

COLUMBINE LOGGING

Scale: 5" / 100'
Measured Depth Log

Well Name Rohn State LD03-63-1HN

Location SESE SEC 4 T9N R58W

State COLORADO

County WELD

Country USA

Rig Number H&P 273

API Number 05-123-37471

Field WILDCAT

Region DJ BASIN

Drilling Completed 9/9/2014

Spud Date 9/7/2014

Surface Coordinates 774' FSL; 330' FEL

Bottom Hole Coordinates 990' FFSLL; 660' FFELL

Ground Elevation 4706'

K.B. Elevation 4730'

Logged Interval 1217' To 4915'

Total Depth 4915'

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
- 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

Rounding

- ANGULAR
- ROUNDED
- SUBANG
- SUBRND

Textures

- BOUNDSTONE
- CHALKY
- CRYPTOXLN

- WIRELINE TESTED - LEFT
- WIRELINE TESTED - RT
- 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

- 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

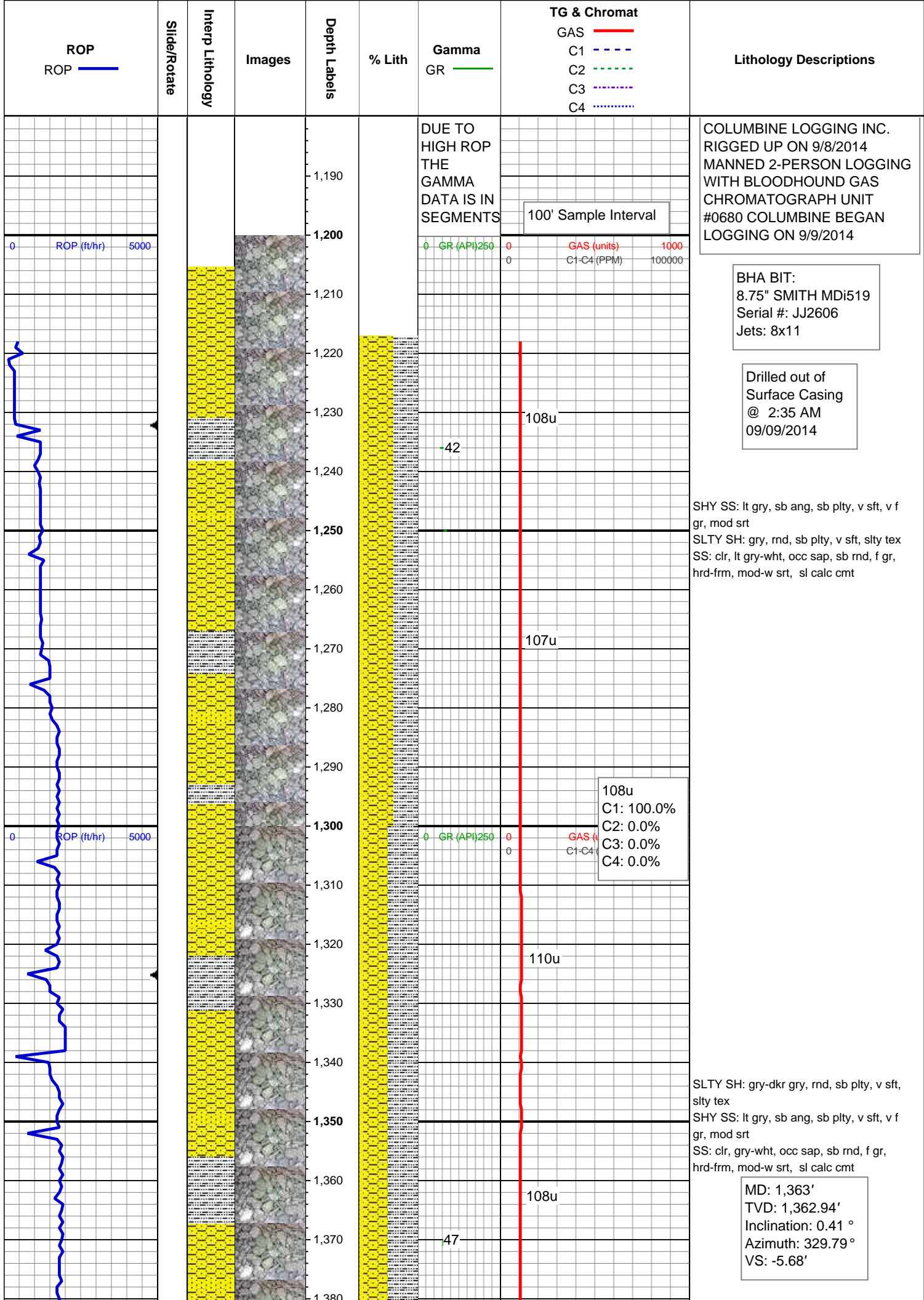
Wellsite Geological Services Provided By Columbine Logging Inc.

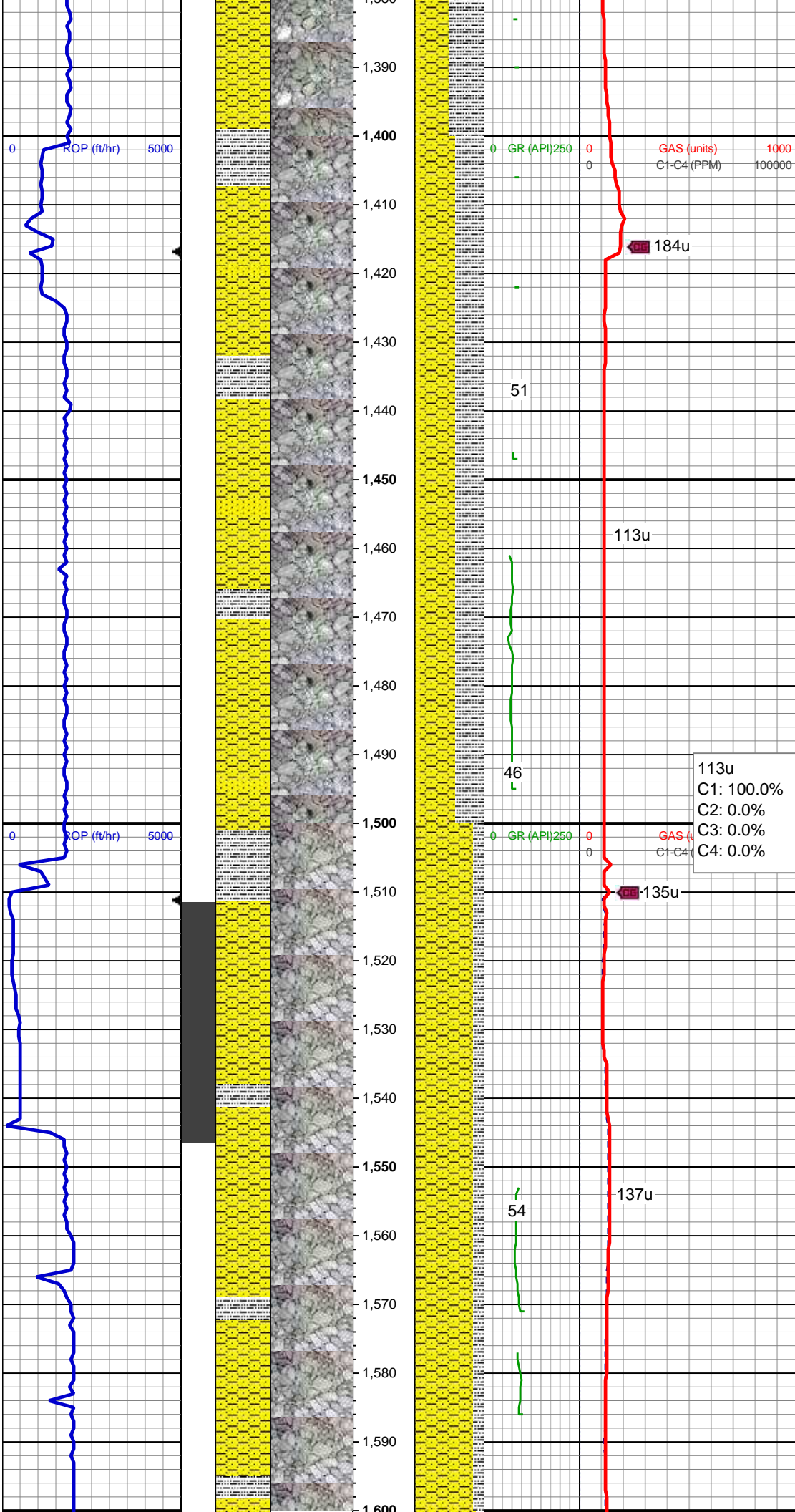
Geologist

Name RENEE CLACKER

Company NOBLE ENERGY INC.

