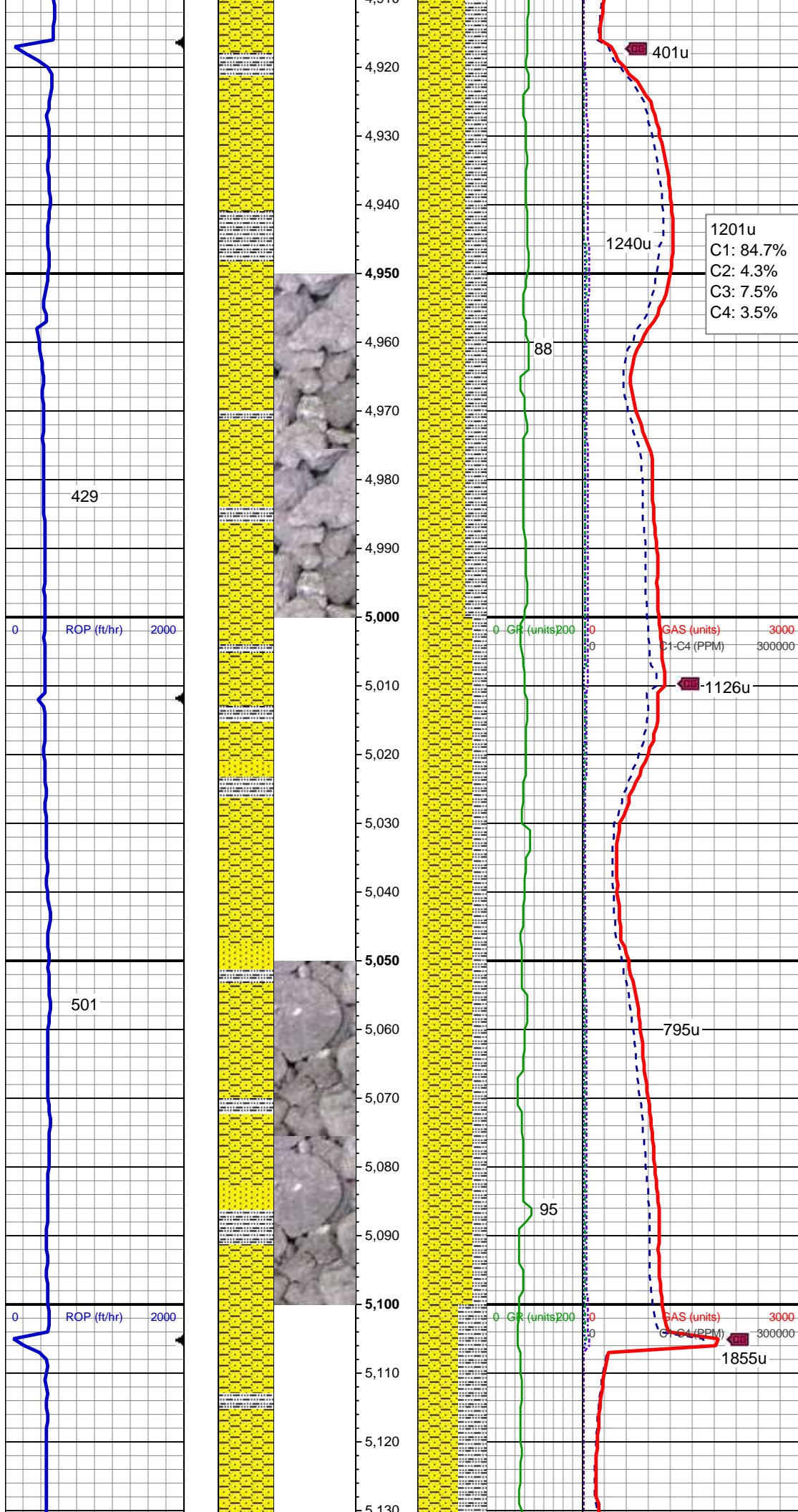


SHY SS: lt-med gy, sft frm, vf gr-f gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc, scat glauc grns, carb flks, SLTY SH: lt-dk gy, sft-mod frm, sb blk-y-sb plty, gritty

MD: 4,773'  
Inclination: 9.94 °  
Azimuth: 327.5 °  
TVD: 4,710.17'  
VS: -235.62'

