

# COLUMBINE LOGGING

Scale: 5" / 100'  
Measured Depth Log

**Well Name** CUTTHROAT LC28-75-1AHNB VERT

**Location** SWSE SEC 28 T9N R59W

**State** COLORADO

**County** WELD

**Country** USA

**Rig Number** H&P 273

**API Number** 05-123-38852

**Field** WILDCAT

**Region** DJ BASIN

**Drilling Completed** 7/12/2014

**Spud Date** 7/7/2014

**Surface Coordinates** 340' FSL; 1960' FEL

**Ground Elevation** 4,843'

**K.B. Elevation** 4,867'

**Logged Interval** 658' To 10397'

**Total Depth** 10397'

**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
- COBAN
- FOSSIL
- GASTROPOD
- INOCERAMUS
- OOLITE
- OSTRACOD
- PELECYPOD
- PELLET
- PISOLITE
- PLANT REMAINS
- PLANT PRODES

- 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** Kevin Donahue

**Wellsite Geologist #2** Tim Bright

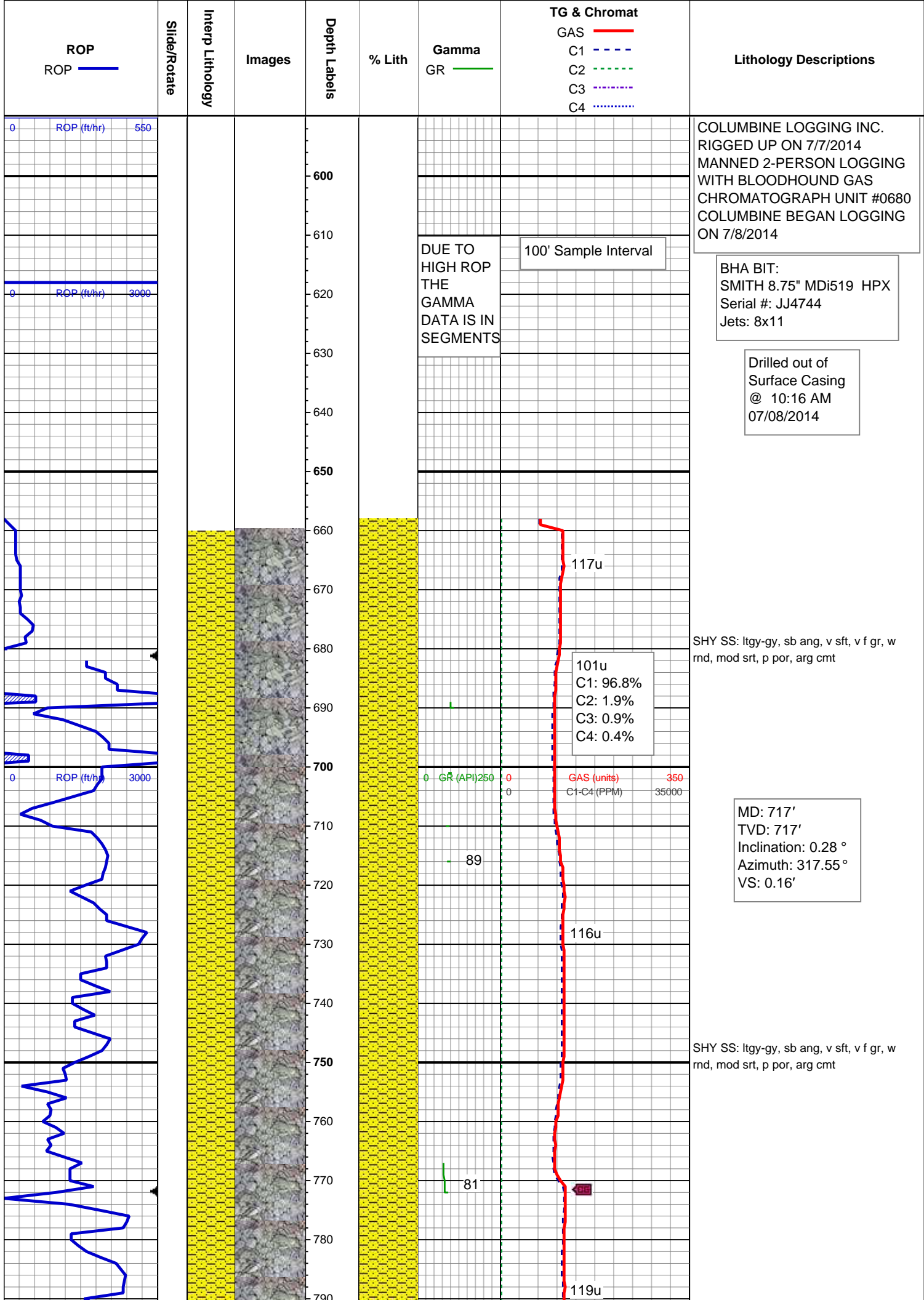
**Wellsite Geological Services Provided By** Columbine Logging Inc.

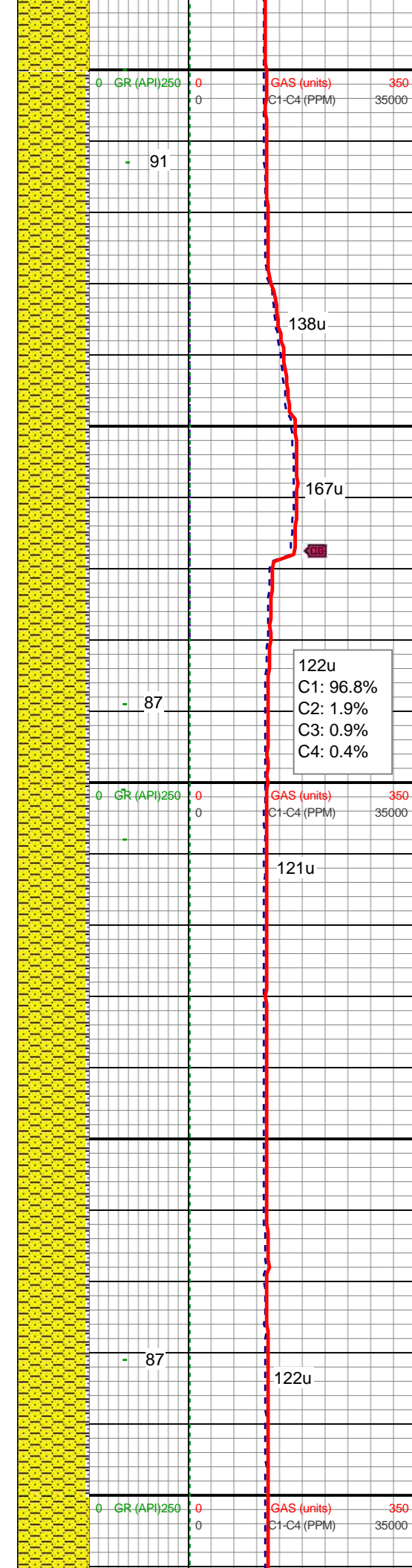
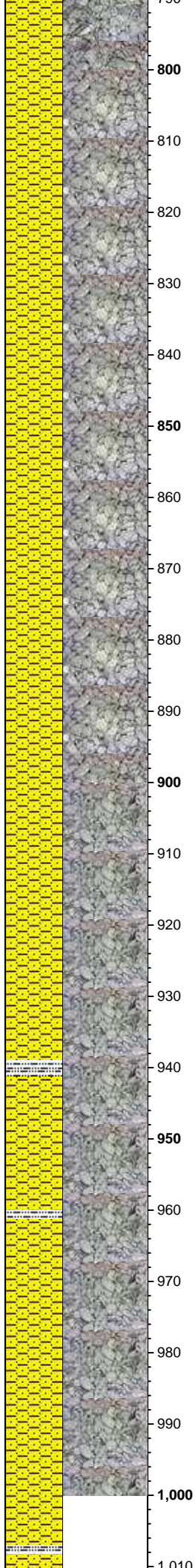
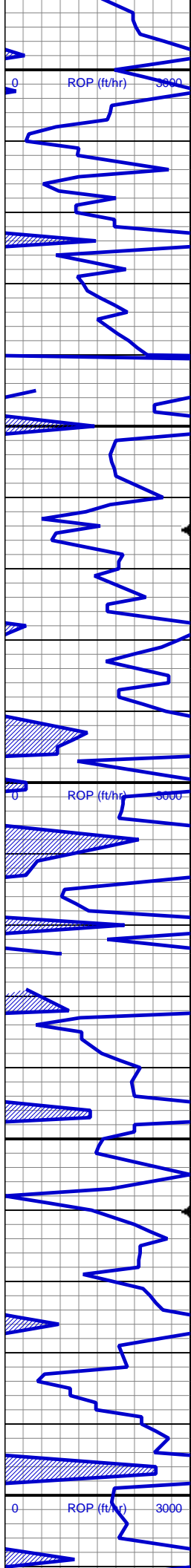
## Geologist