Address 1625 Broadway Suite 2200
Denver, CO 80202





WT IN 8.40/ OUT 8.40
VIS IN 27/ OUT 27

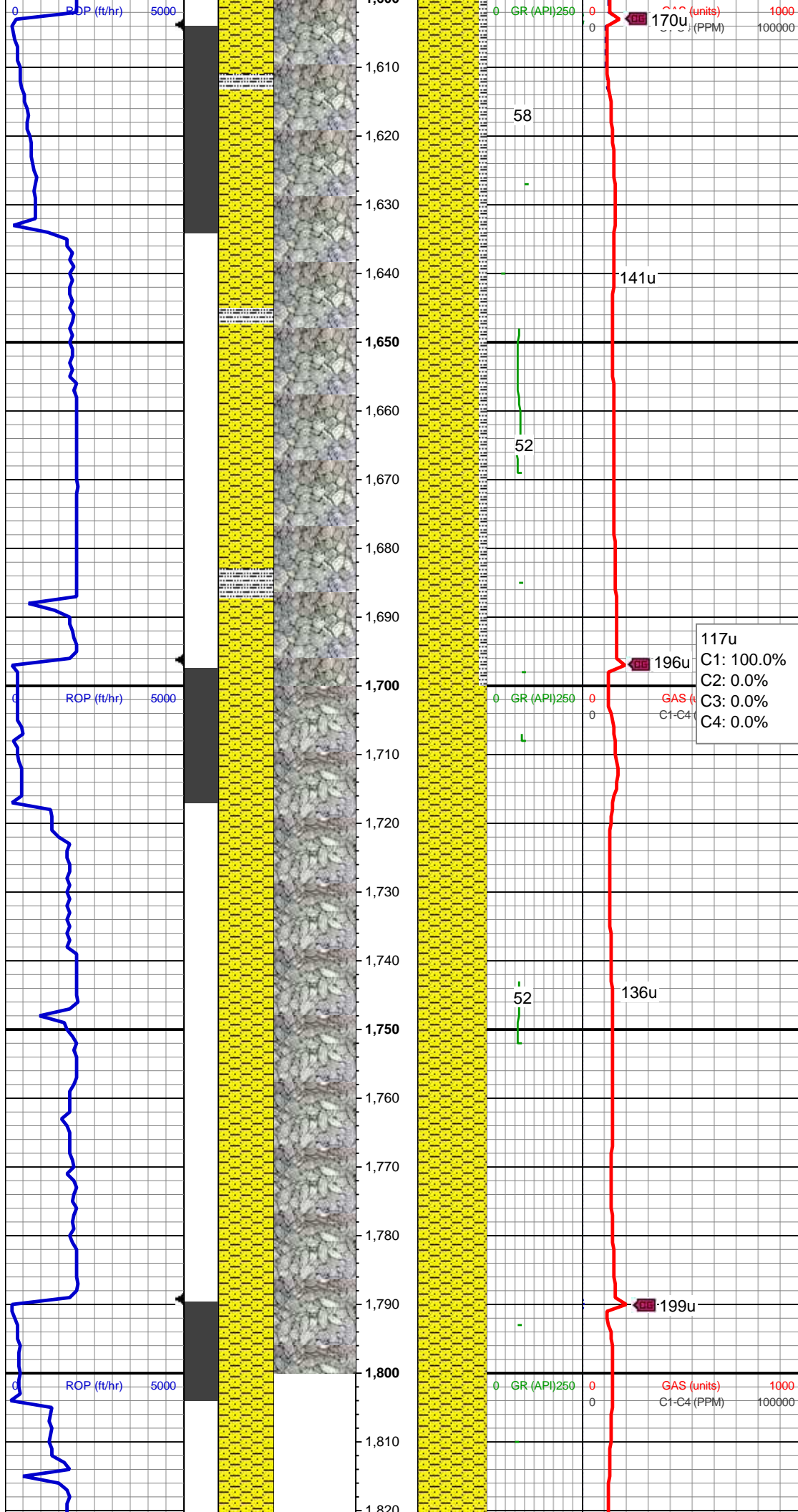
SHY SS: lt gry, sb ang, sb plty, v sft, v f gr, mod srt
SLTY SH: gry, rnd, sb plty, v sft, slty tex
SS: clr, lt gry-wht, occ sap, sb rnd, f gr, hrd frm, mod-w srt, sl calc cmt

MD: 1,456'
TVD: 1,455.93'
Inclination: 0.58 °
Azimuth: 344.16 °
VS: -5.92'

113u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%

MD: 1,549'
TVD: 1,548.9'
Inclination: 2.57 °
Azimuth: 34.46 °
VS: -4.73'

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



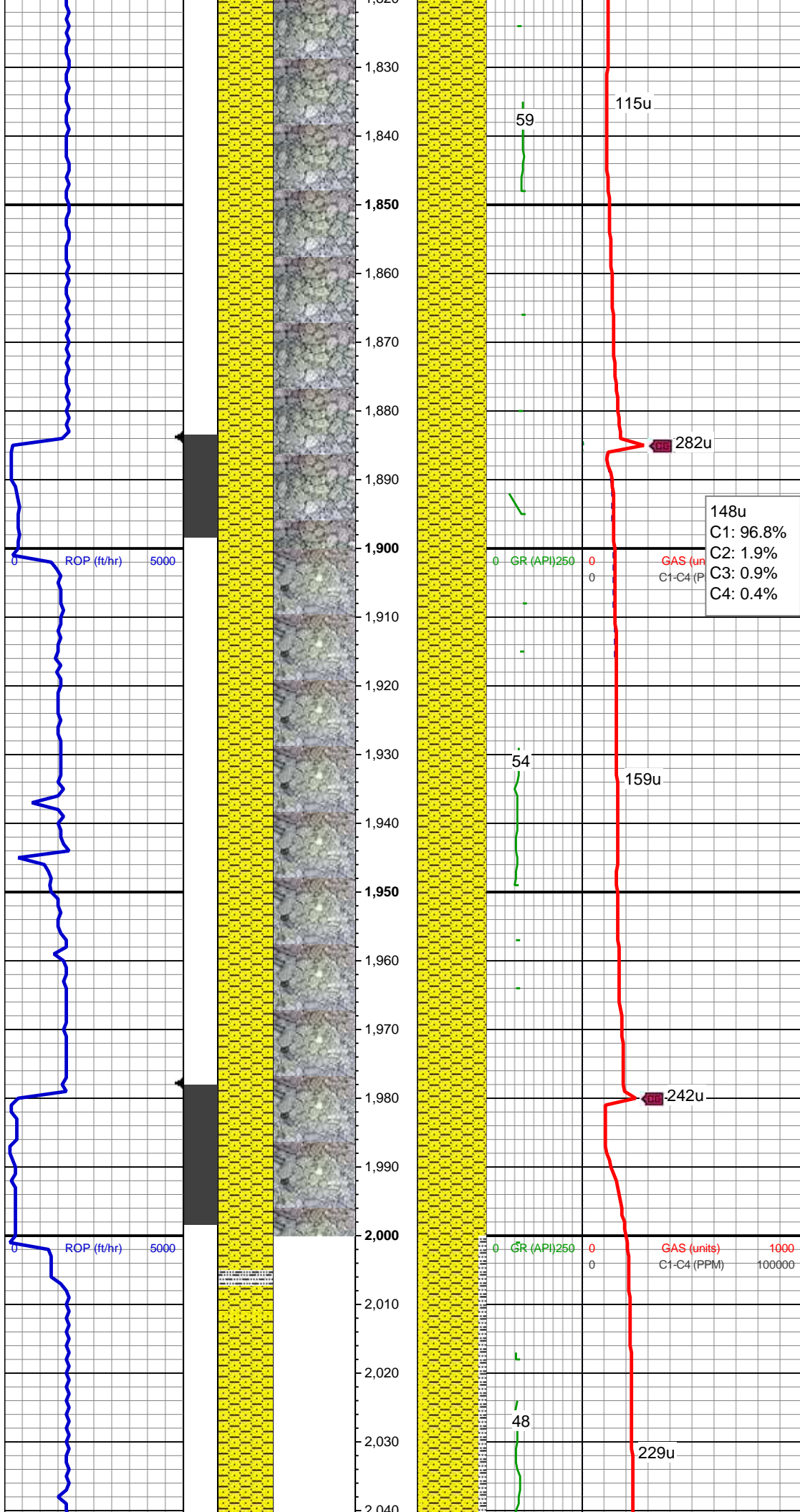
MD: 1,642'
TVD: 1,641.68'
Inclination: 5.14 °
Azimuth: 37.46 °
VS: -0.68'

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

WT IN 8.40/ OUT 8.40
VIS IN 27/ OUT 27

MD: 1,734'
TVD: 1,733.2'
Inclination: 6.58 °
Azimuth: 39.35 °
VS: 5.66'

