

COLUMBINE LOGGING

Scale: 5" / 100'
Measured Depth Log

Well Name Rohn State LD10-62HN

Location SESE SEC 9 T9N R58W

State COLORADO

County WELD

Country USA

Rig Number H&P 273

API Number 05-123-37624

Field WILDCAT

Region DJ BASIN

Drilling Completed 10/23/2014

Spud Date 10/21/2014

Surface Coordinates 810' FSL; 330' FEL

Bottom Hole Coordinates 660' FFSLL; 660' FFELL

Ground Elevation 4719'

K.B. Elevation 4743'

Logged Interval 1213' To 4929'

Total Depth 4929'

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

CAI CARBOUS

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 Nick Kopiasz

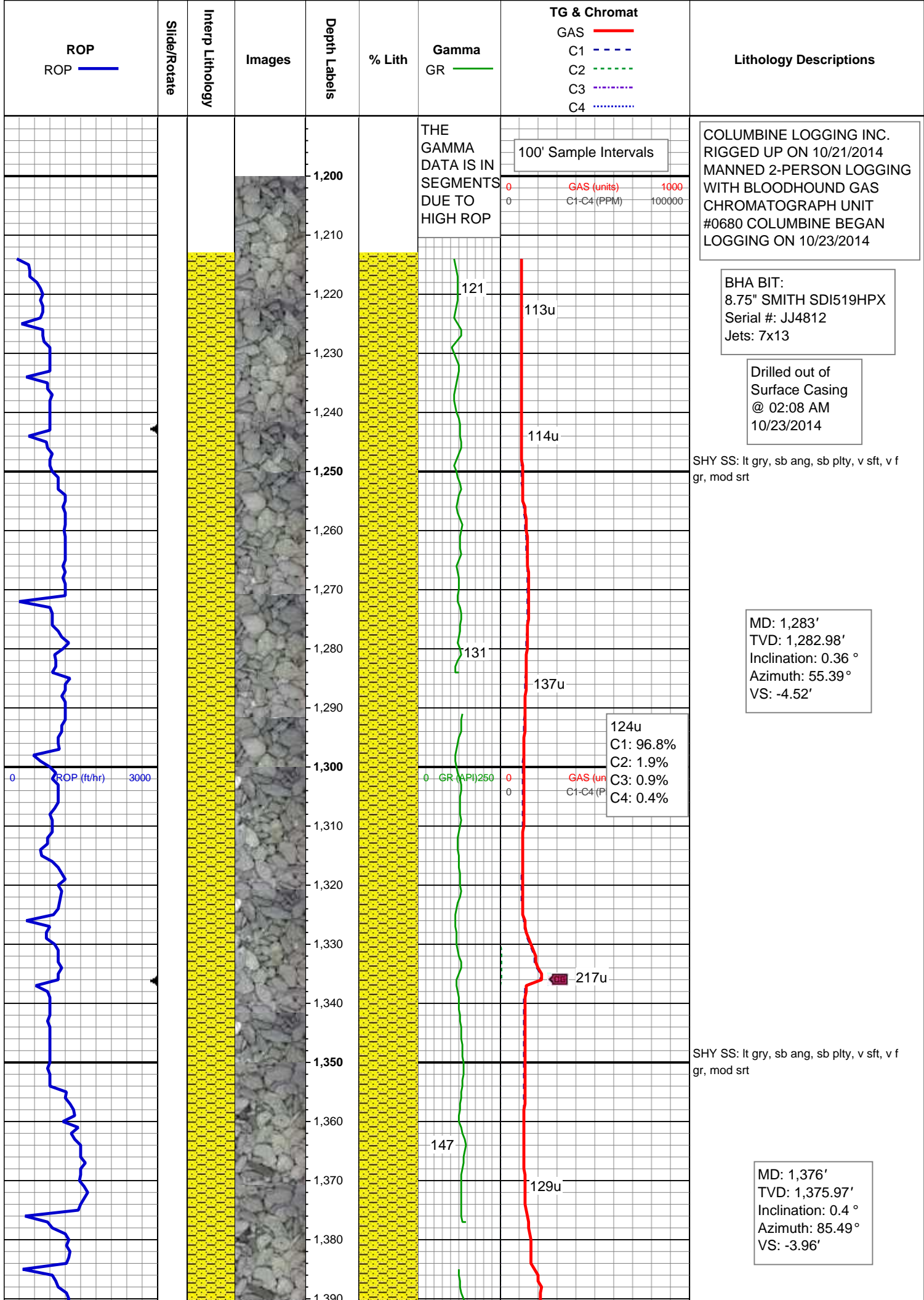
Wellsite Geological Services Provided By Columbine Logging Inc.

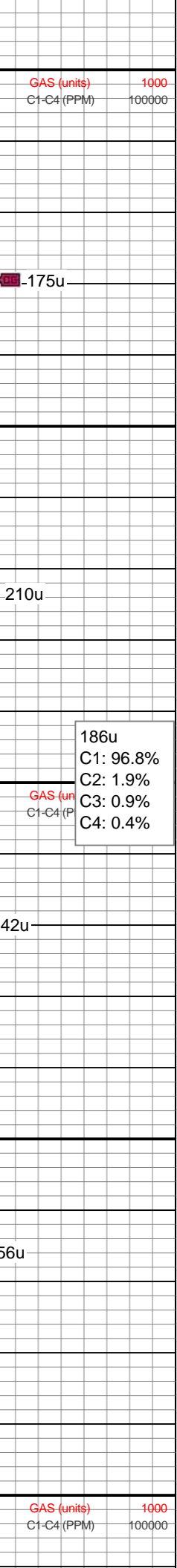
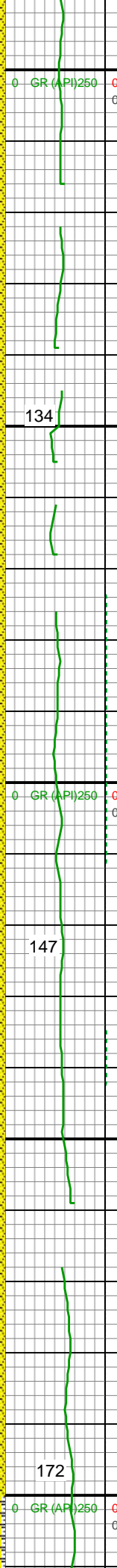
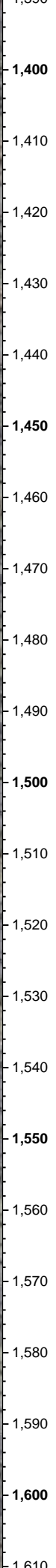
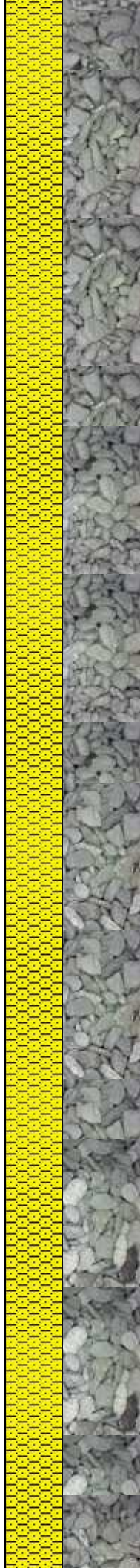
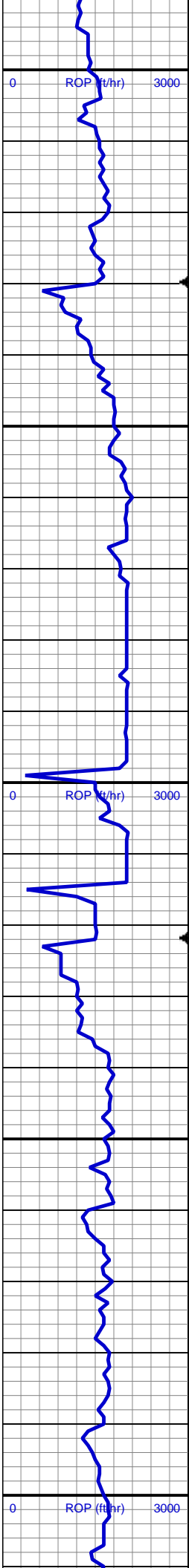
Geologist

Name RENEE CLACKER

Company NOBLE ENERGY INC.