SHY SS: lt-med gy, sft frm, vf gr-f gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc, scat glauc grns, carb flks, SLTY SH: lt-dk gy, sft-mod frm, sb blk-y-sb plty, gritty

MD: 4,867'  
Inclination: 12.13 °  
Azimuth: 328.73 °  
TVD: 4,802.43'  
VS: -240.78'

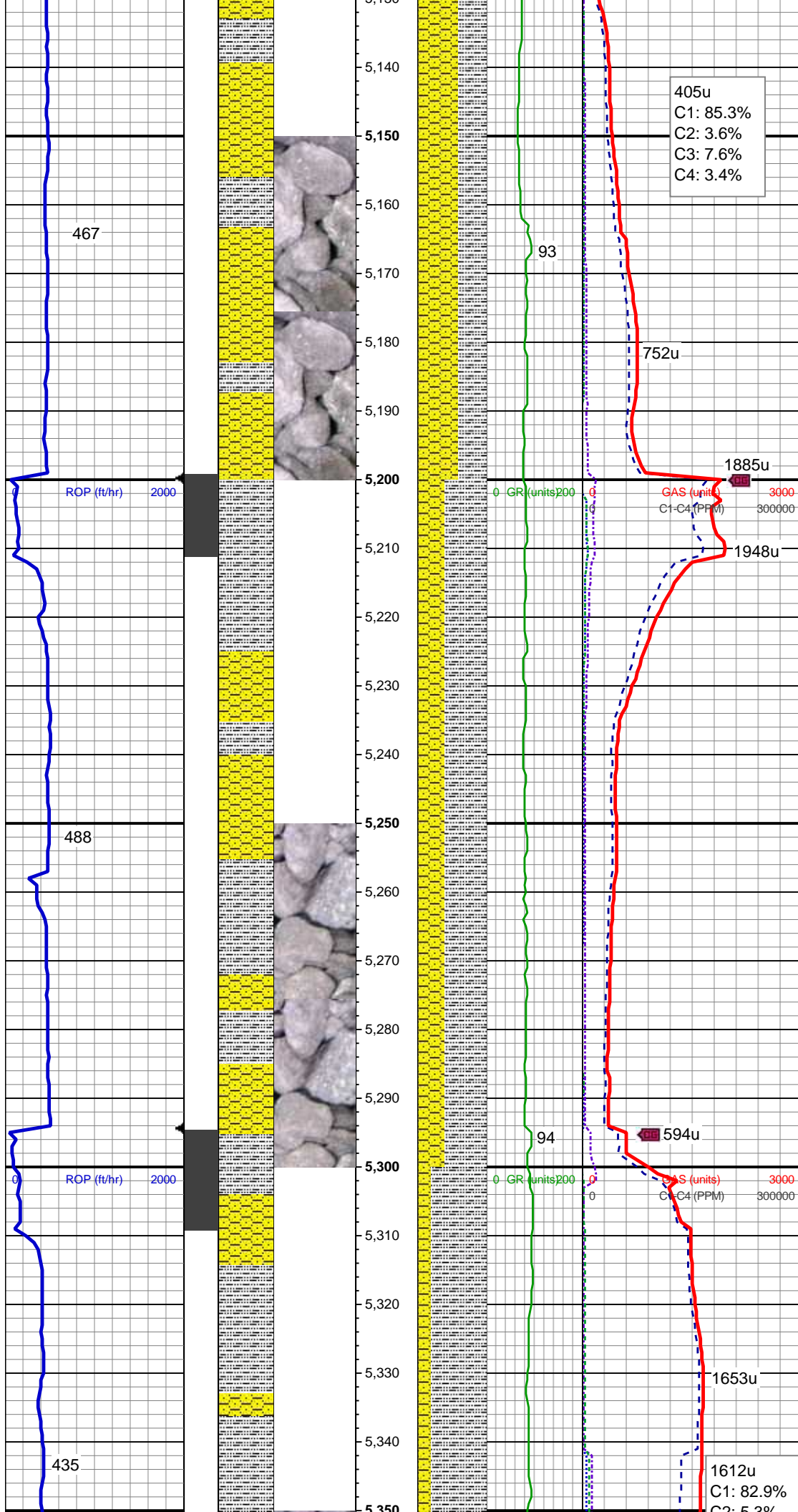


SHY SS: lt-med gy, sft-firm, vf gr-f gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc, scat glauc grns, carb flks, SLTY SH: lt-dk gy, sft-mod frm, sb blkgy-sb plty, gritty