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



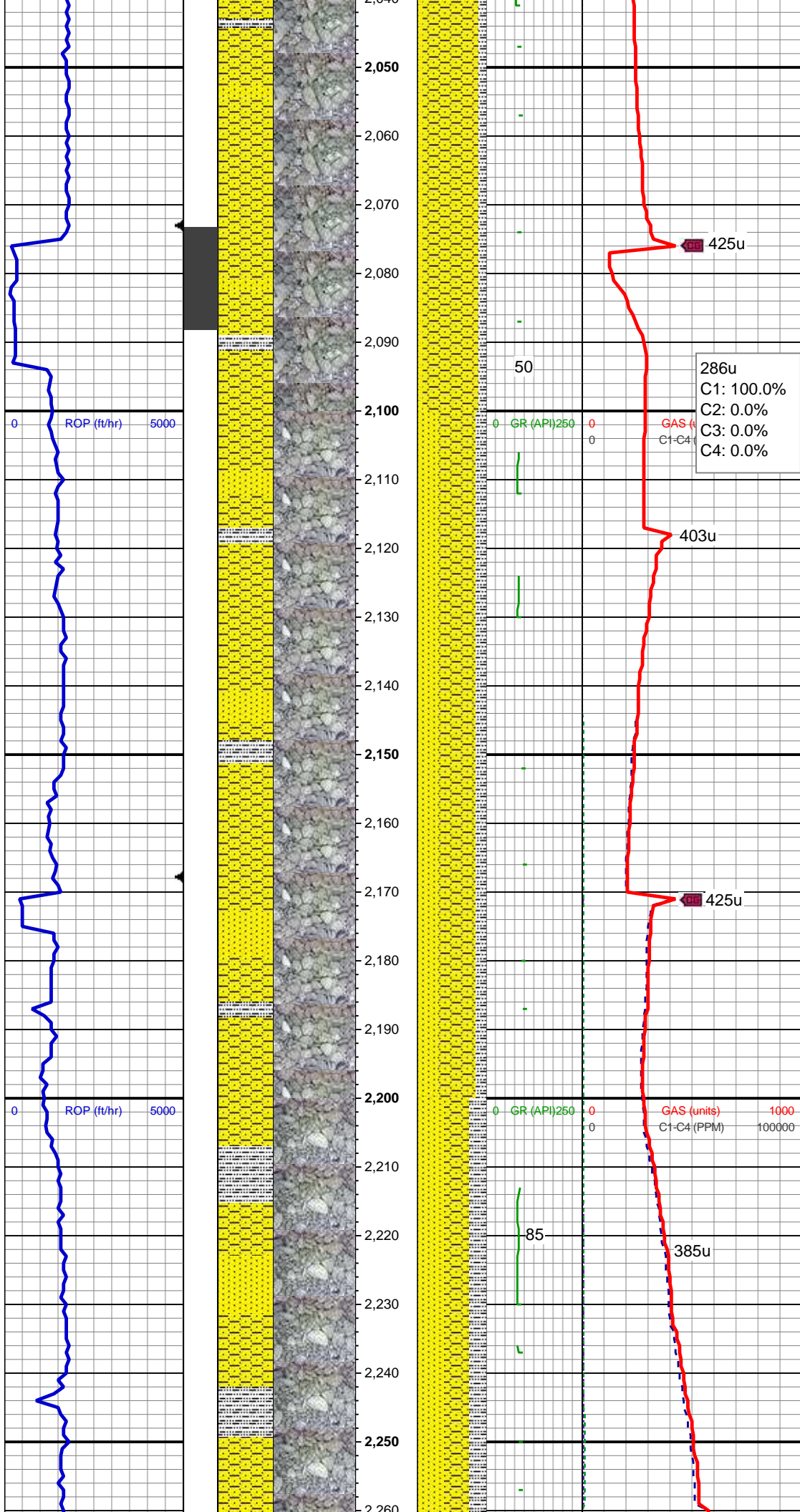
MD: 1,828'
TVD: 1,826.44'
Inclination: 7.93 °
Azimuth: 39.6 °
VS: 13.82'

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

MD: 1,923'
TVD: 1,920.4'
Inclination: 9.05 °
Azimuth: 39.81 °
VS: 23.5'

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

MD: 2,018'
TVD: 2,014.05'
Inclination: 10.32 °
Azimuth: 30.21 °
VS: 33.44'



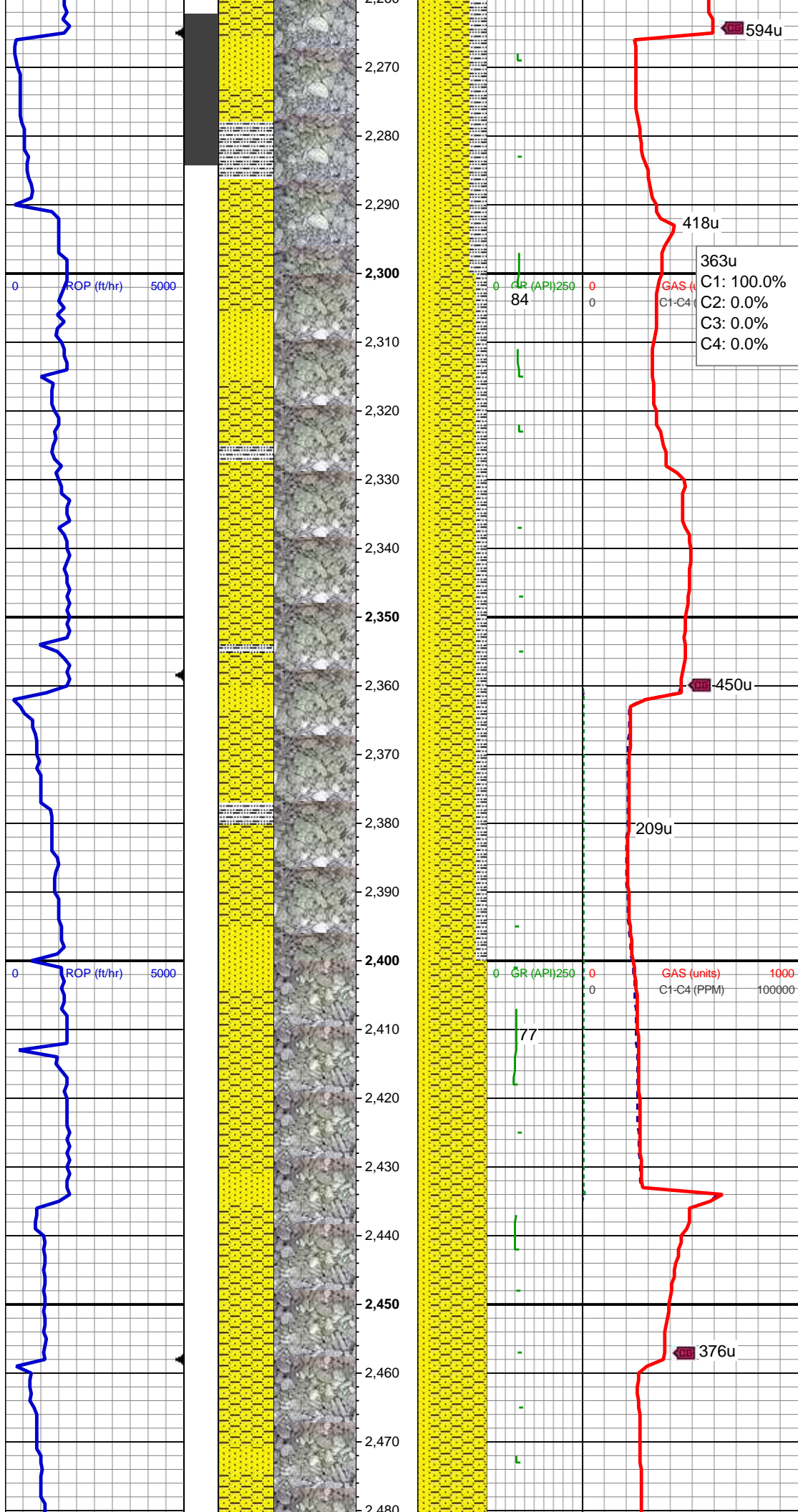
SHY SS: ltgy-gy, sb ang, v sft, v f gr, w
rnd, mod srt, p por, arg cmt, rr pyr
SLTY SH: gy-dk gy, sb blkgy-sb plty, v sft,
silty tex, arg cmt
SS: clr-wh-ltgy, sb ang-sb rnd, v f -f gr, w
rnd, mod srt, mod por, calc cmt, rr glau

MD: 2,112'
TVD: 2,106.38'
Inclination: 11.33 °
Azimuth: 31.03 °
VS: 43.46'

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

MD: 2,207'
TVD: 2,199.75'
Inclination: 9.89 °
Azimuth: 33.22 °
VS: 53.74'

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

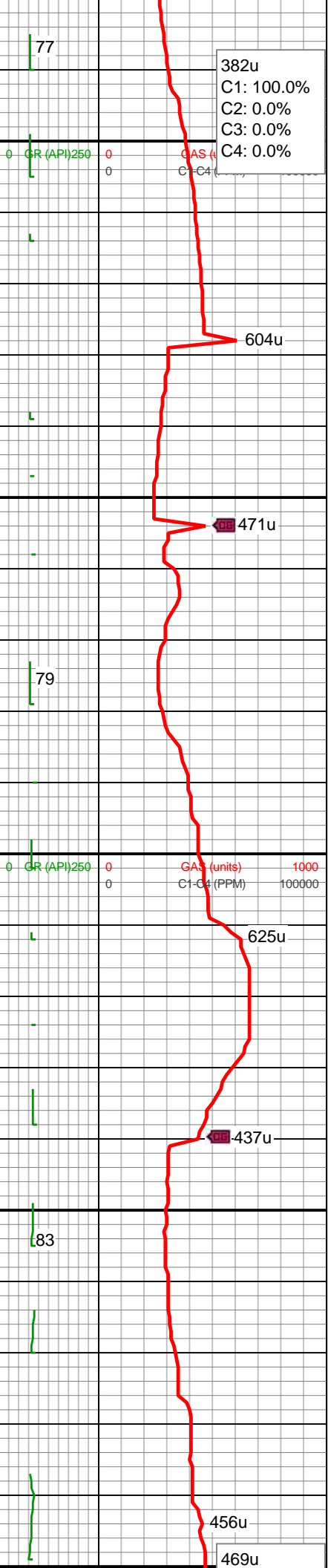
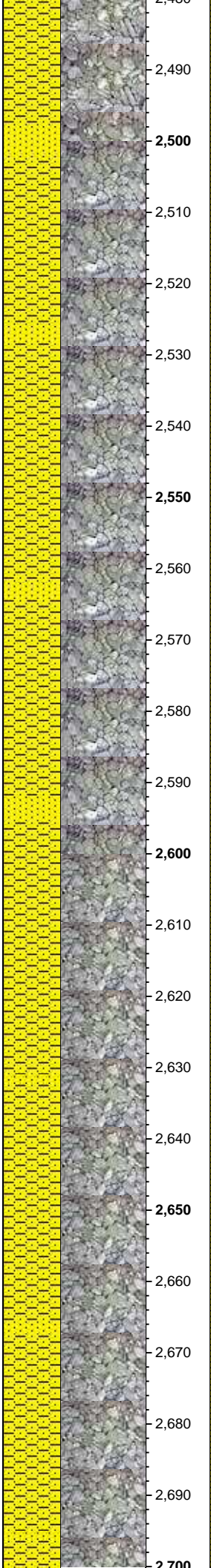
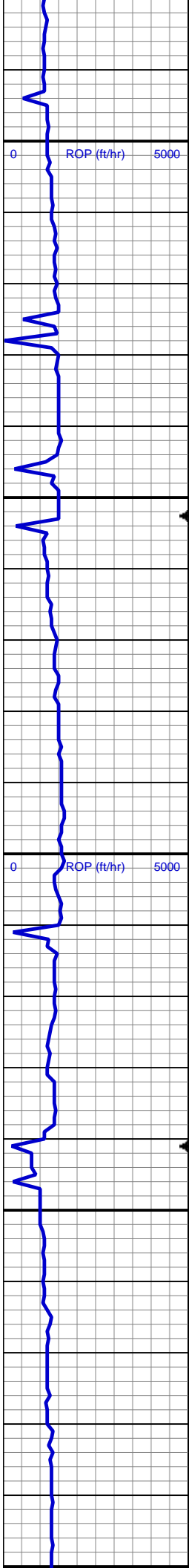