Address 1625 Broadway Suite 2200
Denver, CO 80202





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

MD: 1,469'
TVD: 1,468.97'
Inclination: 0.56 °
Azimuth: 47.38 °
VS: -3.3'

186u
C1: 96.8%
C2: 1.9%
C3: 0.9%
C4: 0.4%

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

MD: 1,562'
TVD: 1,561.97'
Inclination: 0.41 °
Azimuth: 27.93 °
VS: -2.81'

175u

210u

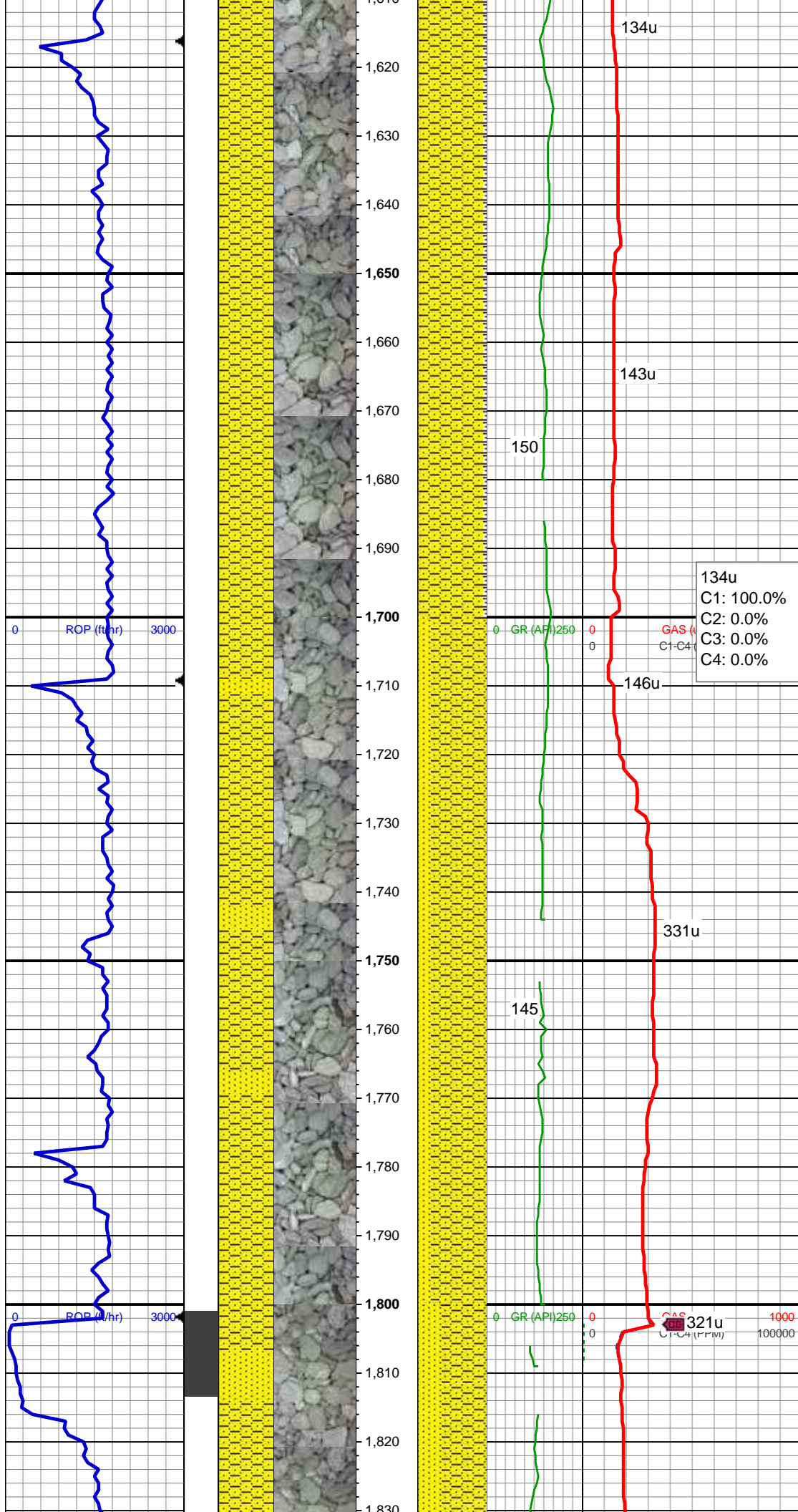
142u

156u

134

147

172



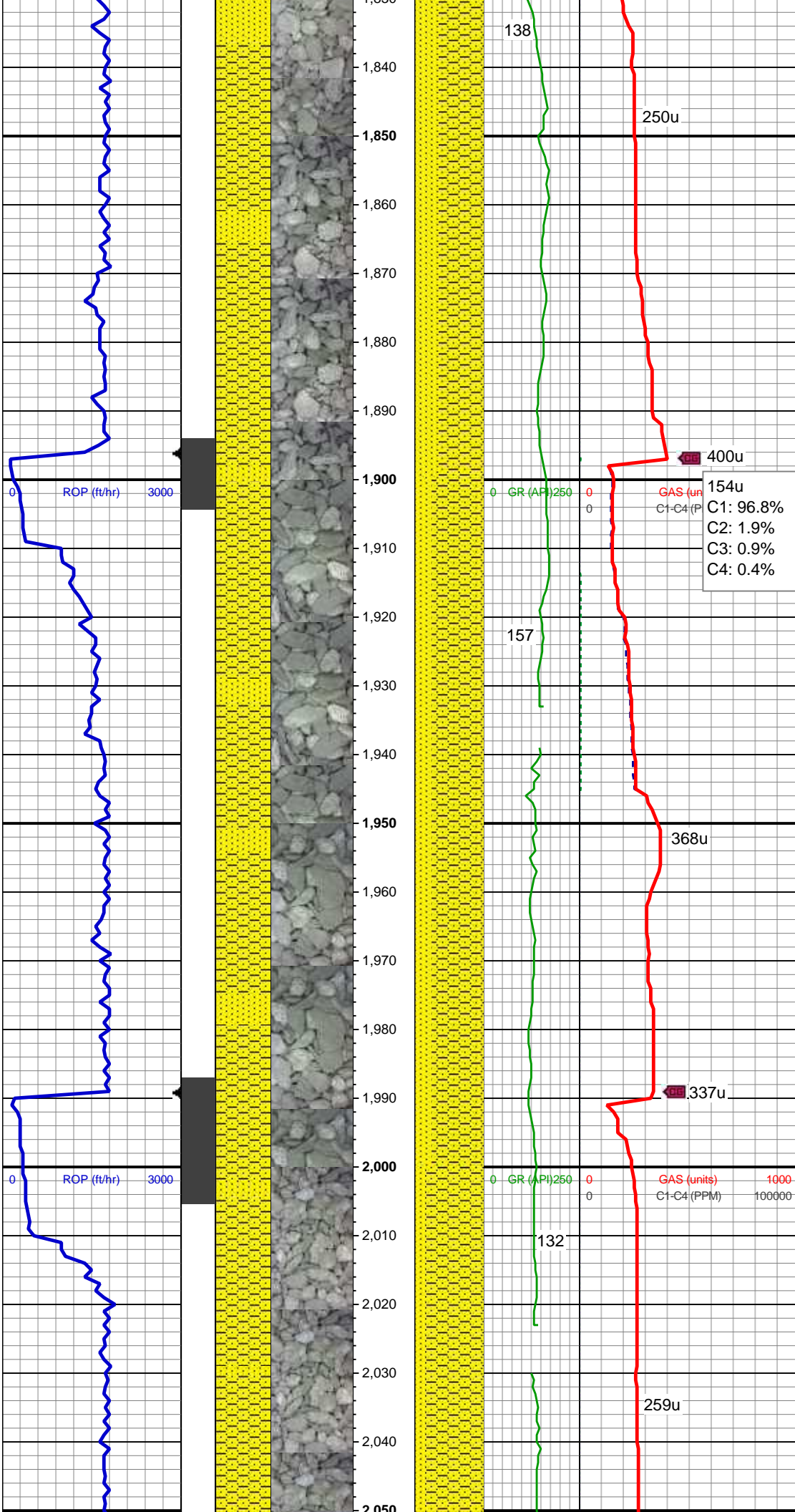
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gr, mod srt
SLTY SH: gry-dkr gry, rnd, sb plty, v sft,
sly tex

134u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%

MD: 1,747'
TVD: 1,746.97'
Inclination: 0.29 °
Azimuth: 218.33 °
VS: -2.79'

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: 1,840'



TVD: 1,839.94'
Inclination: 2.07 °
Azimuth: 139.62 °
VS: -1.85'

