

COLUMBINE LOGGING

Scale: 5" / 100'
Measured Depth Log

Well Name Trisha LC29-75HNB

Location SWSE SEC 29 T9N R59W

State COLORADO

County WELD

Country USA

Rig Number H&P 273

API Number 05-123-38780

Field WILDCAT

Region DJ BASIN

Drilling Completed 5/19/2014

Spud Date 6/18/2014

Surface Coordinates 340' FSL; 2205' FEL

Ground Elevation 4873'

K.B. Elevation 4897'

Logged Interval 622' To 5489'

Total Depth 5489'

Formation NIOBRARA

Type of Drilling Fluid LSND

Other Symbols

Oil Show

- DEAD
- EVEN
- QUESTIONABLE
- SPOTTED STAINING

Porosity

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

- MOLDIC
- ORGANIC
- PINPOINT
- VUGGY

Engineering

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

- FAULT
- FORMATION TOP
- GAS SHOW
- MN DEPTH
- NORMAL FAULT
- OIL SHOW
- OVERTURNED STRATA
- REVERSE FAULT
- SLIDE
- SURVEY
- TRIP GAS

- WIRELINE TESTED - LEFT
- WIRELINE TESTED - RT

Rounding

- ANGULAR
- ROUNDED
- SUBANG
- SUBRND

Textures

- BOUNDSTONE
- CHALKY
- CRYPTOXLN

- E EARTHY
- FINELYXLN
- GRAINSTONE
- L LITHOGRAPHIC
- MX MICROXLN
- MS MUDSTONE
- PS PACKSTONE
- WS WACKSTONE

Sorting

- M MODERATE
- P POOR
- W WELL

Zone Color Coding

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

Accessories

Fossils

- ALGAE
- AMPHIPORA
- BELEMNITE
- BIOCLASTIC
- BRACHIOPOD
- BRYOZOA
- CEPHALOPOD
- CORDAL
- FOSSIL
- GASTROPOD
- INOCERAMUS
- OOLITE
- OSTRACOD
- PELECYPOD
- PELLET
- PISOLITE
- PLANT REMAINS
- PLANT PROPOG

- ANHYDRITIC
- ARGILLACEOUS
- ARGILLITE GRAIN
- BENTONITE
- BITUMENOUS SUBSTANCE
- BRECCIA FRAGMENTS
- CALCAREOUS
- CARBONACEOUS FLAKES
- CHTDK
- CHULT

- FERRUGINOUS
- GLAUCONITE
- GYPSIFEROUS
- HEAVY MINERAL
- KAOLIN
- MARLSTONE
- MINERAL CRYSTALS
- NODULES
- PHOSPHATE PELLETS
- TYNITE

- TUFFACEOUS

Stringer

- ANHYDRITE STRINGER
- BENTONITE STRINGER
- COAL STRINGER
- DOLOMITE STRINGER
- GYPSUM STRINGER
- LIMESTONE STRINGER
- MARLSTONE (OIL) STRINGER

CORAL
CRINOID
ECHINOID
FISH
FORAMINIFERA

PLANT SPORES
SCAPHOPOD
STROMATOPOROID

Minerals

CHERT
COAL - THIN BEDS
DOLOMITIC
FELDSPAR
FERRUGINOUS PELLET

PYRITE
SALT CAST
SANDY
SILICEOUS
SILTY

MARLSTONE (CALC) STRG
MARLSTONE (DOL) STRG
SANDSTONE STRINGER
SHALE STRINGER
SILTSTONE STRINGER

Rock Types

UNKNOWN
CHALK
MARLSTONE
SANDSTONE
SHALY SANDSTONE
SILTY SHALE
ANHYDRITE
BENTONITE
BRECCIA

CEMENT
CHERT
CLAY CHOKE SAND
CLAYSTONE
COAL
CONGLOMERATE
DOLOMITE
GRANITE
GYPSUM

IGNEOUS
LIMESTONE
SIDERITE or LIMONITE
METAMORPHIC
NO SAMPLE
SALT
SALT- PEPPER SAND
SHALE
SHALE COLORED

SHALE GRAY
SHALY SILTSTONE
SILTSTONE
TILL
TUFF
WELDED TUFF

Operator

Company NOBLE ENERGY INC.

Address 1625 Broadway Suite 2200
Denver, CO 80202

Other

Wellsite Geologist #1 Laura Kellogg

Wellsite Geologist #2 Michael Rooks

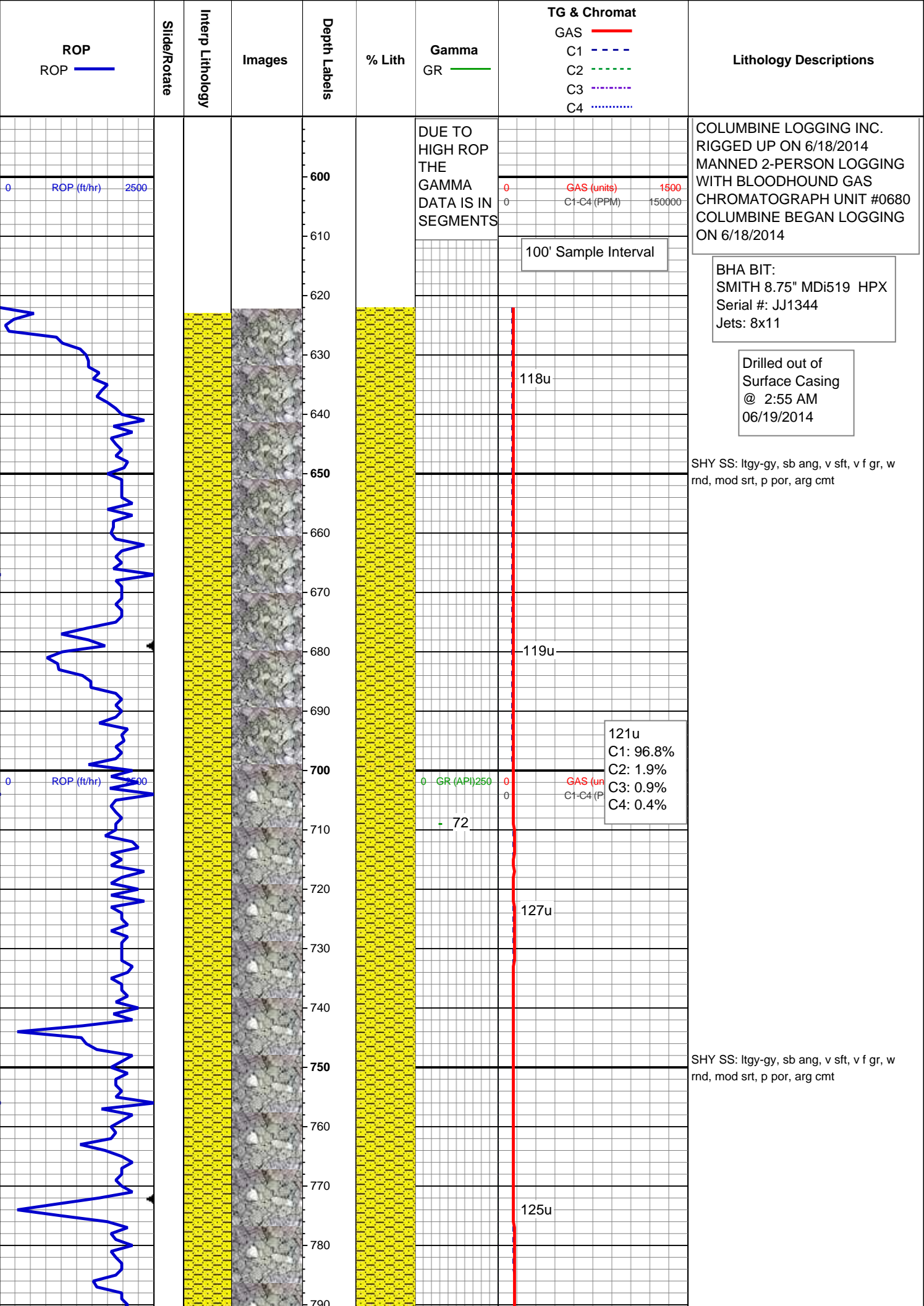
Wellsite Geological Services Provided By Columbine Logging Inc.

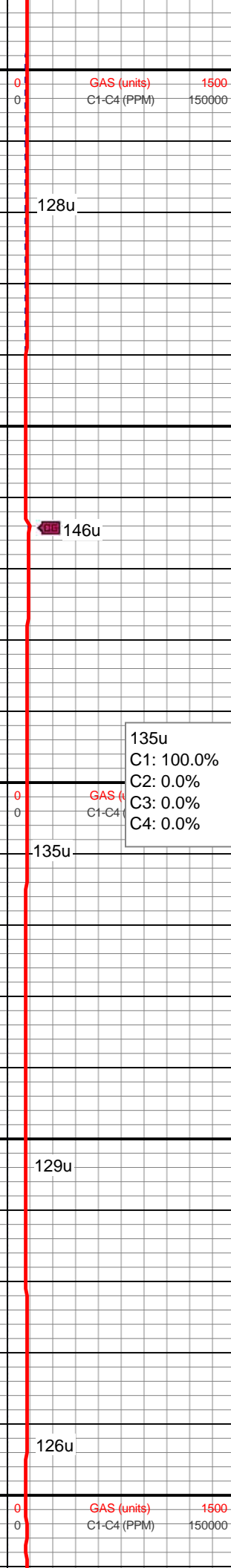
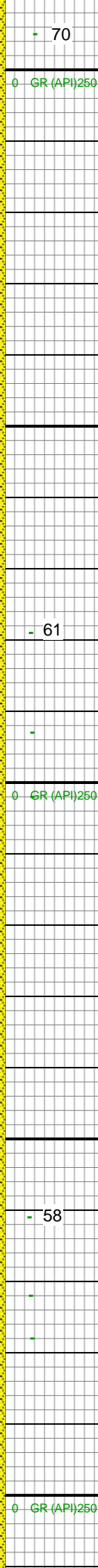
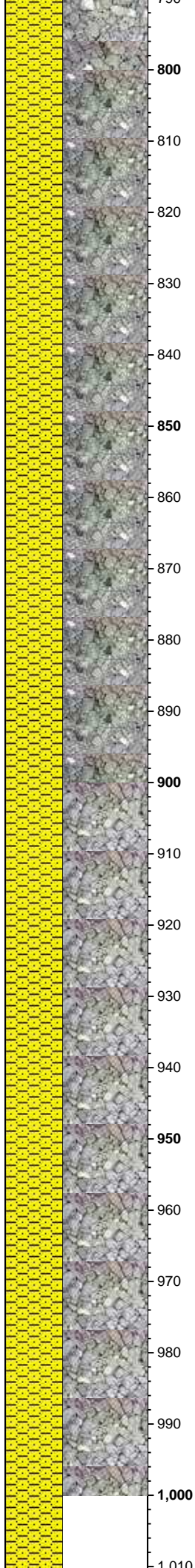
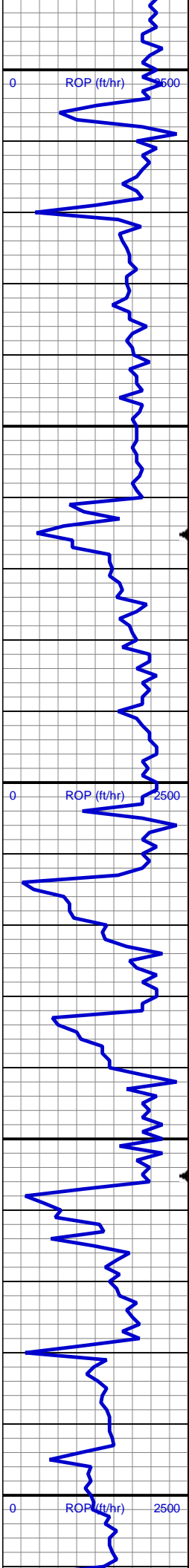
Geologist

Name SARAH COMPTON

Company NOBLE ENERGY INC.