MD: 2,302'
TVD: 2,293.04'
Inclination: 11.89 °
Azimuth: 32.41 °
VS: 64.47'

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

MD: 2,396'
TVD: 2,385.09'
Inclination: 11.45 °
Azimuth: 31.41 °
VS: 75.61'

SHY SS: ltgy-gy, sb ang, v sft, v f gr, w
rnd, mod srt, p por, arg cmt, rr pyr
SS: clr-wh-ltgy, sb ang-sb rnd, v f -f gr, w
rnd, mod srt, mod por, calc cmt, rr glau



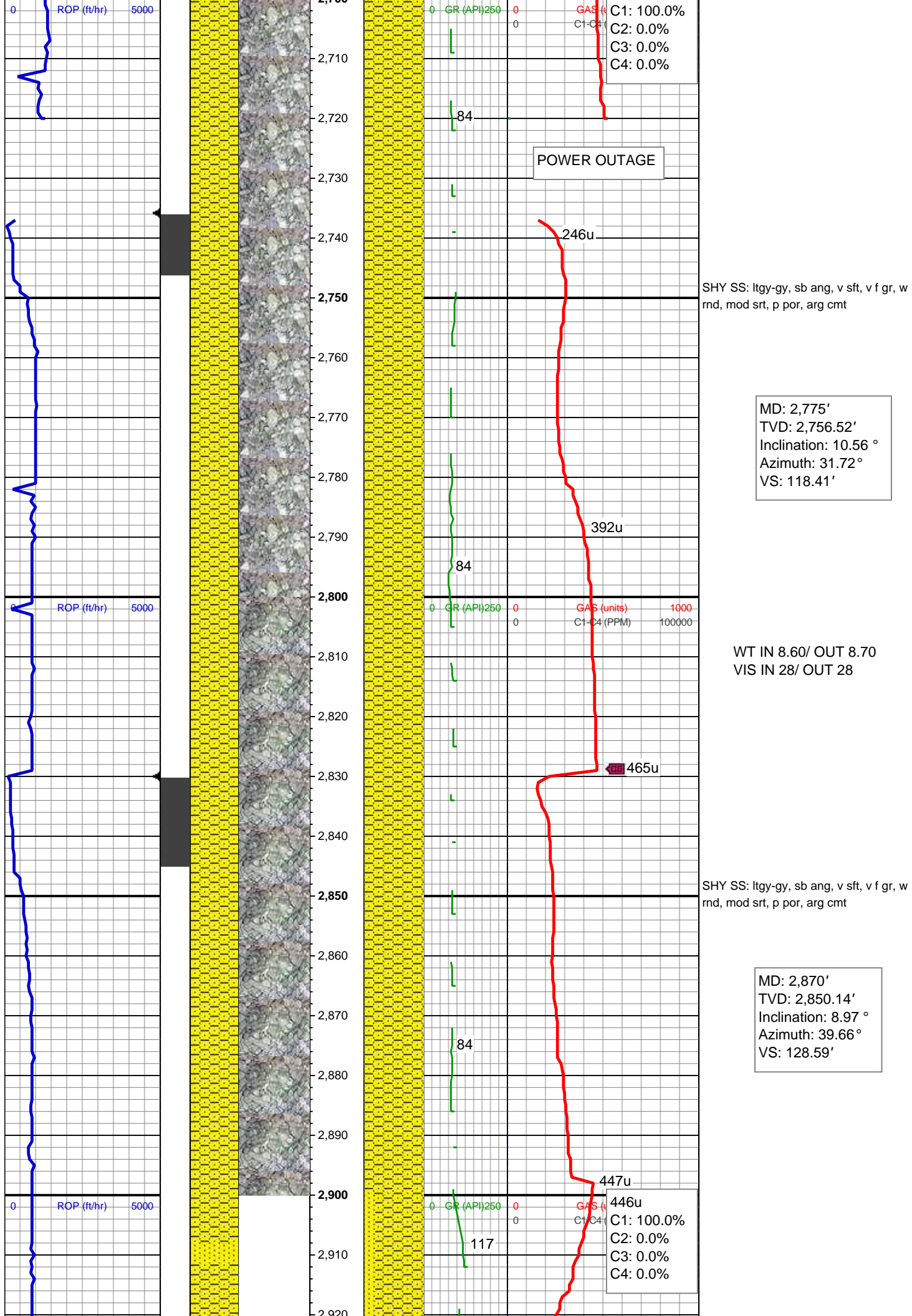
MD: 2,491'
TVD: 2,478.13'
Inclination: 11.91 °
Azimuth: 31.36 °
VS: 86.72'

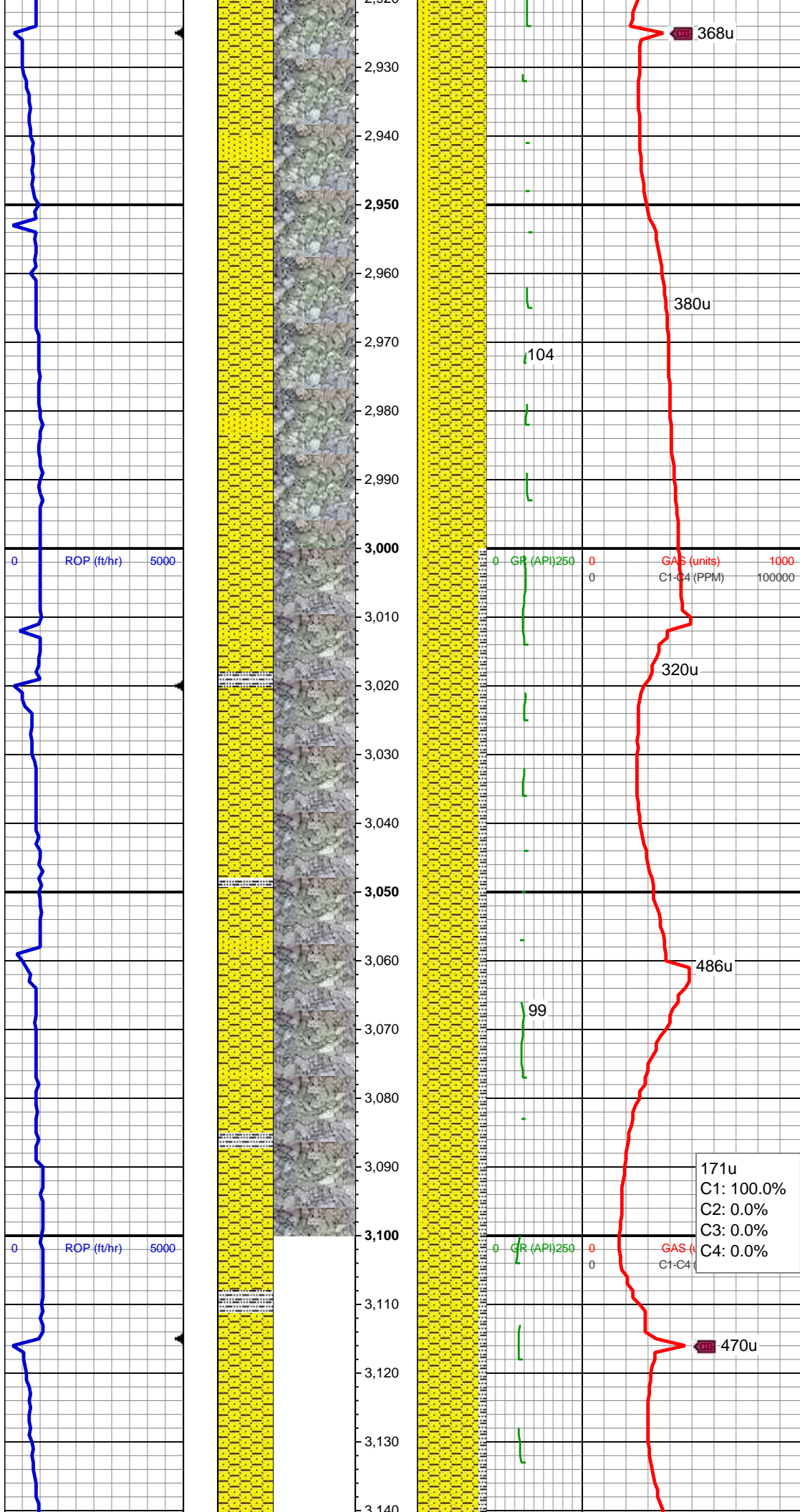
SHY SS: ltgy-gy, sb ang, v sft, v f gr, w
rnd, mod srt, p por, arg cmt, rr pyr
SS: clr-wh-ltgy, sb ang-sb rnd, v f -f gr, w
rnd, mod srt, mod por, calc cmt, rr glau

