

COLUMBINE LOGGING

Scale: 5" / 100'
Measured Depth Log

Well Name ROHN STATE LD03-62HN

Location SESE SEC 4 T9N R58W

State COLORADO

County WELD

Country USA

Rig Number H&P 273

API Number 05-123-37475

Field WILDCAT

Region DJ BASIN

Drilling Completed 9/16/2014

Spud Date 9/14/2014

Surface Coordinates 737' FSL; 330' FEL

Bottom Hole Coordinates 660' FFSLL; 660' FFELL

Ground Elevation 4706'

K.B. Elevation 4730'

Logged Interval 1228' To 4911'

Total Depth 4911'

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
- Q INTEROOLITIC

MOLDIC

ORGANIC

P PINPOINT

V 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

E EARTHY

FINELYXLN

GRAINSTONE

L LITHOGRAPHIC

MX MICROXLN

MS MUDSTONE

PS PACKSTONE

WS WACKESTONE

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

F FOSSIL

GASTROPOD

INOCERAMUS

OOLITE

OSTRACOD

PELECYPOD

PELLET

ANHYDRITIC

ARGILLACEOUS

ARGILLITE GRAIN

BENTONITE

BITUMENOUS SUBSTANCE

BRECCIA FRAGMENTS

CAL CAREOUS

FERRUGINOUS

GLAUCONITE

GYPSIFEROUS

HEAVY MINERAL

KAOLIN

MARLSTONE

MINERAL CRYSTALS

TUFFACEOUS

Stringer

- ANHYDRITE STRINGER
- BENTONITE STRINGER
- COAL STRINGER
- DOLOMITE STRINGER

↑ BRYOZOA
🐙 CEPHALOPOD
🪸 CORAL
🪼 CRINOID
🐚 ECHINOID
🐟 FISH
🔍 FORAMINIFERA

🔍 PISOLITE
🌿 PLANT REMAINS
🍄 PLANT SPORES
🦂 SCAPHOPOD
🪨 STROMATOPOROID

Minerals

■ CARBONACEOUS FLAKES
▲ CHTDK
△ CHTLT
— COAL - THIN BEDS
🔍 DOLOMITIC
+ FELDSPAR
● FERRUGINOUS PELLET

🔍 NODULES
● PHOSPHATE PELLETS
🔍 PYRITE
🔍 SALT CAST
· SANDY
🔍 SILICEOUS
+ SILTY

🔍 GYPSUM STRINGER
🔍 LIMESTONE STRINGER
🔍 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
X X X X X X 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 Garrett Luallen

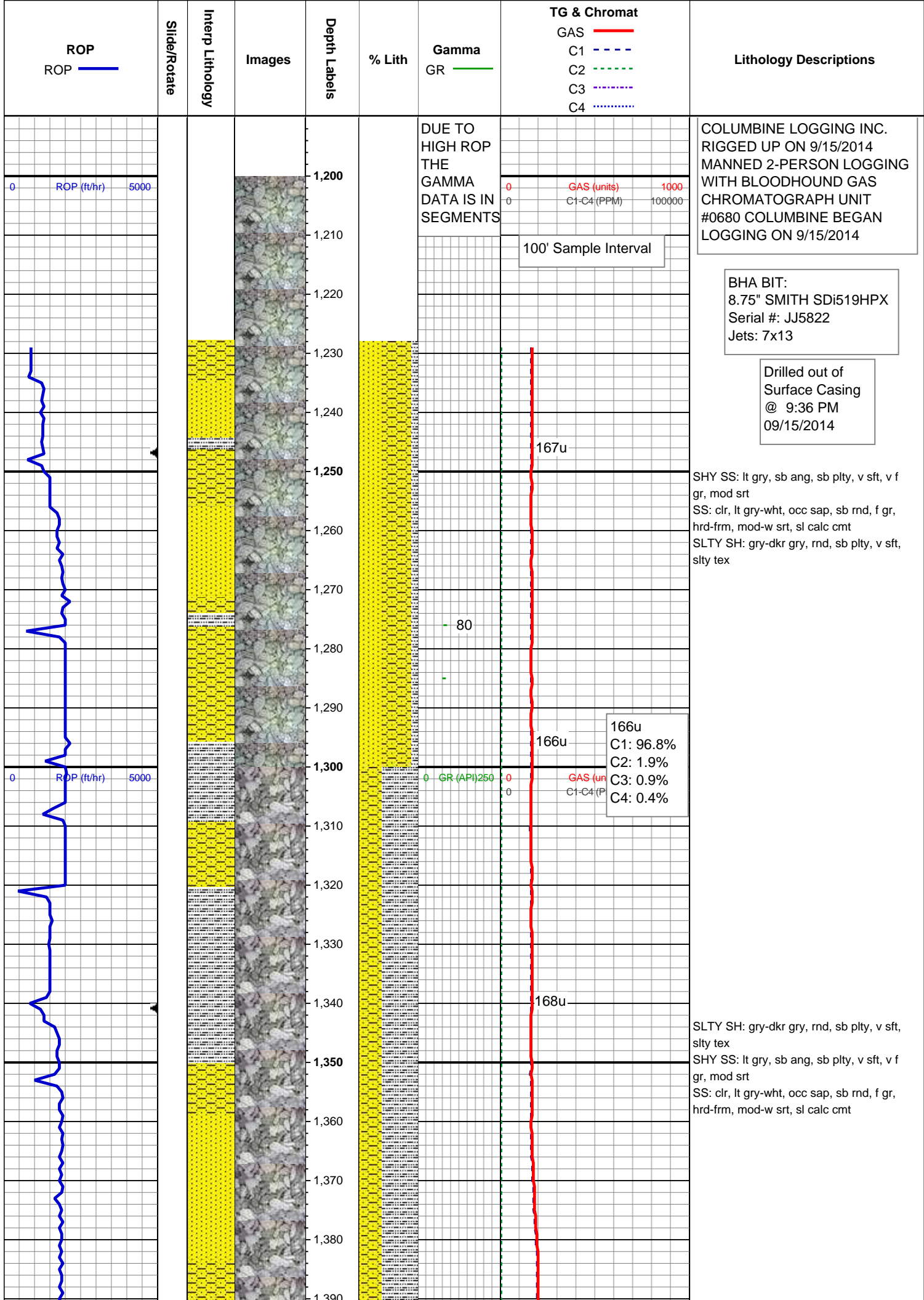
Wellsite Geological Services Provided By Columbine Logging Inc.

Geologist

Name RENEE CLACKER

Company NOBLE ENERGY INC.

Address 1625 Broadway Suite 2200
Denver, CO 80202



DUE TO
HIGH ROP
THE
GAMMA
DATA IS IN
SEGMENTS

100' Sample Interval

167u

80

166u

166u
C1: 96.8%
C2: 1.9%
C3: 0.9%
C4: 0.4%

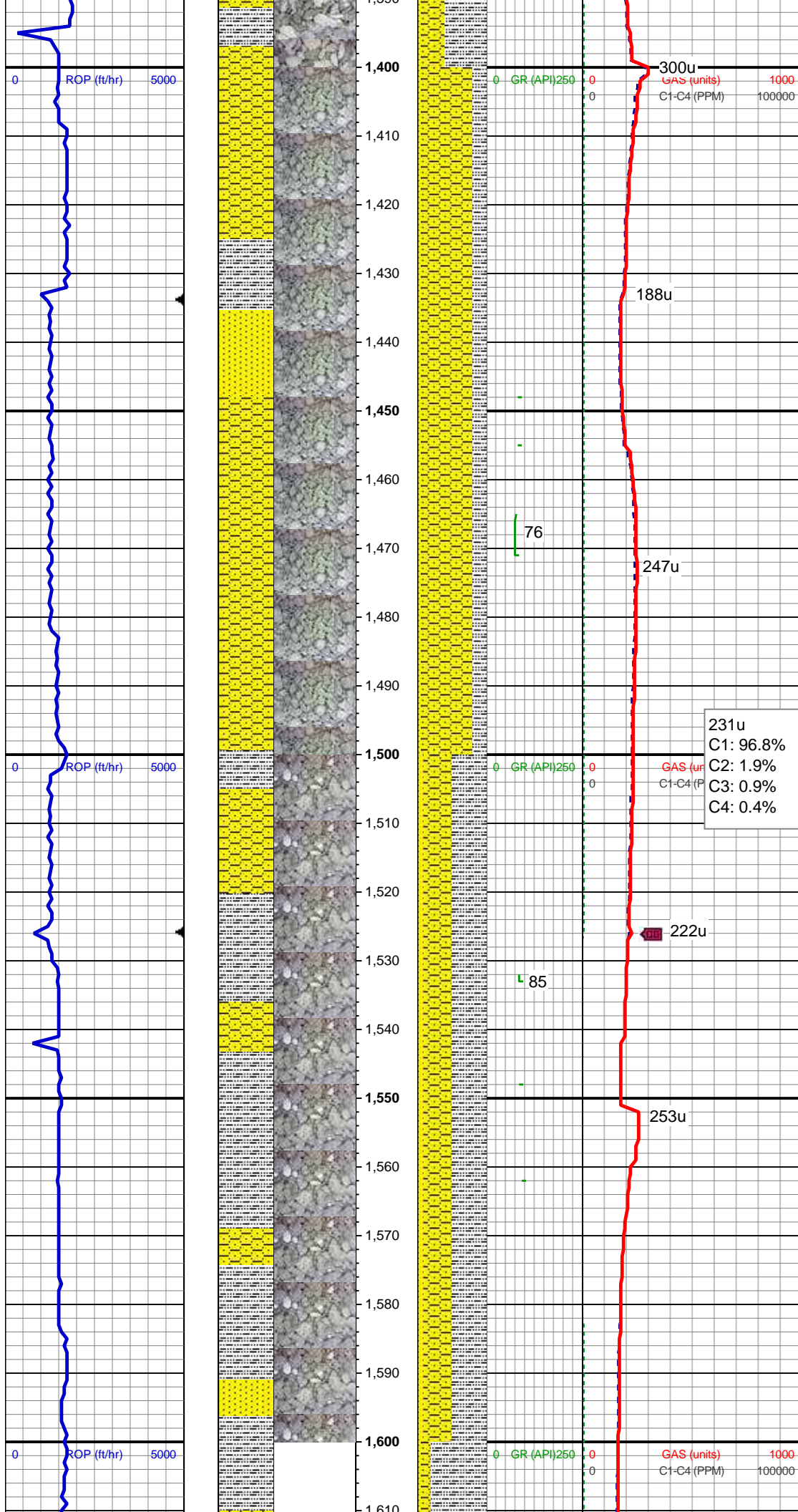
GR (API) 250

GAS (units)
C1-C4 (PPM)