Address 1625 Broadway Suite 2200
Denver, CO 80202





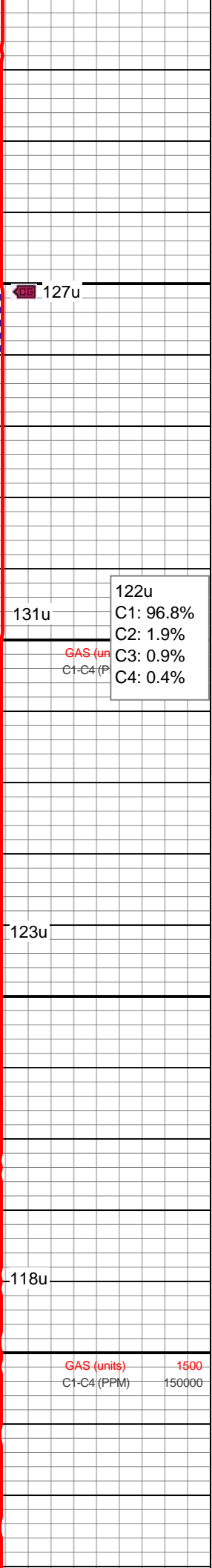
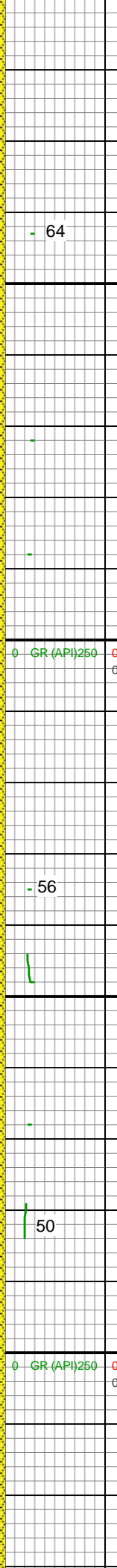
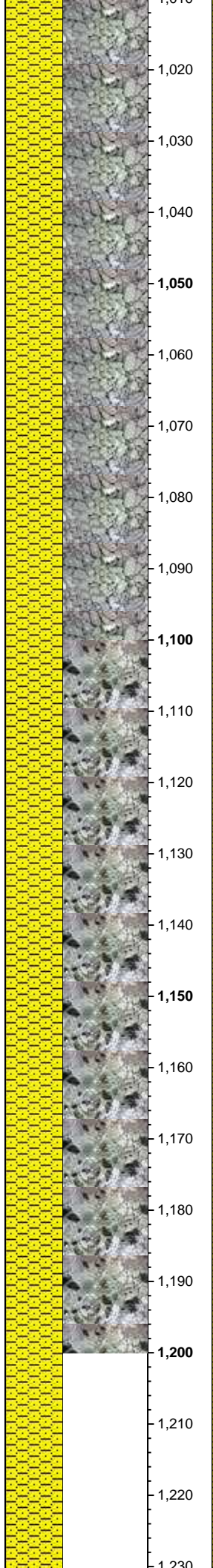
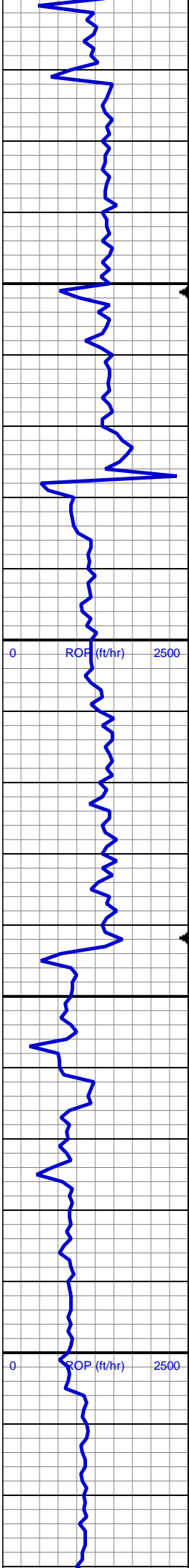
MD: 809'
TVD: 808.97'
Inclination: 1.27 °
Azimuth: 88.05 °
VS: 0.97'

SHY SS: lt gy, sb ang, v sft, v f gr, w rnd,
mod srt, p por, arg cmt

135u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%

SHY SS: lt gy, sb ang, v sft, v f gr, w rnd,
mod srt, p por, arg cmt

MD: 995'
TVD: 994.93'
Inclination: 1.23 °
Azimuth: 88.69 °
VS: 0.61'



SHY SS: gy, sb ang, sft, v f gr, w rnd,
mod srt, p por, arg cmt

MD: 1,087'
TVD: 1,086.91'
Inclination: 1.34 °
Azimuth: 98.7°
VS: 0.22'

122u
C1: 96.8%
C2: 1.9%
C3: 0.9%
C4: 0.4%

SHY SS: gy, sb ang, sft, v f gr, w rnd,
mod srt, p por, arg cmt

MD: 1,180'
TVD: 1,179.88'
Inclination: 1.25 °
Azimuth: 85.15°
VS: -0.1'

- 64

127u

131u

- GR (API) 250

GAS (units)
C1-C4 (PPM)

- 56

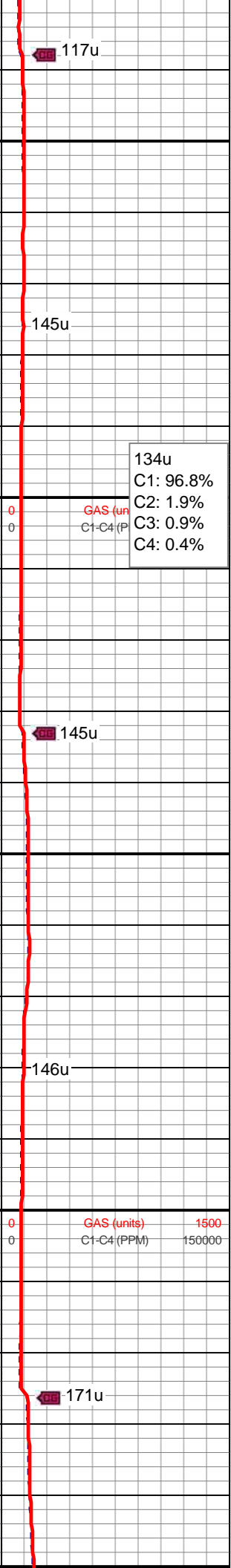
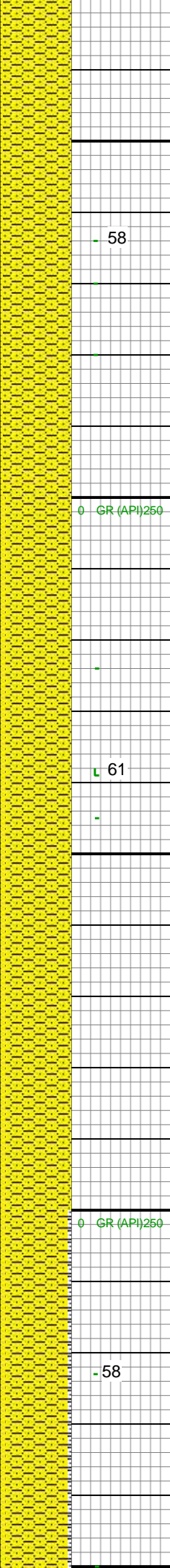
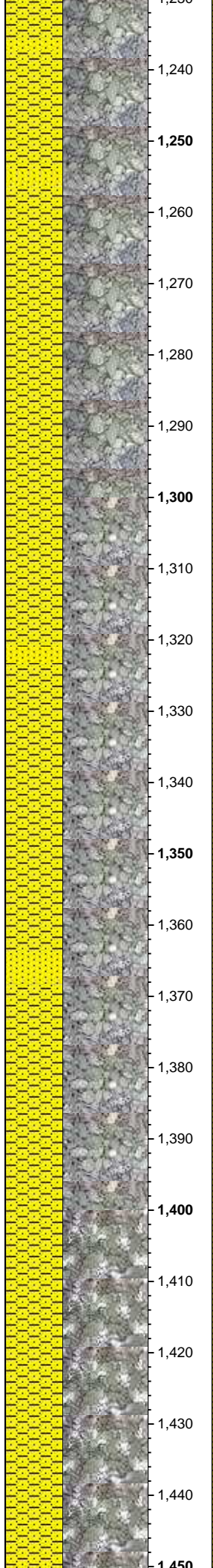
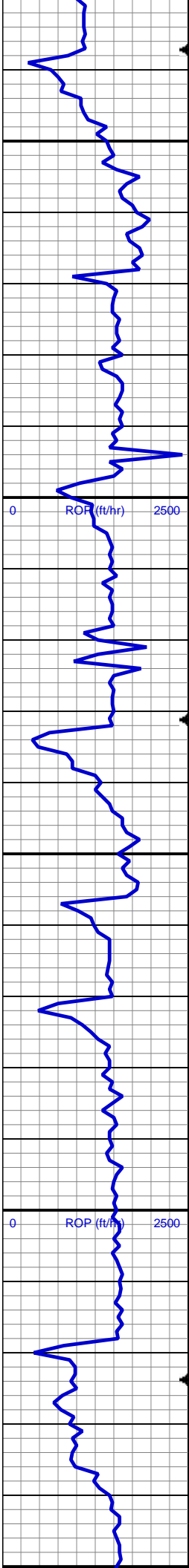
123u

- 50

118u

- GR (API) 250

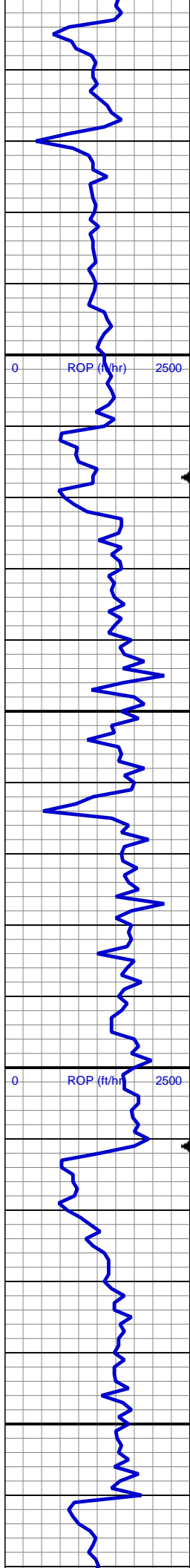
GAS (units)
C1-C4 (PPM)



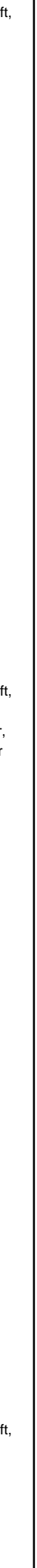
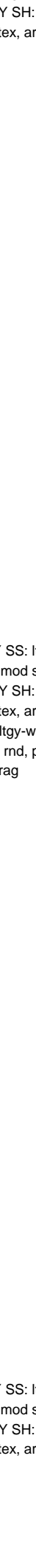
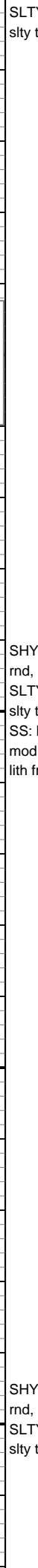
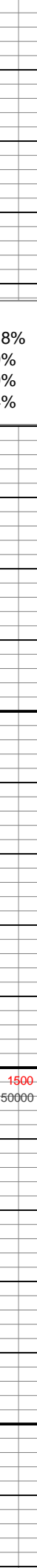
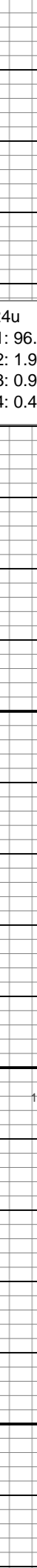
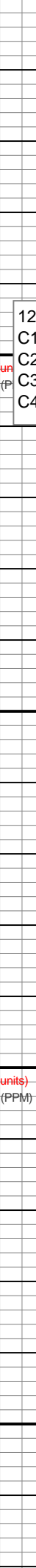
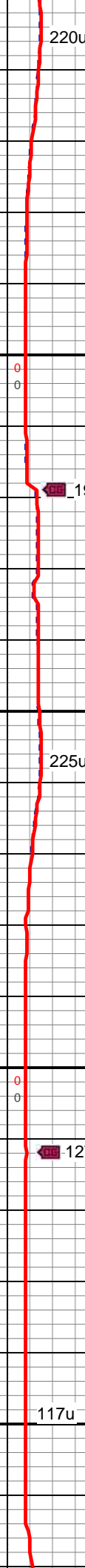
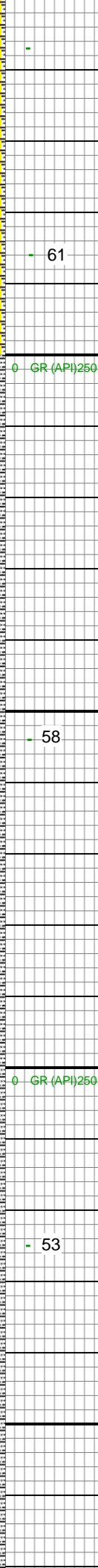
SHY SS: ltgy-gy, sb ang, v sft, v f gr, w
rnd, mod srt, p por, arg cmt
SS: ltgy-wh-op, sb ang, v fri, f gr - v f gr,
mod rnd, p srt, p por, arg cmt, rr glau, tr
lith frag

SHY SS: ltgy-gy, sb ang, v sft, v f gr, w
rnd, mod srt, p por, arg cmt
SS: ltgy-wh-op, sb ang, v fri, f gr - v f gr,
mod rnd, p srt, p por, arg cmt, rr glau, tr
lith frag

SHY SS: ltgy-gy, sb ang, v sft, v f gr, w
rnd, mod srt, p por, arg cmt
SS: ltgy-wh-op, sb ang, v fri, f gr - v f gr,
mod rnd, p srt, p por, arg cmt, tr glau, tr
lith frag



1,450
1,460
1,470
1,480
1,490
1,500
1,510
1,520
1,530
1,540
1,550
1,560
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1,610
1,620
1,630
1,640
1,650
1,660
1,670