MD: 2,586'
TVD: 2,571.13'
Inclination: 11.61 °
Azimuth: 29.62 °
VS: 97.67'

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

MD: 2,681'
TVD: 2,664.23'
Inclination: 11.35 °
Azimuth: 30.17 °
VS: 108.2'





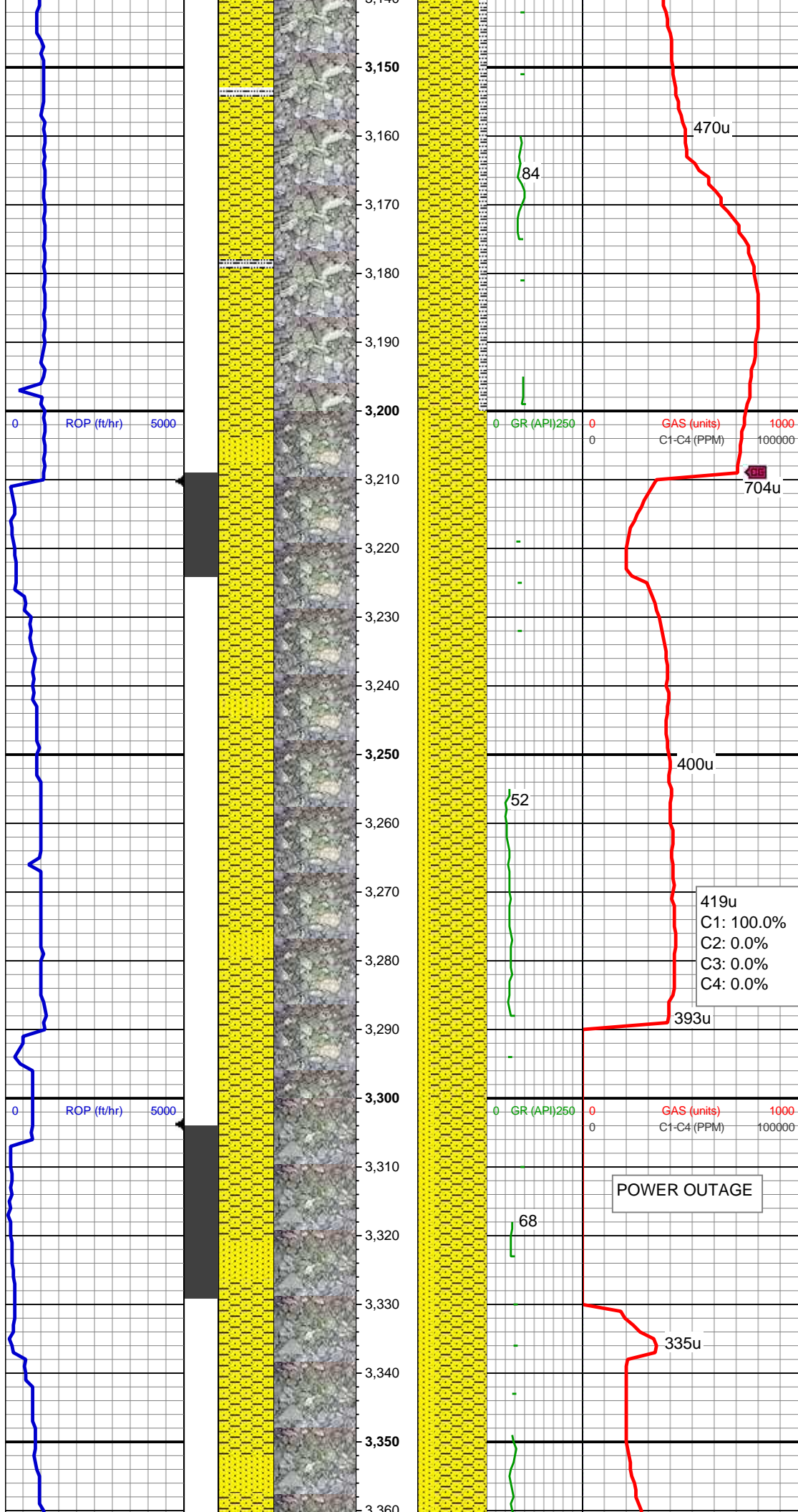
SHY SS: ltgy-gy, sb ang, v sft, v f gr, w
rnd, mod srt, p por, arg cmt
SS: clr-wh-ltgy, sb ang-sb rnd, v f -f gr, w
rnd, mod srt, mod por, calc cmt, occ
glau

MD: 2,965'
TVD: 2,944.16'
Inclination: 7.47 °
Azimuth: 38.05 °
VS: 137.83'

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, scat glau
SLTY SH: lt gy-dk gy, sb blkgy-sb plty, v sft,
sly tex, arg cmt

MD: 3,060'
TVD: 3,038.4'
Inclination: 7.03 °
Azimuth: 37.03 °
VS: 145.78'

171u
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: lt gy-dk gy, sb blkly-sb plty, v sft,
sfty tex, arg cmt

MD: 3,154'
TVD: 3,131.68'
Inclination: 7.21 °
Azimuth: 36.98 °
VS: 153.41'

MD: 3,249'
TVD: 3,226.08'
Inclination: 5.68 °
Azimuth: 40.99 °
VS: 160.63'

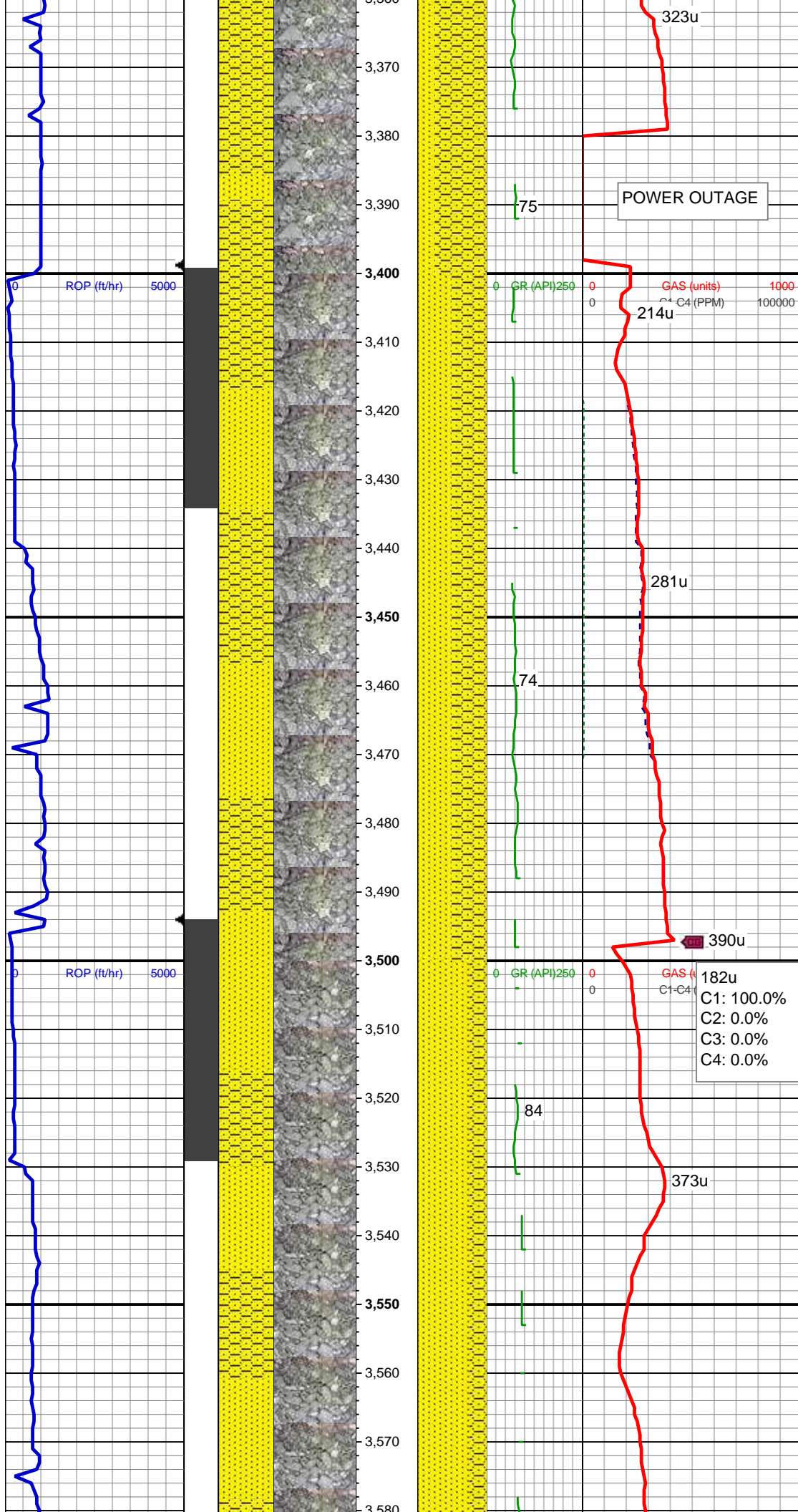
SHY SS: ltgy-gy, sb ang, v sft, v f gr, w
rnd, mod srt, p por, arg cmt
SS: clr-wh, sb ang-sb rnd, v f -f gr, w rnd,
mod srt, calc cmt, scat glau