168u

SHY SS: lt gry, sb ang, sb plty, v sft, v f
gr, mod srt
SS: clr, lt gry-wht, occ sap, sb rnd, f gr,
hrd-frm, mod-w srt, sl calc cmt
SLTY SH: gry-dkr gry, rnd, sb plty, v sft,
sfty tex

SLTY SH: gry-dkr gry, rnd, sb plty, v sft,
sfty tex
SHY SS: lt gry, sb ang, sb plty, v sft, v f
gr, mod srt
SS: clr, lt gry-wht, occ sap, sb rnd, f gr,
hrd-frm, mod-w srt, sl calc cmt



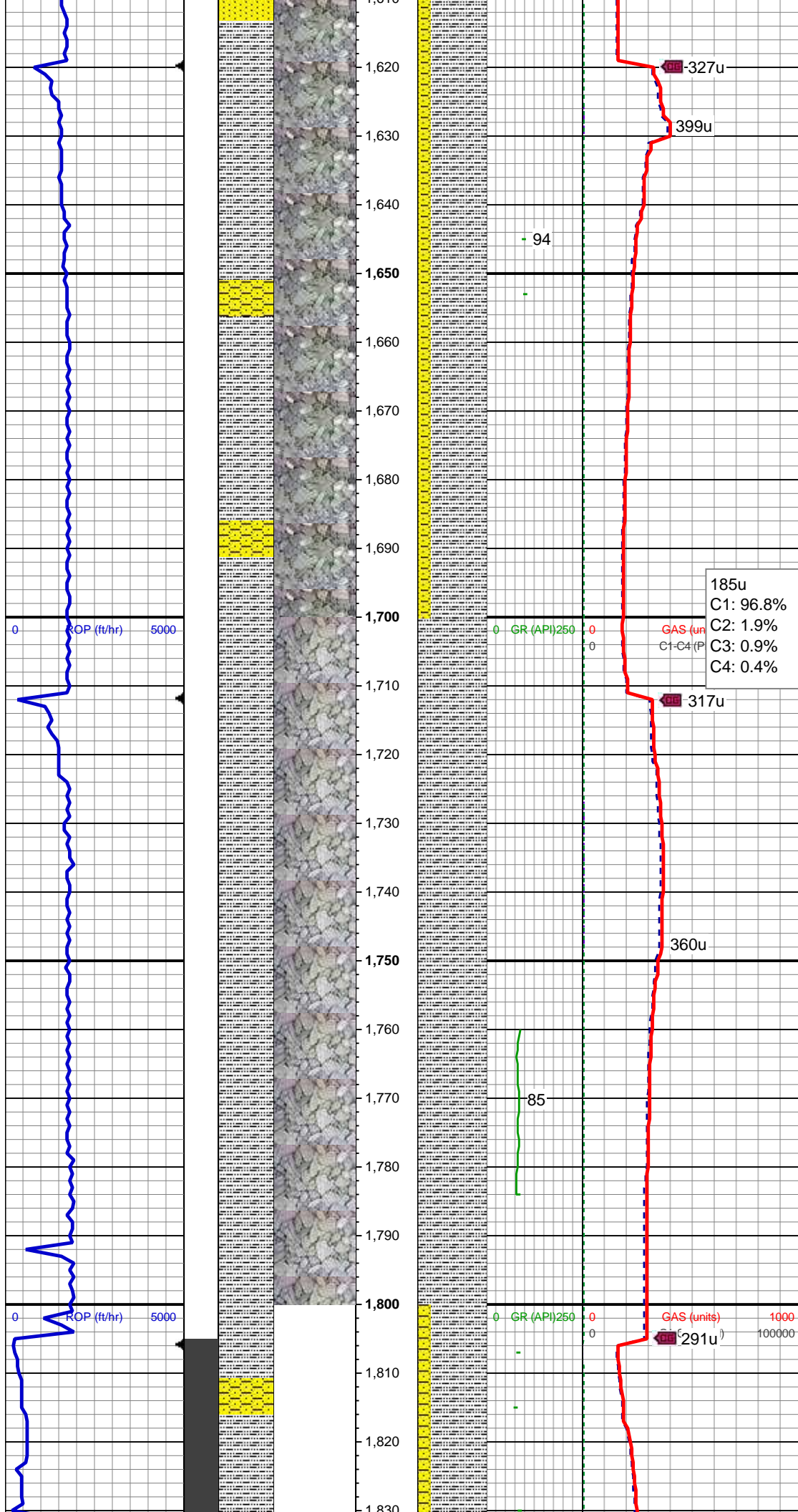
SHY SS: lt gry, sb ang, sb plty, v sft, v f
gr, mod srt
SLTY SH: gry-dkr gry, rnd, sb plty, v sft,
sly tex
SS: clr, lt gry-wht, occ sap, sb rnd, f gr,
hrd-frn, mod-w srt, sl calc cmt

MD: 1,473'
TVD: 1,472.84'
Inclination: 1.27 °
Azimuth: 290.96 °
VS: -4.72'

231u
C1: 96.8%
C2: 1.9%
C3: 0.9%
C4: 0.4%

SLTY SH: gry-ltr gry, rnd, sb plty, v sft,
sly tex
SHY SS: lt gry, sb ang, sb plty, v sft, v f
gr, mod srt
SS: clr, lt gry-wht, occ sap, sb rnd, f gr,
hrd-frn, mod-w srt, sl calc cmt

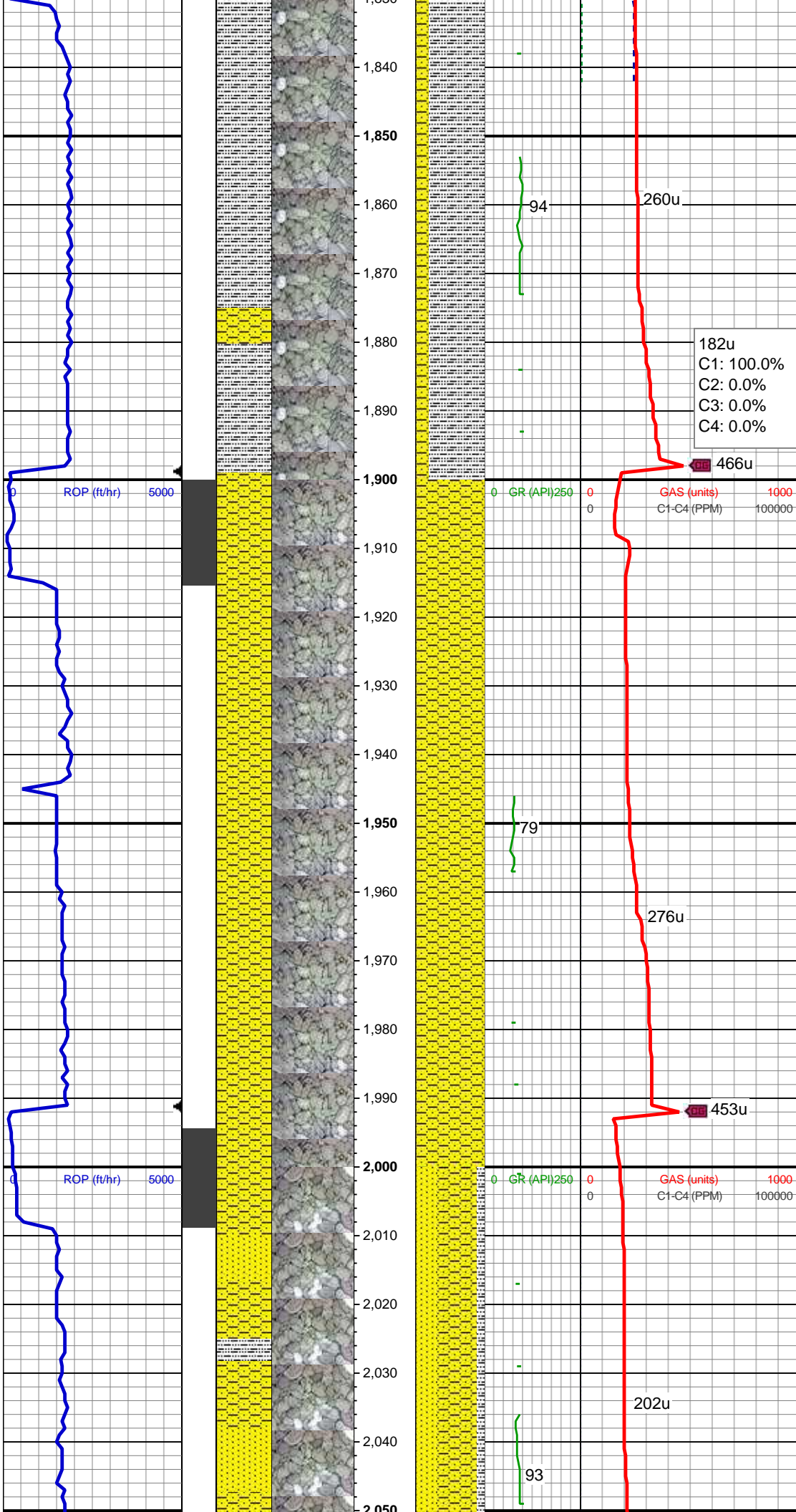
MD: 1,566'
TVD: 1,565.82'
Inclination: 1.12 °
Azimuth: 289.82 °
VS: -6.54'



SLTY SH: gry-dkr gry, rnd, sb plty, v sft, slty tex
SHY SS: lt gry, sb ang, sb plty, v sft, v f gr, mod srt
SS: clr, lt gry-wht, occ sap, sb rnd, f gr, hrd frm, mod-w srt, sl calc cmt

SLTY SH: gry-ltr gry, rnd, sb plty, v sft, slty tex

MD: 1,752'
TVD: 1,751.77'
Inclination: 1.31 °
Azimuth: 279.34 °
VS: -10.33'