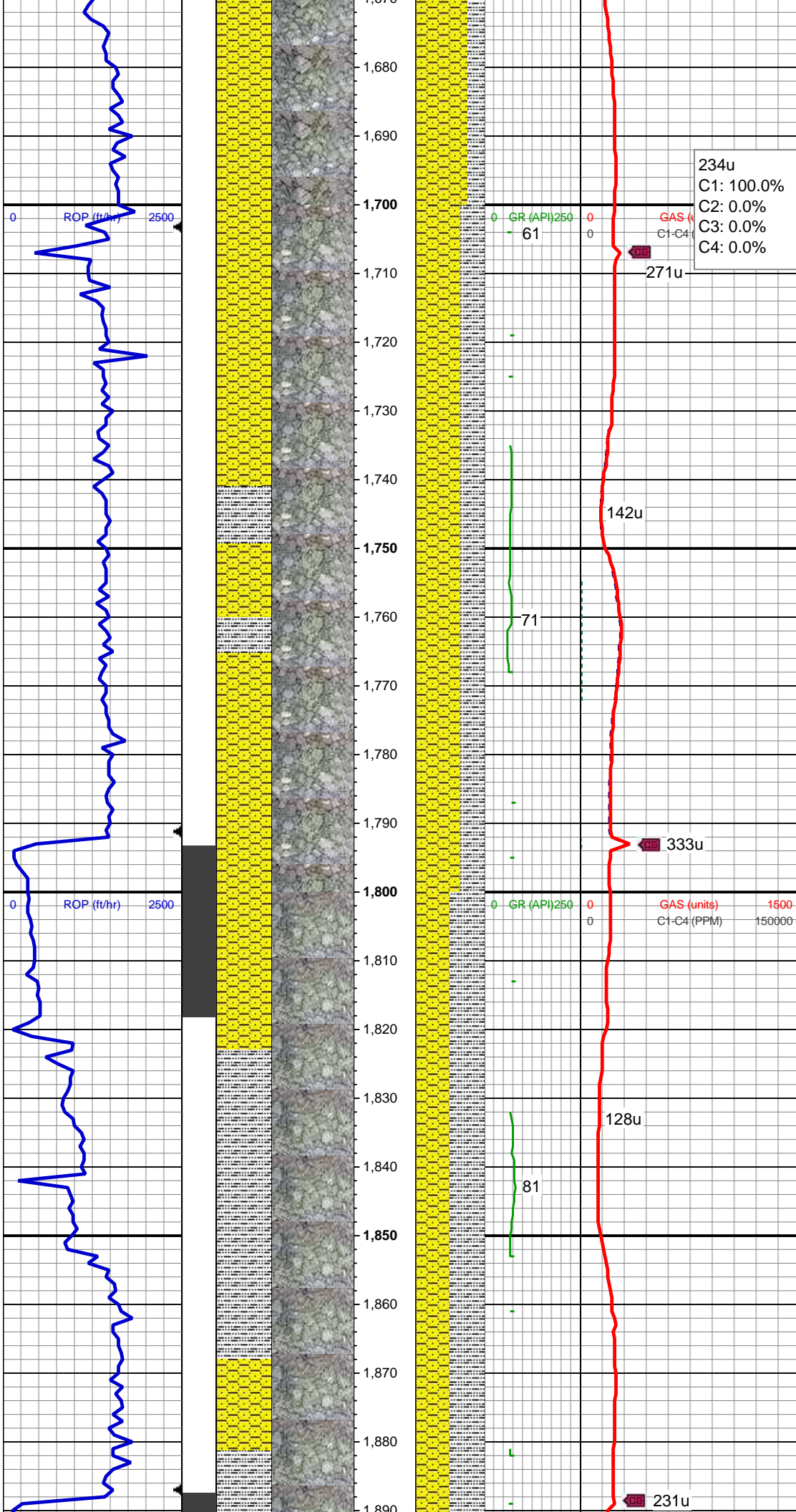
SLTY SH: gy-dk gy, sb blkly-sb plty, v sft, slty tex, arg cmt

MD: 1,459'
TVD: 1,458.82'
Inclination: 1.29 °
Azimuth: 81.24 °
VS: -0.1'

124u
C1: 96.8%
C2: 1.9%
C3: 0.9%
C4: 0.4%

SHY SS: ltgy-gy, sb ang, v sft, v f gr, w rnd, mod srt, p por, arg cmt
SLTY SH: gy-dk gy, sb blkly-sb plty, v sft, slty tex, arg cmt
SS: ltgy-wh-op, sb ang, v fri, f gr - v f gr, mod rnd, p srt, p por, arg cmt, tr glau, tr lith frag

SHY SS: ltgy-gy, sb ang, v sft, v f gr, w rnd, mod srt, p por, arg cmt
SLTY SH: gy-dk gy, sb blkly-sb plty, v sft, slty tex, arg cmt

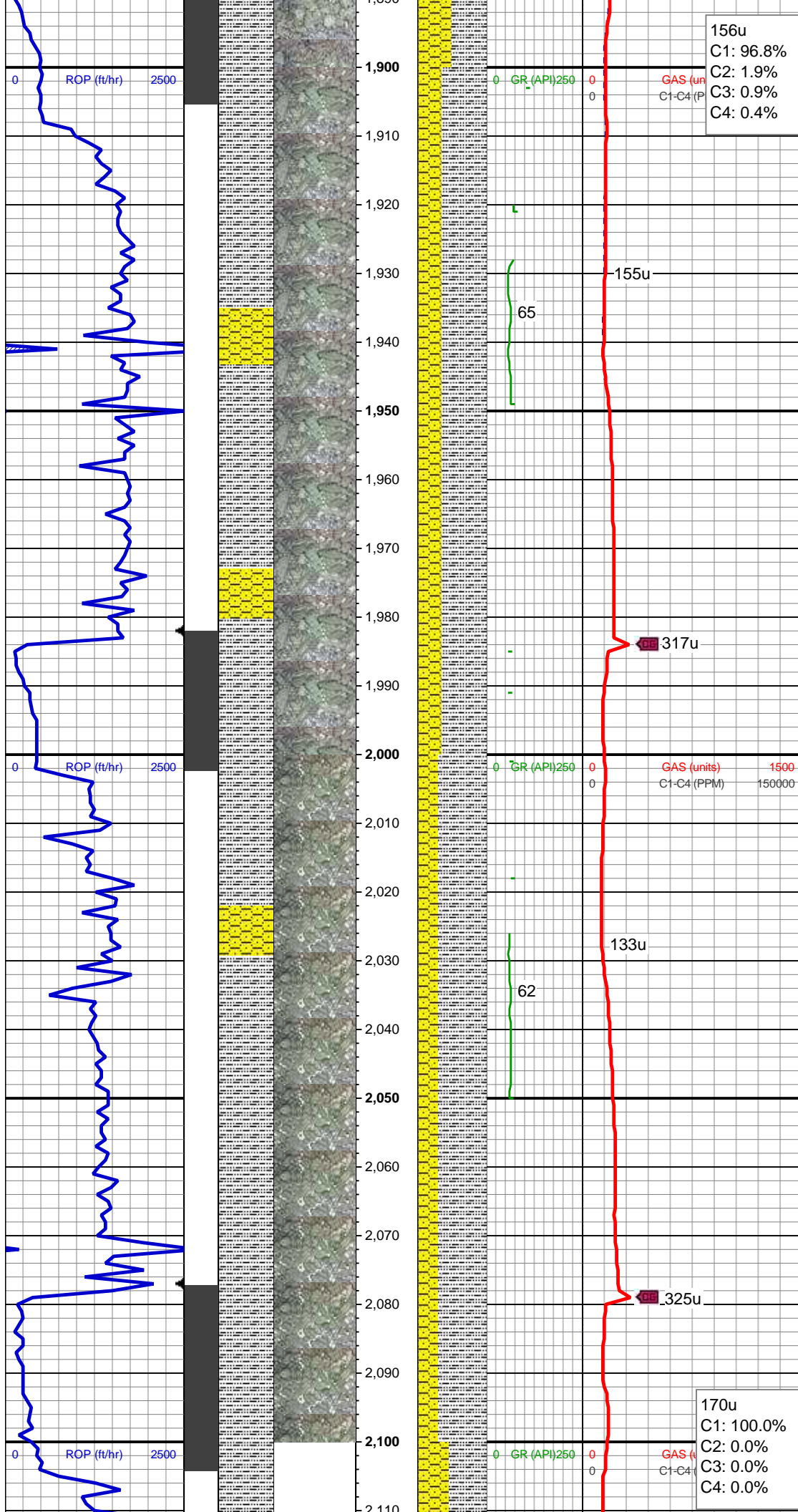


MD: 1,737'
TVD: 1,736.74'
Inclination: 1.33 °
Azimuth: 85.89 °
VS: -0.14'

SHY SS: ltgy-gy, sb ang, v sft, v f gr, w
rnd, mod srt, p por, arg cmt
SLTY SH: gy-dk gy, sb blkgy-sb plty, v sft,
sly tex, arg cmt

MD: 1,831'
TVD: 1,830.73'
Inclination: 1.29 °
Azimuth: 276.05 °
VS: 0.04'

SHY SS: ltgy-gy, sb ang, v sft, v f gr, w
rnd, mod srt, p por, arg cmt
SLTY SH: gy-dk gy, sb blkgy-sb plty, v sft,
sly tex, arg cmt



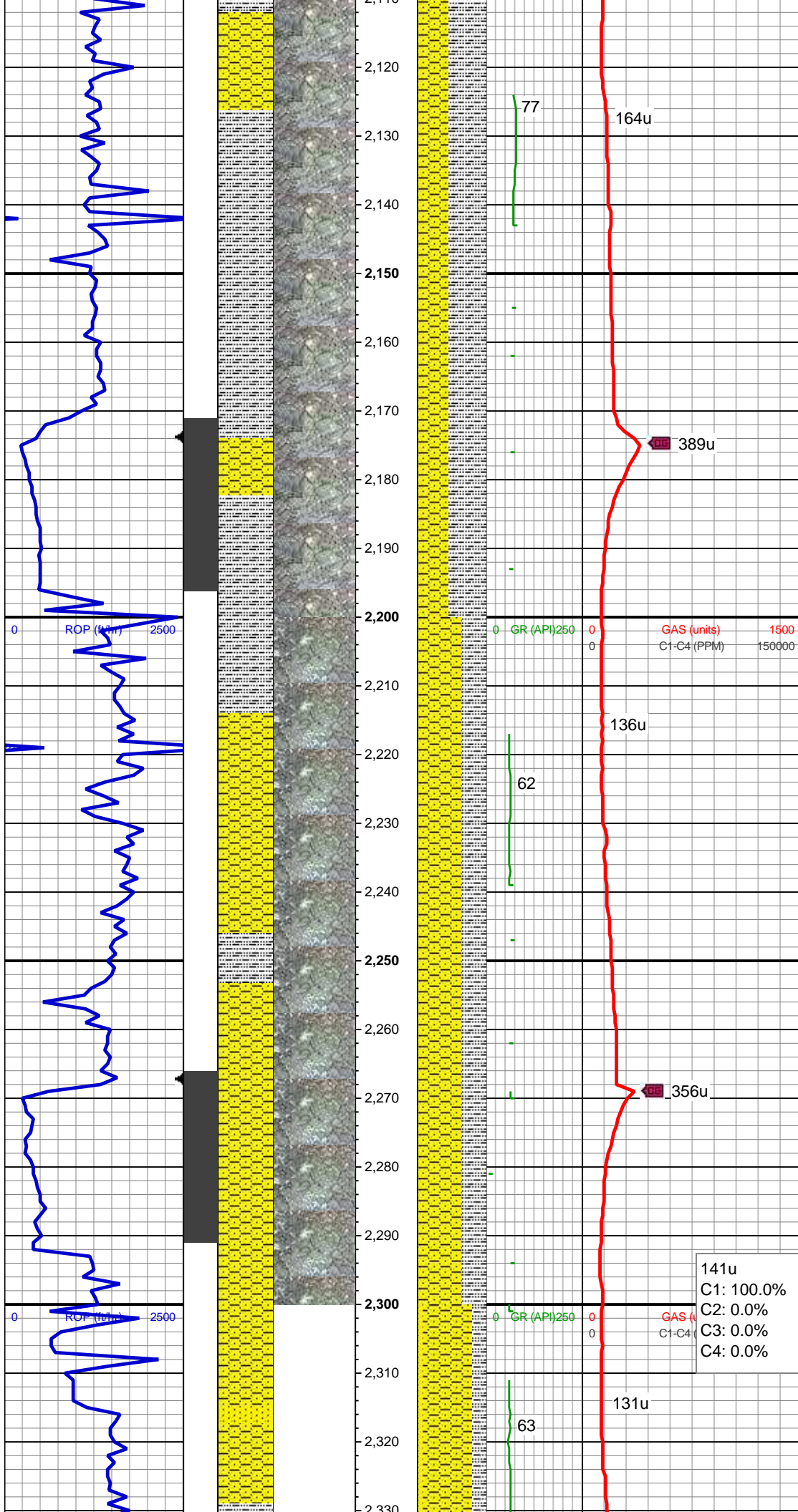
MD: 1,926'
TVD: 1,925.64'
Inclination: 3.52 °
Azimuth: 276.19 °
VS: 0.94'

SLTY SH: gy-dk gy, sb blkly-sb plty, v sft,
sfty tex, arg cmt
SHY SS: ltgy-gy, sb ang, v sft, v f gr, w
rnd, mod srt, p por, arg cmt

MD: 2,021'
TVD: 2,020.36'
Inclination: 5.35 °
Azimuth: 273.4 °
VS: 2.38'

SLTY SH: gy-dk gy, sb blkly-sb plty, v sft,
sfty tex, arg cmt
SHY SS: ltgy-gy, sb ang, v sft, v f gr, w
rnd, mod srt, p por, arg cmt

MD: 2,115'



TVD: 2,113.81'
Inclination: 6.96 °
Azimuth: 262.69 °
VS: 3.1'