419u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%

POWER OUTAGE

MD: 3,344'
TVD: 3,320.71'
Inclination: 4.38 °
Azimuth: 35.36 °
VS: 166.25'

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, scat glau

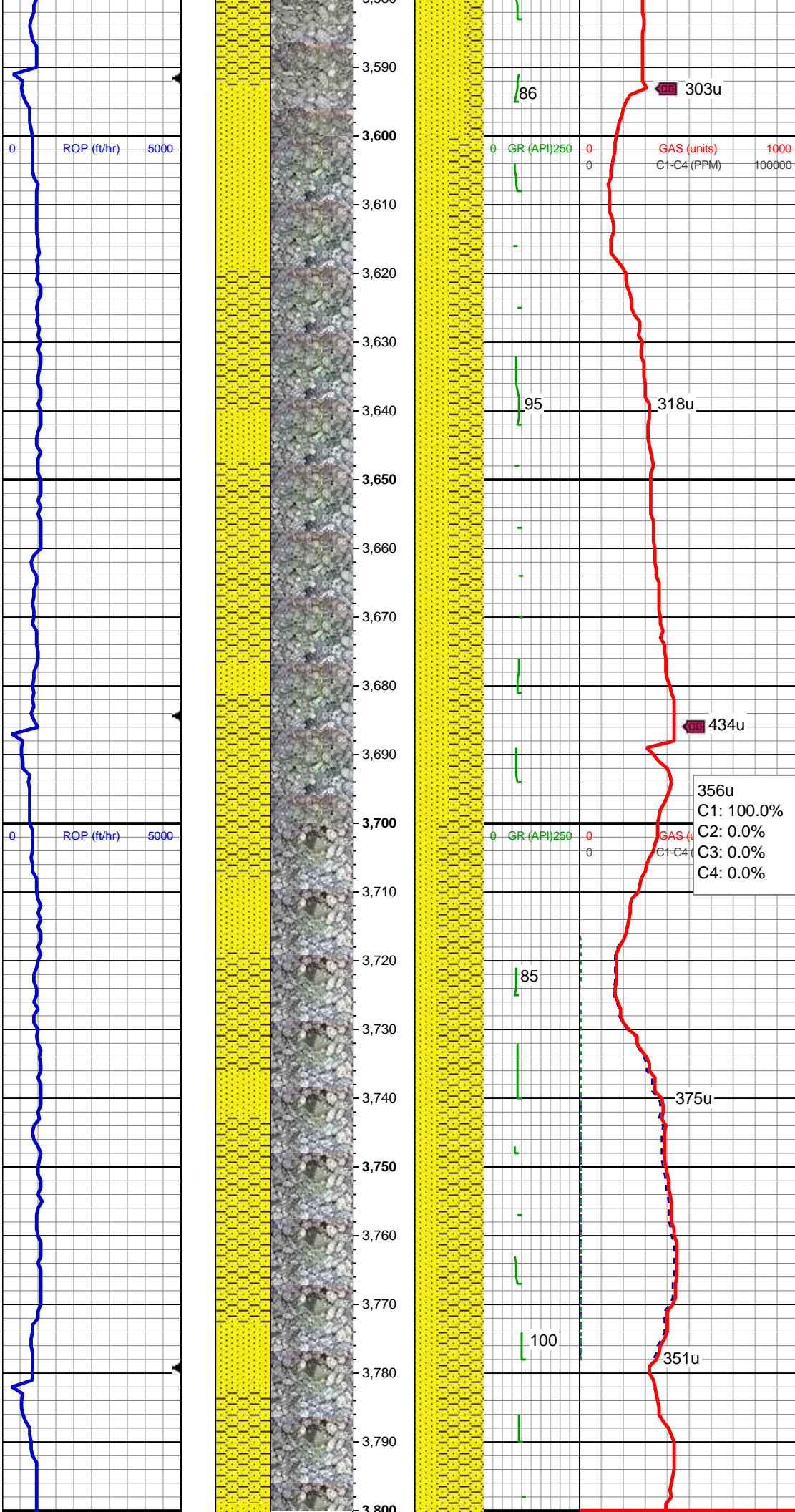


MD: 3,439'
TVD: 3,415.52'
Inclination: 2.75 °
Azimuth: 50.35 °
VS: 170.39'

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

MD: 3,534'
TVD: 3,510.49'
Inclination: 0.35 °
Azimuth: 105.68 °
VS: 172.51'

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



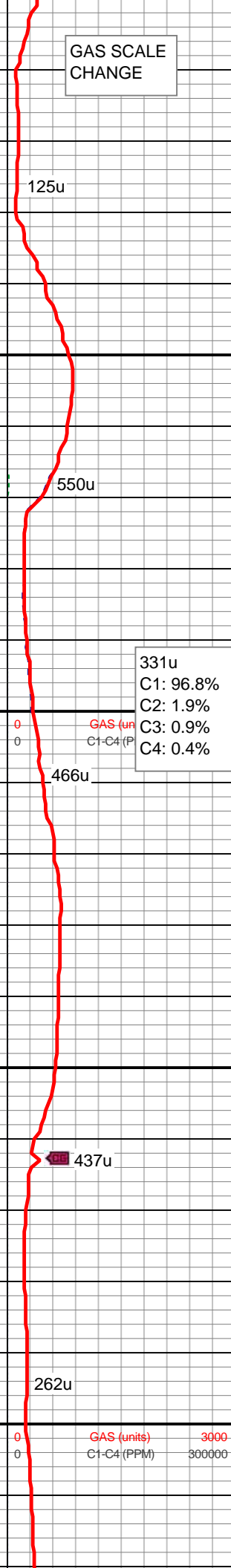
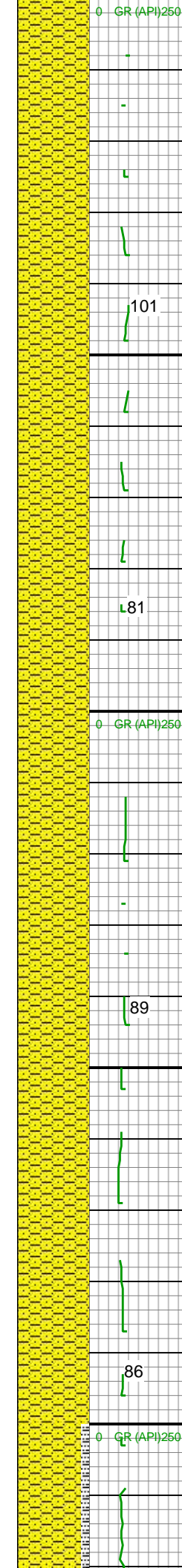
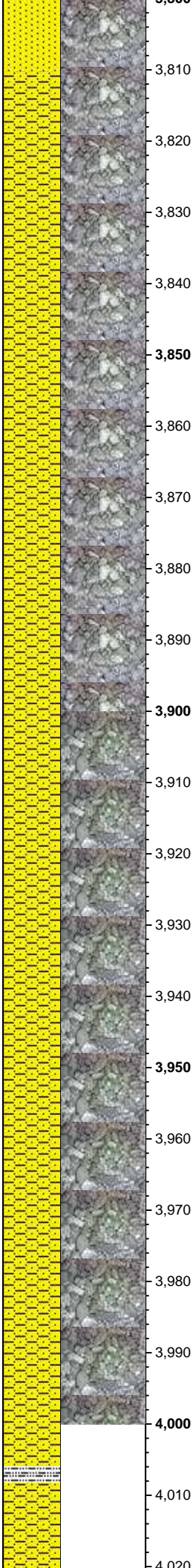
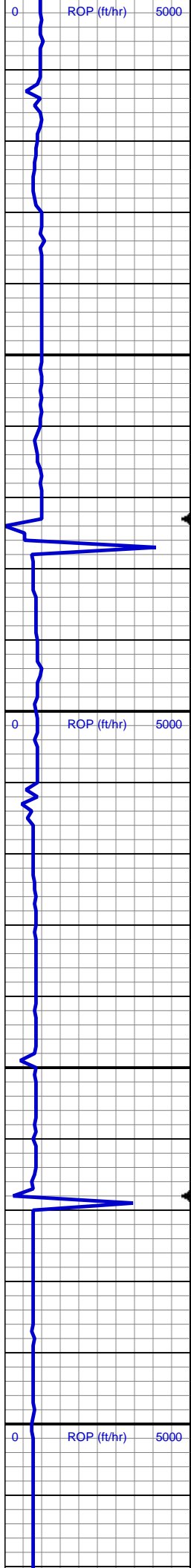
MD: 3,629'
TVD: 3,605.48'
Inclination: 0.52 °
Azimuth: 123.15 °
VS: 173.13'

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, scat glau

356u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%

MD: 3,723'
TVD: 3,699.48'
Inclination: 0.42 °
Azimuth: 70.09 °
VS: 173.8'