**Name** Renee Clackler

**Company** NOBLE ENERGY INC.

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





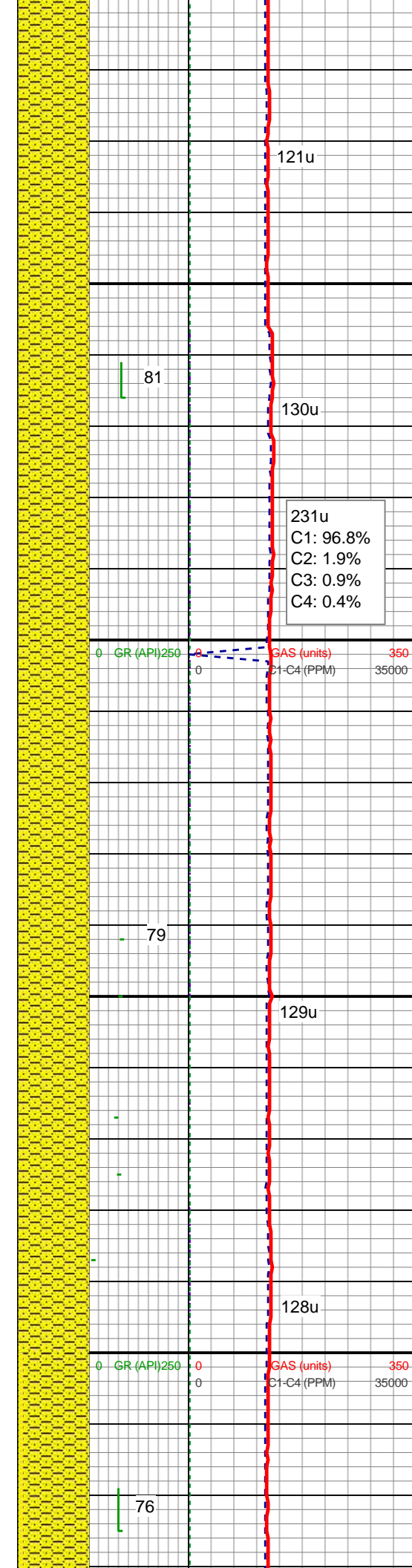
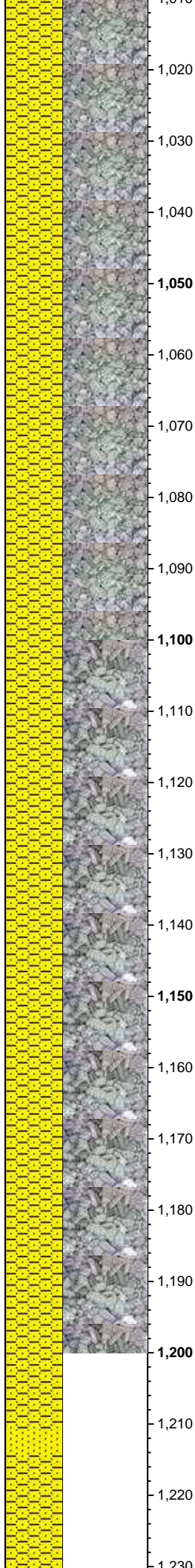
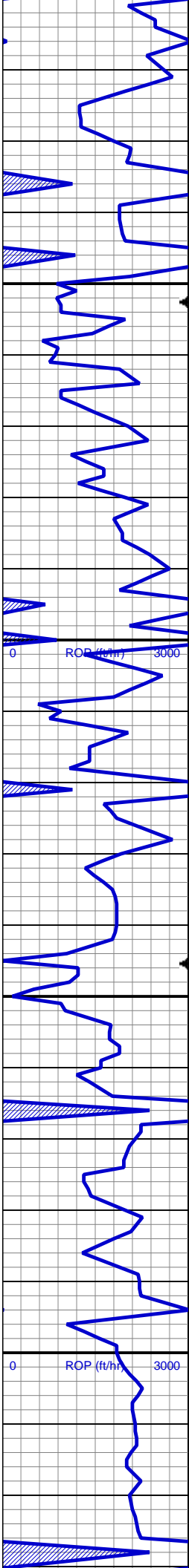
MD: 810'  
TVD: 810'  
Inclination: 0.28 °  
Azimuth: 325.21 °  
VS: 0.51'

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

SHY SS: ltgy-gy, sb ang, v sft, v f gr, w  
rnd, mod srt, p por, arg cmt; intbd wi tr  
SLTY SH: med-dk gy, sb blkgy-sb plty, v  
sft, sl fri, slty tex, rthy lst, arg cmt

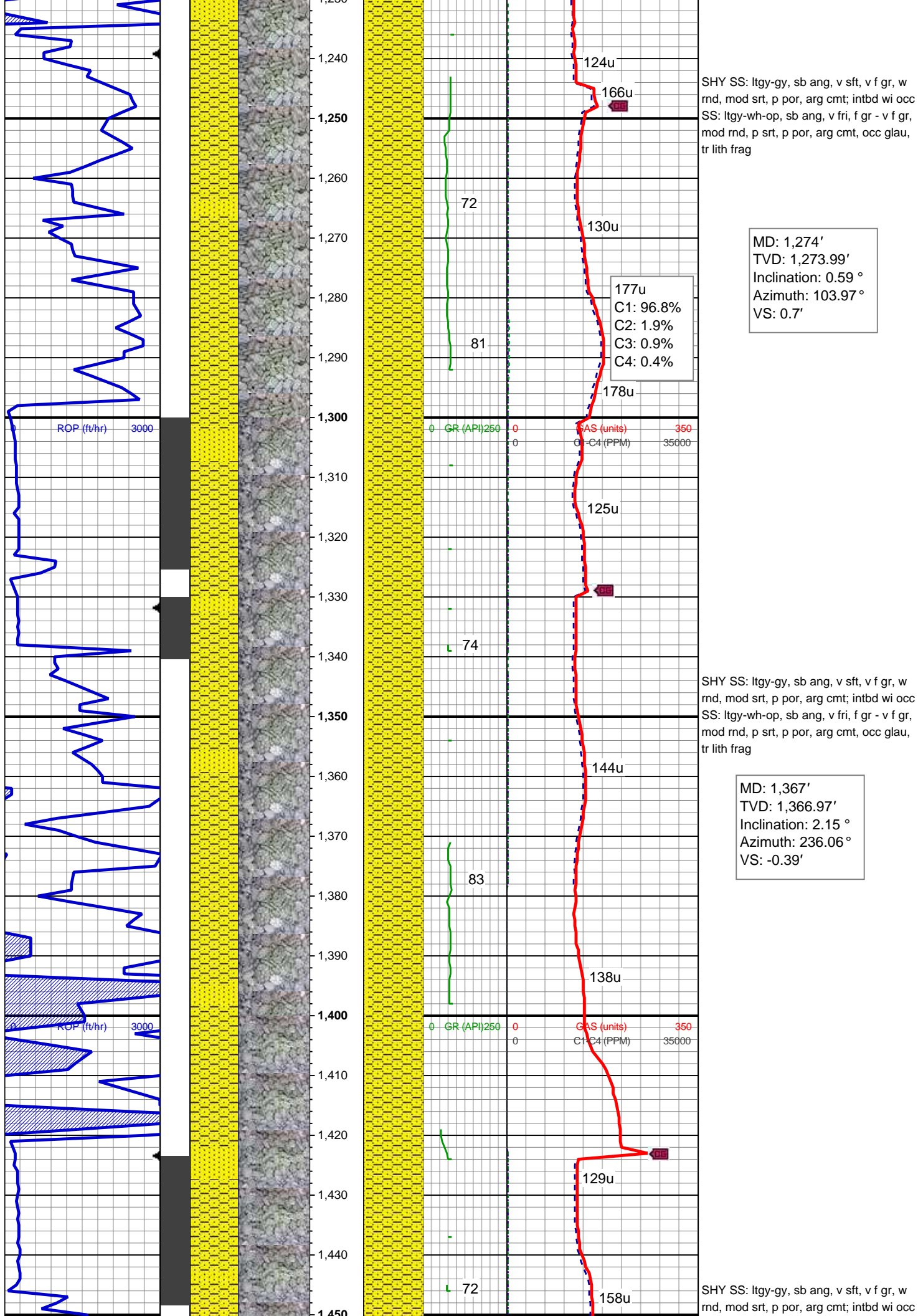
MD: 996'  
TVD: 995.99'  
Inclination: 0.07 °  
Azimuth: 55.22 °  
VS: 0.95'