Mud Wt: 8.85 / 28 Vis

SHY SS: lt-med gy, sft-firm, vf gr-f gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc, SS: med - lt gy, s&P ip, unconcs, speckl wi glau, f gr, hd brit clus, ang - sb ang, calc cmt, SLTY SH: lt-dk gy, sft-mod frm, sb blkgy-sb plty, gritty

MD: 5,056'  
Inclination: 10.73 °  
Azimuth: 324.68 °  
TVD: 4,987.68'  
VS: -252.35'



SHY SS: lt-med gy, sft-frm, vf gr-f gr, sb  
ang - sb rnd, mod w srt, arg cmt, sl  
calc,scat glauc grns, carb flks, SLTY SH:  
lt-dk gy, sft-mod frm, sb blkly-sb plty, gritty

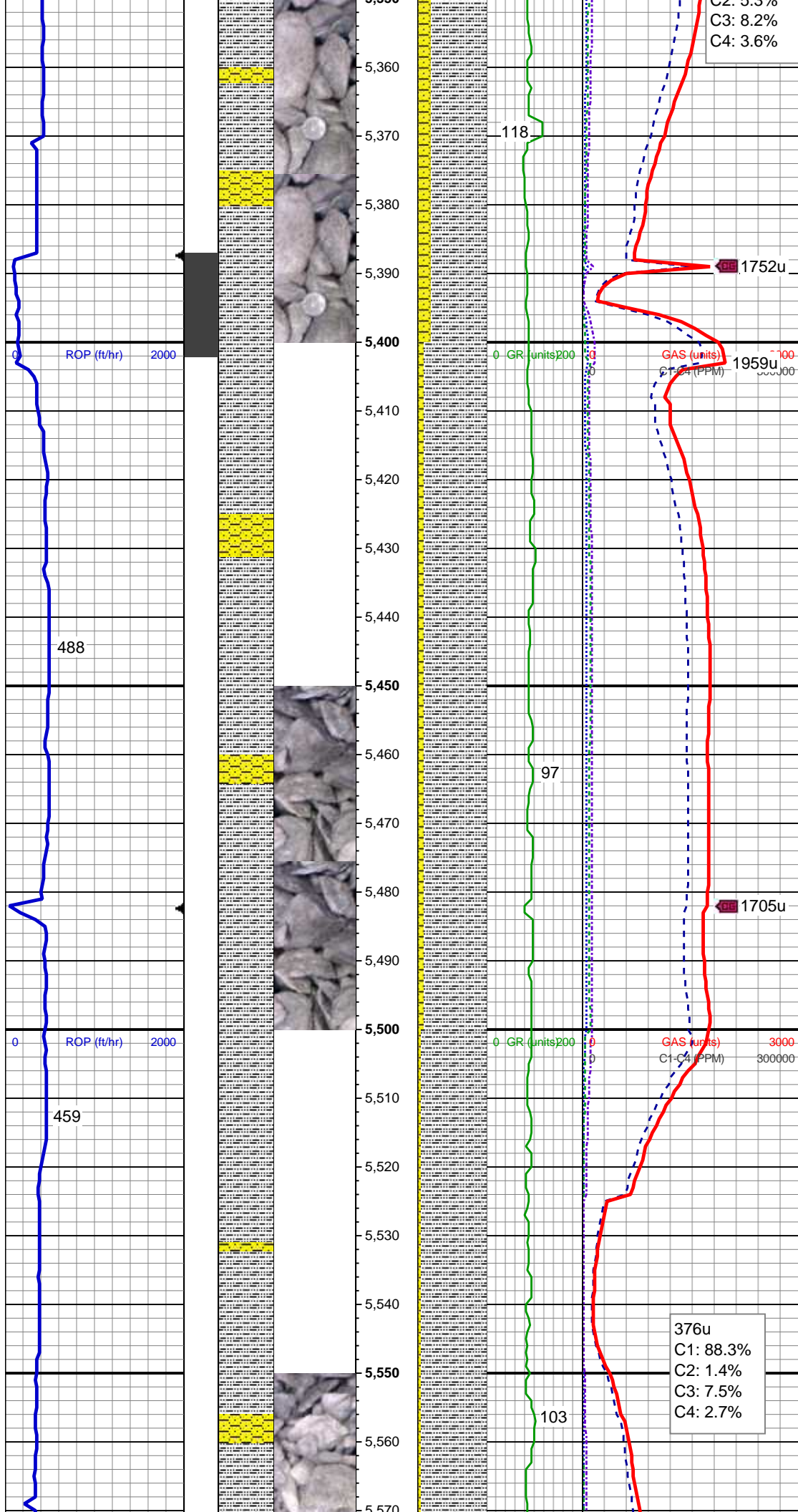
MD: 5,150'  
Inclination: 10.46 °  
Azimuth: 323.45 °  
TVD: 5,080.08'  
VS: -258.48'