MD: 1,845'
TVD: 1,844.74'
Inclination: 2.74 °
Azimuth: 162.34 °
VS: -10.72'

SLTY SH: gry, rnd, sb plty, v sft, slty tex
SHY SS: lt gry, sb ang, sb plty, v sft, v f gr, mod srt

182u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%

466u

GR (API) 250 0 0 0
GAS (units) 1000 0
C1-C4 (PPM) 100000 0

MD: 1,938'
TVD: 1,937.56'
Inclination: 4.33 °
Azimuth: 147.14 °
VS: -8.19'

SHY SS: lt gry, sb ang, sb plty, v sft, f-v f gr, mod-p srt

276u

453u

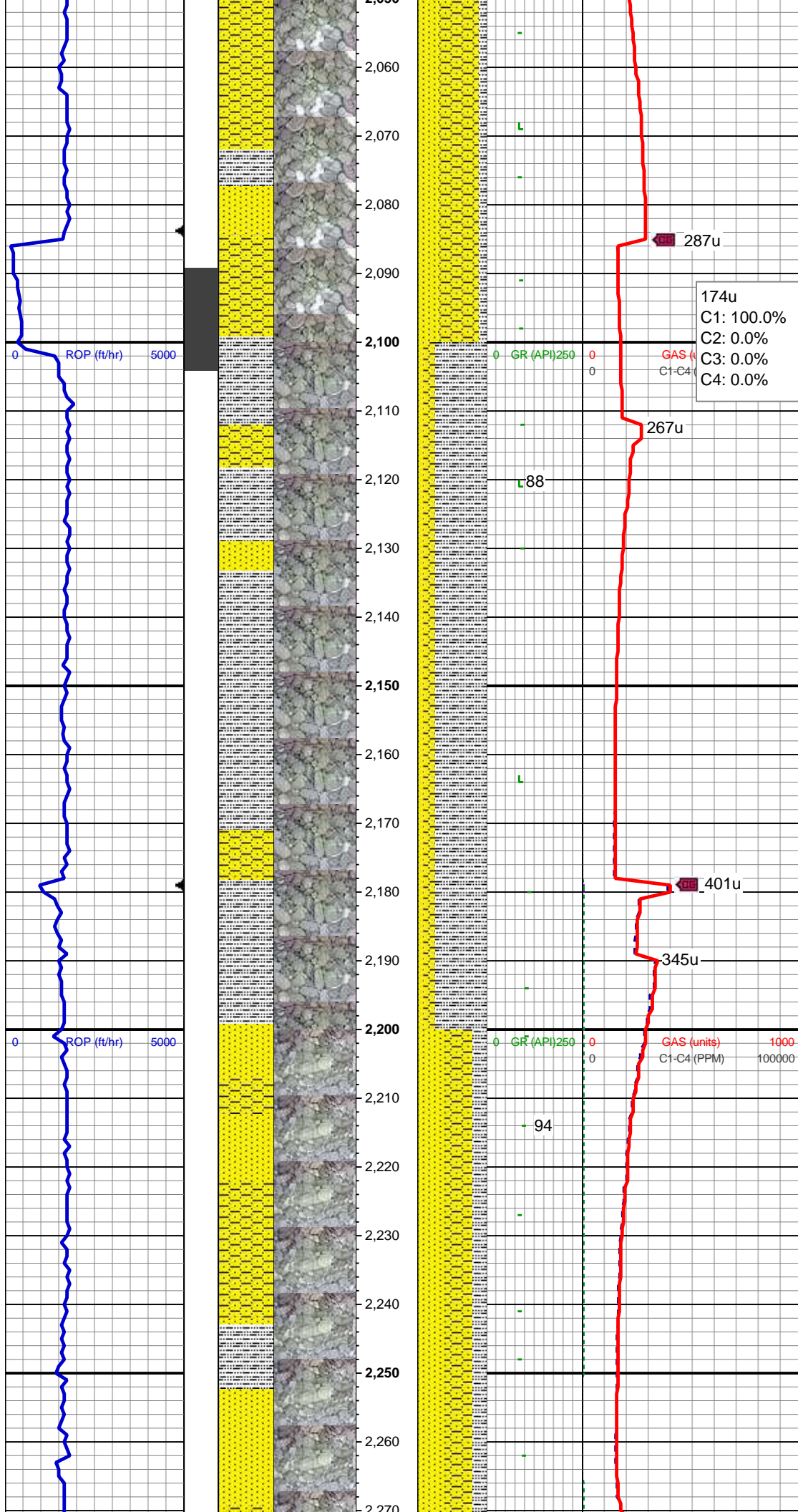
GR (API) 250 0 0 0
GAS (units) 1000 0
C1-C4 (PPM) 100000 0

MD: 2,030'
TVD: 2,029.17'
Inclination: 6.28 °
Azimuth: 132.86 °
VS: -2.67'

SHY SS: lt gry-gry, sb ang, sb plty, v sft, f-v f gr, mod srt
SS: clr, lt gry-wht, occ sap, sb rnd, f gr, mod srt

202u

93



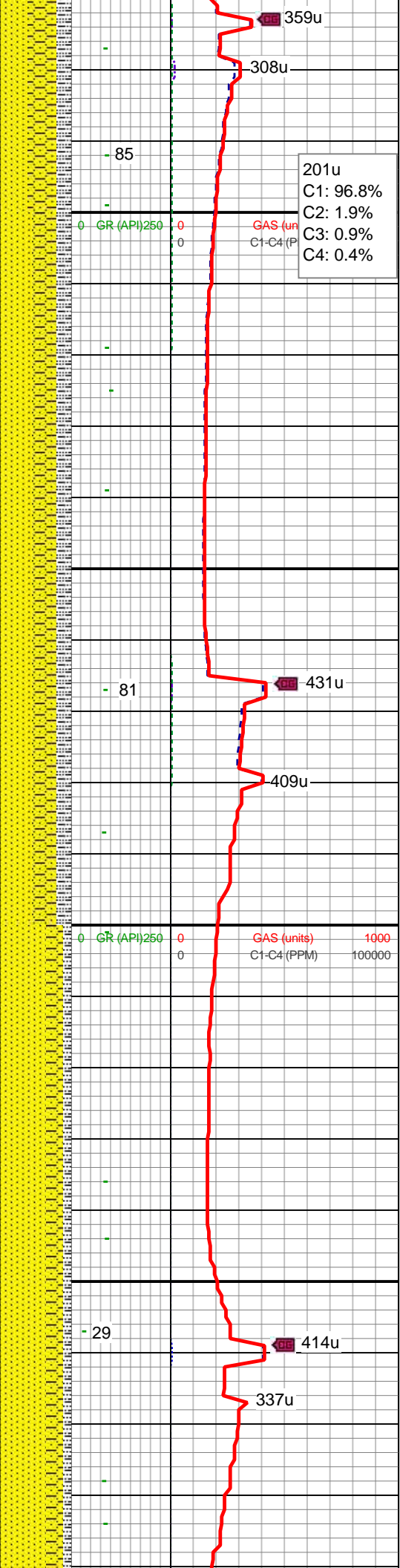
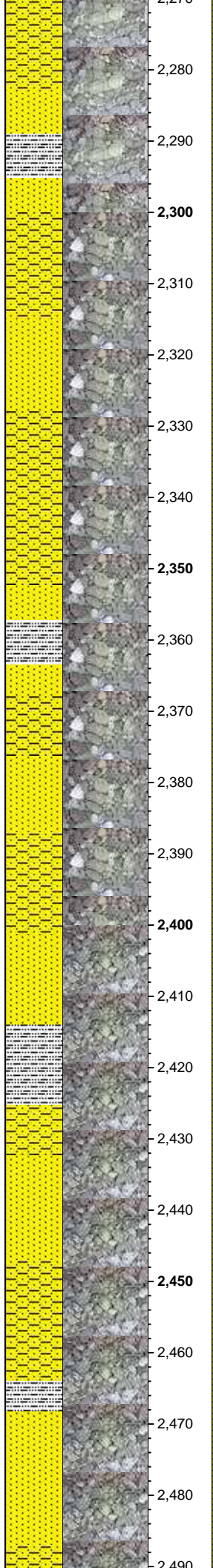
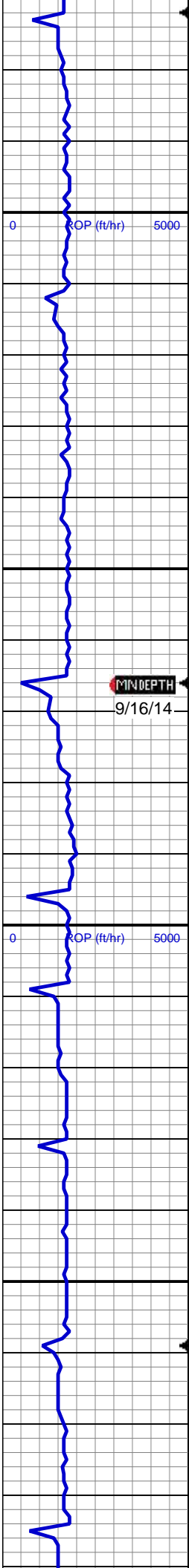
hrd frm, mod-w srt, sl calc cmt
SLTY SH: gry-dkr gry, rnd, sb plty, v sft, slty tex

MD: 2,122'
TVD: 2,120.41'
Inclination: 8.39 °
Azimuth: 119.78 °
VS: 6.78'

SLTY SH: gry-ltr gry, rnd, sb plty, v sft, slty tex
SHY SS: lt gry, sb ang, sb plty, v sft, v f gr, mod srt
SS: clr, lt gry-wht, occ sap, sb rnd, f gr, hrd frm, mod-w srt, sl calc cmt

MD: 2,215'
TVD: 2,212.46'
Inclination: 8.02 °
Azimuth: 119.59 °
VS: 18.25'

SHY SS: lt gry, sb ang, sb plty, v sft, v f gr, mod srt
SS: clr, lt gry-wht, occ sap, sb rnd, f gr, hrd frm, com sml pcs, mod-ply srt, sl calc cmt
SLTY SH: gry-ltr gry, rnd, sb plty, v sft, slty tex