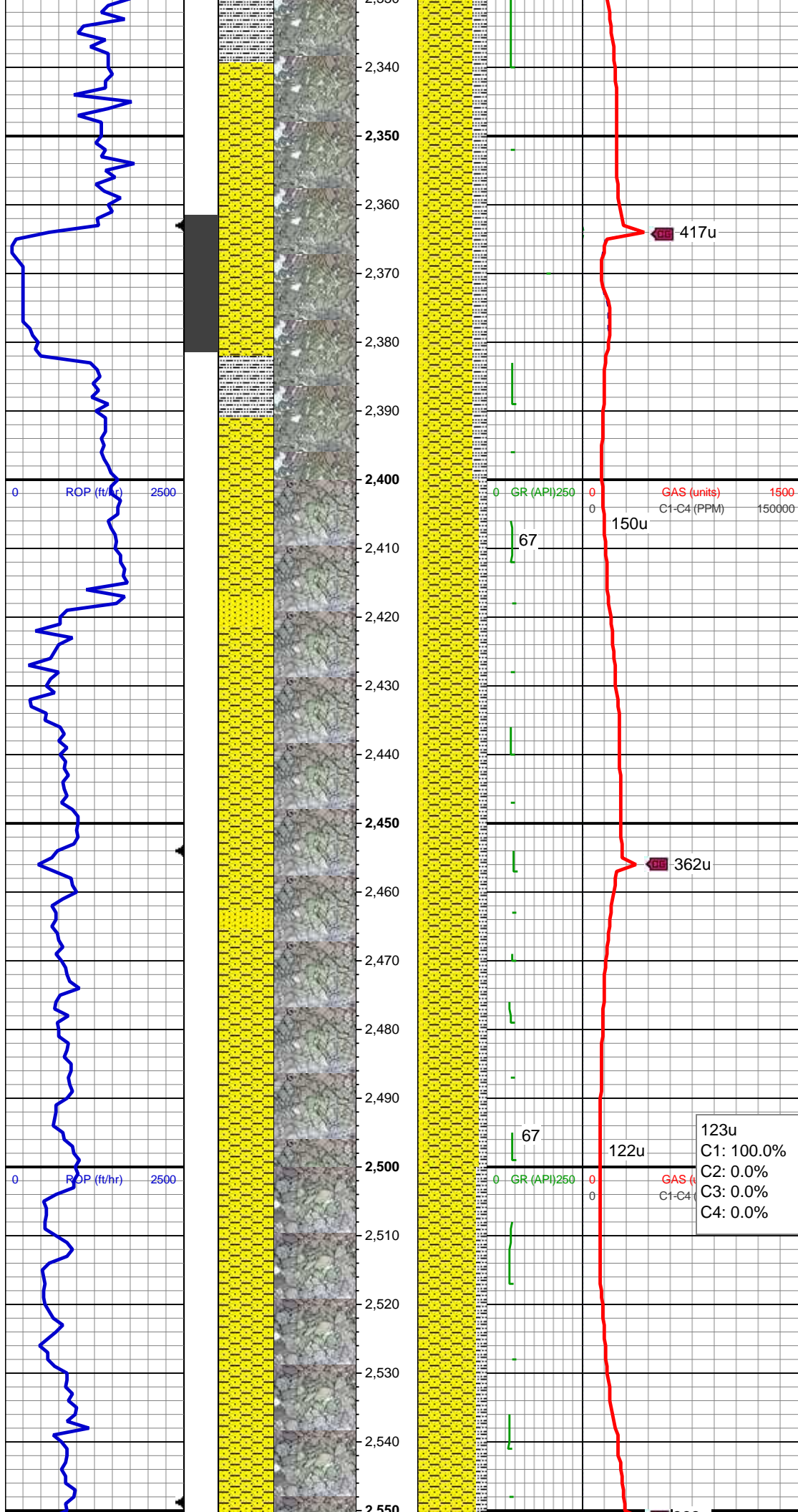
SLTY SH: gy-dk gy, sb blkly-sb plty, v sft, slty tex, arg cmt
SHY SS: ltgy-gy, sb ang, v sft, v f gr, w rnd, mod srt, p por, arg cmt

MD: 2,210'
TVD: 2,207.9'
Inclination: 8.91 °
Azimuth: 263.03 °
VS: 3.03'

SHY SS: ltgy-gy, sb ang, v sft, v f gr, w rnd, mod srt, p por, arg cmt
SLTY SH: gy-dk gy, sb blkly-sb plty, v sft, slty tex, arg cmt

MD: 2,305'
TVD: 2,301.44'
Inclination: 11.2 °
Azimuth: 254.67 °
VS: 1.64'

141u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%



SHY SS: ltgy-gy, sb ang, v sft, v f gr, w
rnd, mod srt, p por, arg cmt
SLTY SH: gy-dk gy, sb blkgy-sb plty, v sft,
sly tex, arg cmt
SS: ltgy-wh-op, sb ang, v fri, f gr - v f gr,
mod rnd, p srt, p por, arg cmt, tr glau,
abnt lith frag

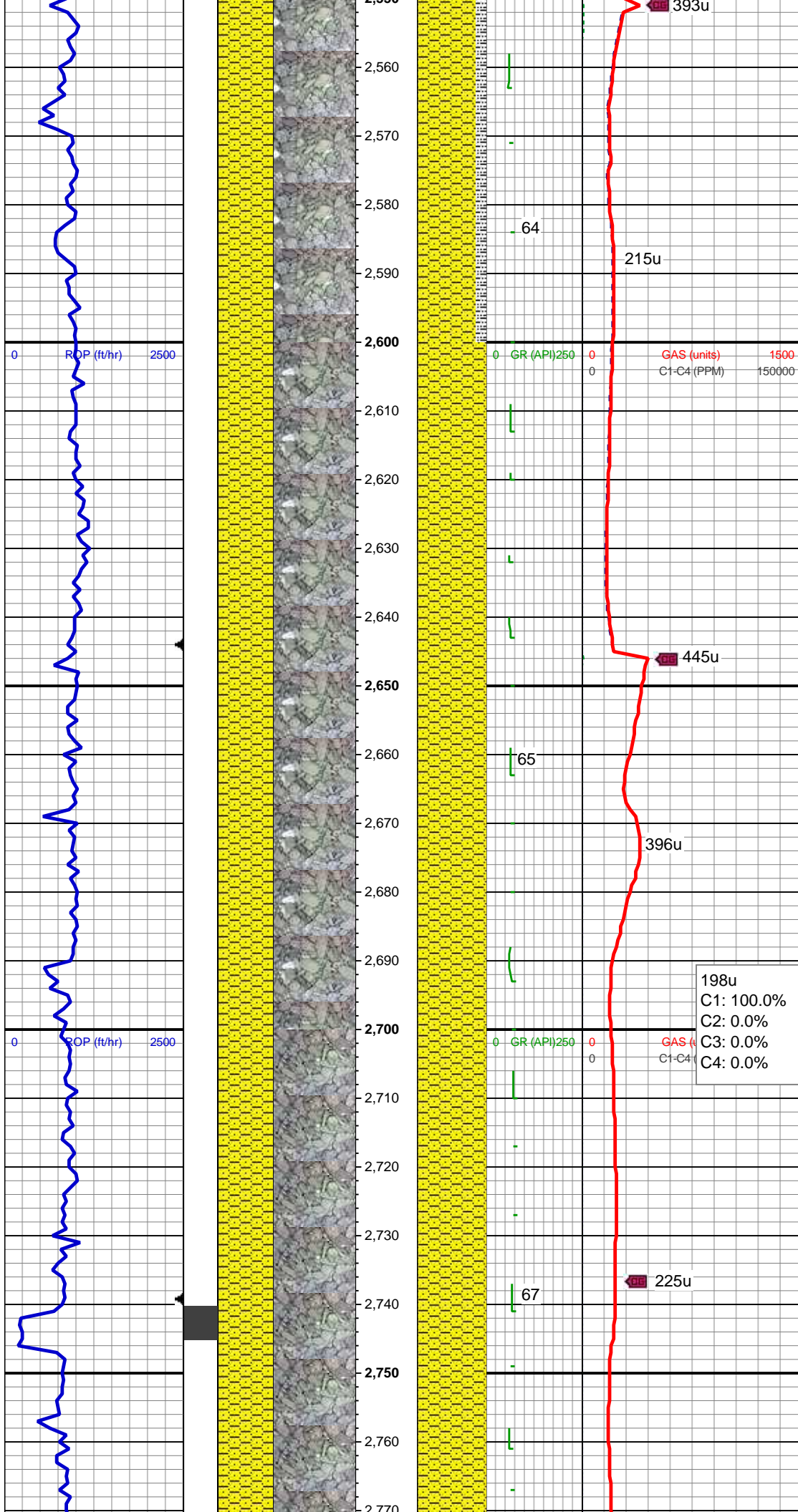
MD: 2,399'
TVD: 2,393.29'
Inclination: 13.3 °
Azimuth: 253.64 °
VS: -1.51'

SHY SS: ltgy-gy, sb ang, v sft, v f gr, w
rnd, mod srt, p por, arg cmt
SLTY SH: gy-dk gy, sb blkgy-sb plty, v sft,
sly tex, arg cmt
SS: ltgy-wh-op, sb ang, v fri, f gr - v f gr,
mod rnd, p srt, p por, arg cmt, tr glau,
abnt lith frag

MD: 2,494'
TVD: 2,485.78'
Inclination: 13.09 °
Azimuth: 255.43 °
VS: -4.78'

123u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%

SHY SS: ltgy-gy, sb ang, v sft, v f gr, w
rnd, mod srt, p por, arg cmt



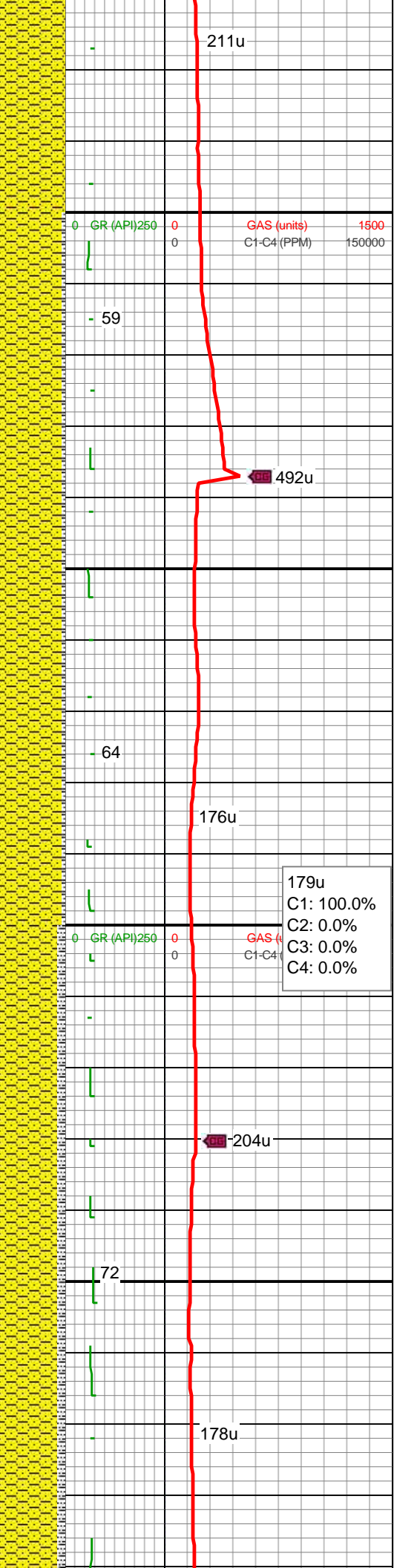
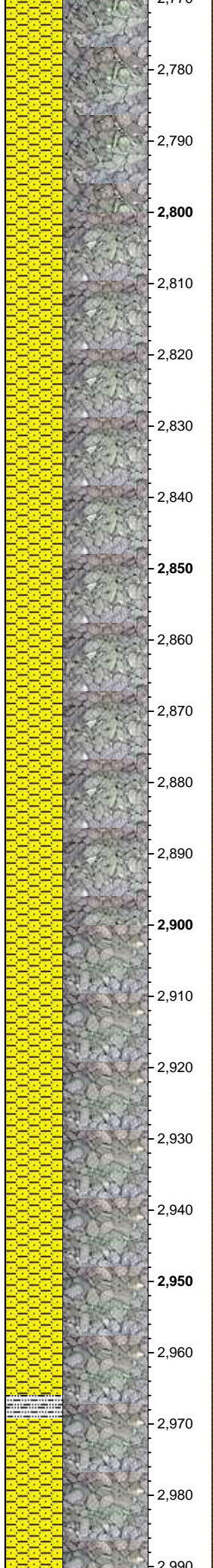
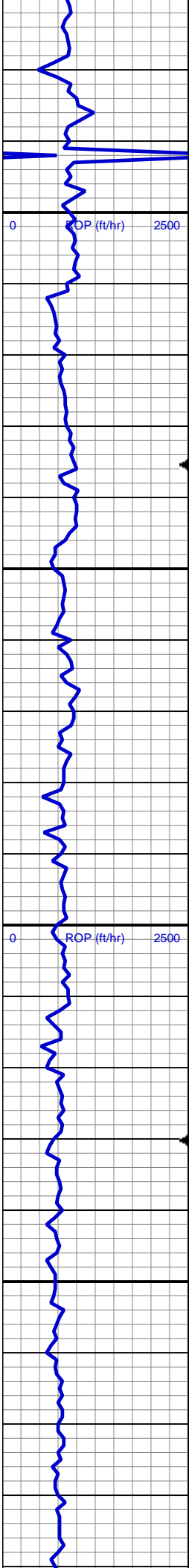
SLTY SH: gy-dk gy, sb blk-y-sb plty, v sft, slty tex, arg cmt