MD: 5,245'  
Inclination: 10.82 °  
Azimuth: 322.4 °  
TVD: 5,173.44'  
VS: -265.03'

SLTY SH: lt-dk gy, sft-mod frm, sb blkly-sb  
plty, gritty, SHY SS: lt-med gy, sft-frm, vf  
gr-f gr, sb ang - sb rnd, mod w srt, arg  
cmt, sl calc,scat glauc grns, carb flks

MD: 5,339'  
Inclination: 12.13 °  
Azimuth: 320.64 °  
TVD: 5,265.56'  
VS: -272.45'

SLTY SH: lt-dk gy, sft-mod frm, sb blkly-sb



plty, gritty, SHY SS: lt-med gy, sft-frm, vf  
gr-f gr, sb ang - sb rnd, mod w srt, arg  
cmt, sl calc, scat glauc grns, carb flks

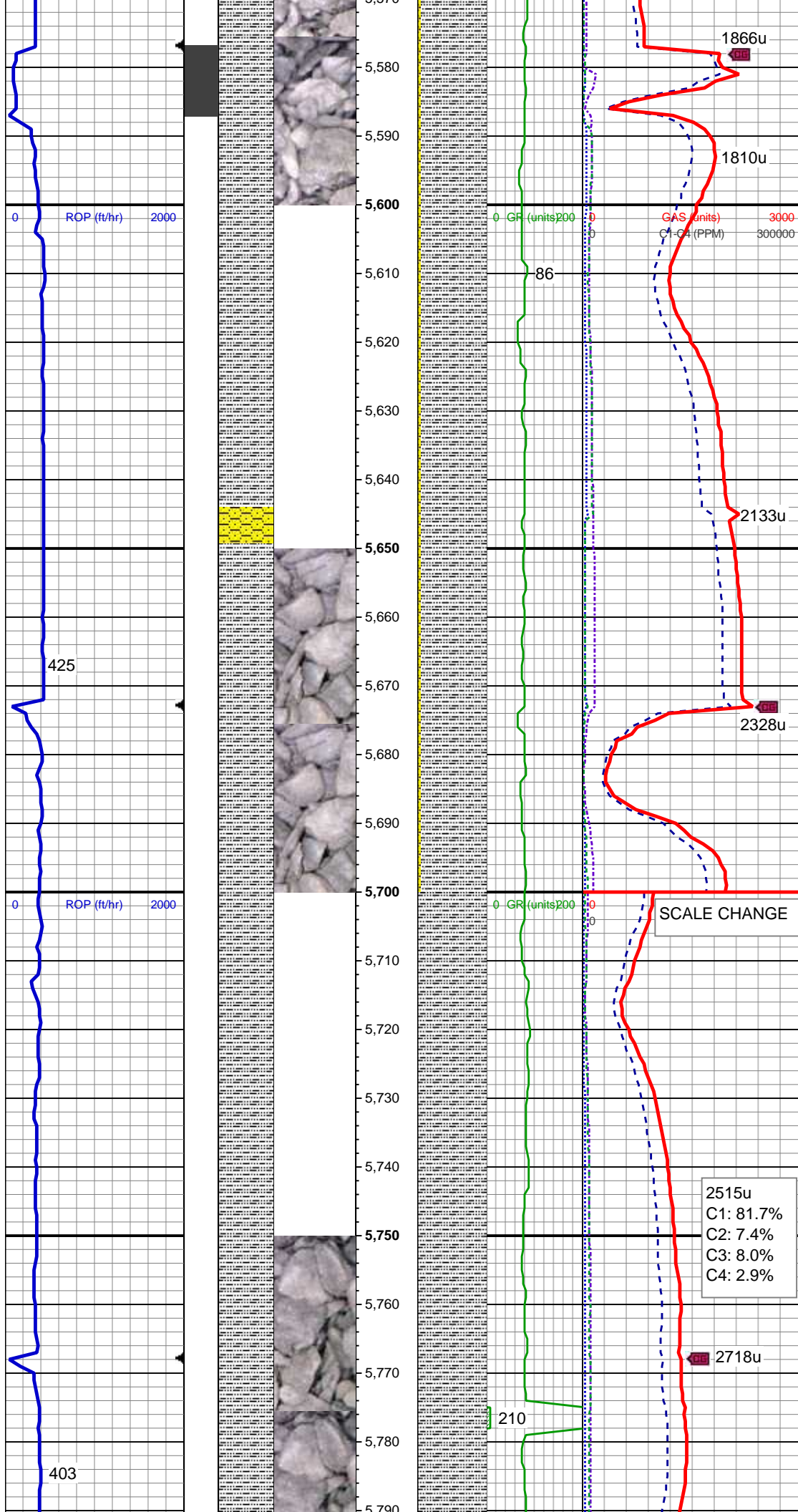
Mud Wt: 8.05 / 29 Vis

MD: 5,434'  
Inclination: 11.52 °  