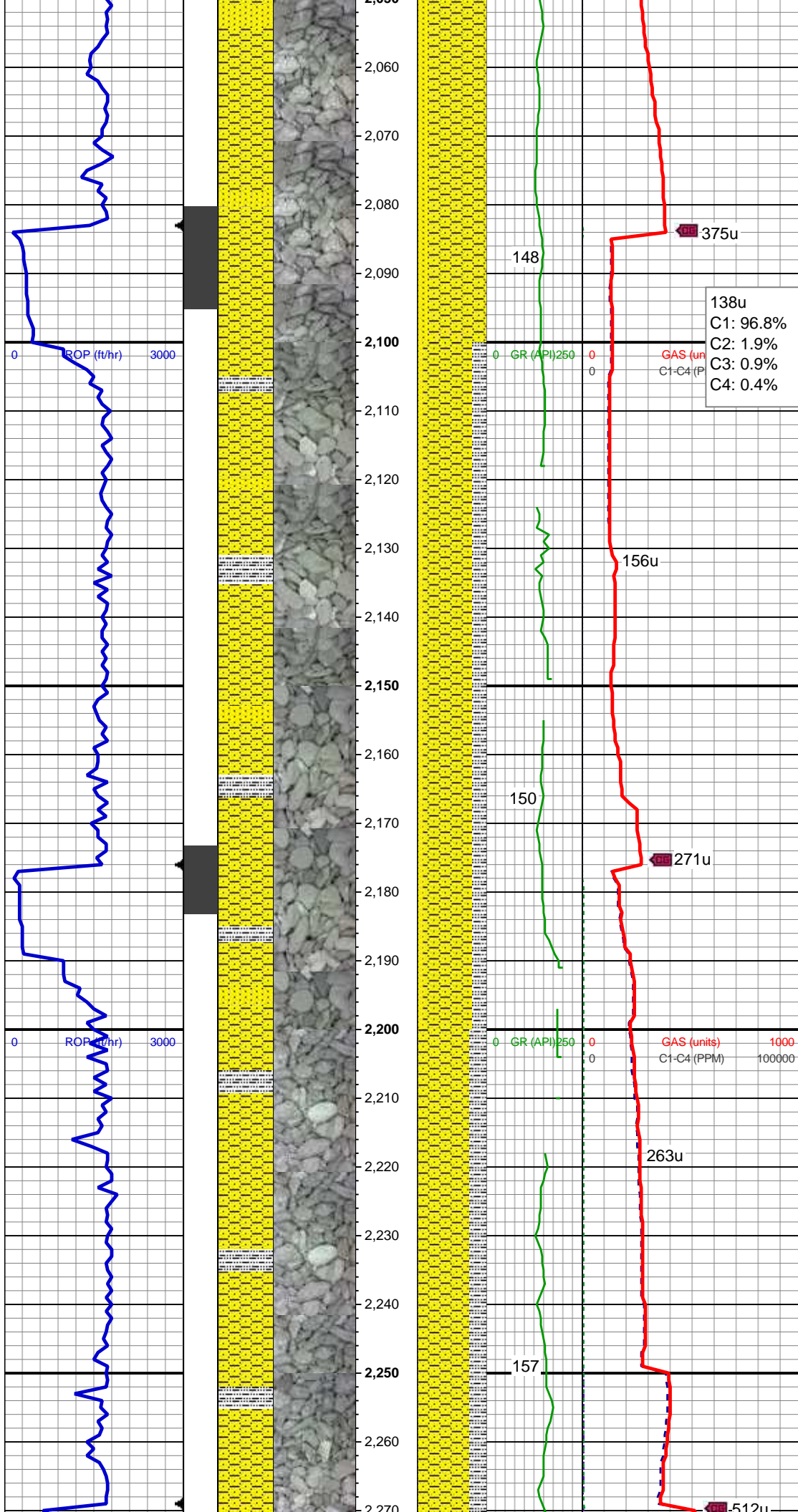
SHY SS: lt gry, sb ang, sb plty, v sft, v f
gr, mod srt
SS: clr, lt gry-wht, occ sap, sb rnd, f gr,
hrd-frm, mod-w srt, sl calc cmt

MD: 1,933'
TVD: 1,932.85'
Inclination: 3.23 °
Azimuth: 112.73 °
VS: 1.66'

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: 2,026'
TVD: 2,025.55'
Inclination: 5.82 °
Azimuth: 110.02 °
VS: 8.52'

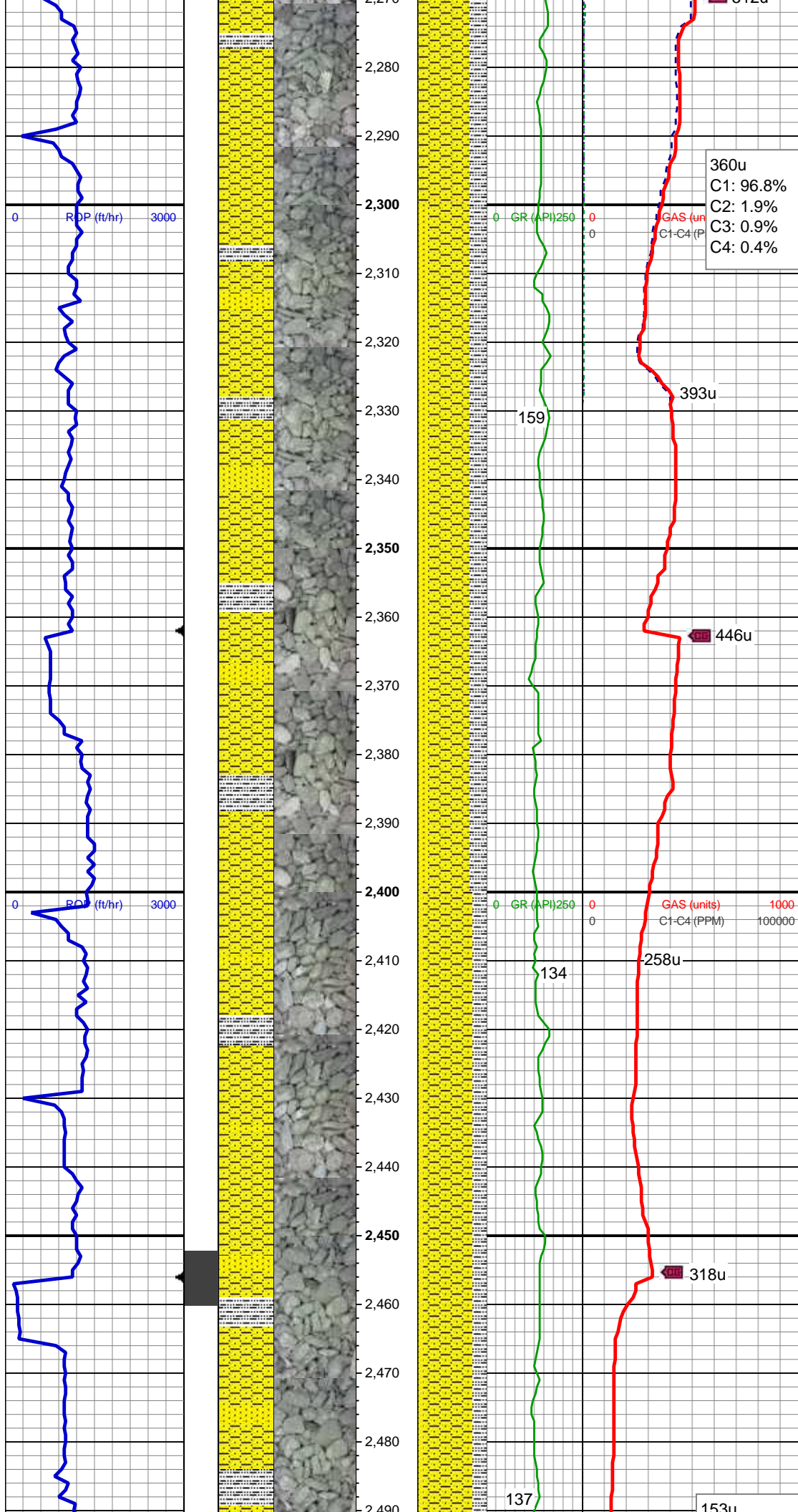
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gr, mod srt
SS: clr, lt gry-wht, occ sap, sb rnd, f gr,
hrd-frm, mod-w srt, sl calc cmt



SS: clr, lt gry-wht, occ sap, sb rnd, f gr,
hrd-frm, mod-w srt, sl calc cmt, tr glauc

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,
silty tex
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,
silty tex