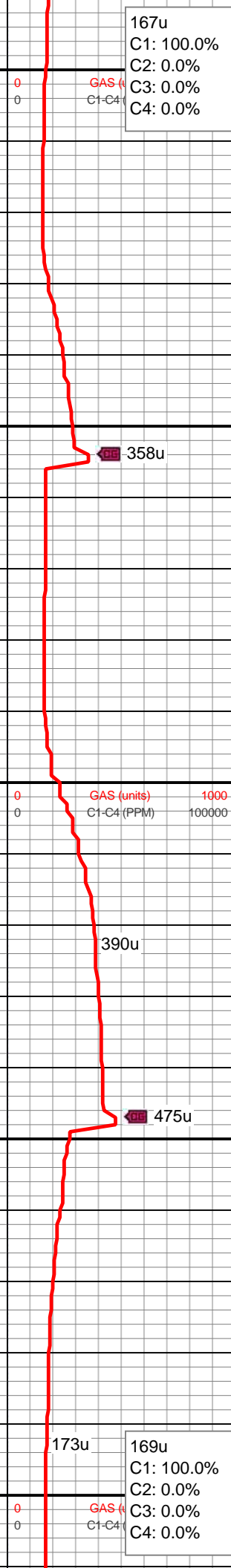
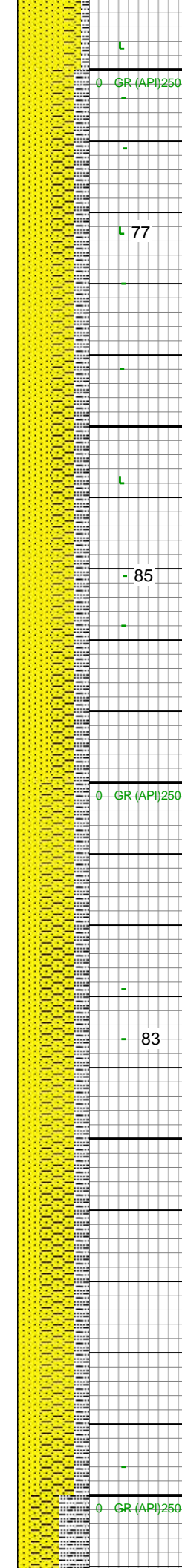
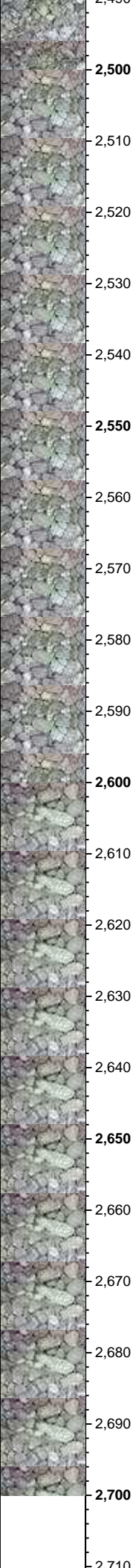
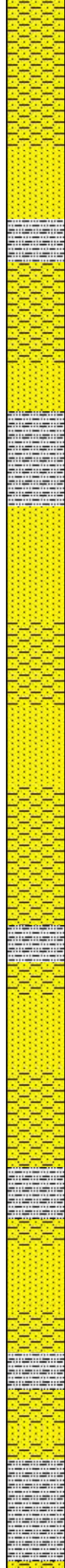
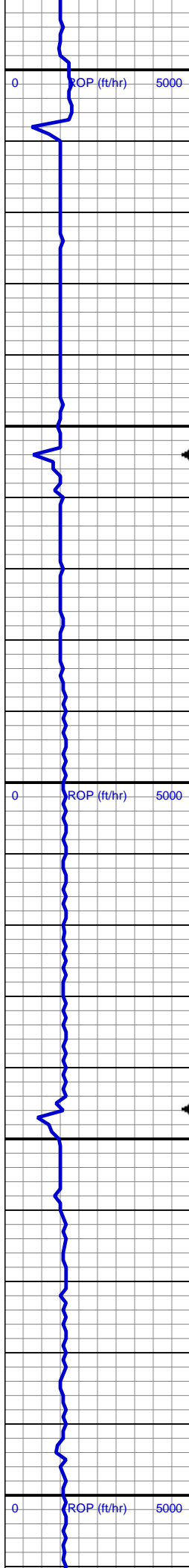
MD: 2,309'
TVD: 2,305.54'
Inclination: 8.05 °
Azimuth: 116.2 °
VS: 29.8'

SS: clr, lt gry-wht, occ sap, sb rnd, f gr,
hrd-frm, mod-ply srt, sl calc cmt
SHY SS: lt gry, sb ang, sb plty, v sft, v f
gr, mod srt
SLTY SH: gry-dkr gry, rnd, sb plty, v sft,
sly tex

MD: 2,402'
TVD: 2,397.63'
Inclination: 7.99 °
Azimuth: 115.84 °
VS: 41.41'

SS: clr, lt gry-wht, occ sap, sb rnd, f gr,
hrd-frm, mod-ply srt, sl calc cmt
SHY SS: lt gry, sb ang, sb plty, v sft, v f
gr, mod srt
SLTY SH: gry-dkr gry, rnd, sb plty, v sft,
sly tex

MD: 2,495'

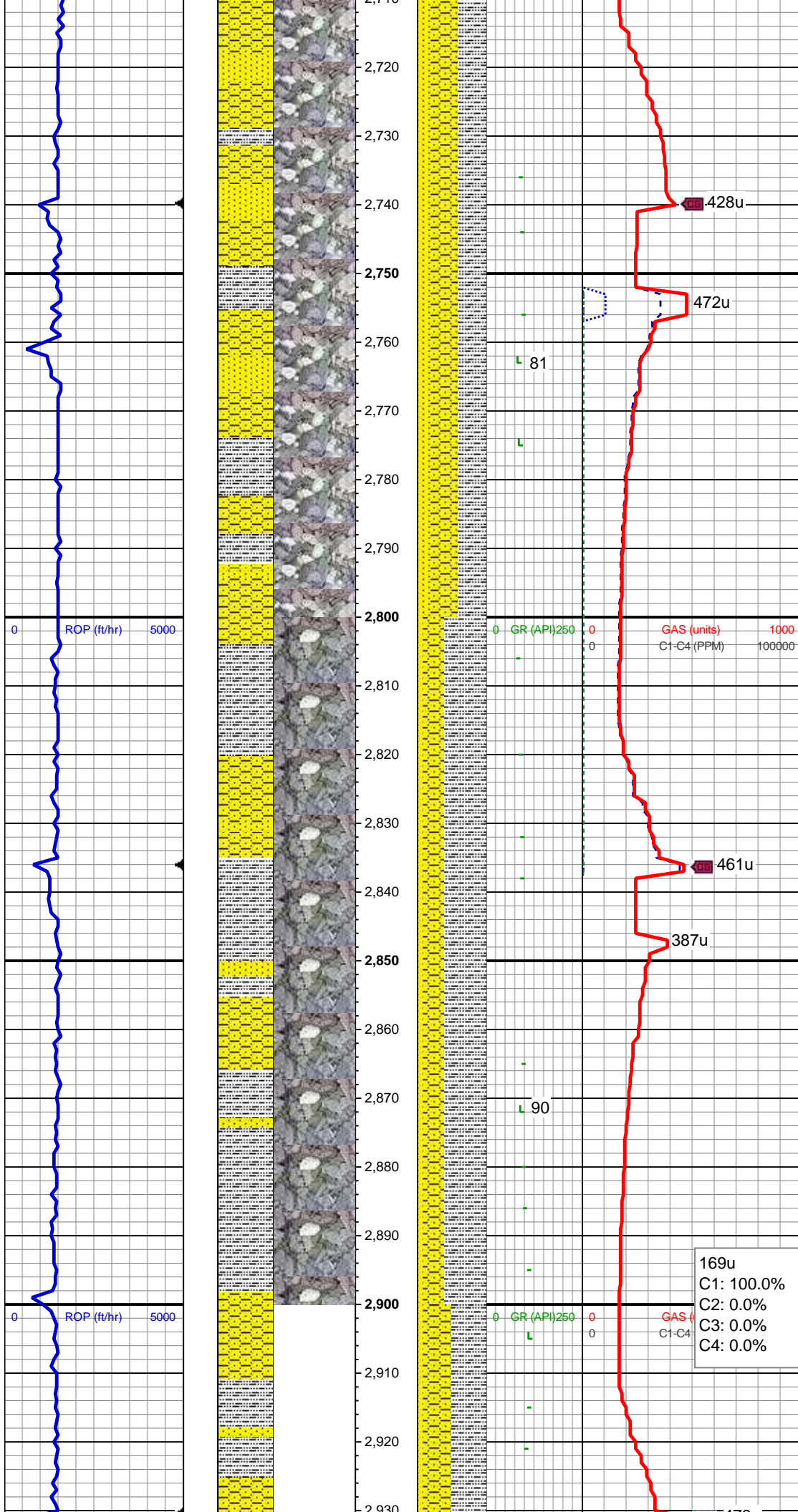


TVD: 2,489.7'
Inclination: 8.21 °
Azimuth: 114.66 °
VS: 53.21'

SS: clr, lt gry-wht, occ sap, sb rnd, f gr, hrd-frn, mod-ply srt, sl calc cmt
SHY SS: lt gry, sb ang, sb plty, v sft, v f gr, mod srt
SLTY SH: gry-dkr gry, rnd, sb plty, v sft, slty tex

SHY SS: lt gry-gry, sb ang, sb plty, v sft, v f gr, mod srt
SS: clr, lt gry-wht, occ sap, sb rnd, f gr, hrd-frn, mod srt, sl calc cmt
SLTY SH: gry-dkr gry, rnd, sb plty, v sft, slty tex

MD: 2,679'
TVD: 2,671.87'
Inclination: 7.97 °
Azimuth: 112.53 °
VS: 76.84'