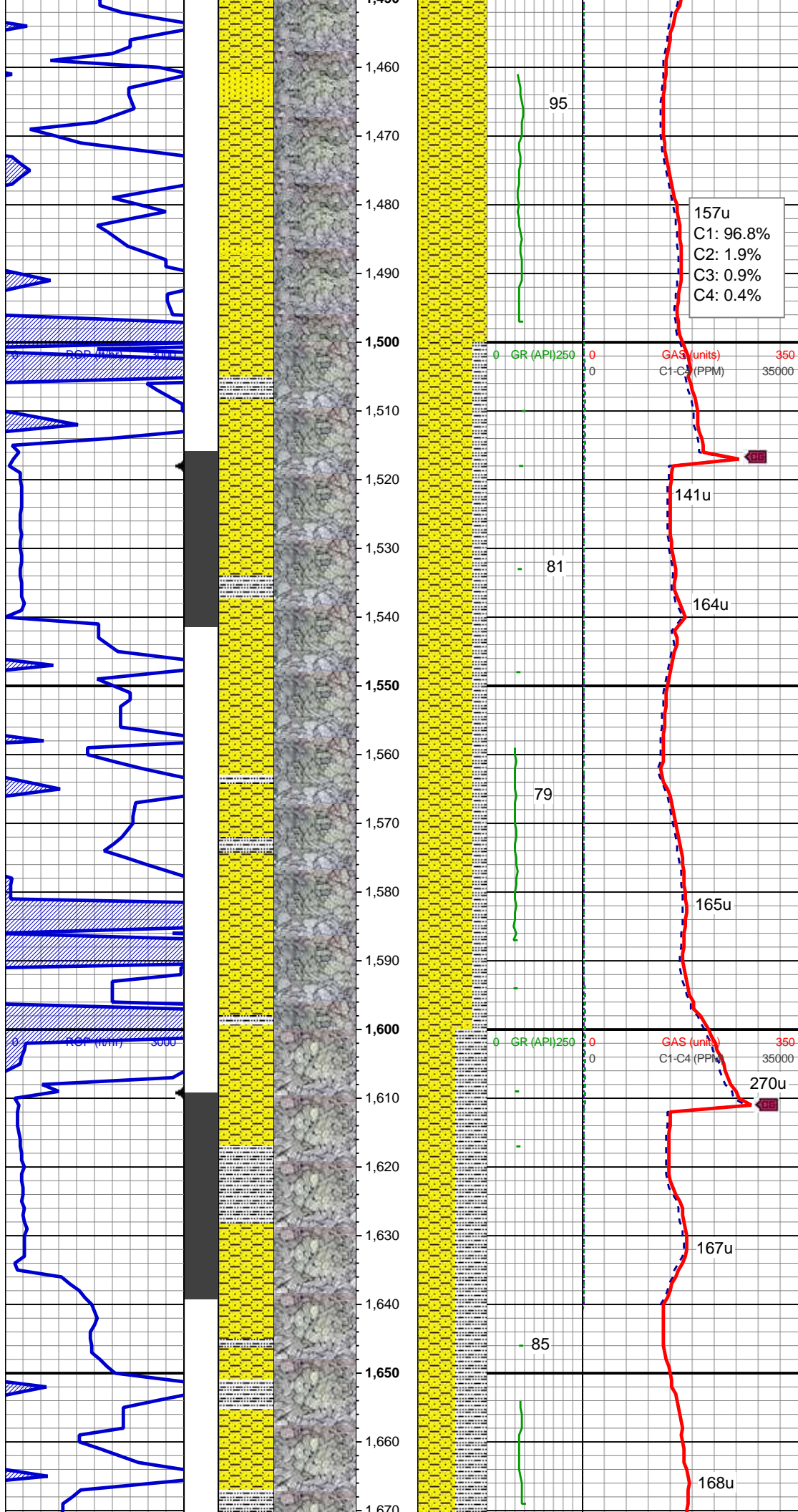


SHY SS: ltgy-gy, sb ang, v sft, v f gr, w  
rnd, mod srt, p por, arg cmt

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: 1,460'  
TVD: 1,459.84'  
Inclination: 3.87 °  
Azimuth: 231.9 °  
VS: -3.3'

157u  
C1: 96.8%  
C2: 1.9%  
C3: 0.9%  
C4: 0.4%

0 GR (API)250 0 GAS (units) 350  
C1-C4 (PPM) 35000

141u

81

164u

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

MD: 1,553'  
TVD: 1,552.52'  
Inclination: 5.64 °  
Azimuth: 234.93 °  
VS: -6.13'

79

165u

0 GR (API)250 0 GAS (units) 350  
C1-C4 (PPM) 35000

270u

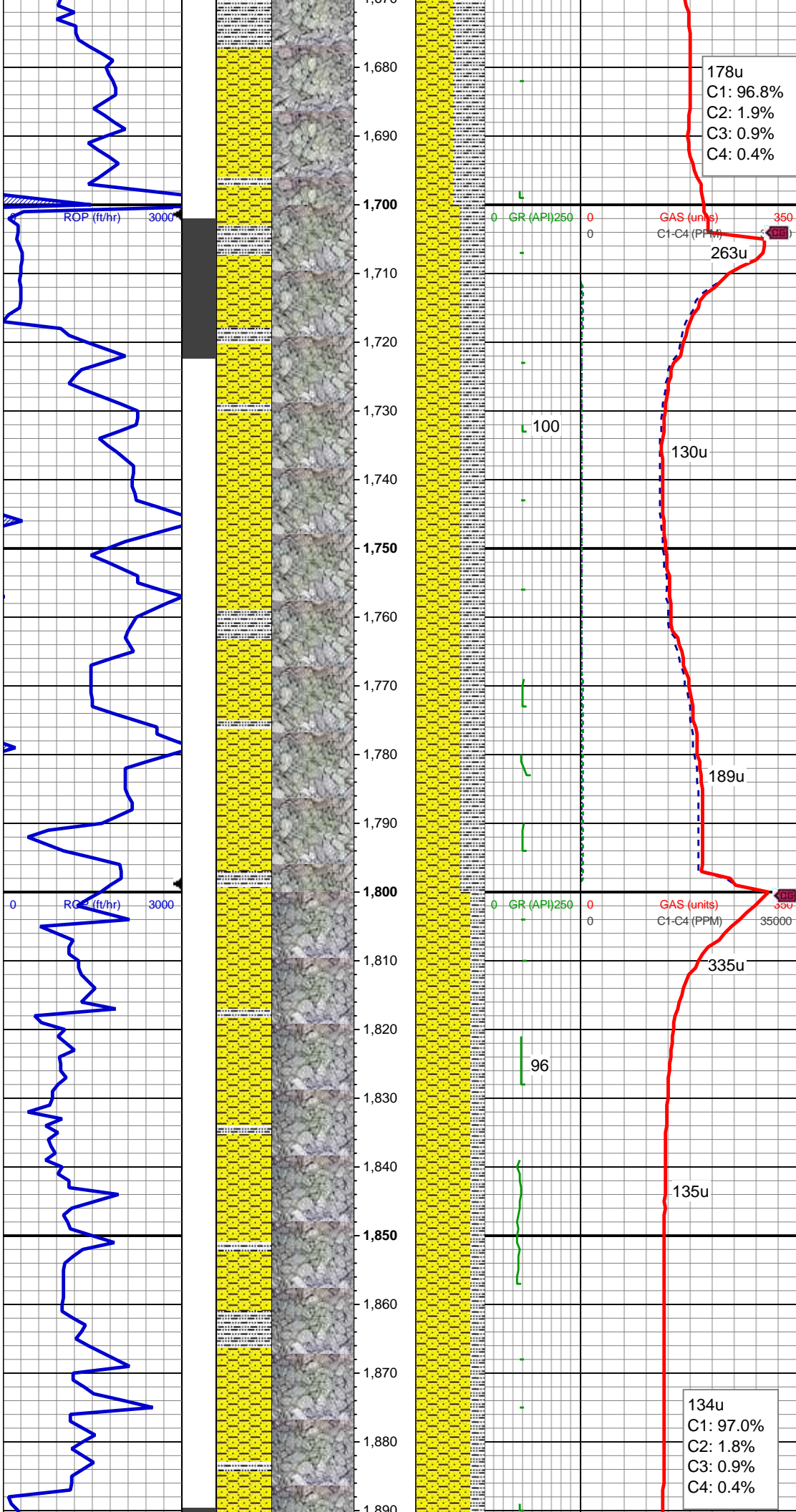
167u

85

168u

MD: 1,646'  
TVD: 1,644.85'  
Inclination: 8 °  
Azimuth: 245.72 °  
VS: -9.95'