MD: 2,589'
TVD: 2,578.27'
Inclination: 13.35 °
Azimuth: 256.43 °
VS: -7.53'

SHY SS: ltgy-gy, sb ang, v sft, v f gr, w rnd, mod srt, p por, arg cmt

MD: 2,684'
TVD: 2,670.7'
Inclination: 13.36 °
Azimuth: 256.48 °
VS: -10.1'

SHY SS: ltgy-gy, sb ang, v sft, v f gr, w rnd, mod srt, p por, arg cmt

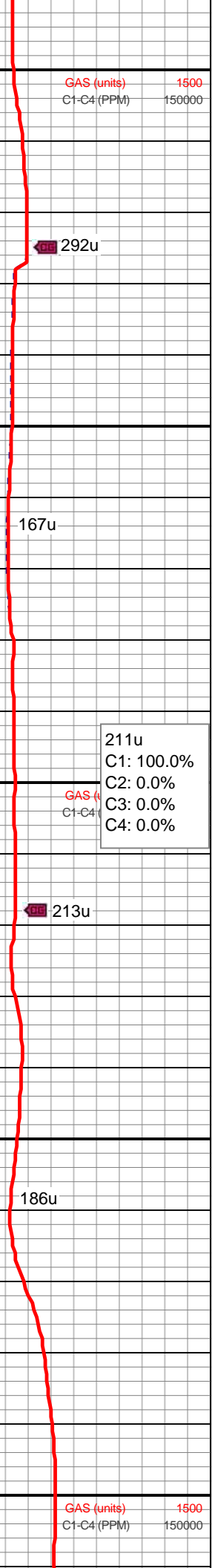
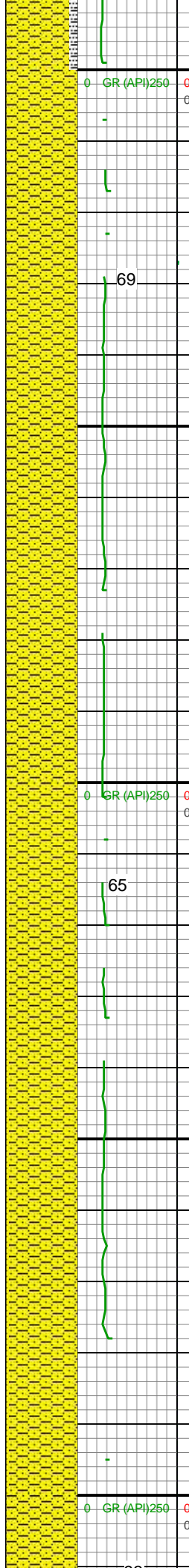
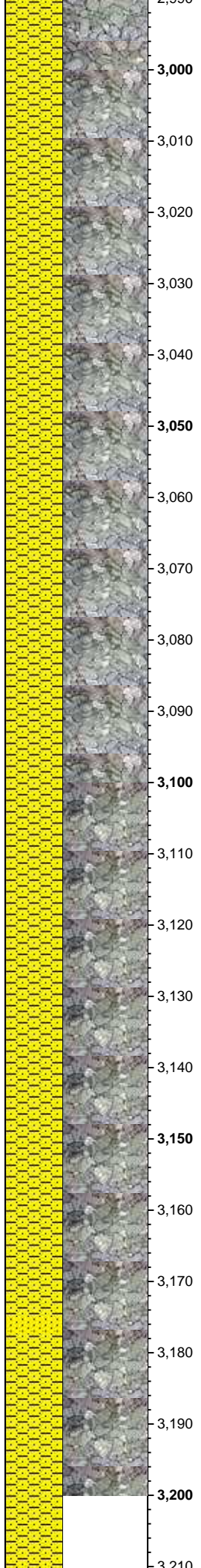
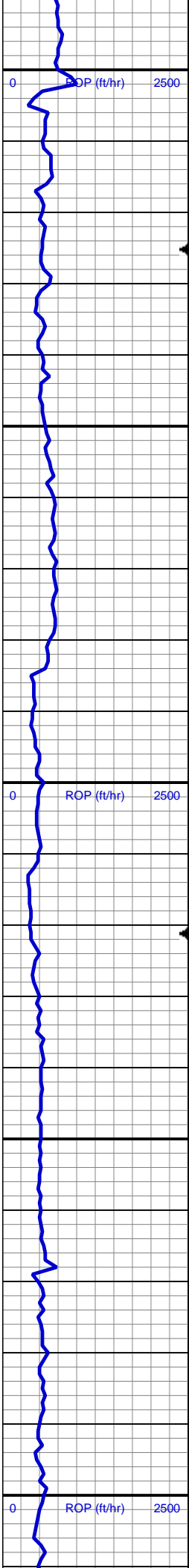


MD: 2,779'
TVD: 2,763.22'
Inclination: 12.87 °
Azimuth: 256.49 °
VS: -12.62'

SHY SS: ltgy-gy, sb ang, v sft, v f gr, w
rnd, mod srt, p por, arg cmt
SLTY SH: gy-dk gy, sb blkgy-sb plty, v sft,
sfty tex, arg cmt

MD: 2,873'
TVD: 2,854.89'
Inclination: 12.71 °
Azimuth: 257.83 °
VS: -14.81'

SHY SS: ltgy-gy, sb ang, v sft, v f gr, w
rnd, mod srt, p por, arg cmt
SLTY SH: gy-dk gy, sb blkgy-sb plty, v sft,
sfty tex, arg cmt



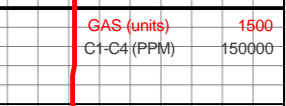
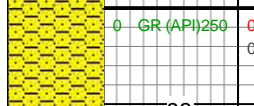
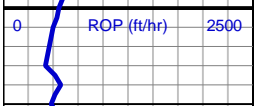
SHY SS: ltgy-gy, sb ang, v sft, v f gr, w
rnd, mod srt, p por, arg cmt

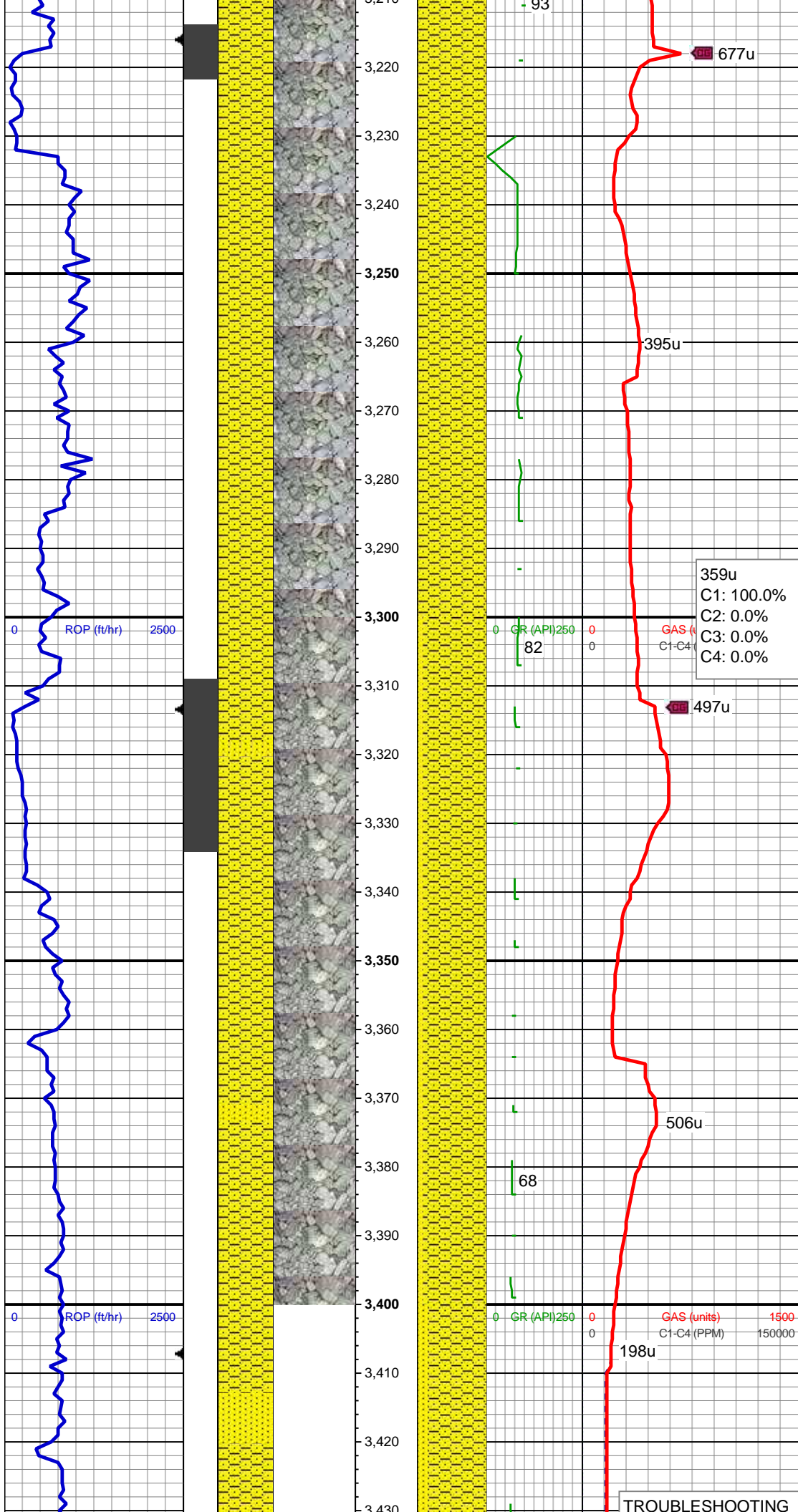
MD: 3,063'
TVD: 3,040.54'
Inclination: 11.85 °
Azimuth: 257.77 °
VS: -18.61'

211u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%

SHY SS: ltgy-gy, sb ang, v sft, v f gr, w
rnd, mod srt, p por, arg cmt
SS: ltgy-wh-op, sb ang, v fri, f gr - v f gr,
mod rnd, p srt, p por, arg cmt, occ glau,
tr lith frag

MD: 3,158'
TVD: 3,133.58'
Inclination: 11.45 °
Azimuth: 259.77 °
VS: -20.1'





SHY SS: ltgy-gy, sb ang, v sft, v f gr, w
rnd, mod srt, p por, arg cmt

MD: 3,253'
TVD: 3,226.81'
Inclination: 10.72 °
Azimuth: 260.42 °
VS: -21.09'

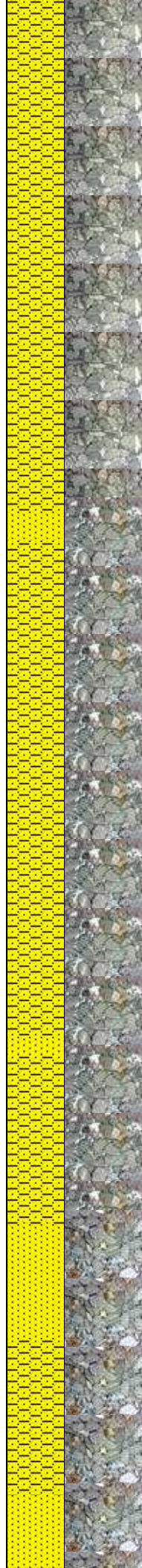
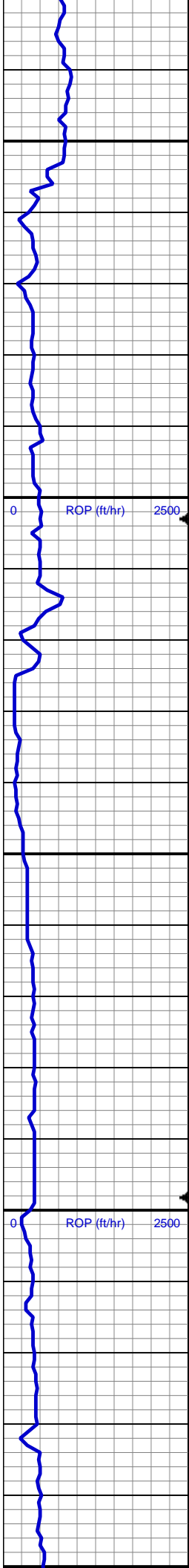
359u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%

MD: 3,347'
TVD: 3,318.86'
Inclination: 12.62 °
Azimuth: 256.61 °
VS: -22.69'

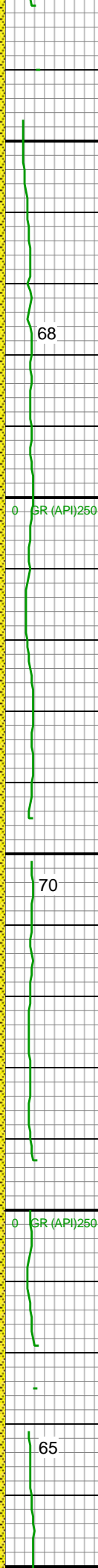
SHY SS: ltgy-gy, sb ang, v sft, v f gr, w
rnd, mod srt, p por, arg cmt
SS: ltgy-wh-op, sb ang, v fri, f gr - v f gr,
mod rnd, p srt, p por, arg cmt, occ glau,
tr lith frag

TROUBLESHOOTING

MD: 3,442'
TVD: 3,411.51'



3,430
3,440
3,450
3,460
3,470
3,480
3,490
3,500
3,510
3,520
3,530
3,540
3,550
3,560
3,570
3,580
3,590
3,600
3,610
3,620
3,630
3,640
3,650