Azimuth: 329.61 °  
TVD: 5,358.55'  
VS: -279.03'

SLTY SH: lt-dk gy, sft-mod frm, sb blkly-sb  
plty, gritty, SHY SS: lt-med gy, sft-frm, vf  
gr-f gr, sb ang - sb rnd, mod w srt, arg  
cmt, sl calc, scat glauc grns, carb flks

MD: 5,528'  
Inclination: 10.55 °  
Azimuth: 326.44 °  
TVD: 5,450.81'  
VS: -284.21'

SLTY SH: lt-dk gy, sft-mod frm, sb blkly-sb  
plty, gritty, SHY SS: lt-med gy, sft-frm, vf  
gr-f gr, sb ang - sb rnd, mod w srt, arg  
cmt, sl calc, scat glauc grns, carb flks



Mud Wt: 9.10 / 36 Vis

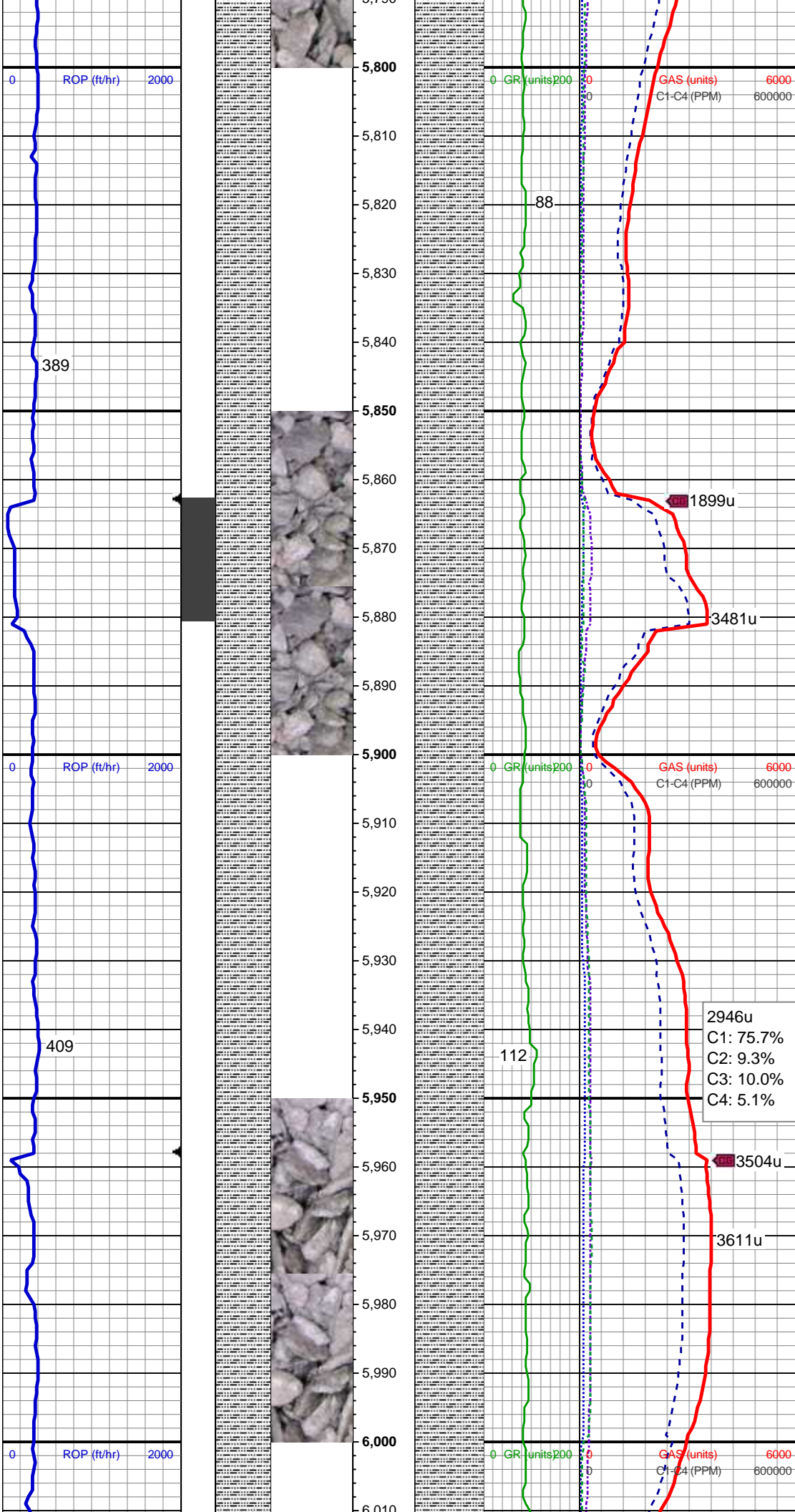
MD: 5,623'  
Inclination: 9.94 °  
Azimuth: 328.55 °  
TVD: 5,544.3'  
VS: -289.26'