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



178u  
C1: 96.8%  
C2: 1.9%  
C3: 0.9%  
C4: 0.4%

GAS (units) 350  
C1-C4 (PPM) 35000

263u

130u

189u

335u

135u

134u  
C1: 97.0%  
C2: 1.8%  
C3: 0.9%  
C4: 0.4%

MD: 1,738'  
TVD: 1,735.79'  
Inclination: 9.43 °  
Azimuth: 245.05 °  
VS: -13.86'

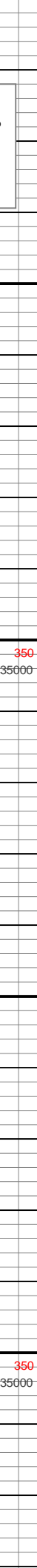
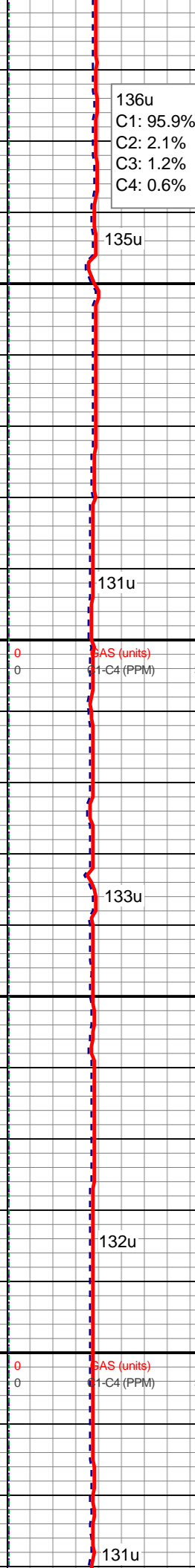
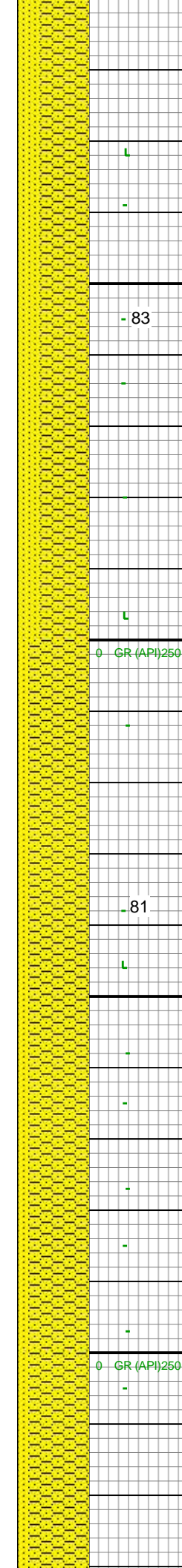
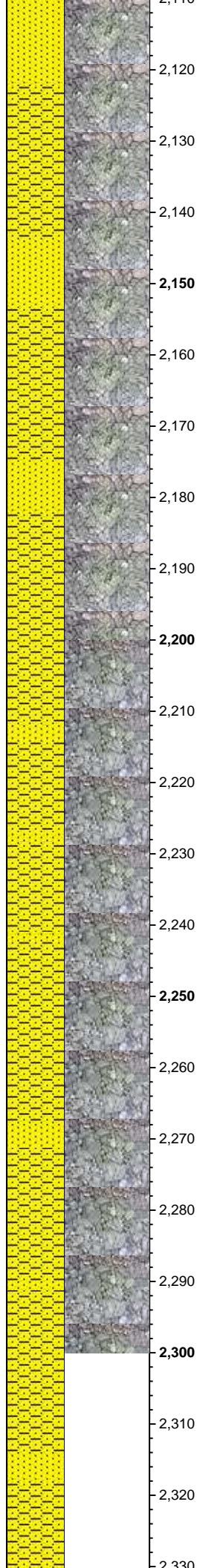
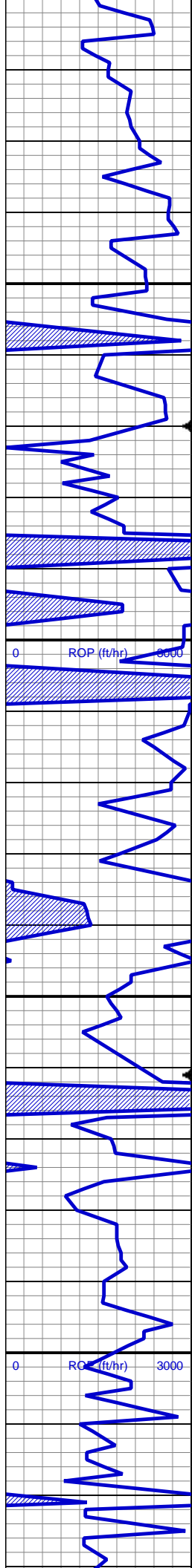
SHY SS: ltgy-gy, S&P ip, sb ang, v sft, v f  
gr, w rnd, mod-w srt, p por, arg cmt;  
SLTY SH: gy-dk gy, sb blkly-sb plty, v sft,  
sly tex, arg cmt

MD: 1,833'  
TVD: 1,829.55'  
Inclination: 9.1 °  
Azimuth: 246.5 °  
VS: -18.04'

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







136u  
C1: 95.9%  
C2: 2.1%  
C3: 1.2%  
C4: 0.6%

135u  
SHY SS: ltgy-gy, sb ang, v sft, v f gr, w  
rnd, mod srt, p por, arg cmt; intbd wi occ  
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

131u

MD: 2,212'  
TVD: 2,202.59'  
Inclination: 10.87 °  
Azimuth: 244.71 °  
VS: -37.17'

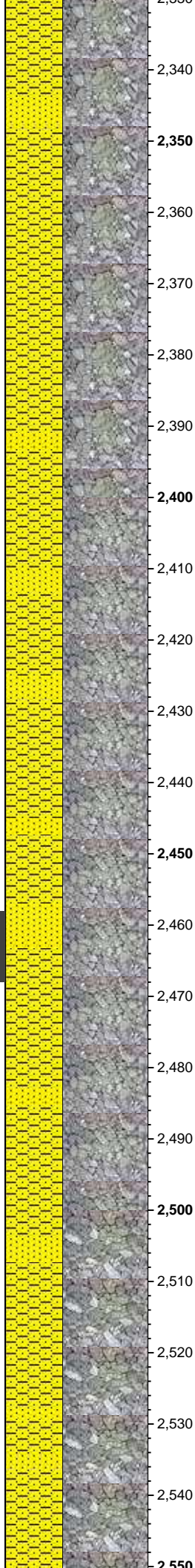
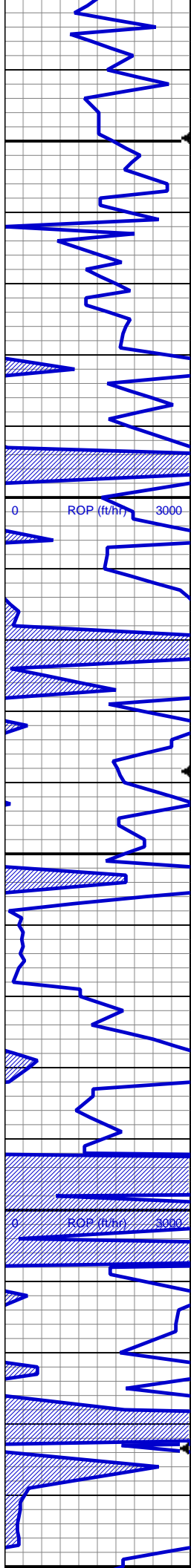
133u  
SHY SS: ltgy-gy, sb ang, v sft, v f gr, w  
rnd, mod srt, p por, arg cmt; intbd wi occ  
SS: ltgy-wh-op, sb ang, v fri, f gr - v f gr,  
mod rnd, p srt, p por, arg cmt, occ glau,  
tr lith frag