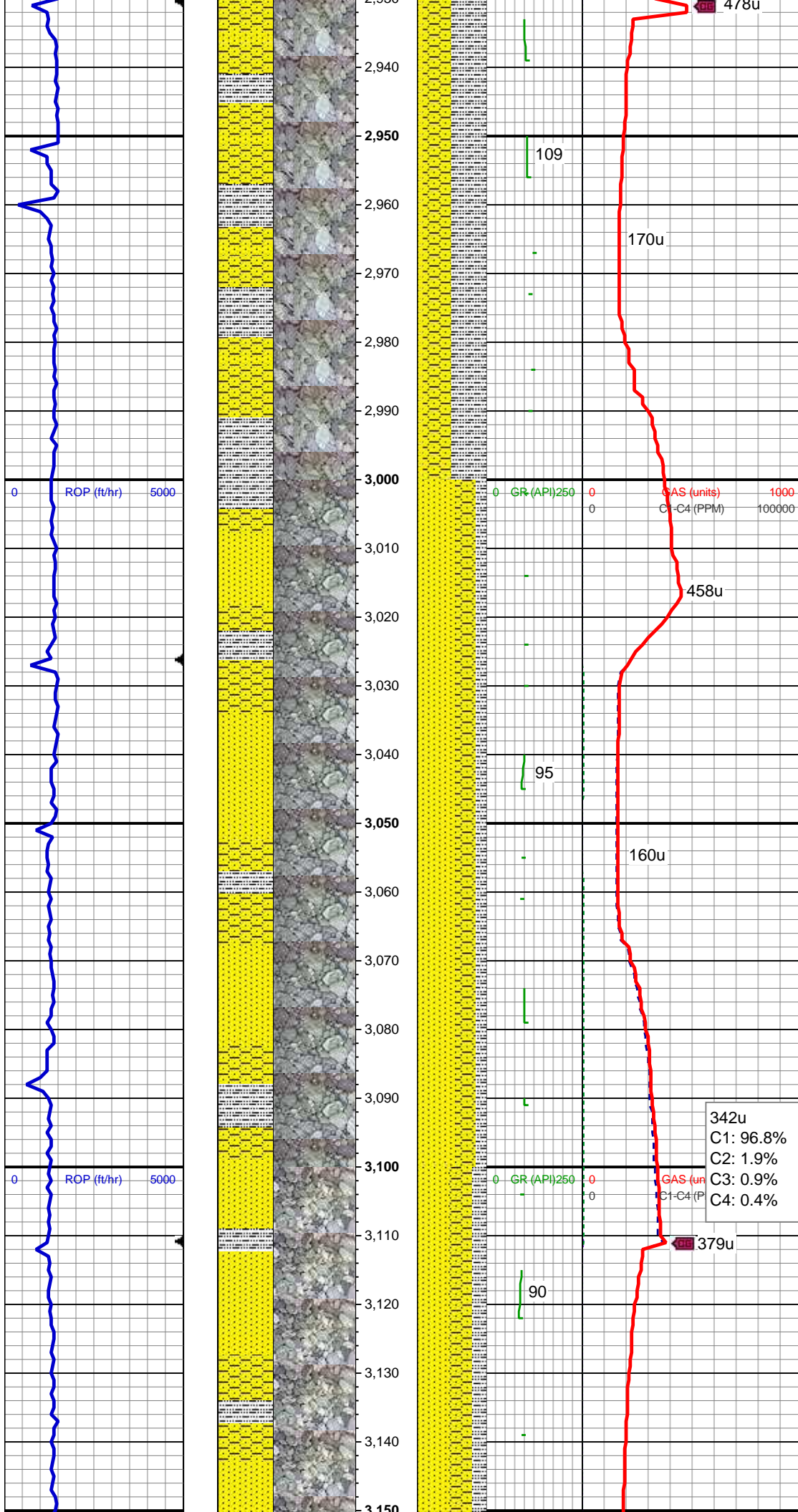
SHY SS: lt gry-gry, sb ang, sb plty, v sft, v
f gr, mod srt
SLTY SH: gry-dkr gry, rnd, sb plty, v sft,
sly tex
SS: clr, lt gry-wht, occ sap, sb rnd, f gr,
hrd frm, mod srt, sl calc cmt

MD: 2,774'
TVD: 2,765.99'
Inclination: 7.64 °
Azimuth: 111.3 °
VS: 88.77'

SLTY SH: gry-dkr gry, rnd, sb plty, v sft,
sly tex
SHY SS: lt gry-gry, sb ang, sb plty, v sft,
f-v f gr, mod srt
SS: clr, lt gry-wht, occ sap, sb rnd, f gr,
hrd frm, mod srt, sl calc cmt

MD: 2,868'
TVD: 2,859.2'
Inclination: 7.26 °
Azimuth: 109.31 °
VS: 100.16'

169u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%



SLTY SH: gry-dkr gry, rnd, sb plty, v sft, slty tex
SHY SS: lt gry-gry, sb ang, sb plty, v sft, f-v f gr, mod srt
SS: clr, lt gry-wht, occ sap, sb rnd, f gr, hrd-frm, mod srt, sl calc cmt

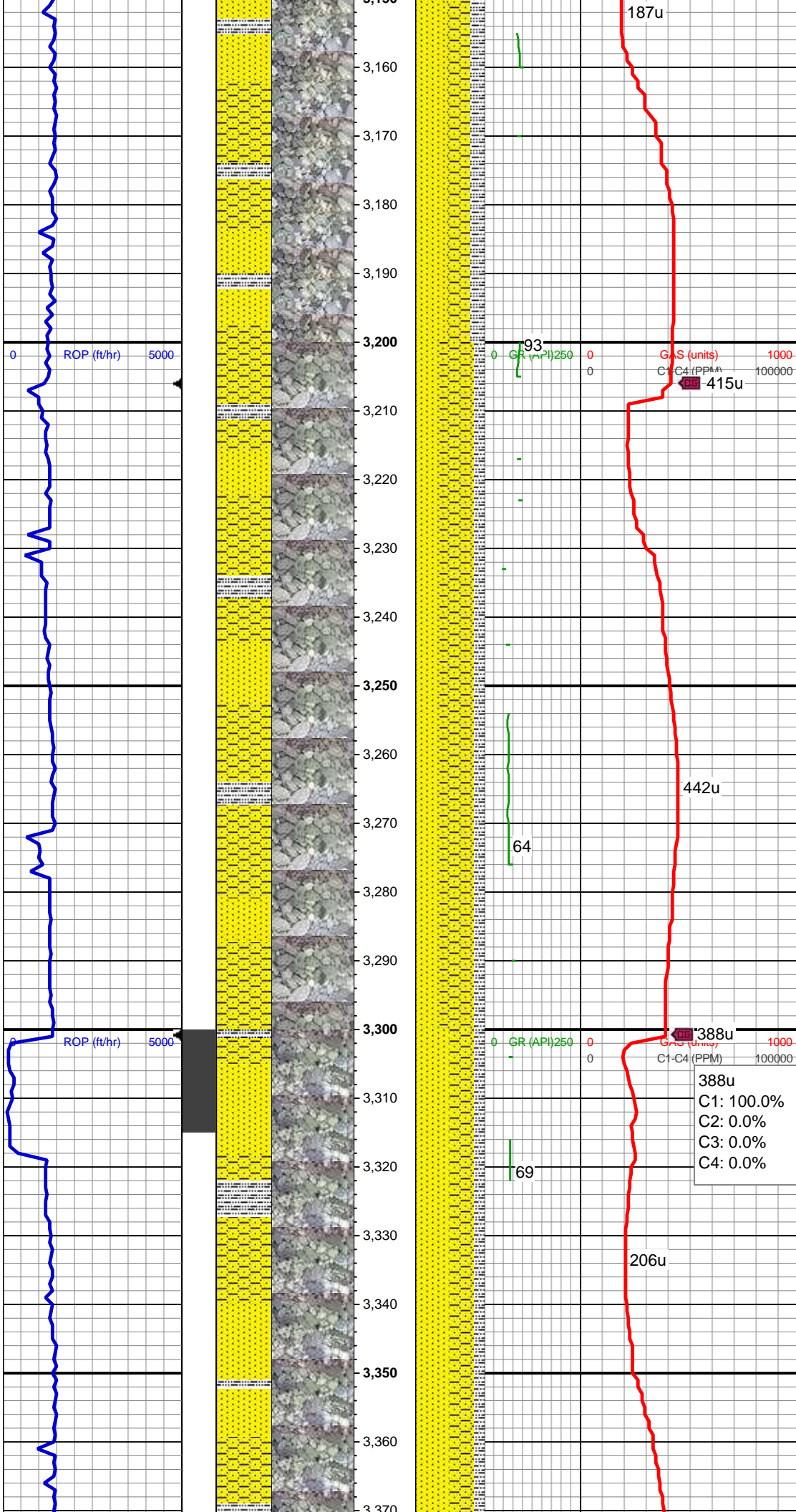
MD: 2,963'
TVD: 2,953.53'
Inclination: 6.34 °
Azimuth: 105.24 °
VS: 110.85'

SS: clr, lt gry-wht, occ sap, sb rnd, f-v f gr, com sml pcs, hrd-frm, mod-ply srt, sl calc cmt
SHY SS: lt gry, sb ang, sb plty, v sft, v f gr, mod srt
SLTY SH: gry-dkr gry, rnd, sb plty, v sft, slty tex

MD: 3,058'
TVD: 3,047.97'
Inclination: 6.06 °
Azimuth: 101.4 °
VS: 120.8'

342u
C1: 96.8%
C2: 1.9%
C3: 0.9%
C4: 0.4%

SS: clr, lt gry-wht, occ brn, occ sap, sb rnd, f-v f gr, hrd-frm, mod-ply srt, sl calc cmt