SLTY SH: lt-dk gy, sft-mod frm, sb blkly-sb  
ppty, gritty, SHY SS: lt-med gy, sft-frm, vf  
gr-f gr, sb ang - sb rnd, mod w srt, arg  
cmt, sl calc, scat glauc grns, carb flks

MD: 5,717'  
Inclination: 9.41 °  
Azimuth: 326.79 °  
TVD: 5,636.96'  
VS: -293.92'

SLTY SH: lt-dk gy, sft-mod frm, sb blkly-sb  
ppty, gritty

2515u  
C1: 81.7%  
C2: 7.4%  
C3: 8.0%  
C4: 2.9%



MD: 5,812'  
Inclination: 8.53 °  
Azimuth: 323.1 °  
TVD: 5,730.8'  
VS: -298.93'

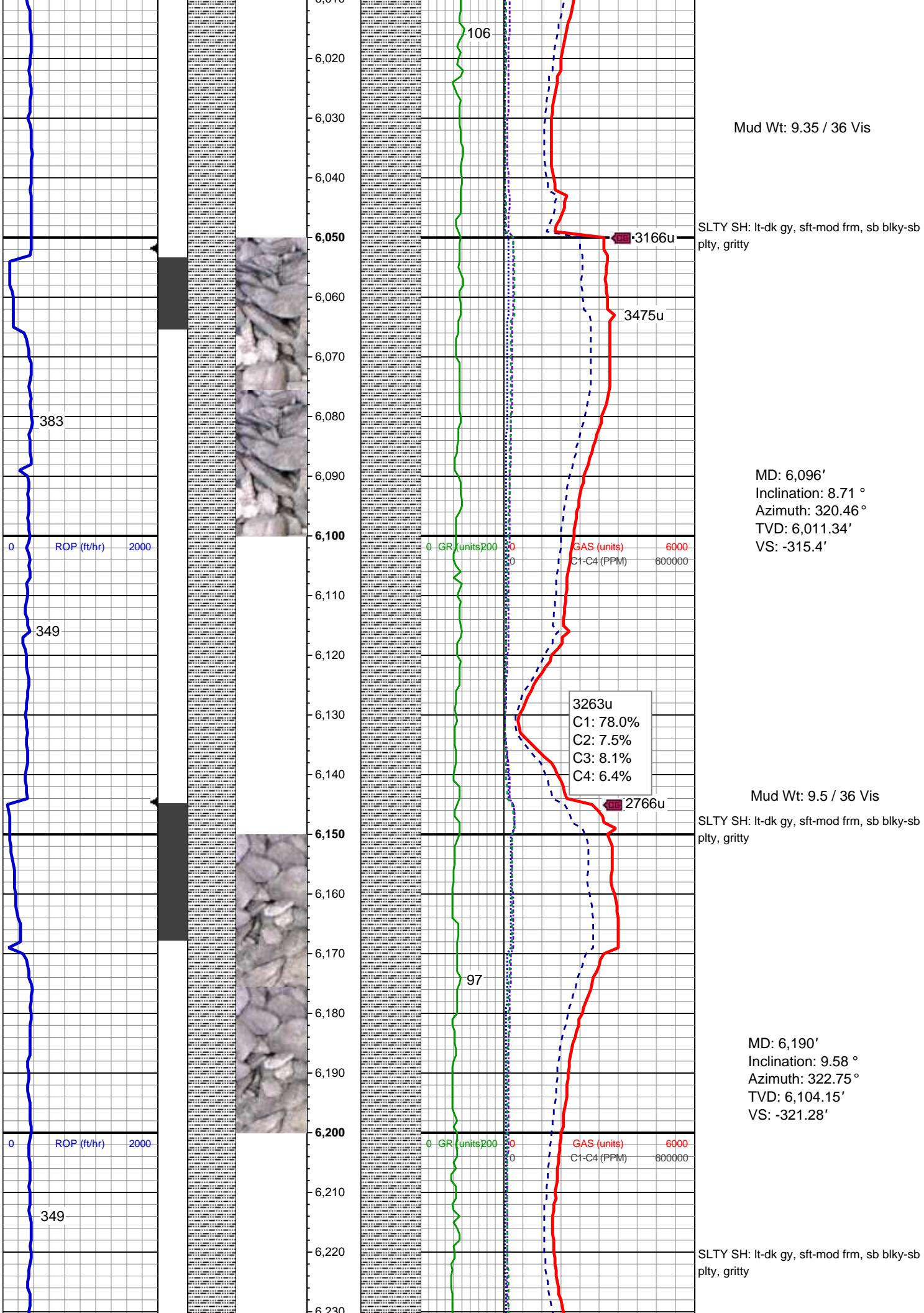