132u

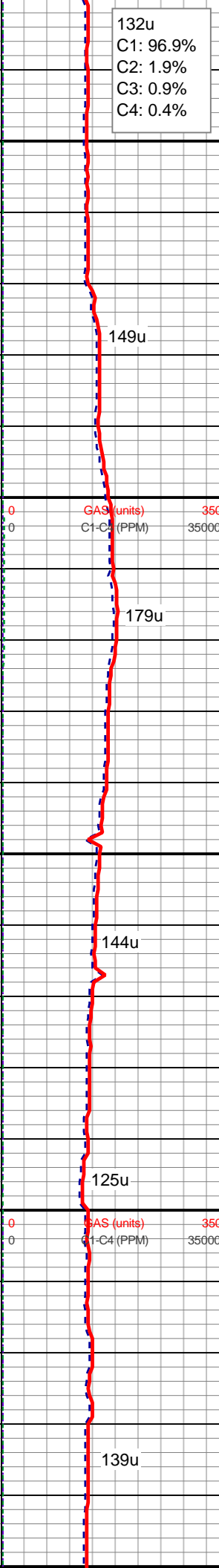
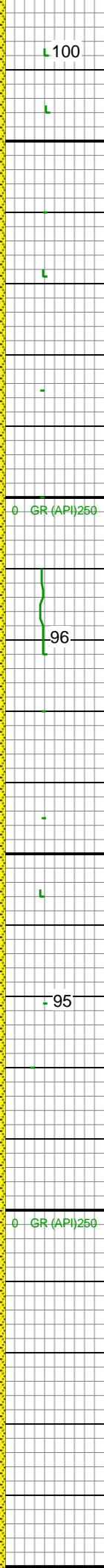
MD: 2,307'  
TVD: 2,295.92'  
Inclination: 10.69 °  
Azimuth: 243.51 °  
VS: -42.51'

131u





2,330  
2,340  
2,350  
2,360  
2,370  
2,380  
2,390  
2,400  
2,410  
2,420  
2,430  
2,440  
2,450  
2,460  
2,470  
2,480  
2,490  
2,500  
2,510  
2,520  
2,530  
2,540  
2,550



132u  
C1: 96.9%  
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; intbd wi occ  
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: 2,402'  
TVD: 2,389.31'  
Inclination: 10.43 °  
Azimuth: 243.82 °  
VS: -47.88'

SHY SS: ltgy-gy, sb ang, v sft, v f gr, w  
rnd, mod srt, p por, arg cmt; intbd wi occ  
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: 2,497'  
TVD: 2,482.78'  
Inclination: 10.16 °  
Azimuth: 249.97 °  
VS: -52.2'

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

100

L

L

L

L

L

L

L

L

L

L

L

L

L

L

L

L

L

L

L

L

L

L

L

149u

179u

96

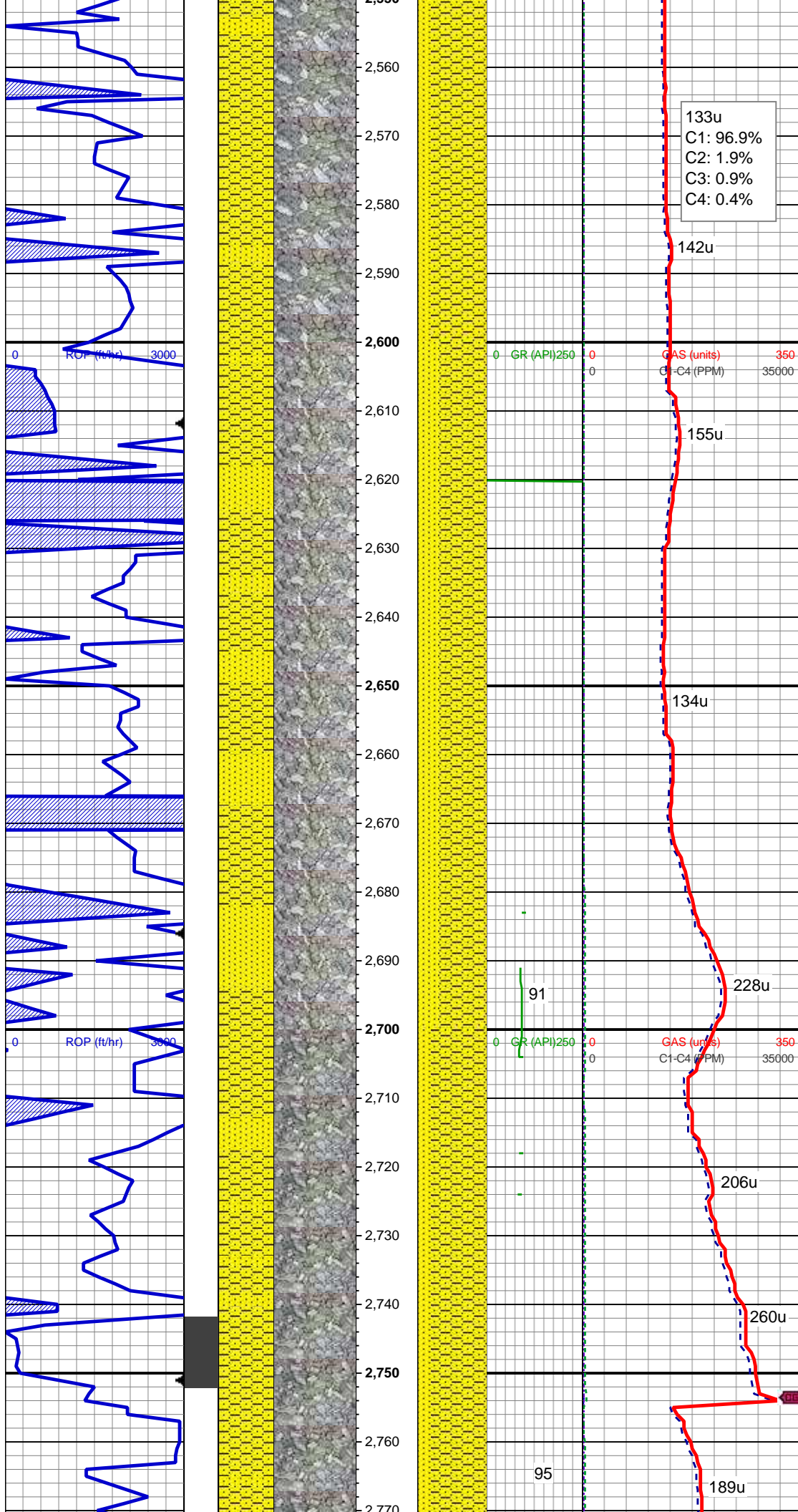
144u

95

125u

139u



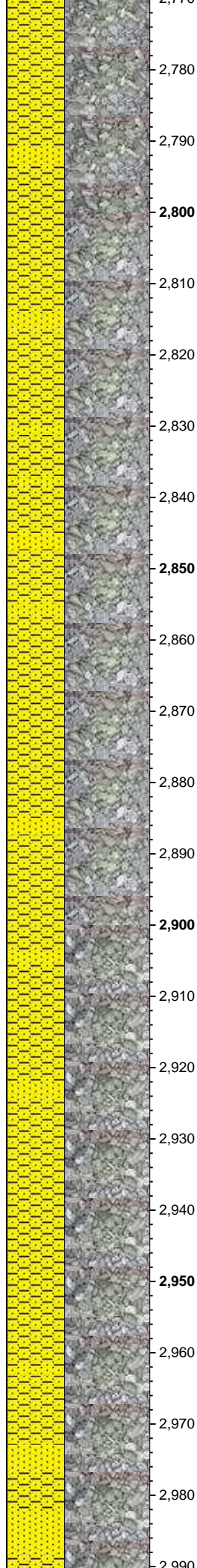
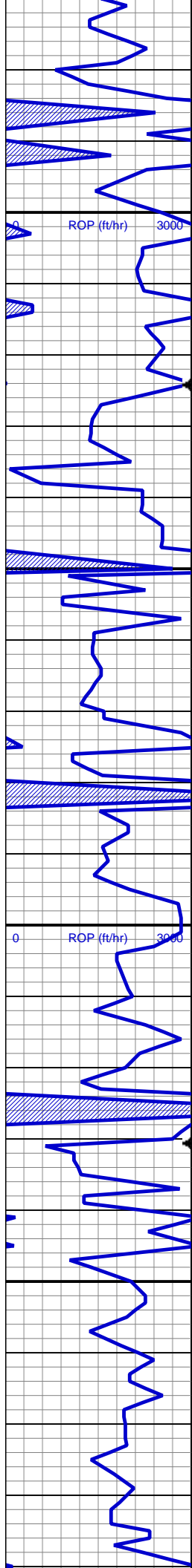


SS: ltgy-wh-op, sb ang, v fri, f gr - v f gr,  
mod rnd, p srt, p por, arg cmt, occ glau,  
tr lith frag