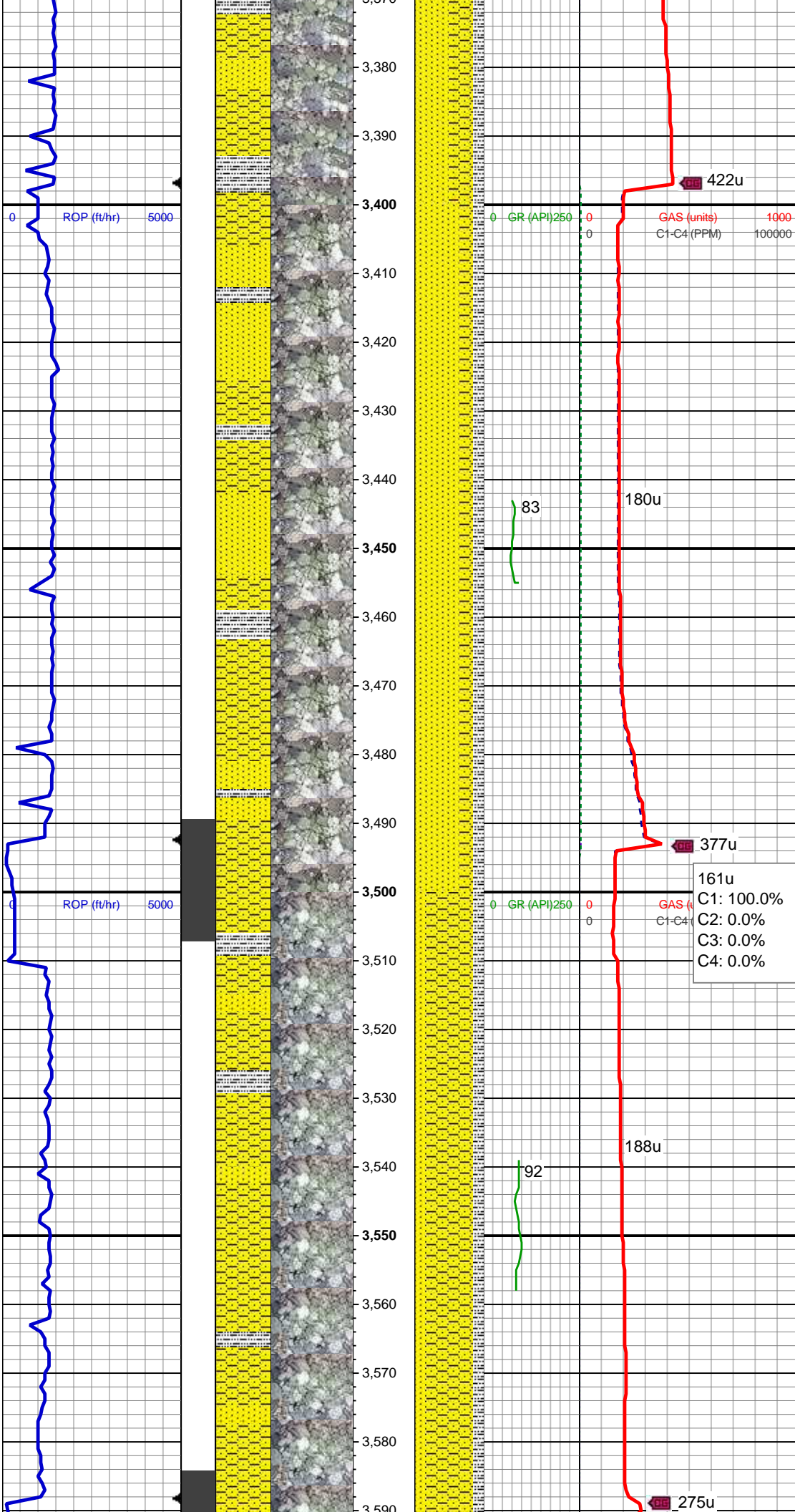


SHY SS: lt gry, sb ang, sb plty, v sft, v f
gr, mod srt
SLTY SH: gry, rnd, sb plty, v sft, slty tex

MD: 3,152'
TVD: 3,141.43'
Inclination: 6.31 °
Azimuth: 102.68 °
VS: 131.05'

SHY SS: lt gry, sb ang, sb plty, v sft, v f
gr, mod srt
SS: clr, lt gry-wht, occ brn, occ sap, sb
rnd, f-v f gr, hrd-frm, mod-ply srt, sl calc
cmt
SLTY SH: gry, rnd, sb plty, v sft, slty tex

SS: clr, lt gry-wht, occ sap, sb rnd, f-v f
gr, hrd-frm, mod-ply srt, sl calc cmt
SHY SS: lt gry, sb ang, sb plty, v sft, v f
gr, mod srt
SLTY SH: gry, rnd, sb plty, v sft, slty tex



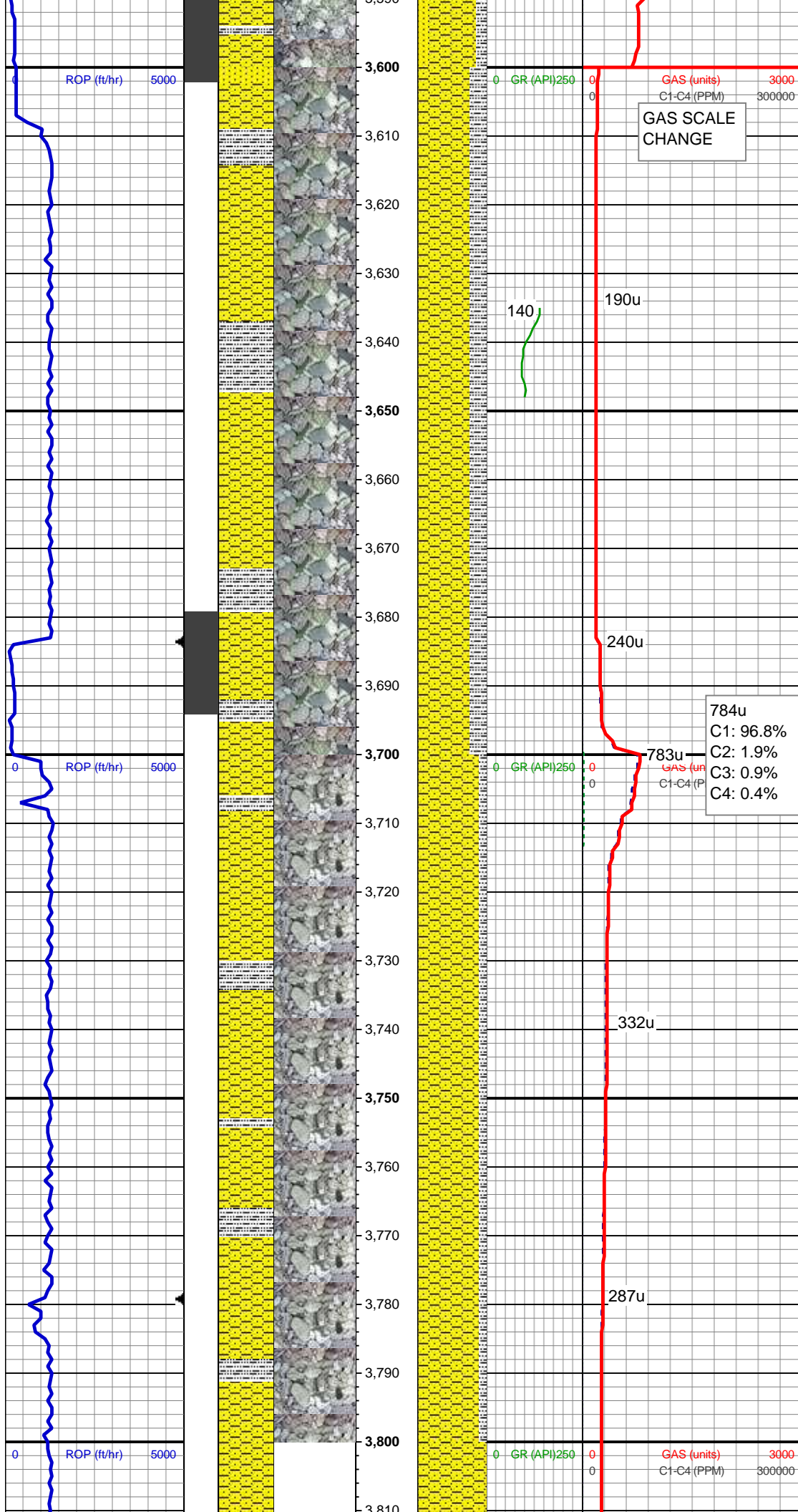
MD: 3,437'
TVD: 3,424.97'
Inclination: 4.37 °
Azimuth: 97.59 °
VS: 158.91'

SS: clr, lt gry-wht, occ sap, sb rnd, f-v f
gr, hrd frm, mod ply srt, sl calc cmt
SHY SS: lt gry, sb ang, sb plty, v sft, v f
gr, mod srt
SLTY SH: gry, rnd, sb plty, v sft, slty tex

161u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%

MD: 3,532'
TVD: 3,519.78'
Inclination: 2.87 °
Azimuth: 75.1 °
VS: 164.8'

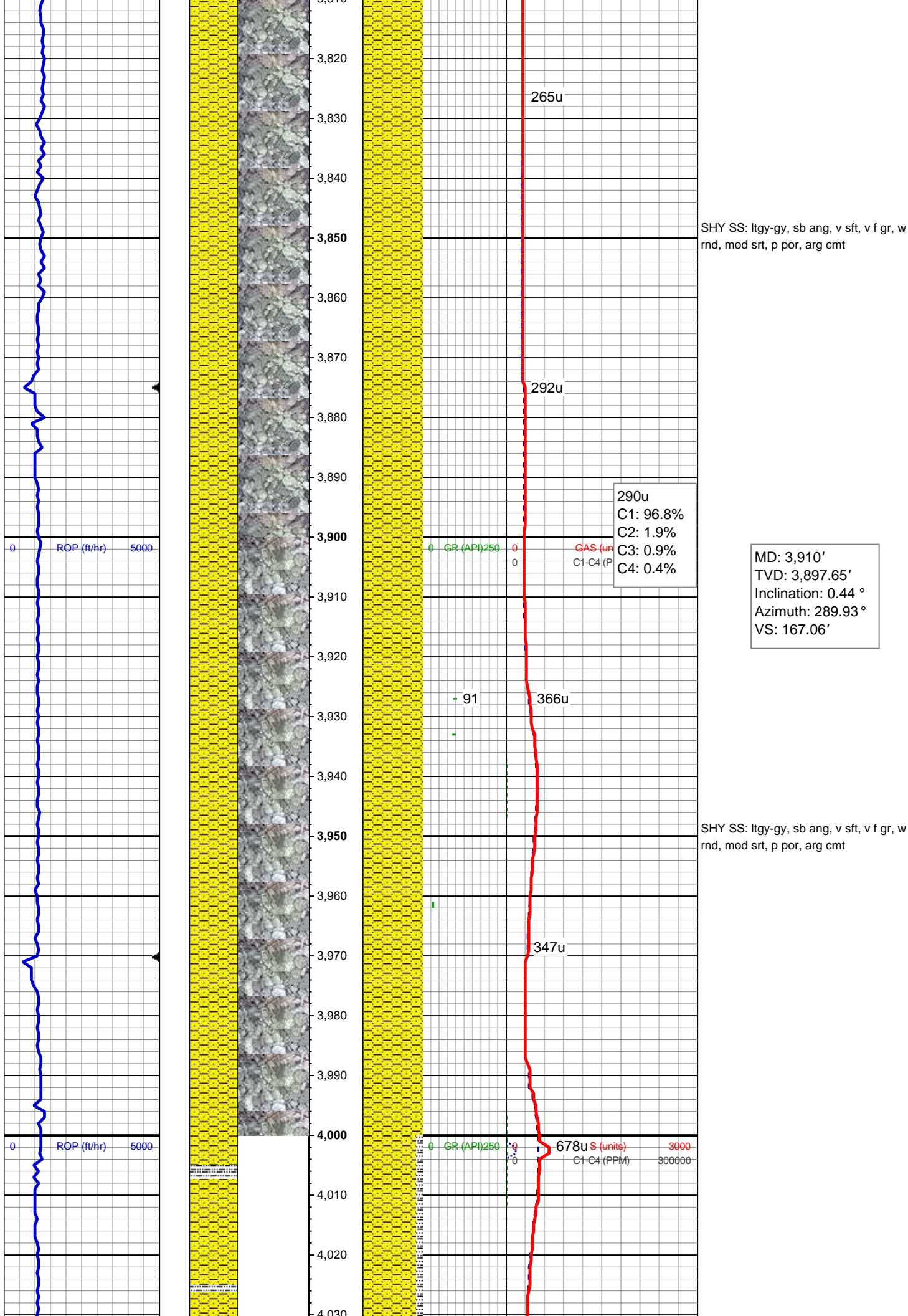
SHY SS: ltgy-gy, sb ang, v sft, v f gr, w
rnd, mod srt, p por, arg cmt
SS: clr-wh, sb ang-sb rnd, v f -f gr, w rnd,
mod srt, calc cmt, abnt glau
SLTY SH: lt gy-dk gy, sb blkgy-sb plty, v sft,
slty tex, arg cmt