SYSTEM

MD: 3,411.34'
TVD: 3,411.34'
Inclination: 12.76 °
Azimuth: 255.86 °
VS: -25.22'

SHY SS: ltgy-gy, sb ang, v sft, v f gr, w
rnd, mod srt, p por, arg cmt
SS: ltgy-wh-op, sb ang, v fri, f gr - v f gr,
mod rnd, p srt, p por, arg cmt, occ glau,
abnt lith frag

495u

68

619u
C1: 96.8%
C2: 1.9%
C3: 0.9%
C4: 0.4%

683u

WT IN 9.20+ OUT 9.20+
VIS IN 33/ OUT 33

MD: 3,537'
TVD: 3,504.18'
Inclination: 12.86 °
Azimuth: 255.4 °
VS: -28'

SHY SS: ltgy-gy, sb ang, v sft, v f gr, w
rnd, mod srt, p por, arg cmt
SS: ltgy-wh-op, sb ang, v fri, f gr - v f gr,
mod rnd, p srt, p por, arg cmt, abnt glau,
abnt lith frag

70

463u

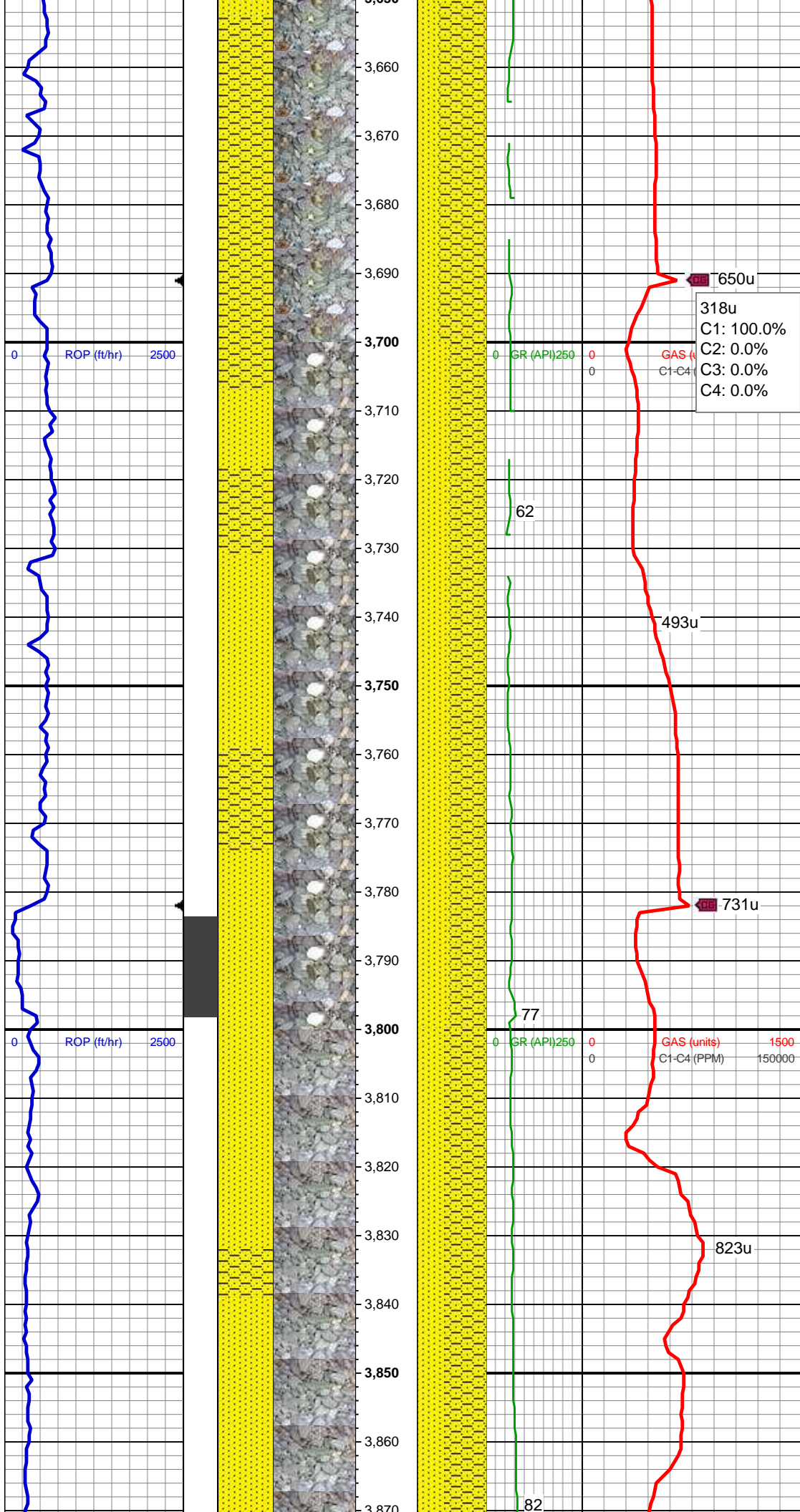
WT IN 9.20/ OUT 9.20
VIS IN 39/ OUT 39

582u

65

461u

SHY SS: ltgy-gy, sb ang, v sft, v f gr, w
rnd, mod srt, p por, arg cmt
SS: ltgy-wh-op, sb ang, v fri, f gr - v f gr



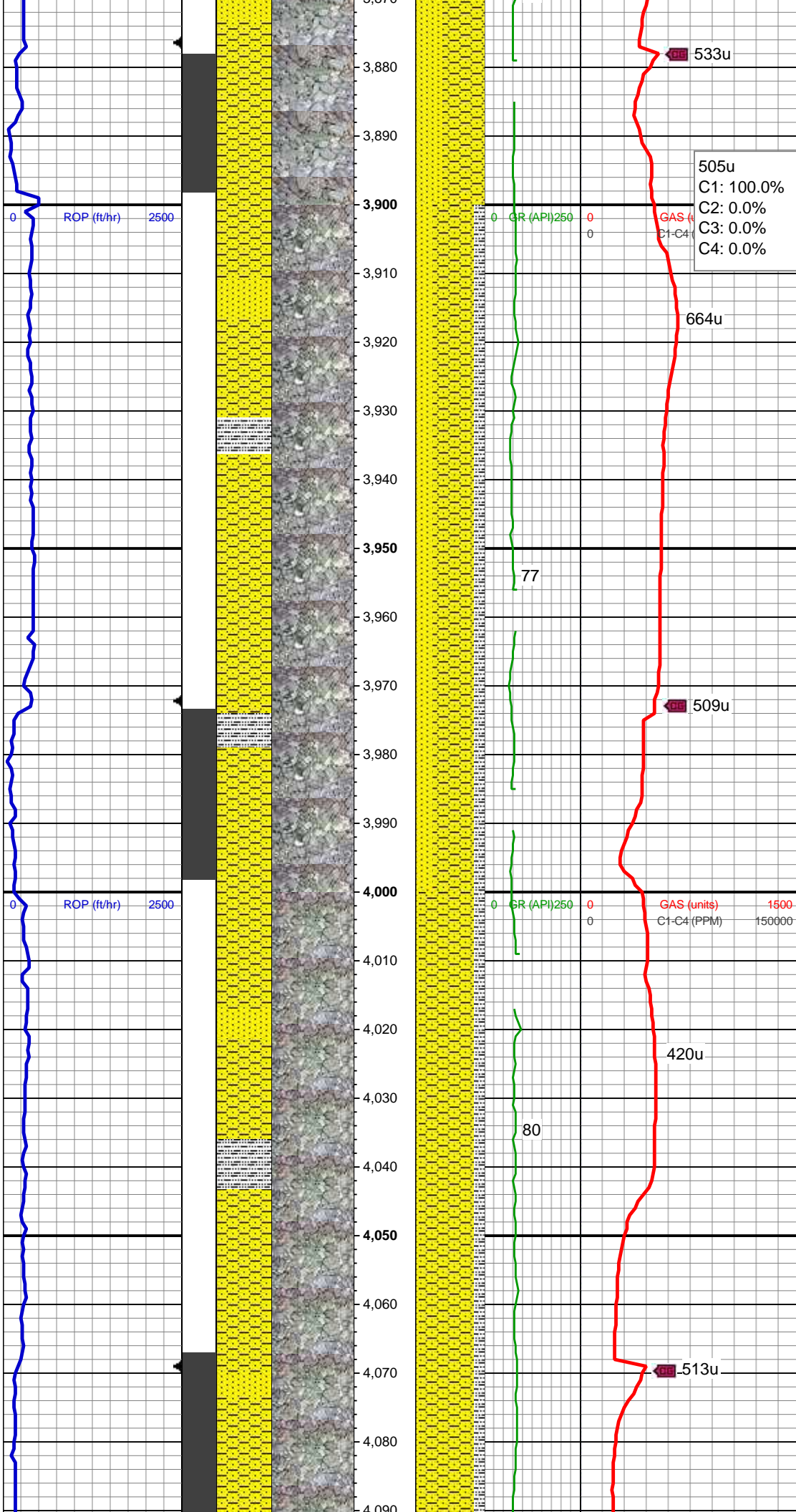
SS: ltgy-wh-op, sb ang, v fri, f gr - v f gr,
mod rnd, p srt, p por, arg cmt, abnt glau,
abnt lith frag

MD: 3,727'
TVD: 3,689.27'
Inclination: 13.41 °
Azimuth: 253.64 °
VS: -34.75'

SHY SS: ltgy-gy, sb ang, v sft, v f gr, w
rnd, mod srt, p por, arg cmt
SS: ltgy-wh-op, sb ang, v fri, f gr - v f gr,
mod rnd, p srt, p por, arg cmt, abnt glau,
abnt lith frag

MD: 3,822'
TVD: 3,781.87'
Inclination: 12.41 °
Azimuth: 255.03 °
VS: -38.03'

SHY SS: ltgy-gy, sb ang, v sft, v f gr, w
rnd, mod srt, p por, arg cmt
SS: ltgy-wh-op, tr s&p, sb ang, v fri, f gr -
v f gr, mod rnd, p srt, p por, arg cmt, abnt
glau, abnt lith frag



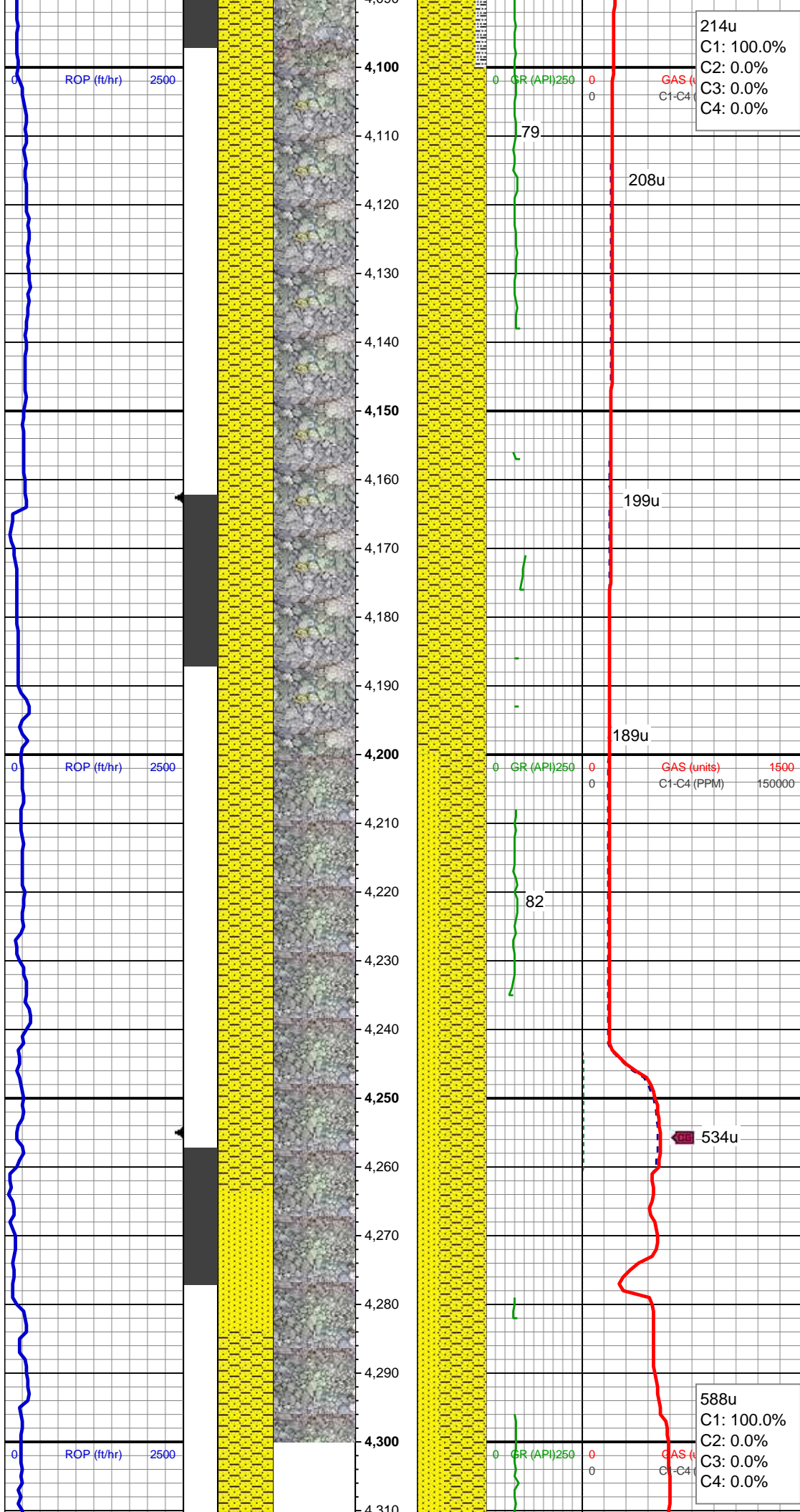
MD: 3,917'
TVD: 3,874.85'
Inclination: 11.22 °
Azimuth: 255.18 °
VS: -40.77'