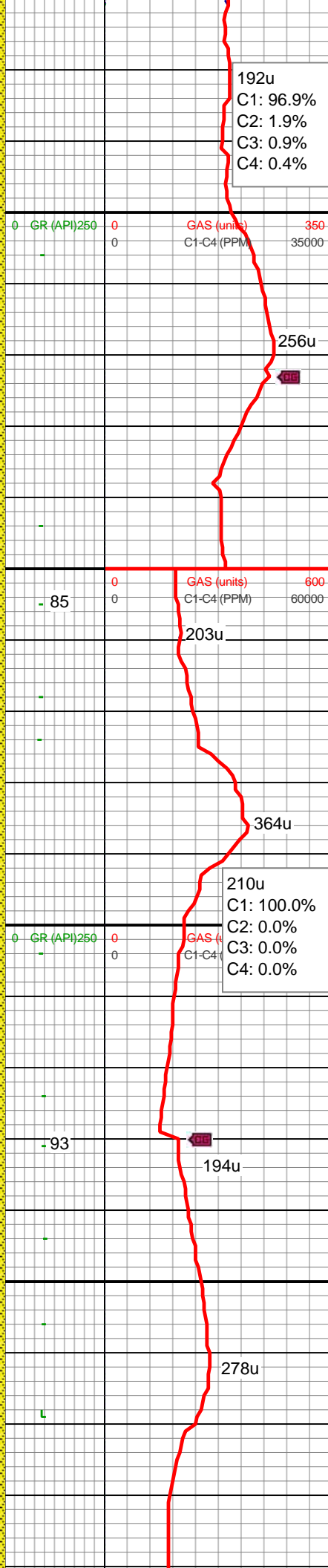
SHY SS: ltgy-gy, sb ang, v sft, v f gr, w  
rnd, mod srt, p por, arg cmt; intbd wi occ  
SS: ltgy-wh-op, sb ang, v fri, f gr - v f gr,  
mod rnd, p srt, p por, arg cmt, occ glau,  
tr lith frag

MD: 2,686'  
TVD: 2,668.83'  
Inclination: 10.1 °  
Azimuth: 251.45 °  
VS: -58.49'

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



2,770  
2,780  
2,790  
2,800  
2,810  
2,820  
2,830  
2,840  
2,850  
2,860  
2,870  
2,880  
2,890  
2,900  
2,910  
2,920  
2,930  
2,940  
2,950  
2,960  
2,970  
2,980  
2,990



MD: 2,781'  
TVD: 2,762.3'  
Inclination: 10.5 °  
Azimuth: 244.99 °  
VS: -62.44'

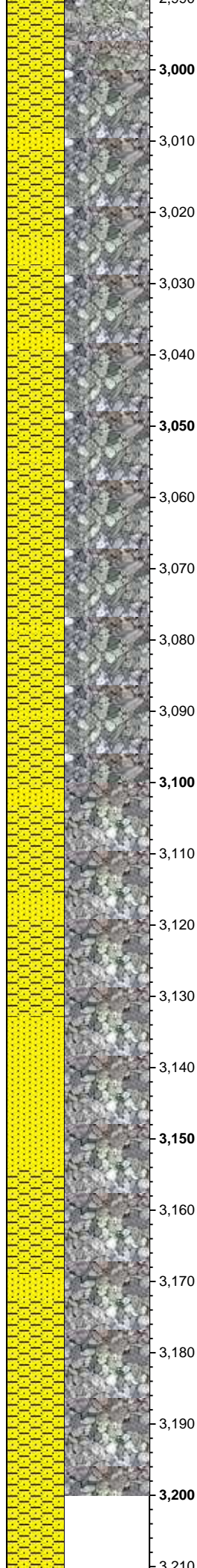
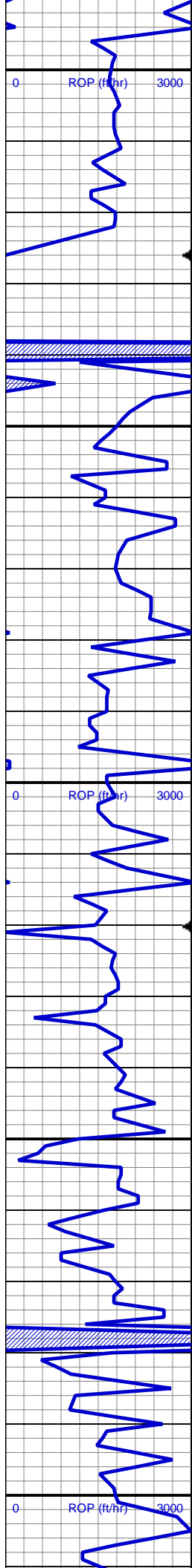
SHY SS: ltgy-gy, sb ang, v sft, v f gr, w  
rnd, mod srt, p por, arg cmt; intbd wi occ  
SS: ltgy-wh-op, sb ang, v fri, f gr - v f gr,  
mod rnd, p srt, p por, arg cmt, occ glau,  
tr lith frag

MD: 2,876'  
TVD: 2,855.72'  
Inclination: 10.43 °  
Azimuth: 244.63 °  
VS: -67.43'

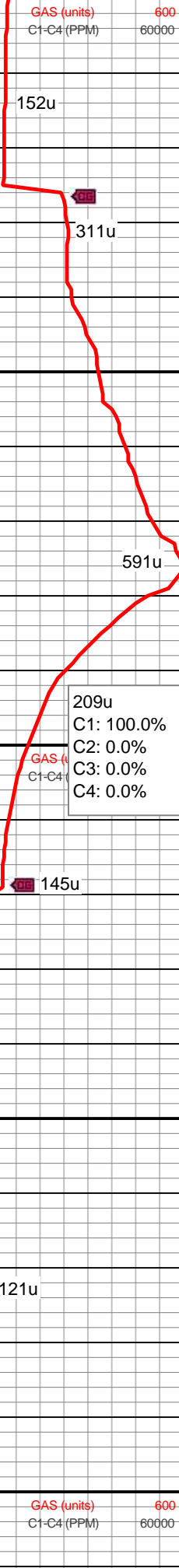
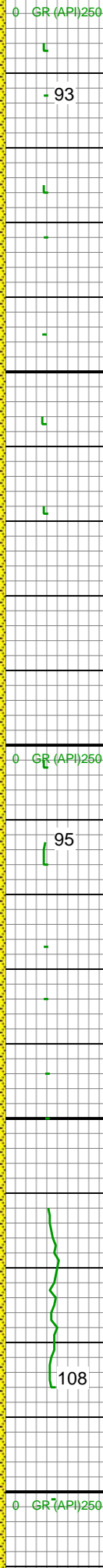
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rnd, mod srt, p por, arg cmt; intbd wi occ  
SS: ltgy-wh-op, sb ang, v fri, f gr - v f gr,  
mod rnd, p srt, p por, arg cmt, occ glau,  
tr lith frag

MD: 2,971'  
TVD: 2,949.2'  
Inclination: 10.15 °  
Azimuth: 244.05 °  
VS: -72.47'





3,000  
3,010  
3,020  
3,030  
3,040  
3,050  
3,060  
3,070  
3,080  
3,090  
3,100  
3,110  
3,120  
3,130  
3,140  
3,150  
3,160  
3,170  
3,180  
3,190  
3,200  
3,210



93

152u

L

311u

L

L

L

591u

209u  
C1: 100.0%  
C2: 0.0%  
C3: 0.0%  
C4: 0.0%

95

145u

L

L

L

L

L

L

L

L

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

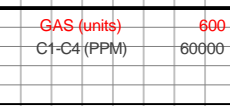
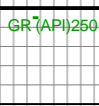
MD: 3,066'  
TVD: 3,042.78'  
Inclination: 9.69 °  
Azimuth: 243.26 °  
VS: -77.51'