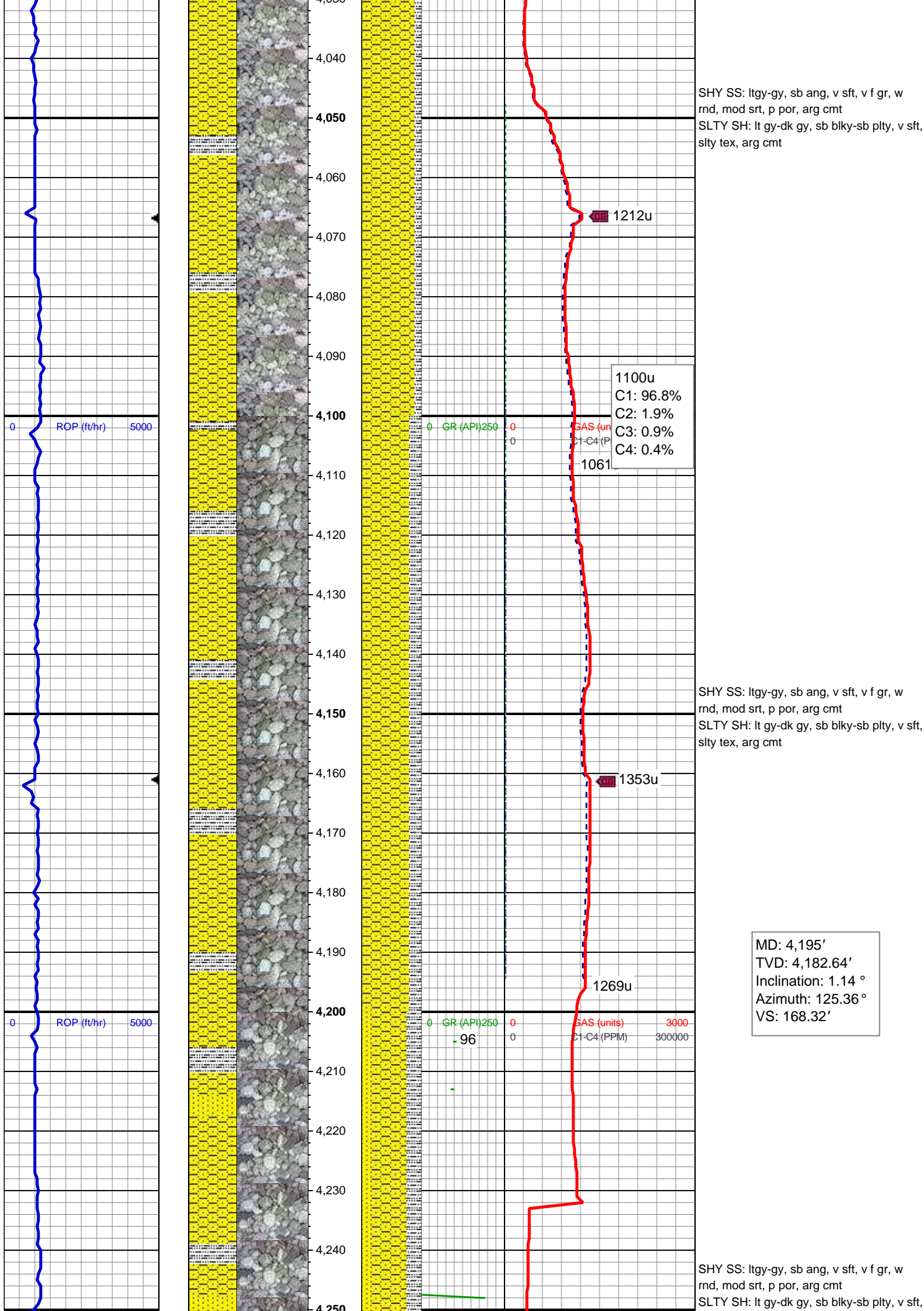


MD: 3,626'
TVD: 3,613.71'
Inclination: 1.89 °
Azimuth: 8.78 °
VS: 167.33'

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

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





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

1212u

1100u
C1: 96.8%
C2: 1.9%
C3: 0.9%
C4: 0.4%

GR (API) 250

SAS (units)

C1-C4 (PPM)

1061

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

1353u

1269u

GR (API) 250

96

SAS (units)

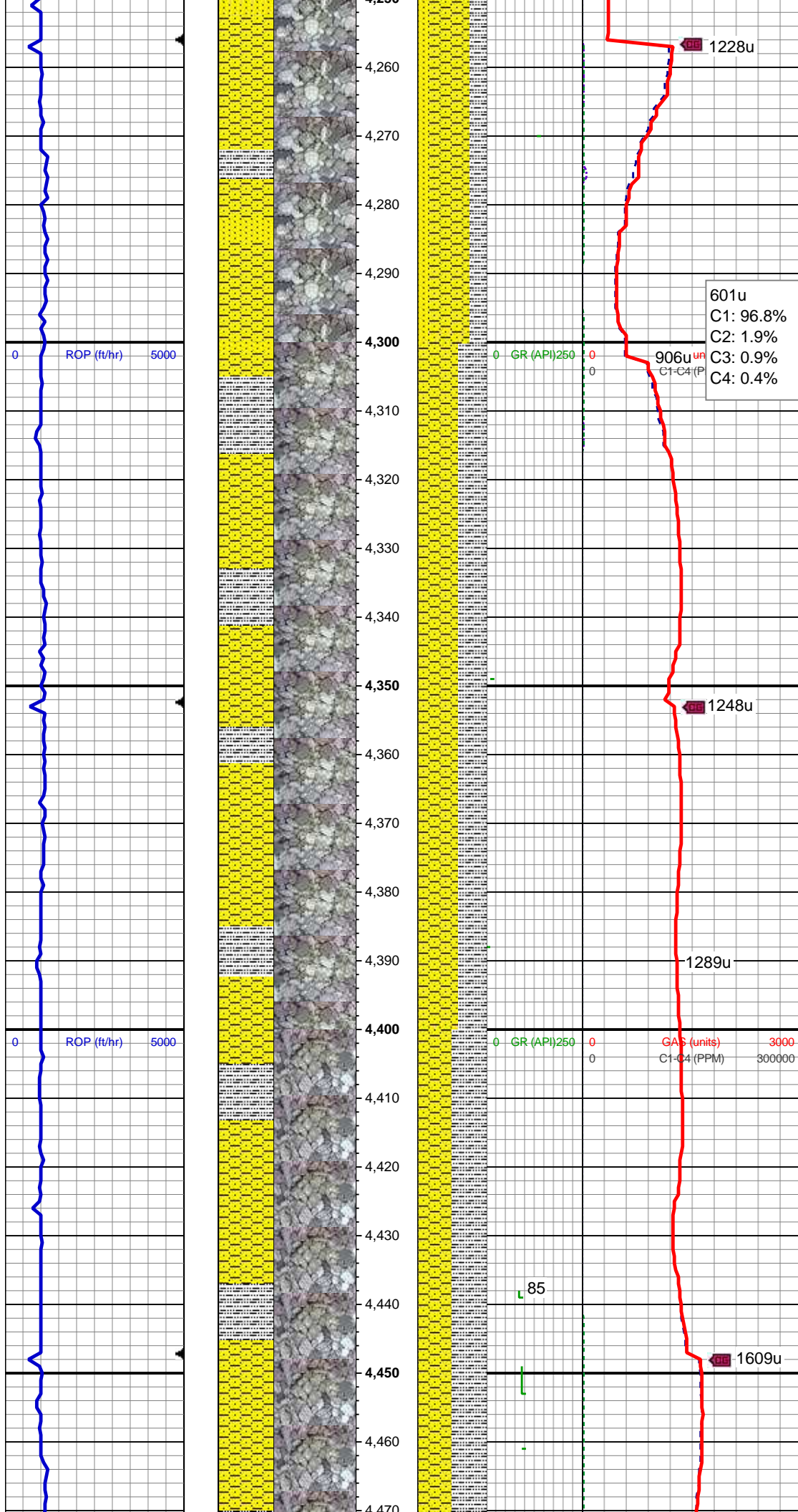
3000

C1-C4 (PPM)