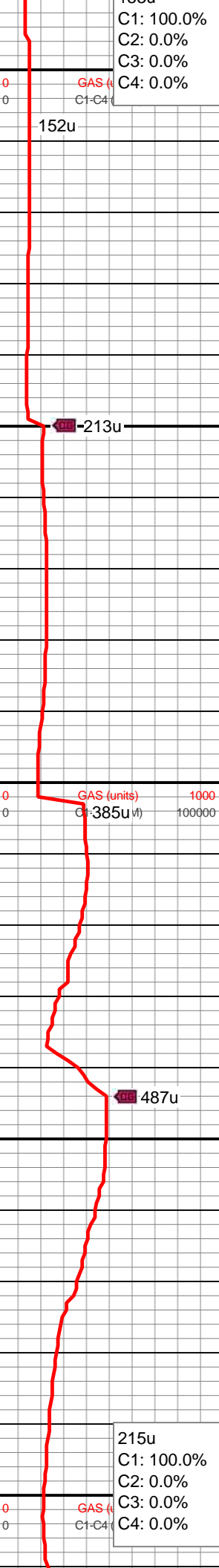
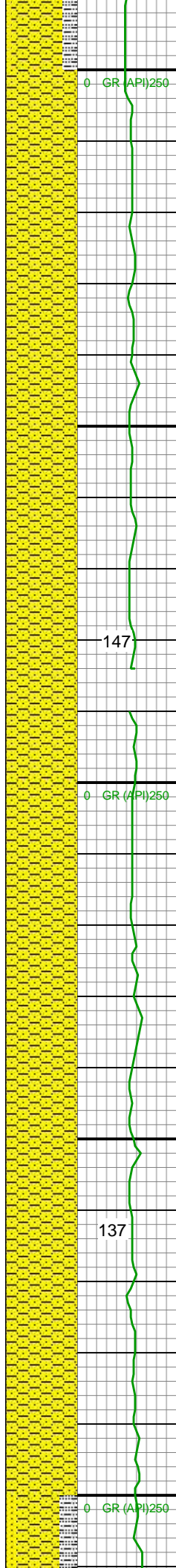
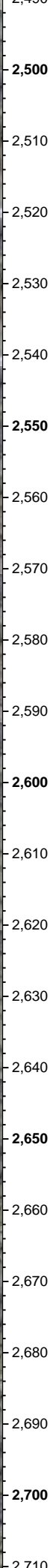
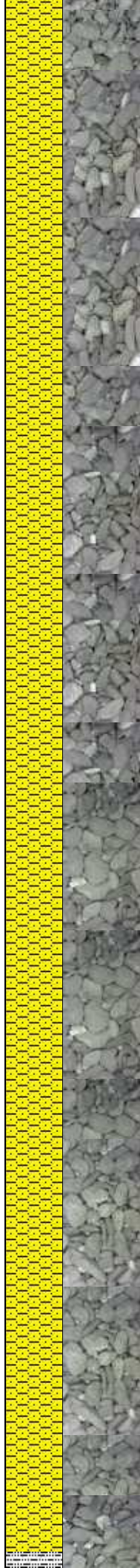
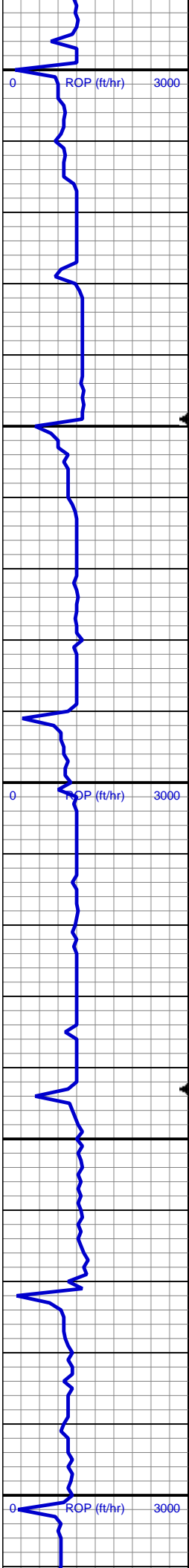


MD: 2,305'
TVD: 2,302.11'
Inclination: 7.81 °
Azimuth: 101.49 °
VS: 43.69'

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-frm, mod-w srt, sl calc cmt

MD: 2,398'
TVD: 2,394.31'
Inclination: 7.2 °
Azimuth: 98.49 °
VS: 55.65'

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-frm, mod-w srt, sl calc cmt



2,500

2,510

2,520

2,530

2,540

2,550

2,560

2,570

2,580

2,590

2,600

2,610

2,620

2,630

2,640

2,650

2,660

2,670

2,680

2,690

2,700

2,710

152u

213u

147

385u

487u

137

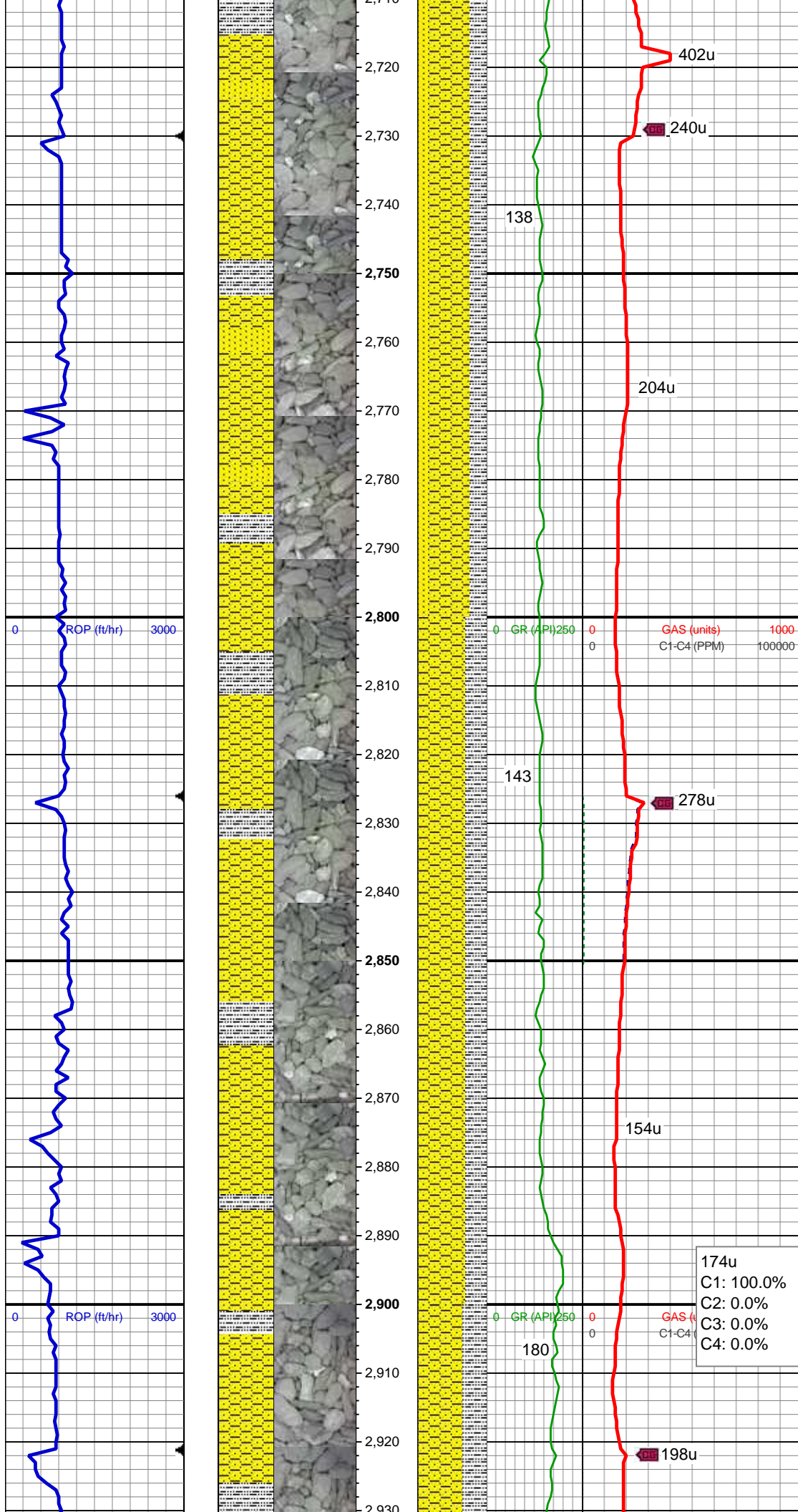
215u

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

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

MD: 2,582'
TVD: 2,576.65'
Inclination: 8.18 °
Azimuth: 96.6 °
VS: 80.07'