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

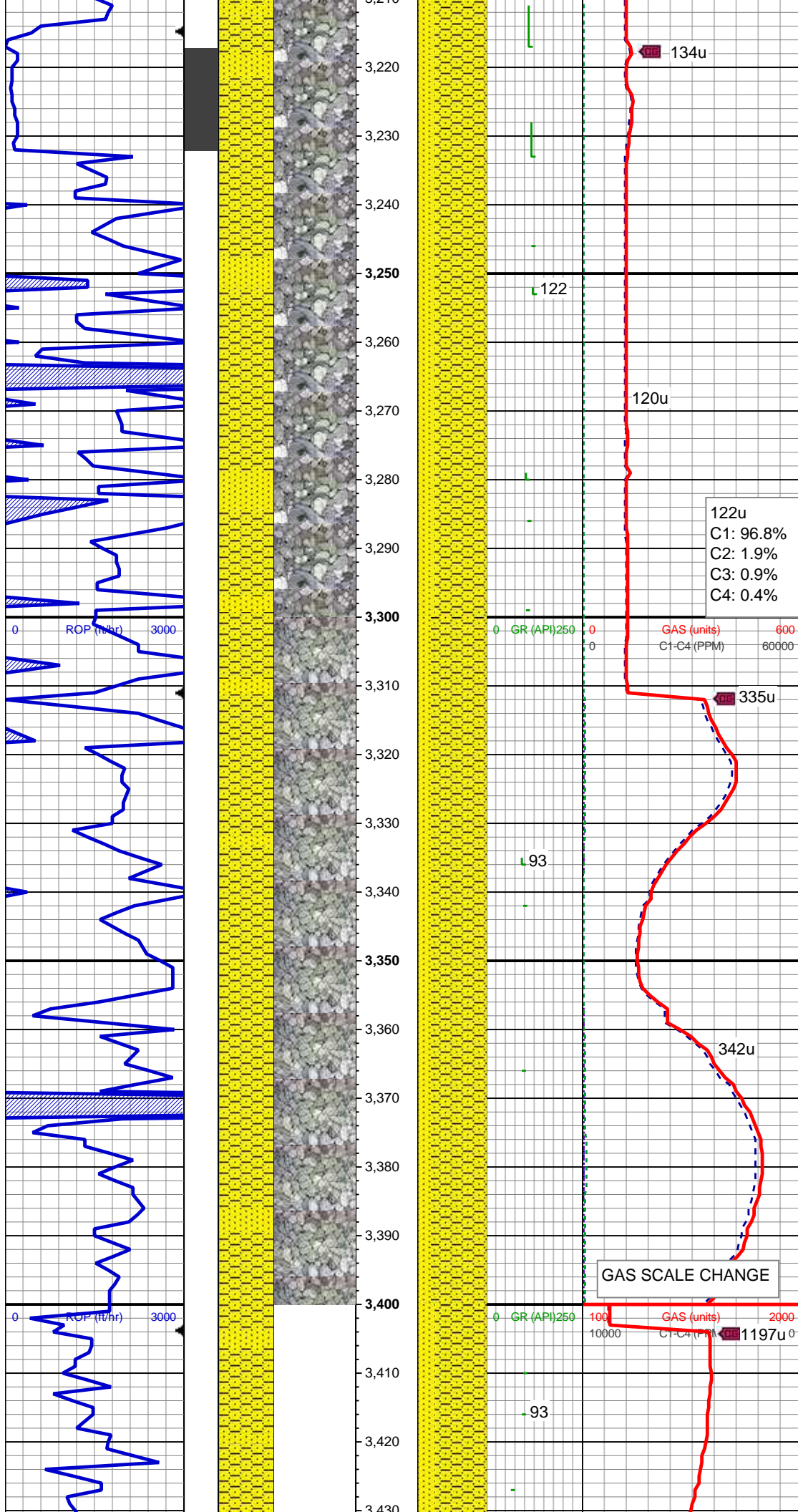
MD: 3,161'  
TVD: 3,136.51'  
Inclination: 9.07 °  
Azimuth: 244.52 °  
VS: -82.23'

108

121u







SHY SS: ltgy-gy, sb ang, v sft, v f gr, w  
rnd, mod srt, p por, arg cmt; intbd wi occ  
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: 3,256'  
TVD: 3,230.2'  
Inclination: 9.96 °  
Azimuth: 242.64 °  
VS: -87.11'

122u  
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; intbd wi occ  
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: 3,350'  
TVD: 3,322.81'  
Inclination: 9.78 °  
Azimuth: 241.78 °  
VS: -92.46'

GAS SCALE CHANGE

MD: 3,445'  
TVD: 3,416.4'  
Inclination: 10 °

Inclination: 10.38°  
Azimuth: 240.68°  
VS: -98.14'

SHY SS: ltgy-gy, sb ang, v sft, v f gr, w  
rnd, mod srt, p por, arg cmt; intbd wi occ  
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, tr pyr

853u

504u  
C1: 99.6%  
C2: 0.4%  
C3: 0.0%  
C4: 0.0%

504u

GR (API) 250 100 GAS (units) 2000  
C1-C4 (PPM) 10000 200000

- 87

MD: 3,541'  
TVD: 3,510.88'  
Inclination: 10.38°  
Azimuth: 241.09°  
VS: -104.16'

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

422u

590u

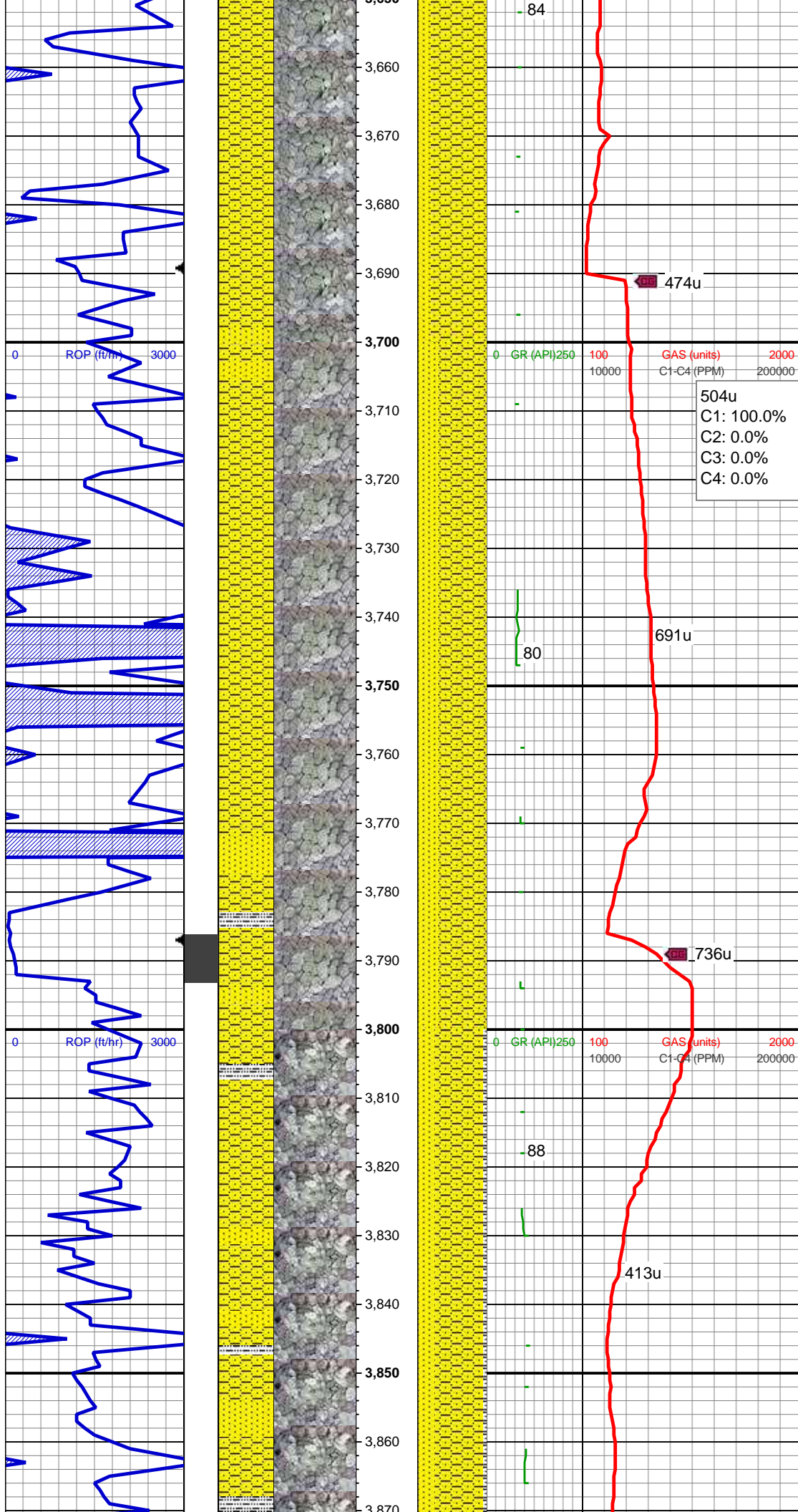
WT IN 8.80/ OUT 8.80  
VIS IN 28/ OUT 28

MD: 3,636'  
TVD: 3,604.37'  
Inclination: 10.12°  
Azimuth: 247.51°  
VS: -109.19'