300000

MD: 4,195'
TVD: 4,182.64'
Inclination: 1.14 °
Azimuth: 125.36 °
VS: 168.32'

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



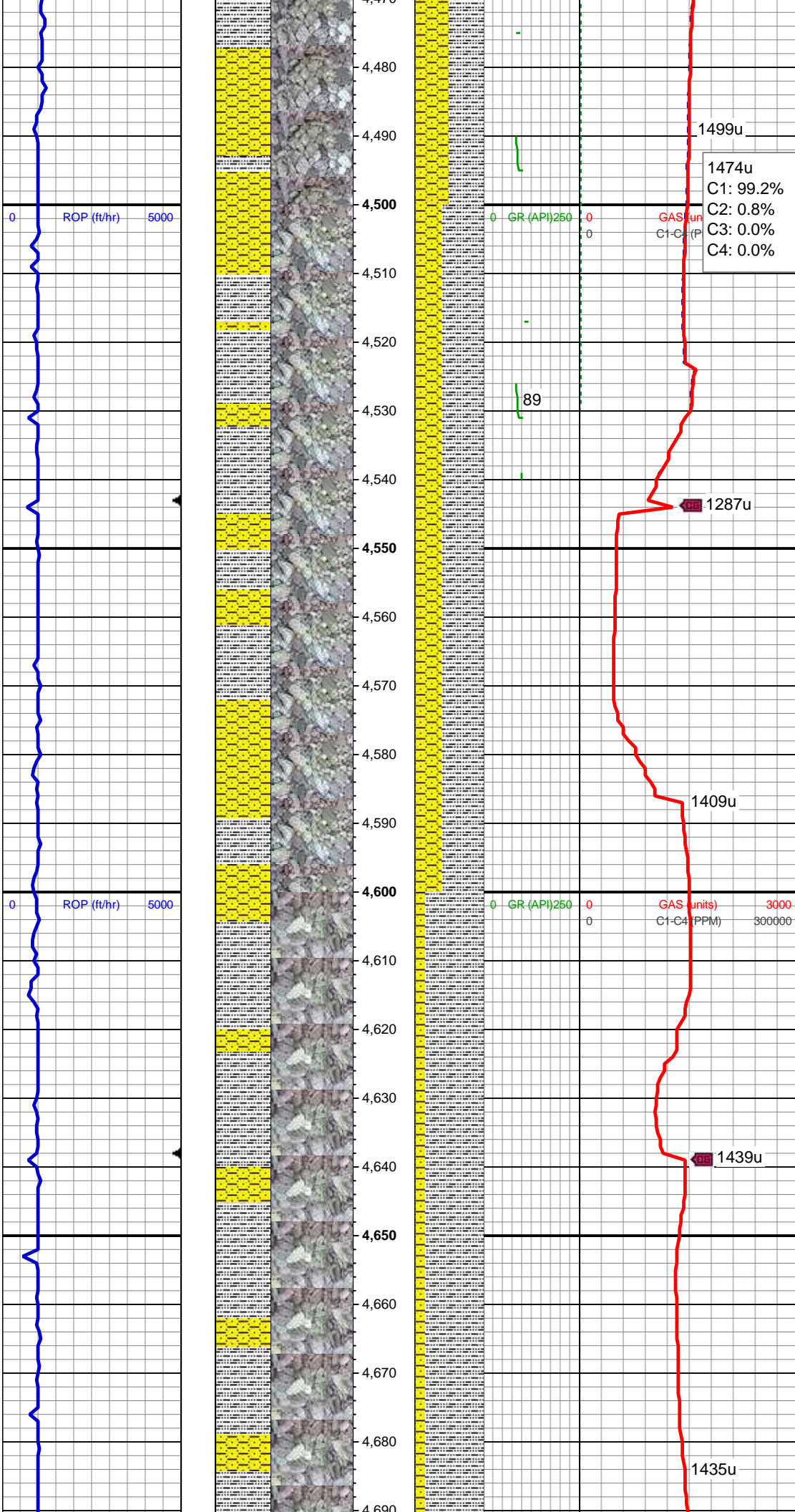
slty tex, arg cmt
SS: clr-wh, sb ang-sb rnd, v f-f gr, w rnd,
mod srt, calc cmt, abnt glau

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

MD: 4,384'
TVD: 4,371.63'
Inclination: 0.18 °
Azimuth: 287.12 °
VS: 169.55'

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

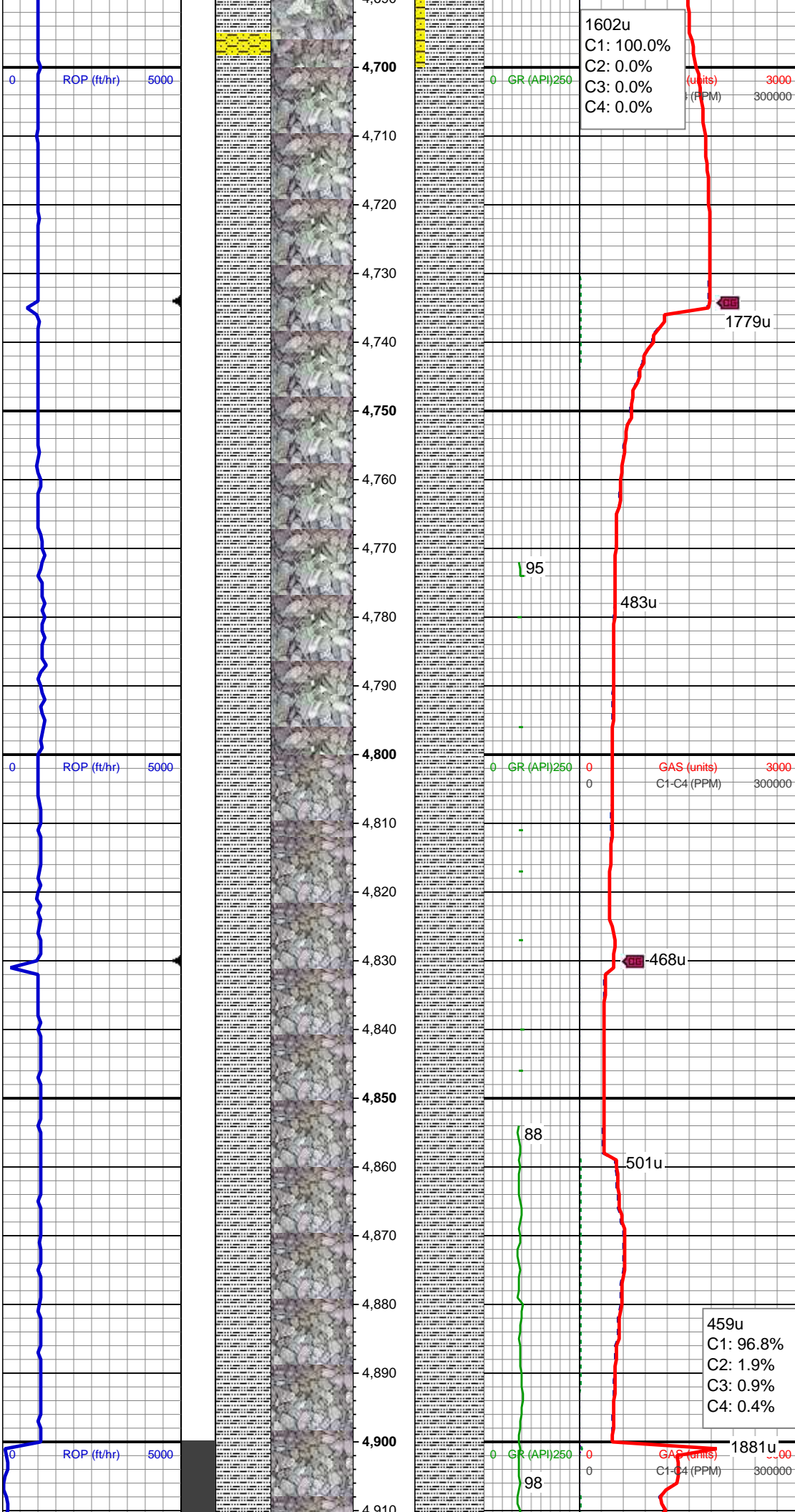
MD: 4,479'
TVD: 4,466.63'
Inclination: 0.91 °
Azimuth: 99.59 °
VS: 170.15'



1474u
C1: 99.2%
C2: 0.8%
C3: 0.0%
C4: 0.0%

SLTY SH: lt 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

SLTY SH: lt 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



1602u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%

(units)
3000
300000

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

MD: 4,764'
TVD: 4,751.59'
Inclination: 0.84 °
Azimuth: 82.62 °
VS: 174.46'

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

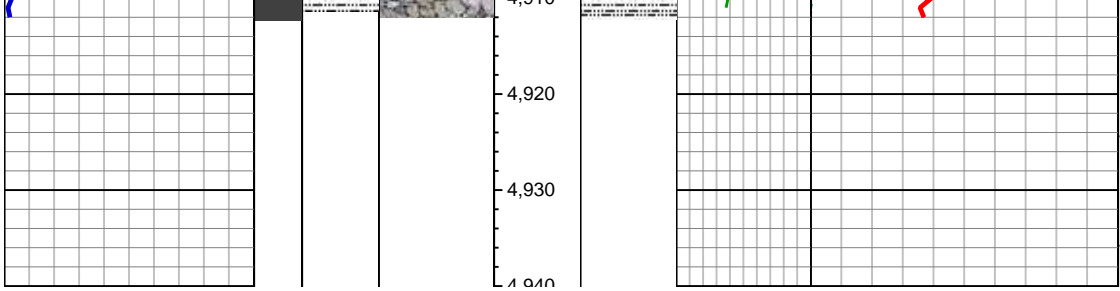
SLTY SH: lt gy-dk gy, sb blkly-sb plty, v sft, slty tex, arg cmt

MD: 4,859'
TVD: 4,846.58'
Inclination: 0.66 °
Azimuth: 90.3 °
VS: 175.7'

459u
C1: 96.8%
C2: 1.9%
C3: 0.9%
C4: 0.4%

WT IN 9.70/ OUT 10.10
VIS IN 36/ OUT 36

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



ENDED VERT @ 4911' MD
09/15/2014 @ 6:49 AM

LOG CONTINUES ON MPLOT
"ROHN STATE LD03-62HN HORZ"