MD: 2,677'
TVD: 2,670.73'
Inclination: 7.76 °
Azimuth: 97.01 °
VS: 93.16'



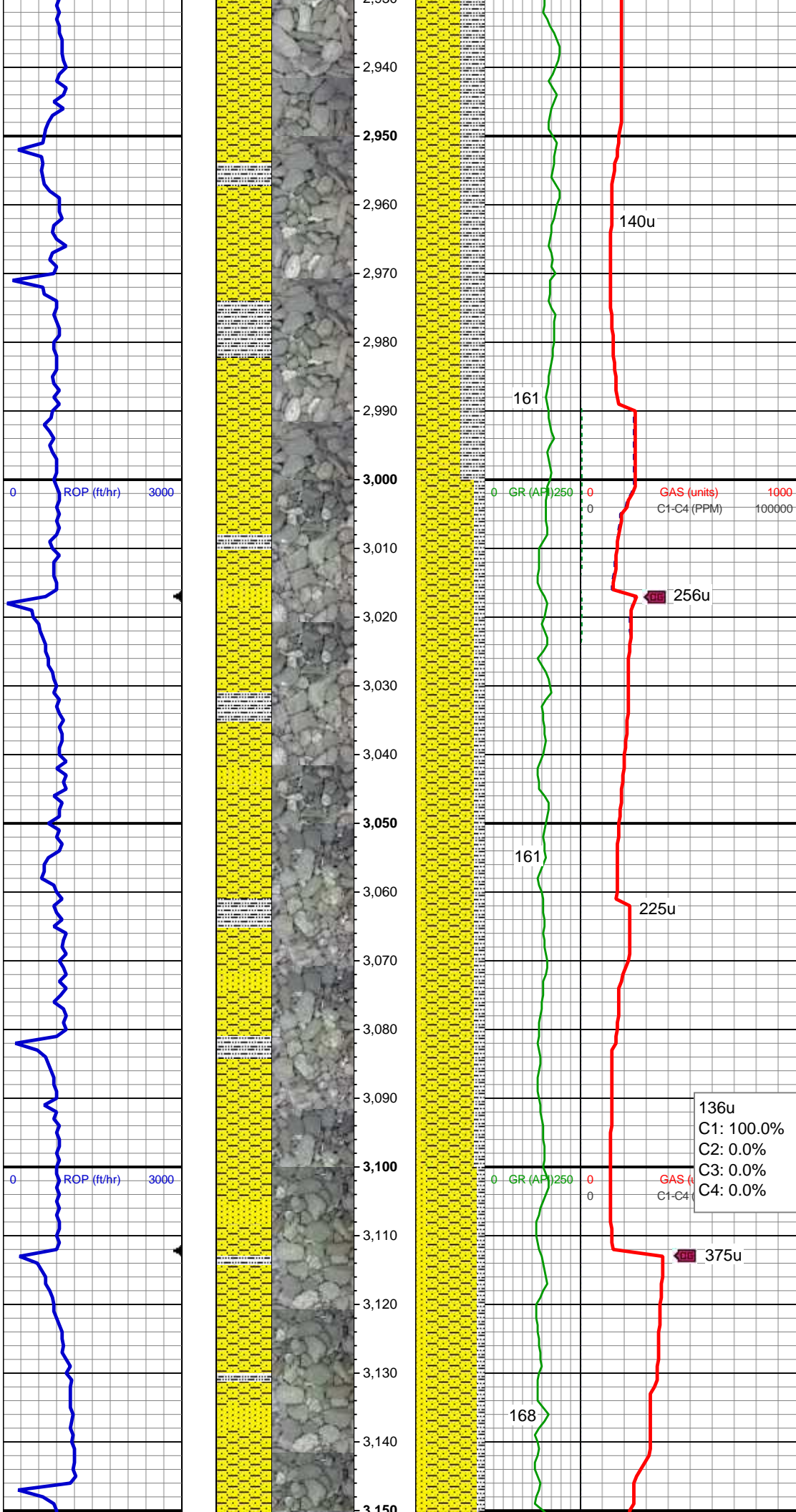
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gr, mod srt
SLTY SH: gry-dkr gry, rnd, sb plty, v sft,
silty tex
SS: clr, lt gry-wht, occ sap, sb rnd, f gr,
hrd-frn, mod-w srt, sl calc cmt

MD: 2,772'
TVD: 2,764.94'
Inclination: 7.1 °
Azimuth: 97.05 °
VS: 105.36'

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,
silty tex

MD: 2,867'
TVD: 2,859.32'
Inclination: 5.92 °
Azimuth: 91.83 °
VS: 116.09'

174u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%



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

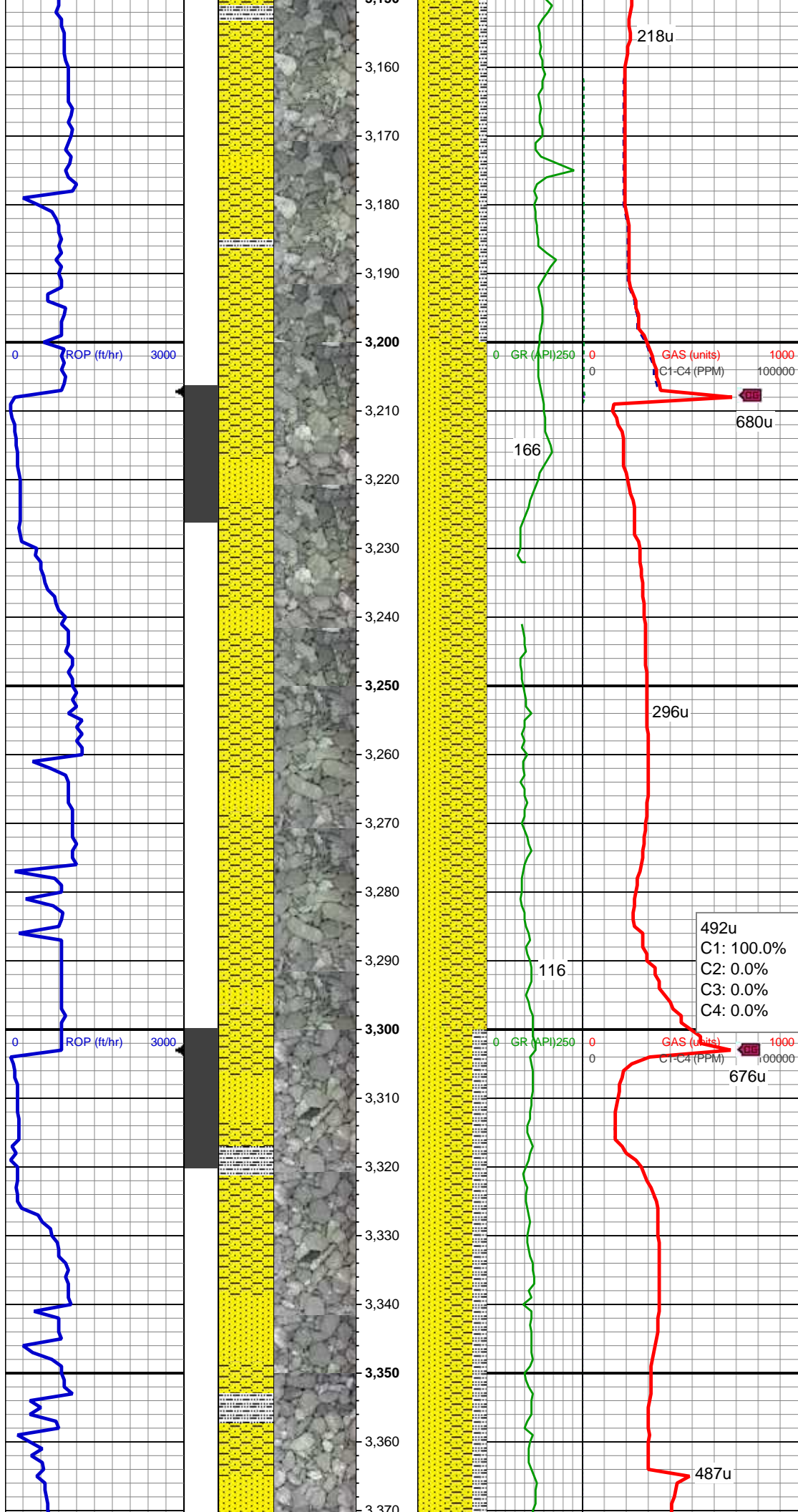
MD: 2,962'
TVD: 2,953.87'
Inclination: 5.31 °
Azimuth: 88.6°
VS: 125.38'