SHY SS: ltgy-gy, sb ang, v sft, v f gr, w
rnd, mod srt, p por, arg cmt
SS: ltgy-wh-op, sb ang, v fri, f gr - v f gr,
mod rnd, p srt, p por, arg cmt, occ glau,
tr lith frag
SLTY SH: gy-dk gy, sb blkly-sb plty, v sft,
sly tex, arg cmt

WT IN 9.20/ OUT 9.20
VIS IN 41/ OUT 41

MD: 4,011'
TVD: 3,967.34'
Inclination: 9.35 °
Azimuth: 249.92 °
VS: -43.81'

SHY SS: ltgy-gy, sb ang, v sft, v f gr, w
rnd, mod srt, p por, arg cmt
SLTY SH: gy-dk gy, sb blkly-sb plty, v sft,
sly tex, arg cmt
SS: ltgy-wh-op, sb ang, v fri, f gr - v f gr,
mod rnd, p srt, p por, arg cmt, occ glau,
tr lith frag



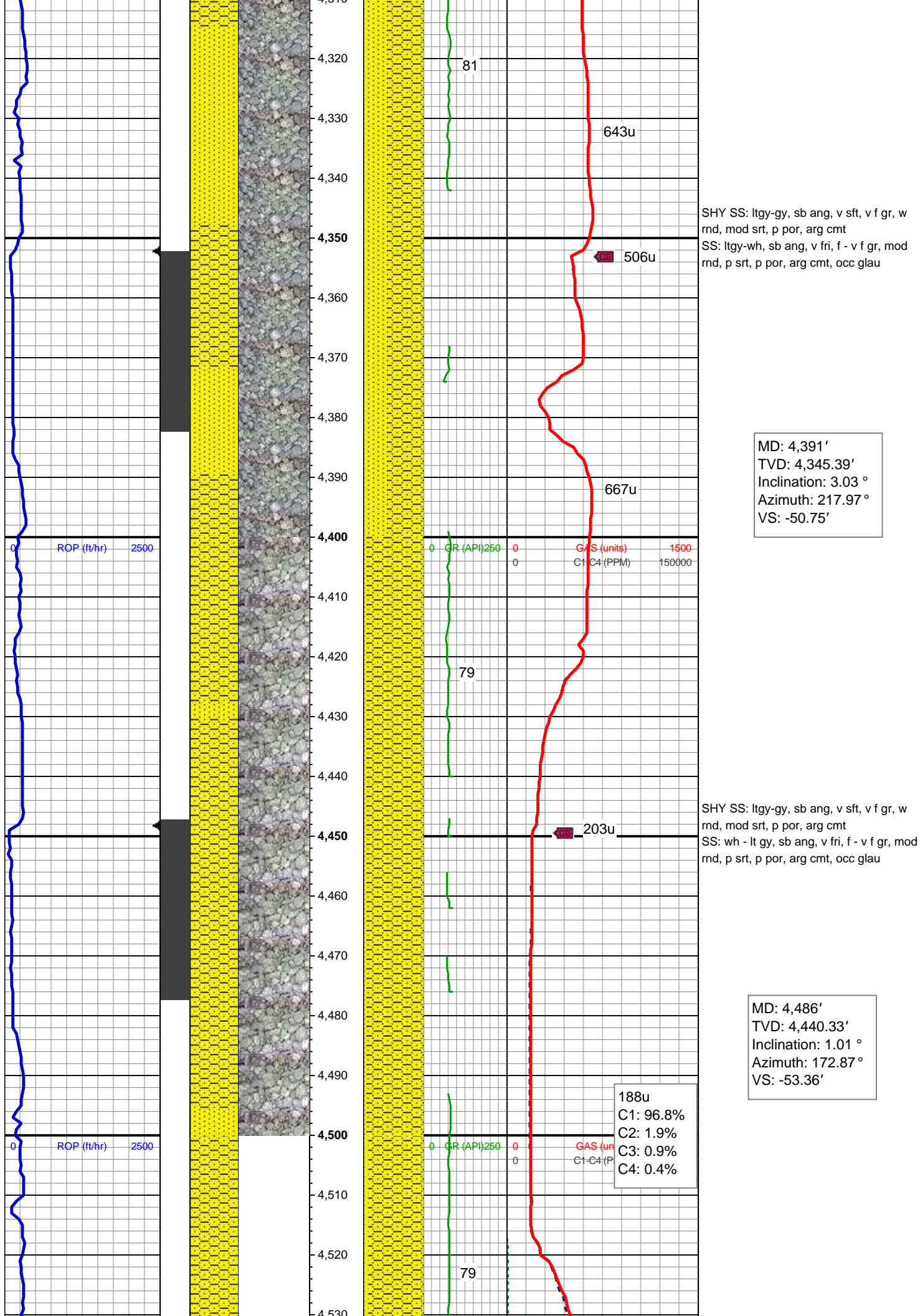
MD: 4,106'
TVD: 4,061.37'
Inclination: 6.96 °
Azimuth: 257.72 °
VS: -46.13'

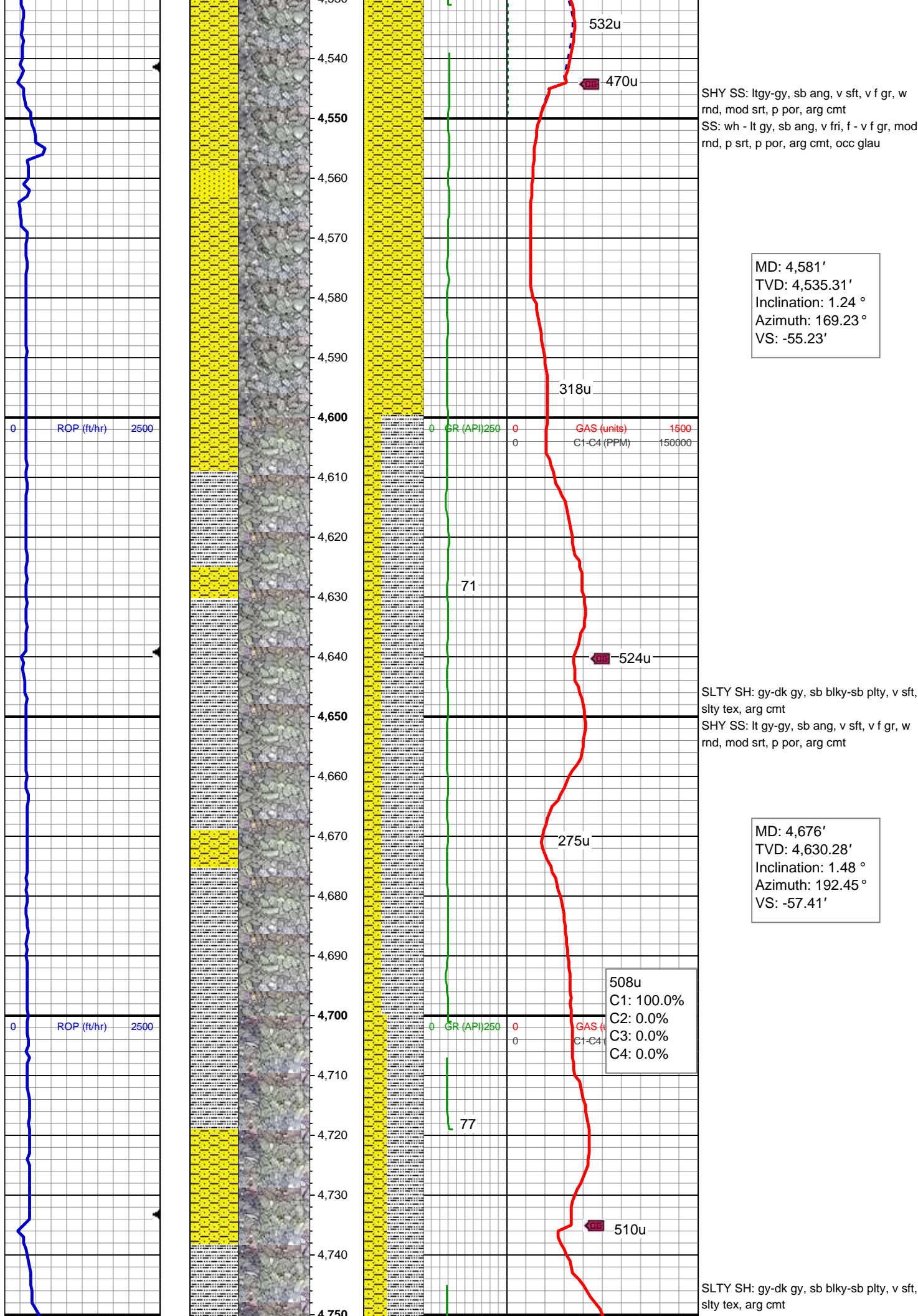
SHY SS: ltgy-gy, sb ang, v sft, v f gr, w
rnd, mod srt, p por, arg cmt, occ glau

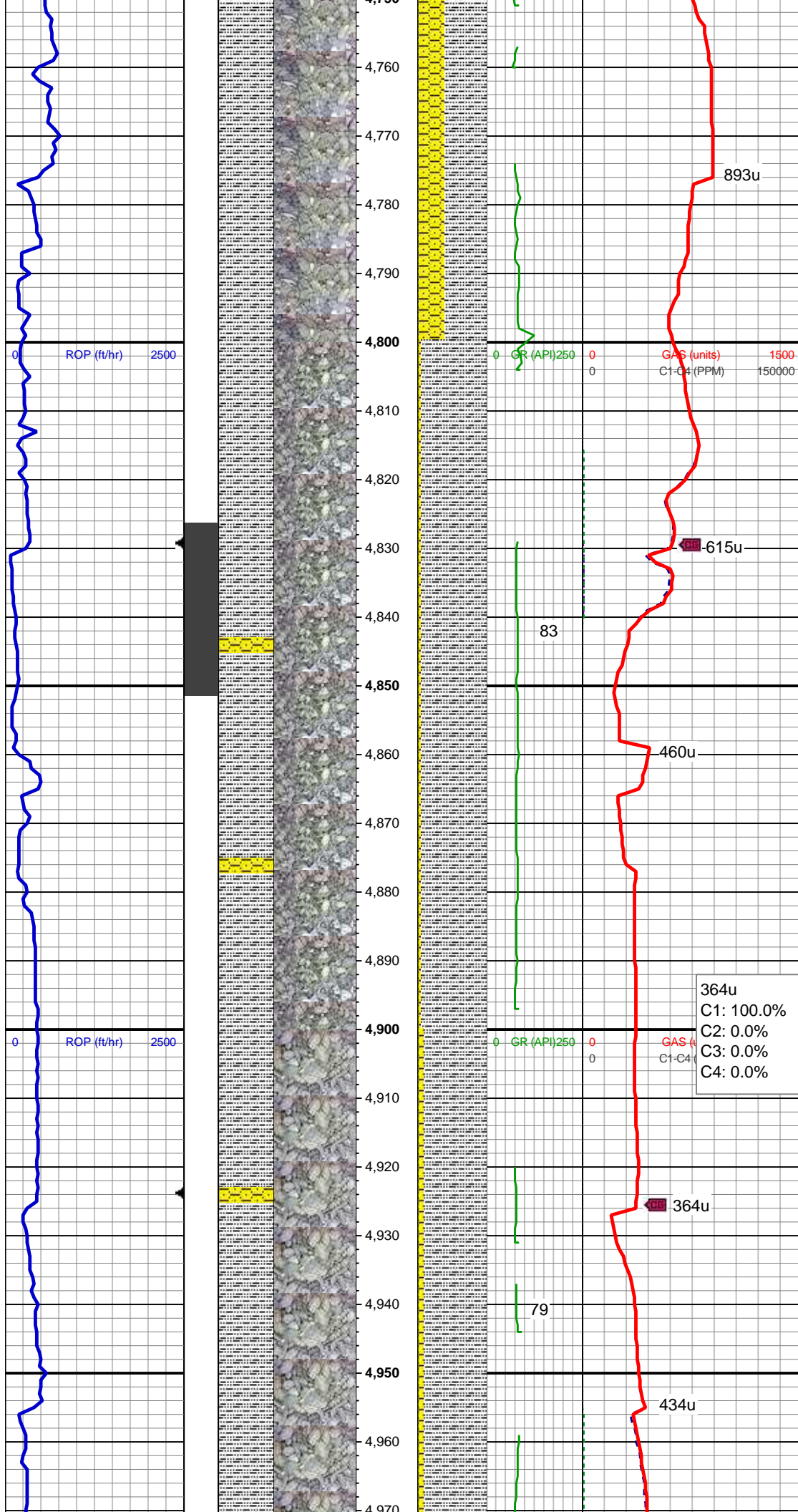
MD: 4,201'
TVD: 4,155.88'
Inclination: 4.72 °
Azimuth: 255.27 °
VS: -47.22'

SHY SS: ltgy-gy, sb ang, v sft, v f gr, w
rnd, mod srt, p por, arg cmt
SS: ltgy-wh, sb ang, v fri, f - v f gr, mod
rnd, p srt, p por, arg cmt, occ glau