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, scat glau



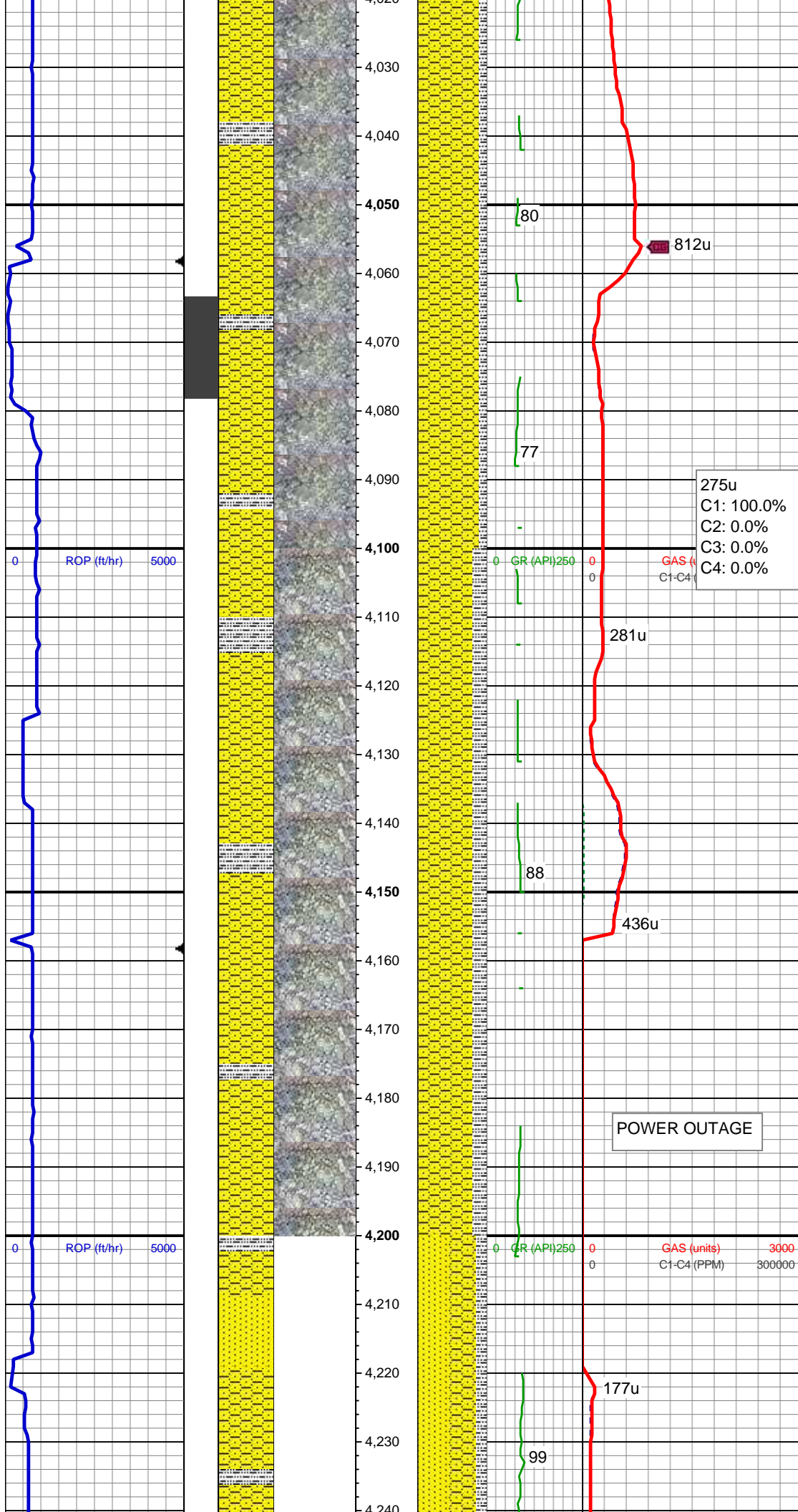
MD: 3,818'
TVD: 3,794.48'
Inclination: 0.75 °
Azimuth: 321.68 °
VS: 173.79'

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

MD: 3,913'
TVD: 3,889.46'
Inclination: 1.27 °
Azimuth: 300.71 °
VS: 172.57'

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

MD: 4,008'
TVD: 3,984.43'
Inclination: 1.59 °
Azimuth: 312.91 °
VS: 170.81'



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,
sly tex, arg cmt

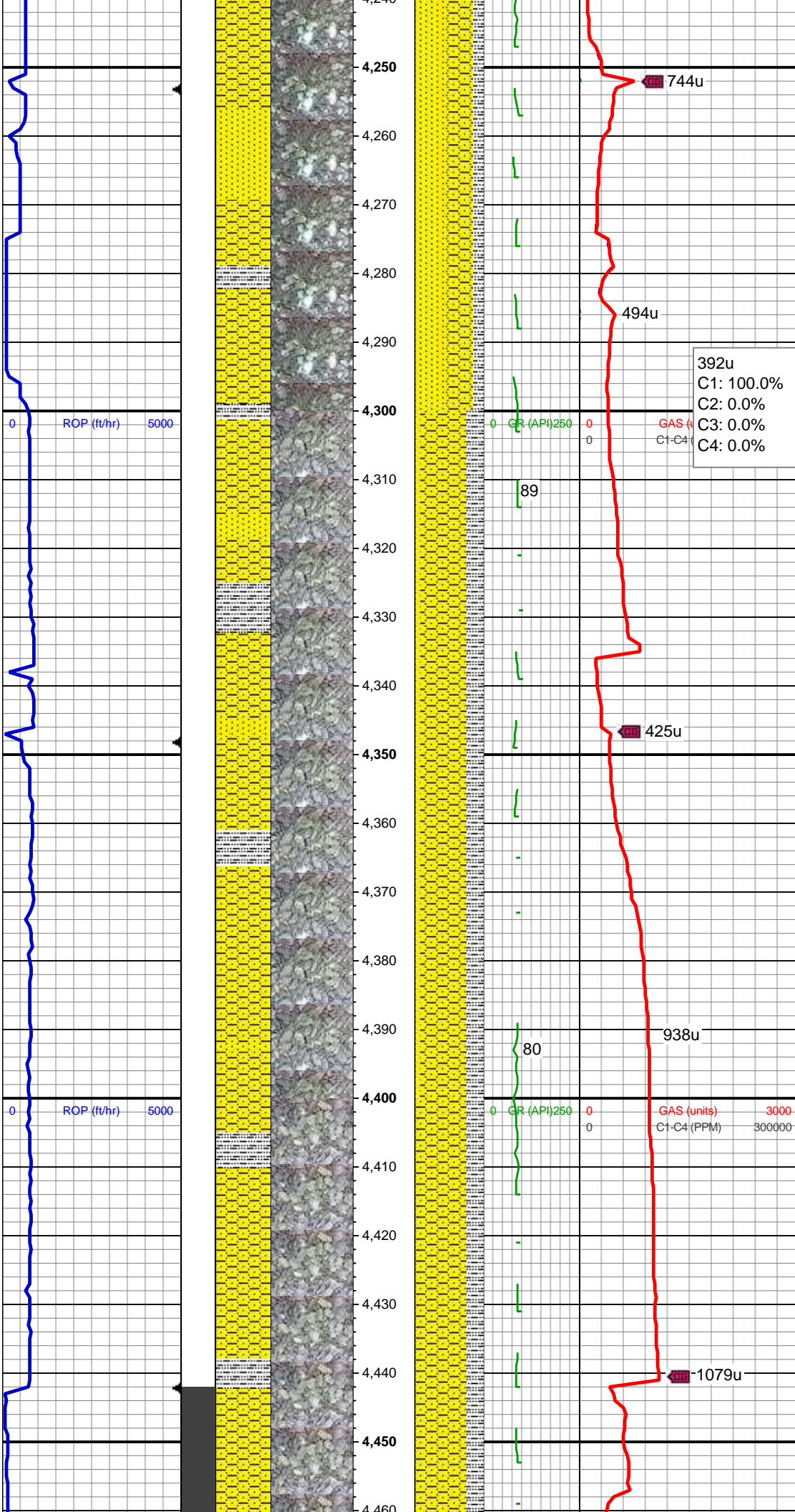
275u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%

MD: 4,103'
TVD: 4,079.41'
Inclination: 0.59 °
Azimuth: 341.11 °
VS: 169.78'