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 frm, mod-w srt, sl calc cmt

MD: 3,057'
TVD: 3,048.48'
Inclination: 5.08 °
Azimuth: 83.43°
VS: 133.96'

136u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%

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,



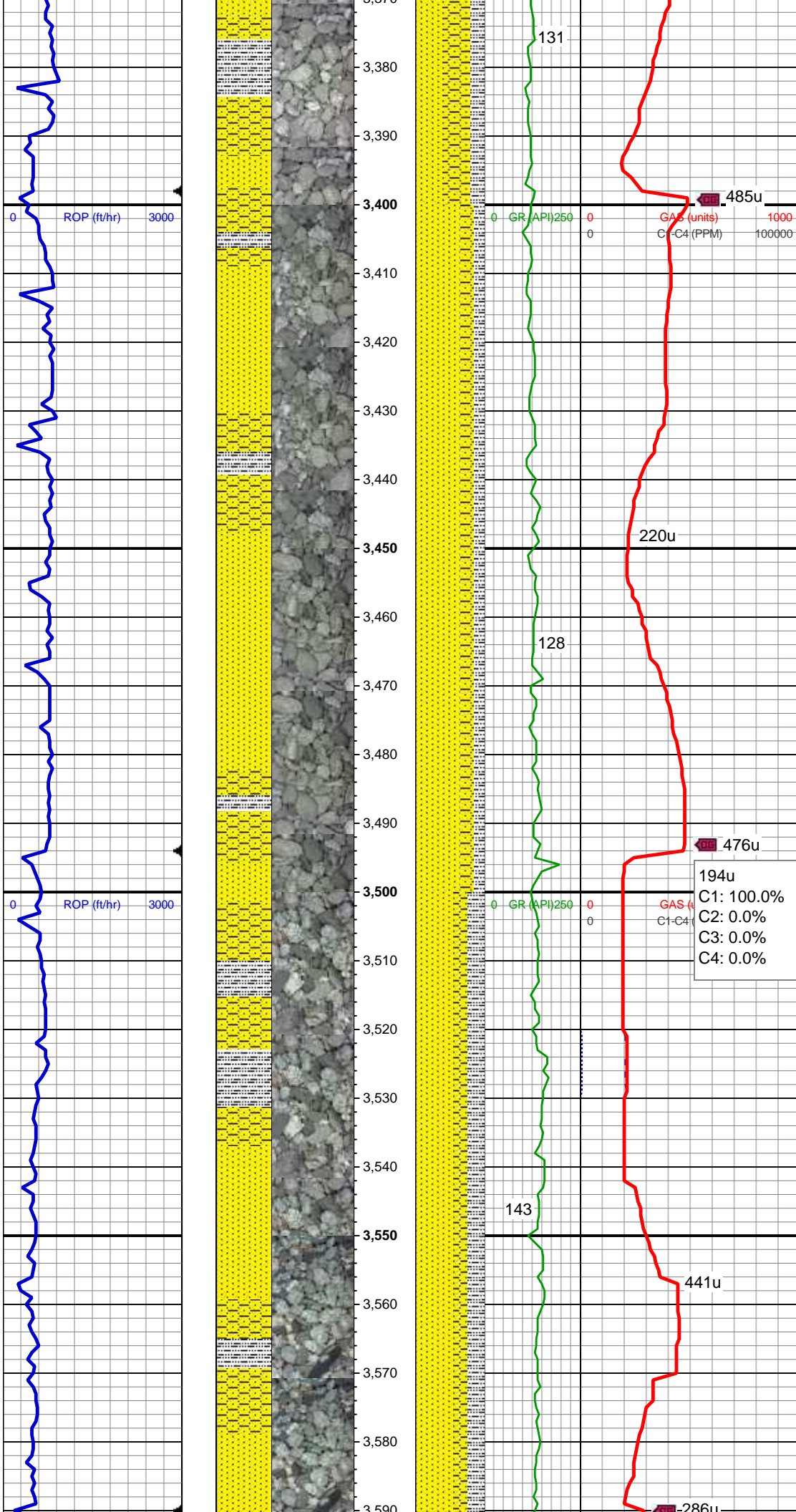
hrd-frm, mod-w srt, sl calc cmt
SLTY SH: gry-dkr gry, rnd, sb plty, v sft,
sly tex

MD: 3,152'
TVD: 3,143.12'
Inclination: 4.83 °
Azimuth: 84.05 °
VS: 142.11'

MD: 3,246'
TVD: 3,236.89'
Inclination: 3.17 °
Azimuth: 61.7 °
VS: 148.33'

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
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,
sly tex

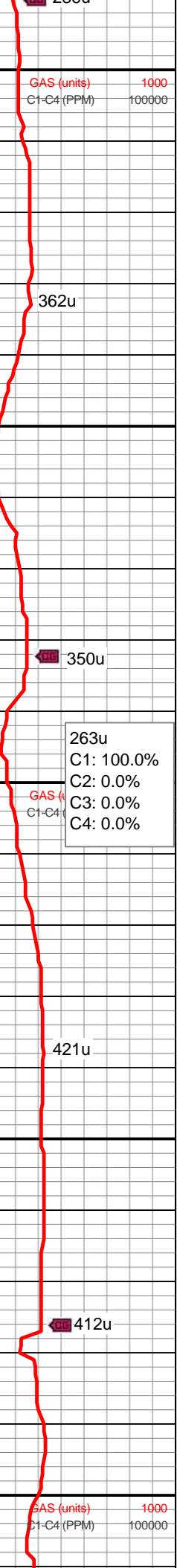
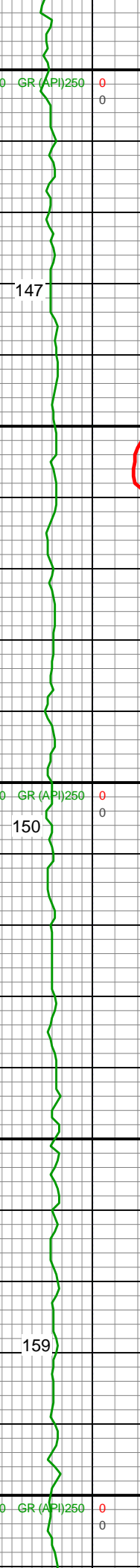
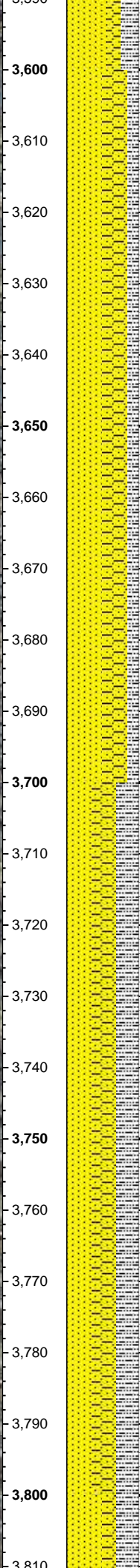
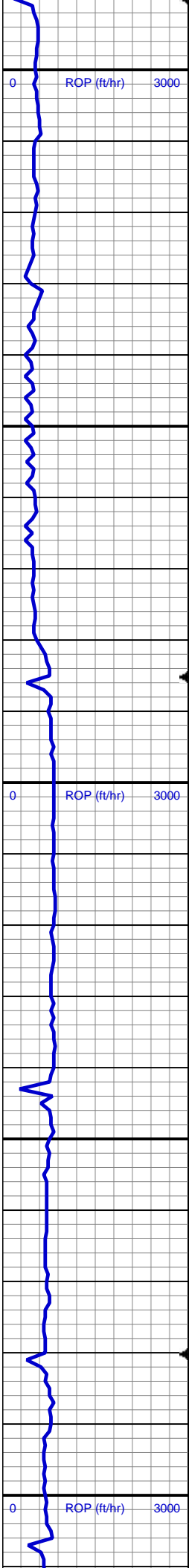


MD: 3,436'
TVD: 3,426.76'
Inclination: 0.87 °
Azimuth: 44.49 °
VS: 153.97'

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

MD: 3,531'
TVD: 3,521.75'
Inclination: 0.92 °
Azimuth: 45.6 °
VS: 155.02'