SLTY SH: lt-dk gy, sft-mod frm, sb blkly-sb  
ply, gritty

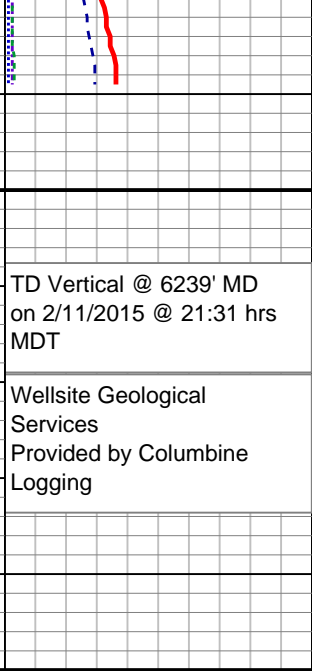
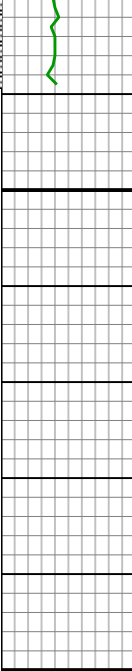
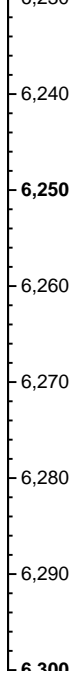
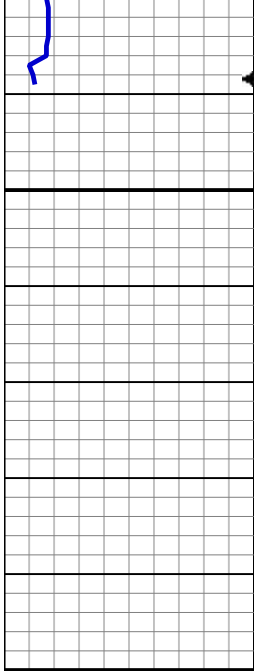
Mud Wt: 9.35 / 38 Vis

MD: 5,906'  
Inclination: 9.85 °  
Azimuth: 325.39 °  
TVD: 5,823.59'  
VS: -304.19'

SLTY SH: lt-dk gy, sft-mod frm, sb blkly-sb  
ply, gritty

MD: 6,001'  
Inclination: 8.35 °  
Azimuth: 321.17 °  
TVD: 5,917.4'  
VS: -309.67'





See Corresponding Horizontal Log  
Reliance E23-69HN(HORZ)