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,
sly tex, arg cmt

POWER OUTAGE

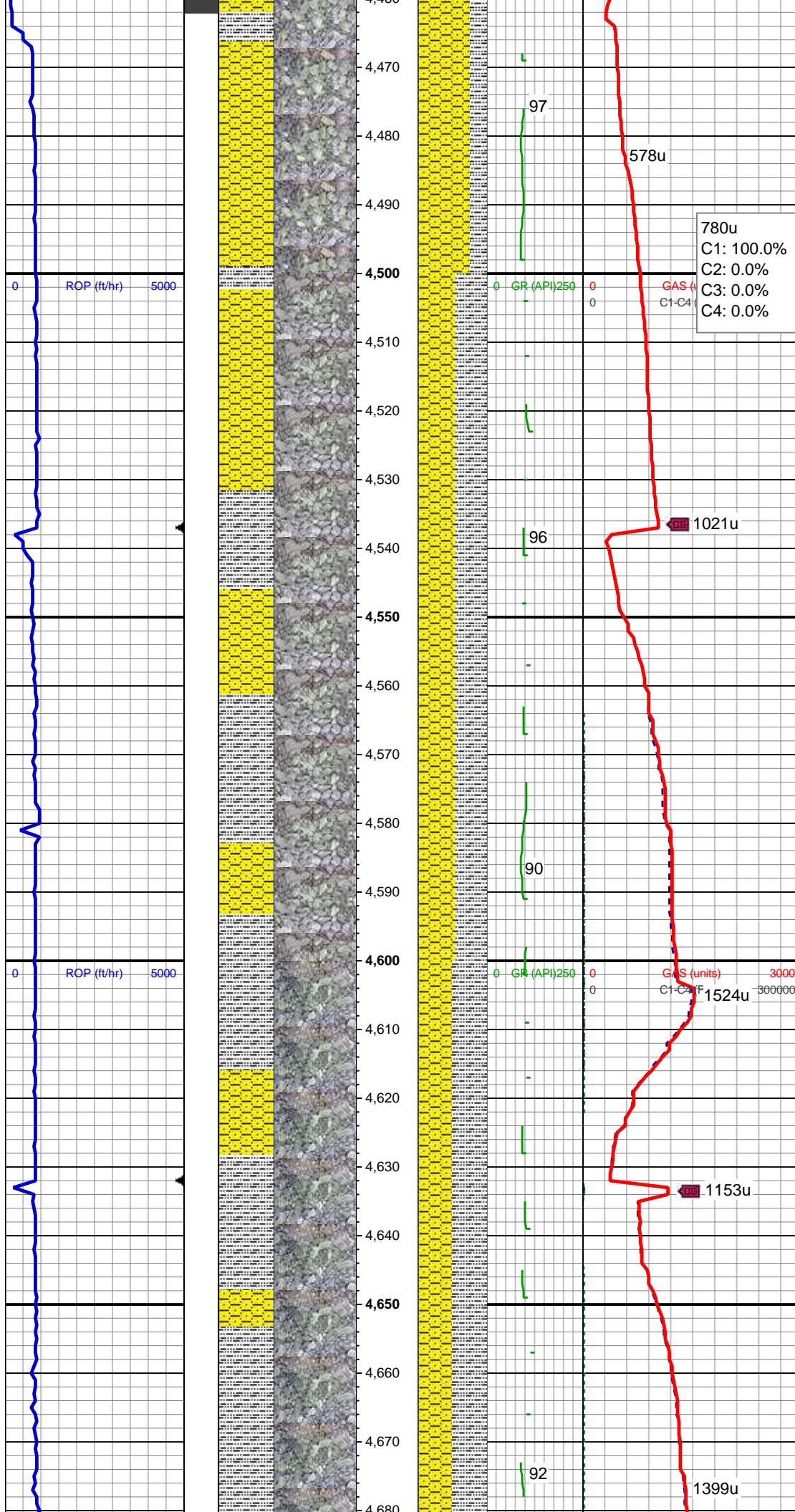
MD: 4,198'
TVD: 4,174.41'
Inclination: 0.7 °
Azimuth: 339.15 °
VS: 169.48'



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,
sly 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,
sly 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,
sly tex, arg cmt



MD: 4,482'
TVD: 4,458.36'
Inclination: 0.38 °
Azimuth: 25.6 °
VS: 167.03'

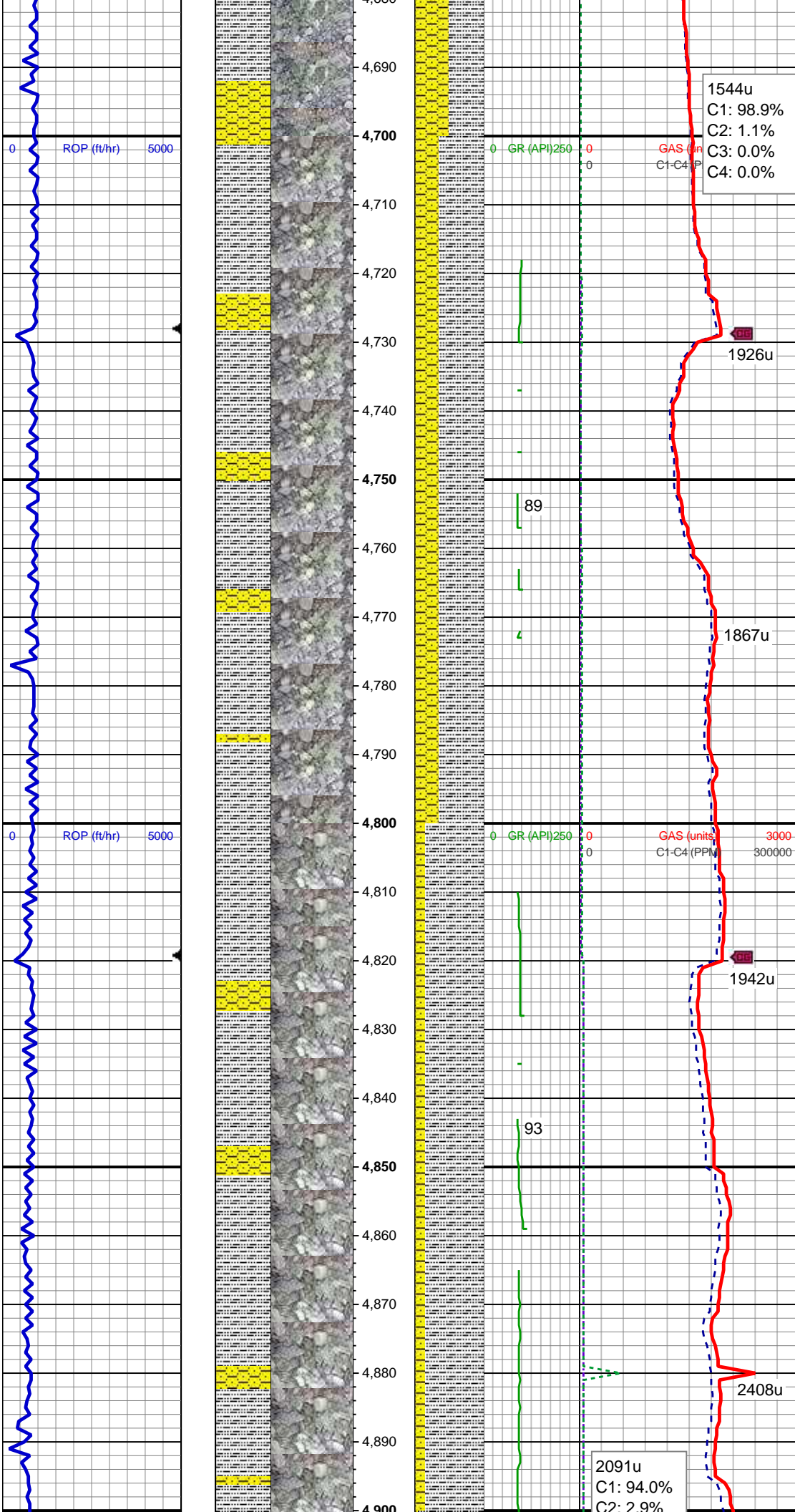
780u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%

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

MD: 4,577'
TVD: 4,553.36'
Inclination: 0.53 °
Azimuth: 4.24 °
VS: 167.25'

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

MD: 4,672'
TVD: 4,648.36'
Inclination: 0.33 °
Azimuth: 86.73 °
VS: 167.59'



1544u
C1: 98.9%
C2: 1.1%
C3: 0.0%
C4: 0.0%

1926u

1867u

1942u

2408u

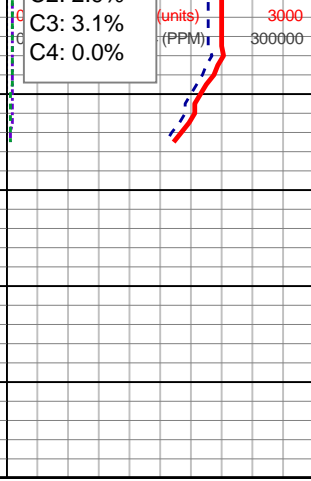
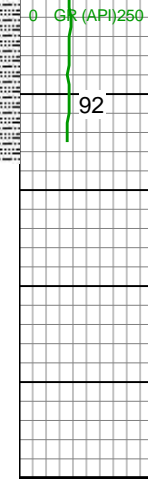
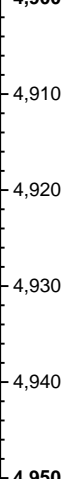
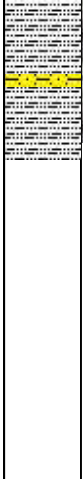
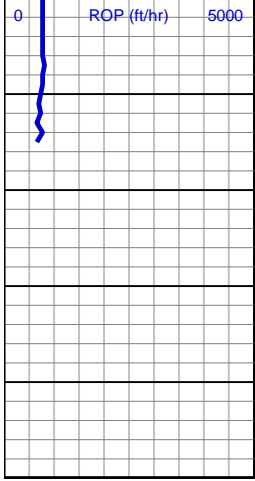
2091u
C1: 94.0%
C2: 2.9%

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, tr glauc

MD: 4,766'
TVD: 4,742.35'
Inclination: 0.62 °
Azimuth: 79.07 °
VS: 168.36'

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, tr glauc

MD: 4,860'
TVD: 4,836.35'
Inclination: 0.26 °
Azimuth: 108.94 °
VS: 169.06'



SLTY SH: lt gy-dk gy, sb blkgy-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

TD @ 4915' MD
09/09/2014 @ 3:23 PM

LOG CONTINUES ON MPlot
"ROHN STATE LD03-63-1HN
HORZ"