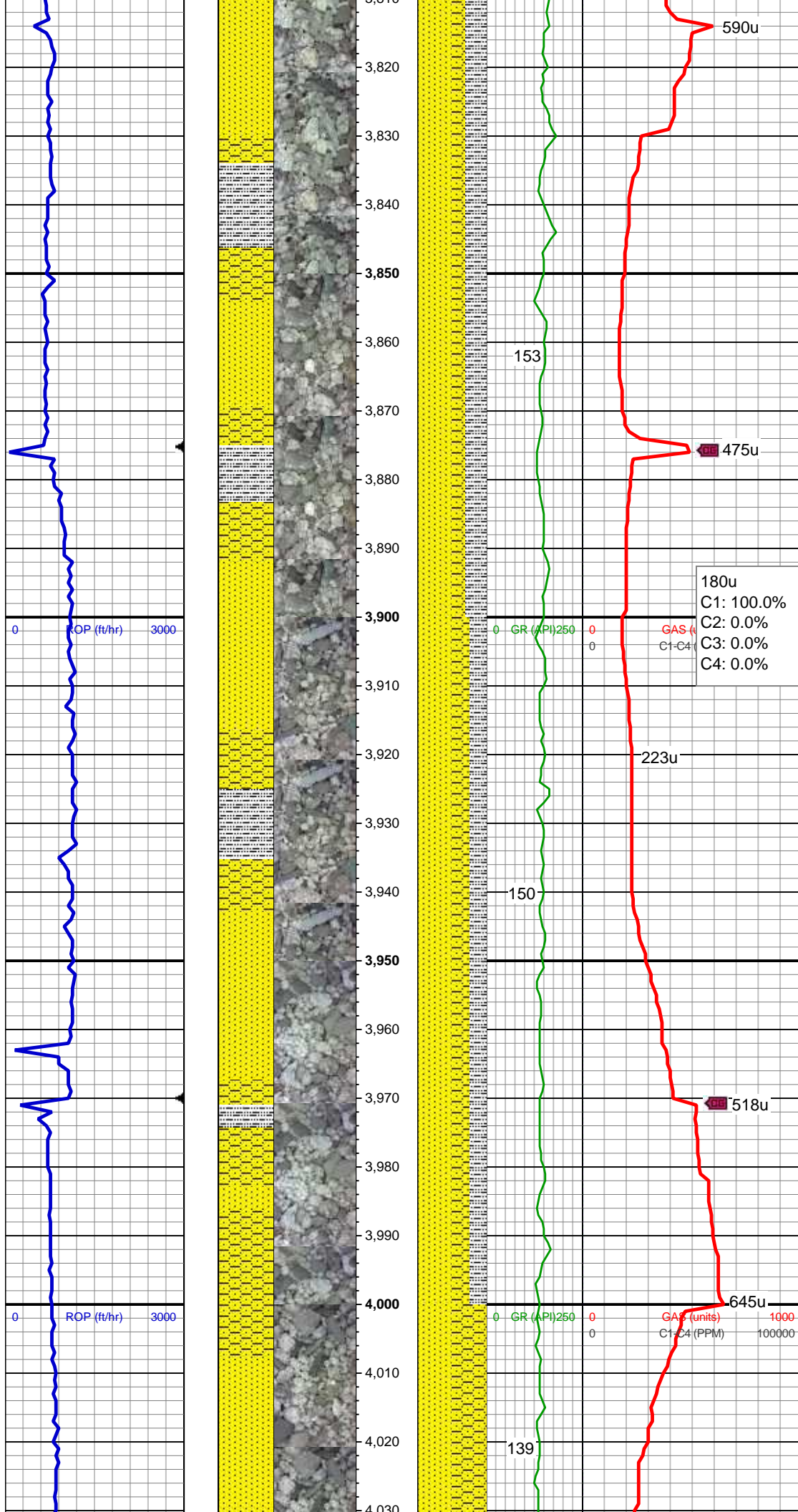
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hrd-frm, mod-w srt, sl calc cmt
SLTY SH: gry-dkr gry, rnd, sb plty, v sft,
sly tex
SHY SS: lt gry, sb ang, sb plty, v sft, v f
gr, mod srt

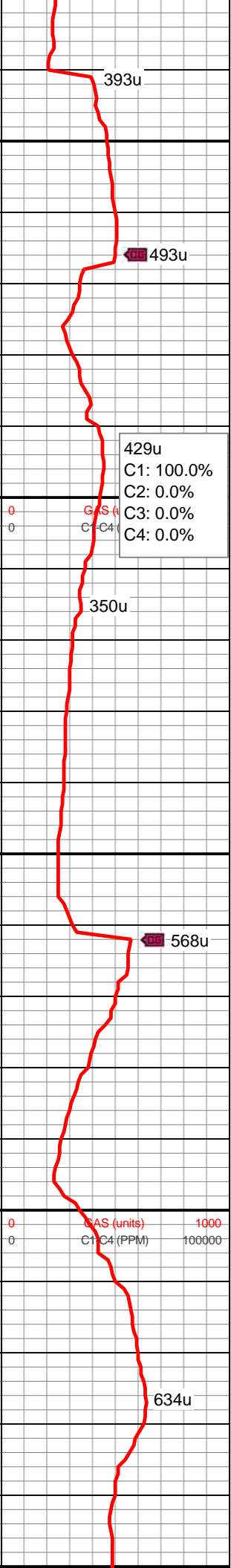
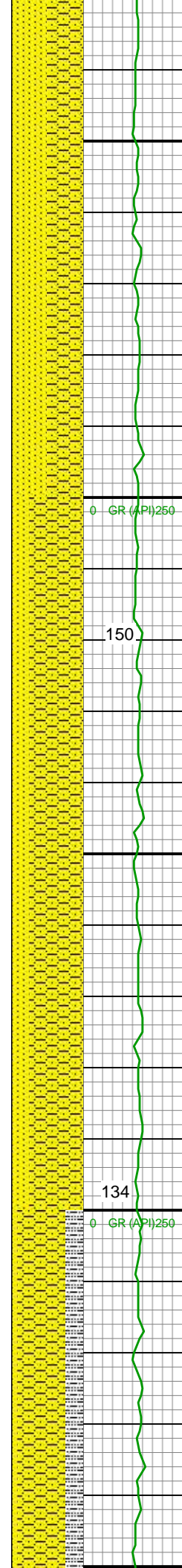
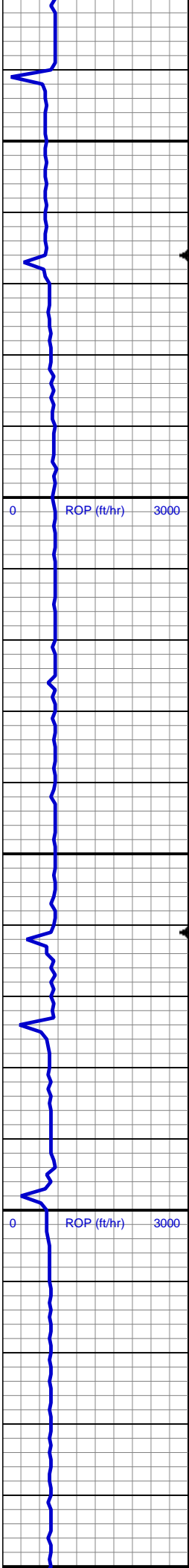


SS: clr, lt gry-wht, occ sap, sb rnd, f gr,
hrd frm, mod-w srt, sl calc cmt
SHY SS: lt gry, sb ang, sb plty, v sft, v f
gr, mod srt
SLTY SH: gry-dkr gry, rnd, sb plty, v sft,
sly tex

MD: 3,721'
TVD: 3,711.74'
Inclination: 0.07 °
Azimuth: 18°
VS: 156.14'