MD: 4,296'
TVD: 4,250.57'
Inclination: 4.39 °
Azimuth: 253.64 °
VS: -48.36'







MD: 4,770'
TVD: 4,724.26'
Inclination: 1.14 °
Azimuth: 192.85 °
VS: -59.44'

SLTY SH: gy-dk gy, sb blkly-sb plty, v sft, slty tex, arg cmt
SHY SS: lt gy-gy, sb ang, v sft, v f gr, w rnd, mod srt, p por, arg cmt

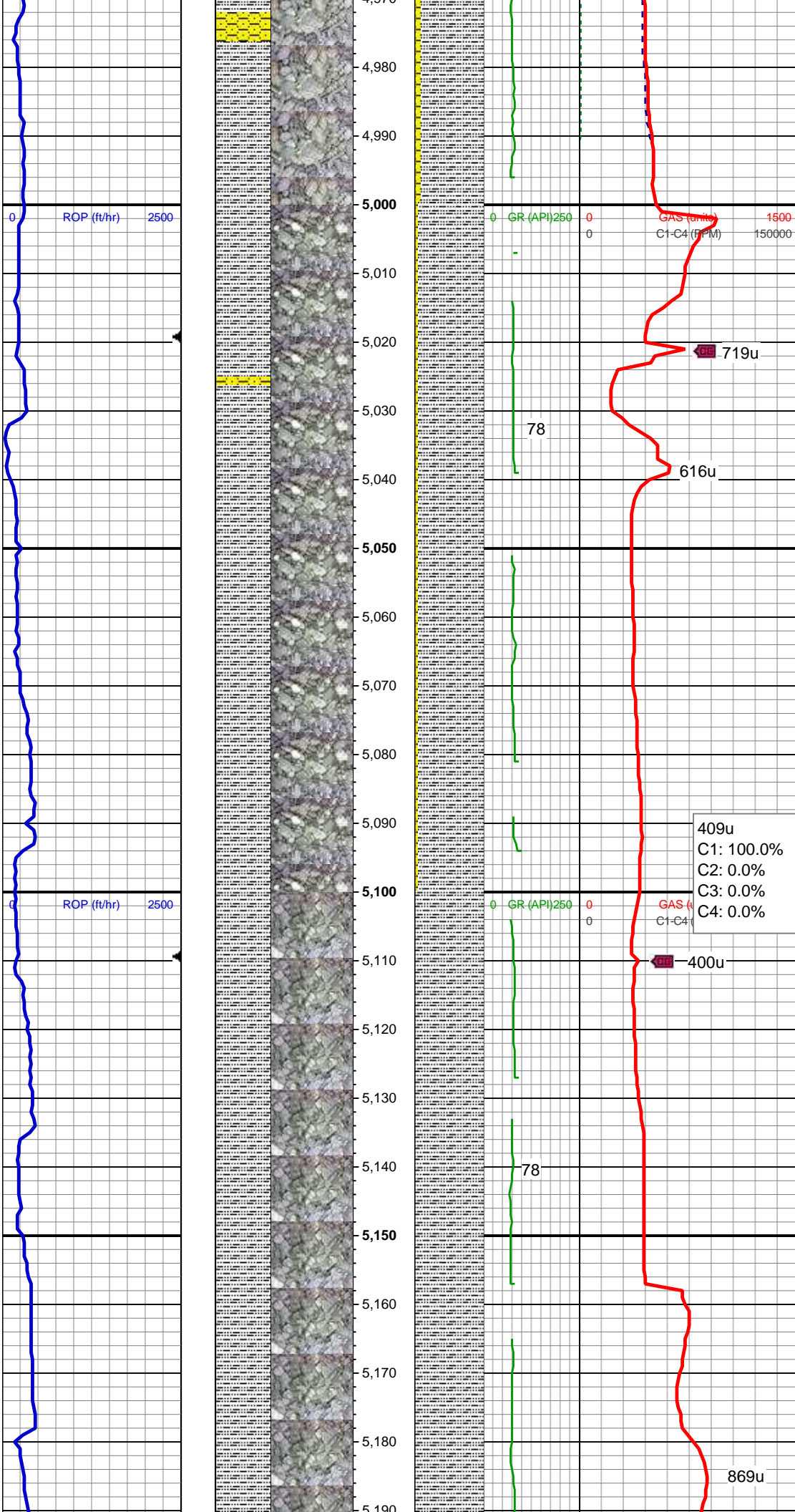
MD: 4,865'
TVD: 4,819.25'
Inclination: 1.71 °
Azimuth: 28.76 °
VS: -59.18'

364u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%

SLTY SH: gy-dk gy, sb blkly-sb plty, v sft, slty tex, arg cmt
SHY SS: lt gy-gy, sb ang, v sft, v f gr, w rnd, mod srt, p por, arg cmt

MD: 4,960'
TVD: 4,914.2'
Inclination: 1.71 °
Azimuth: 14.48 °
VS: -56.71'

VS: -56.71°



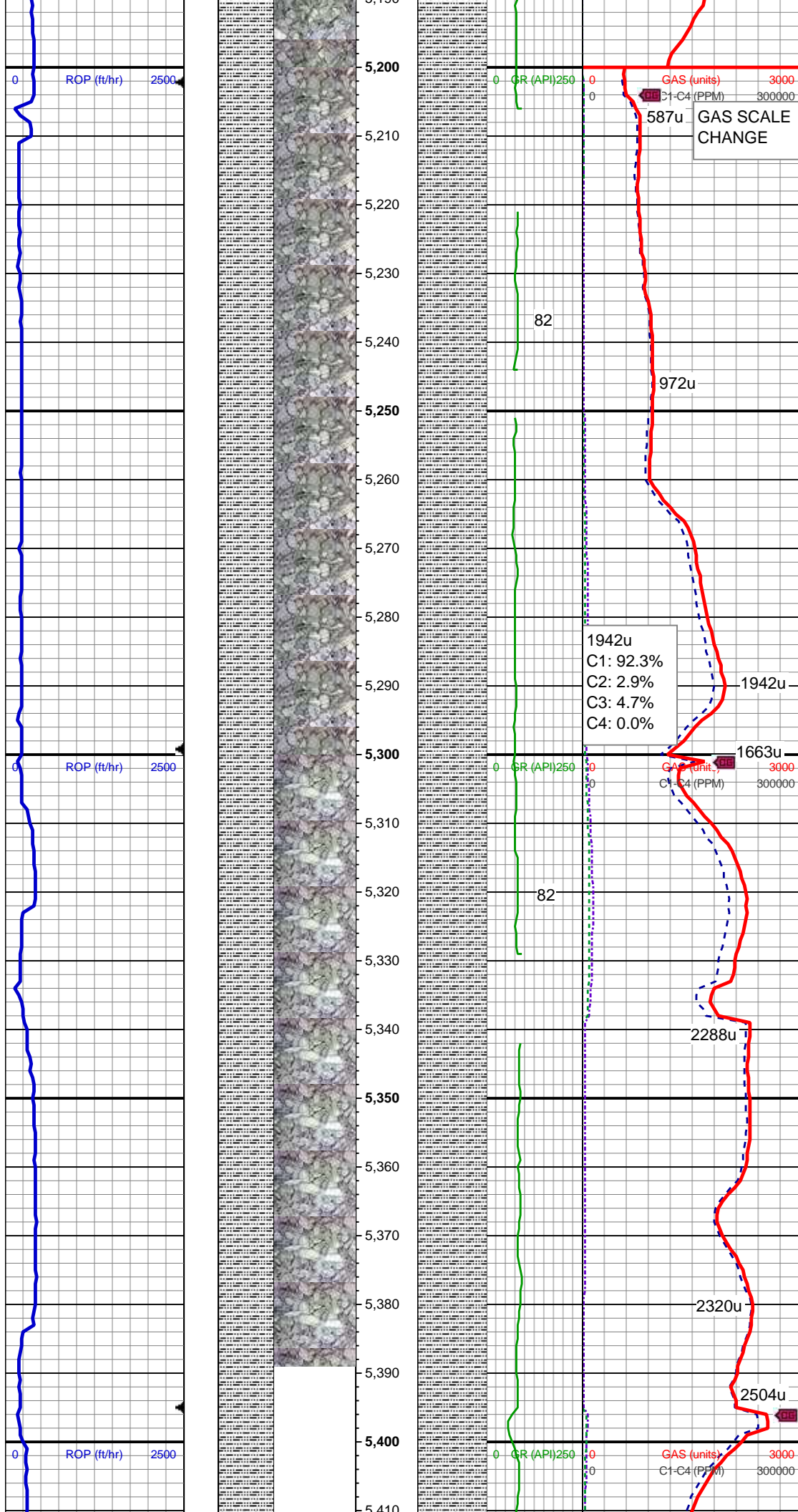
WT IN 9.6+ OUT 9.80
VIS IN 34/ OUT 34

SLTY SH: gy-dk gy, sb blkly-sb plty, v sft,
sly tex, arg cmt
SHY SS: lt gy-gy, sb ang, v sft, v f gr, w
rnd, mod srt, p por, arg cmt

MD: 5,055'
TVD: 5,009.17'
Inclination: 1.45 °
Azimuth: 7.68 °
VS: -54.22'

409u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%

SLTY SH: gy-dk gy, sb blkly-sb plty, v sft,
sly tex, arg cmt



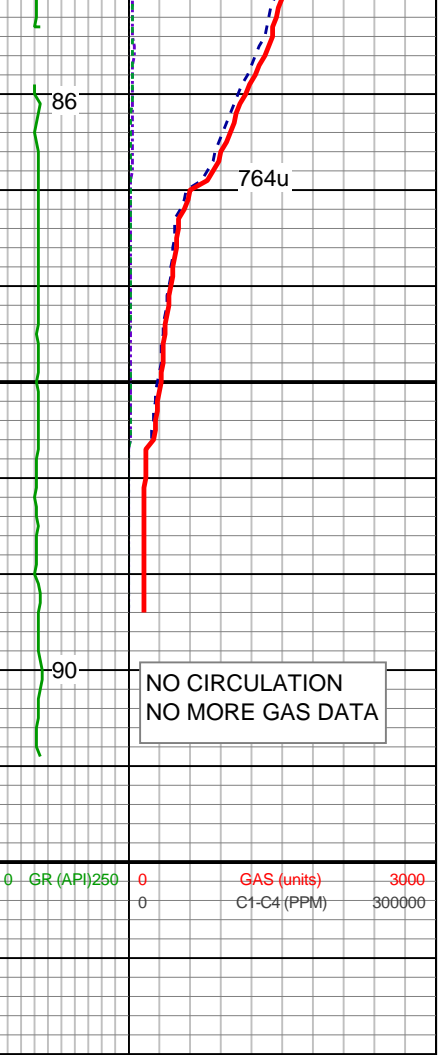
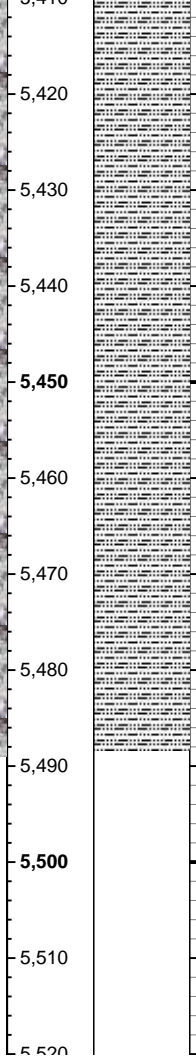
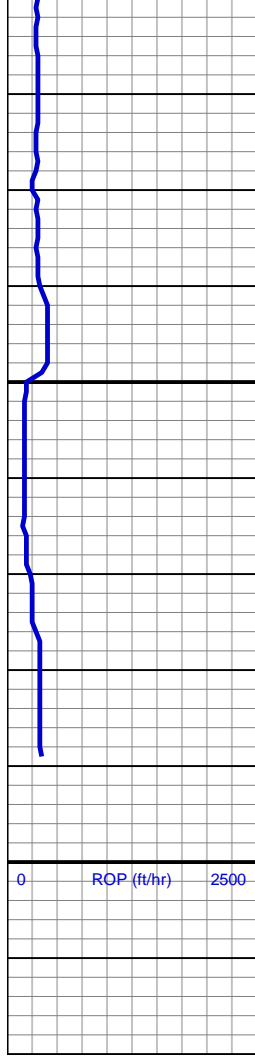
MD: 5,245'
TVD: 5,199.11'
Inclination: 1.33 °
Azimuth: 359.17 °
VS: -49.69'

SLTY SH: gy-dk gy, sb blkly-sb plty, v sft, slty tex, arg cmt, tr ss

MD: 5,339'
TVD: 5,293.09'
Inclination: 1.37 °
Azimuth: 1.63 °
VS: -47.5'

SLTY SH: gy-dk gy, sb blkly-sb plty, v sft, slty tex, arg cmt, tr fos frags

WT IN 9.80/ OUT 10.00
VIS IN 38/ OUT 38



MD: 5,434'
TVD: 5,388.06'
Inclination: 1.23 °
Azimuth: 355.56 °
VS: -45.36'

SLTY SH: gy-dk gy, sb blkly-sb plty, v sft,
sly tex, arg cmt, tr ss

TD @ 5489' MD
06/19/2014 @ 11:45 PM

LOG CONTINUES ON MPlot
"TRISHA LC29-75HNB HORZ"

NO CIRCULATION
NO MORE GAS DATA

0 GR (API) 250 0 GAS (units) 3000
0 C1-C4 (PPM) 300000