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



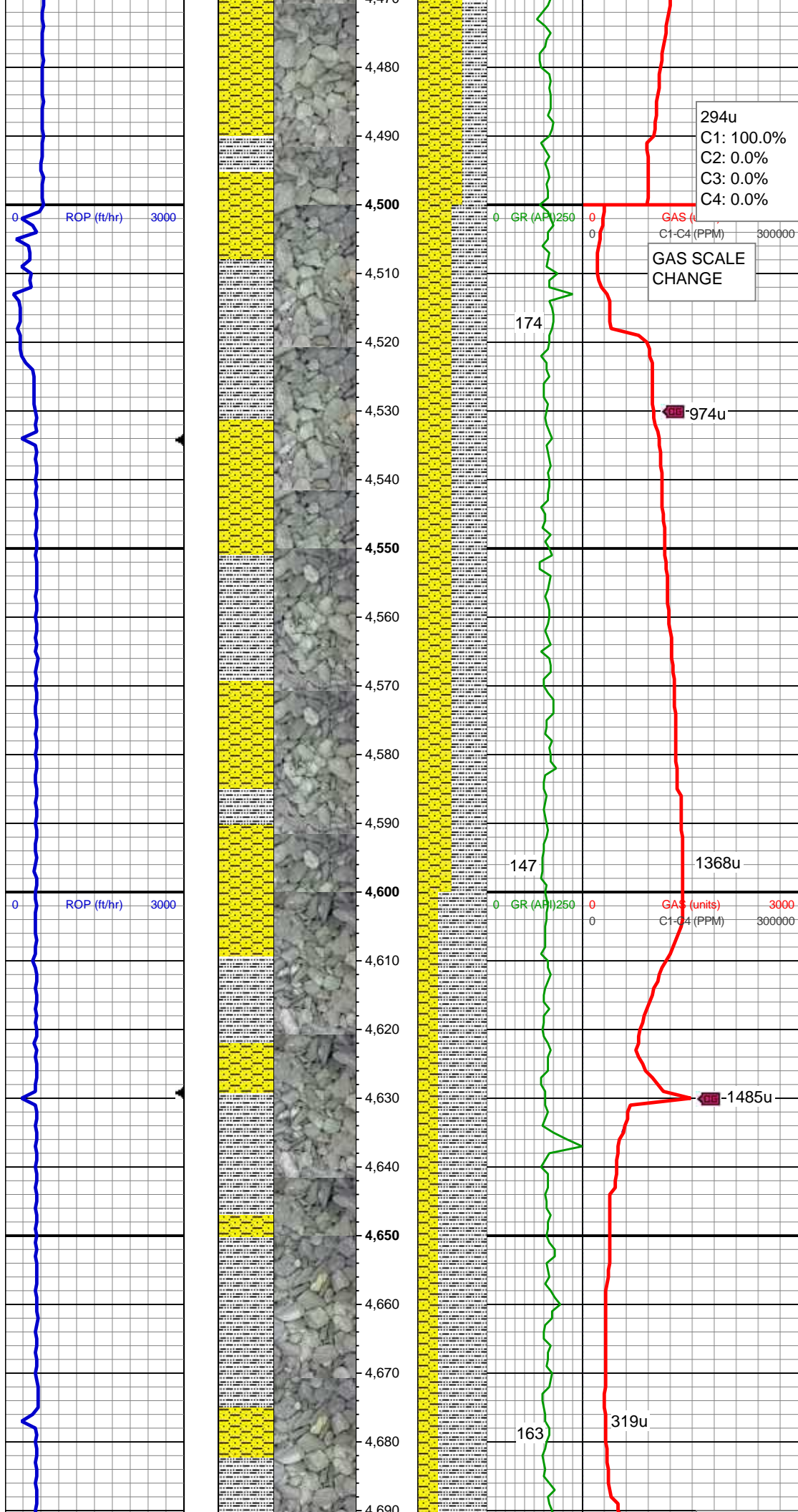


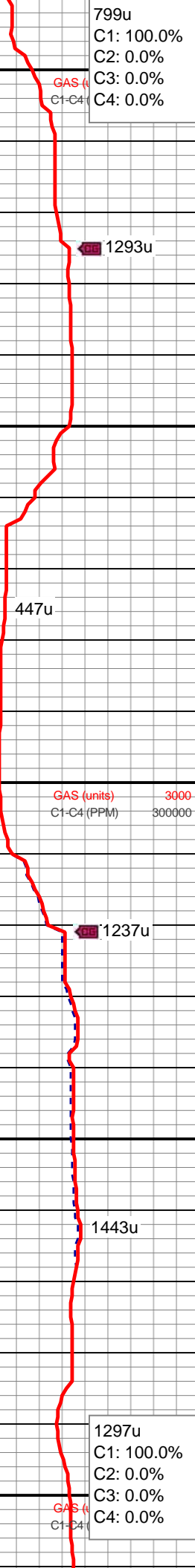
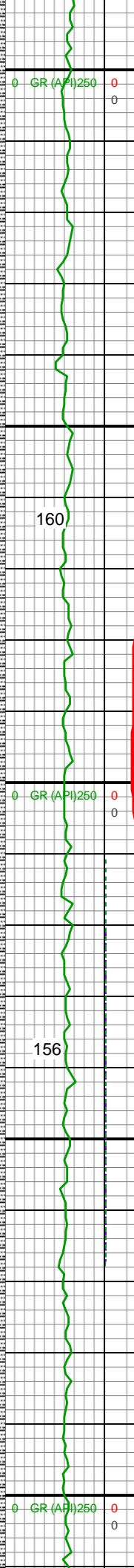
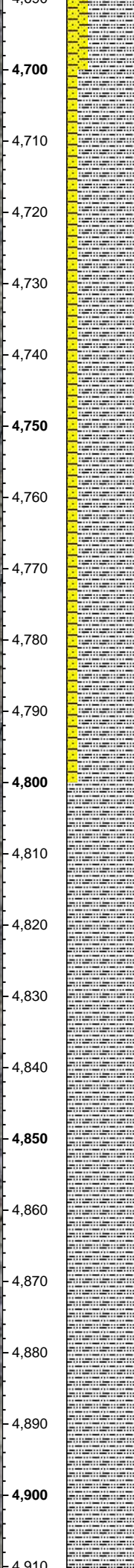
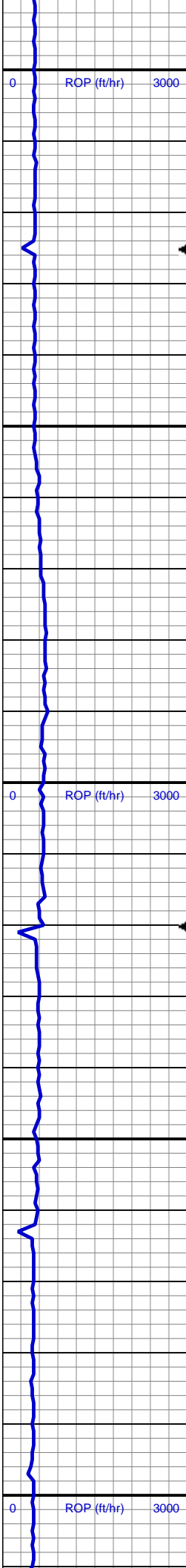
SS: clr, lt gry-wht, occ sap, sb rnd, f gr, hrd-frn, mod-w srt, sl calc cmt
SHY SS: lt gry, sb ang, sb plty, v sft, v f gr, mod srt

MD: 4,100'
TVD: 4,090.73'
Inclination: 0.55 °
Azimuth: 117.36 °
VS: 158.3'

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

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, v f gr, mod srt





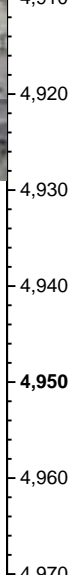
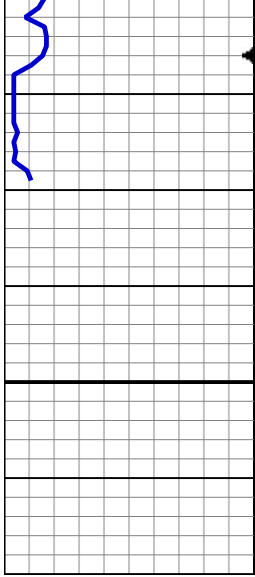
799u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%

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

MD: 4,764'
TVD: 4,754.71'
Inclination: 0.34 °
Azimuth: 1.19 °
VS: 160.24'

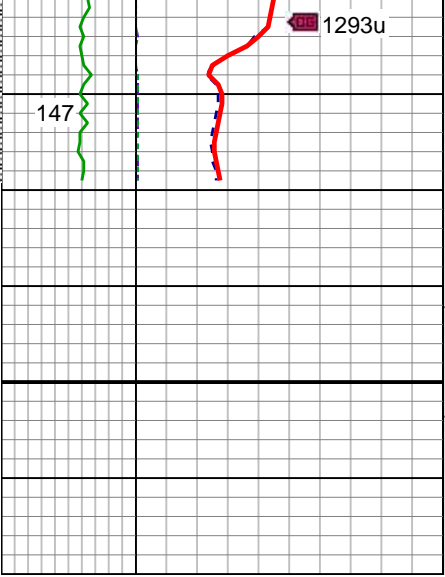
SLTY SH: gry-dkr gry, rnd, sb plty, v sft, slty tex

WT IN 10.00/ OUT 10.00
VIS IN 33/ OUT 33



1293u

147



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

TD VERT @ 4929' MD
10/23/2014 @ 11:54 AM

LOG CONTINUES ON M PLOT
"ROHN STATE LD10-62HN HORZ"