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

372u





mod rnd, p srt, p por, arg cmt, occ glau,  
tr lith frag

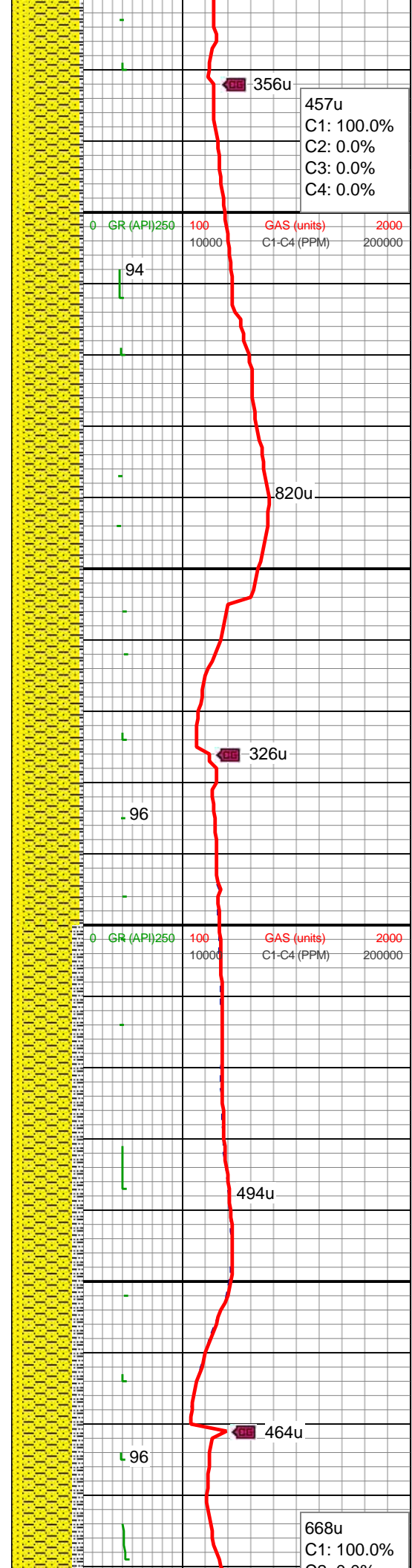
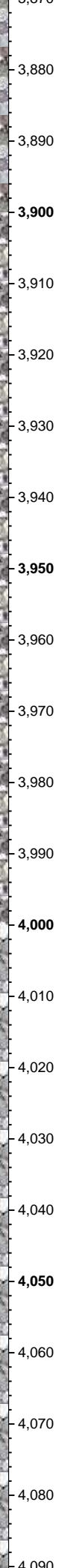
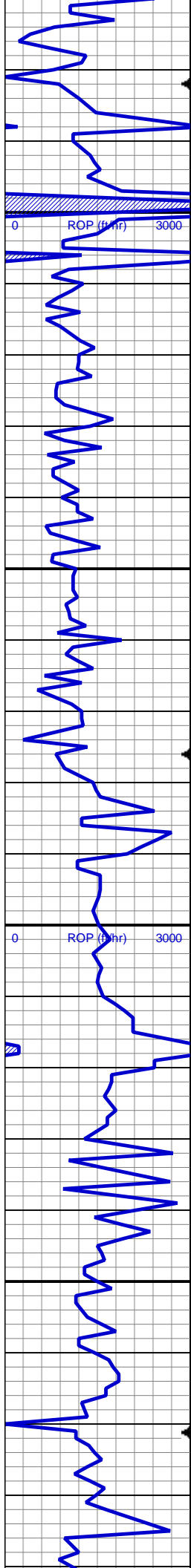
MD: 3,730'  
TVD: 3,696.86'  
Inclination: 10.4 °  
Azimuth: 248.15 °  
VS: -113.18'

SHY SS: ltgy-gy, sb ang, v sft, v f gr, w  
rnd, mod srt, p por, arg cmt; intbd wi occ  
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, tr pyr

MD: 3,825'  
TVD: 3,790.44'  
Inclination: 9.43 °  
Azimuth: 245.33 °  
VS: -117.36'

SHY SS: ltgy-gy, sb ang, v sft, v f gr, w  
rnd, mod srt, p por, arg cmt; intbd wi occ  
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 blk-y-sb plty, v sft,  
silty tex, arg cmt, tr pyr





356u  
457u  
C1: 100.0%  
C2: 0.0%  
C3: 0.0%  
C4: 0.0%

94

820u

326u

96

494u

464u

96

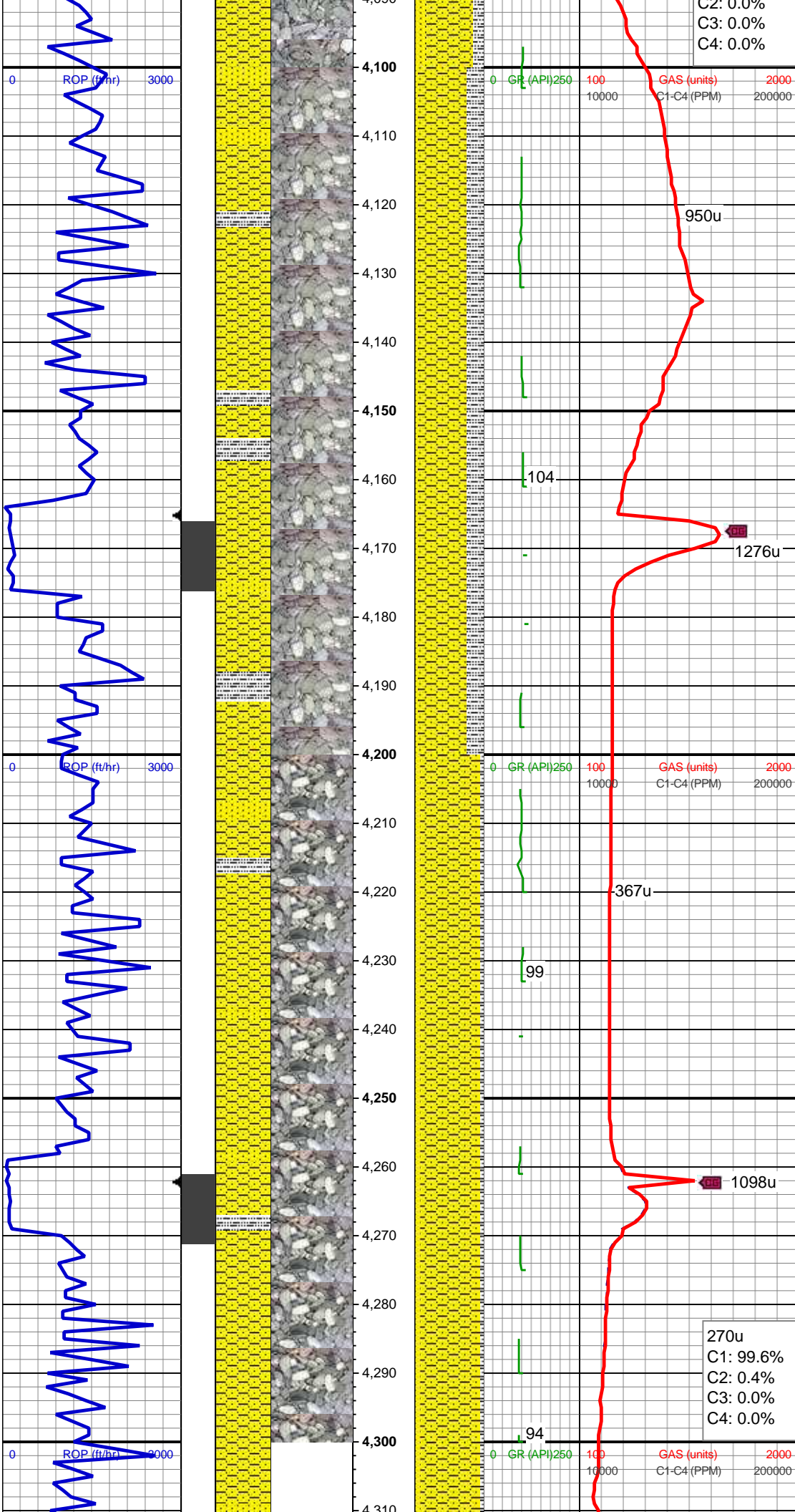
668u  
C1: 100.0%  
C2: 0.0%

MD: 3,920'  
TVD: 3,884.1'  
Inclination: 9.85 °  
Azimuth: 243.21 °  
VS: -122.11'

SHY SS: ltgy-gy, sb ang, v sft, v f gr, w  
rnd, mod srt, p por, arg cmt; intbd wi occ  
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, tr pyr

MD: 4,015'  
TVD: 3,977.79'  
Inclination: 9.19 °  
Azimuth: 243.3 °  
VS: -127.07'

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, tr pyr



MD: 4,110'  
TVD: 4,071.68'  
Inclination: 8.39 °  
Azimuth: 242.39 °  
VS: -131.73'

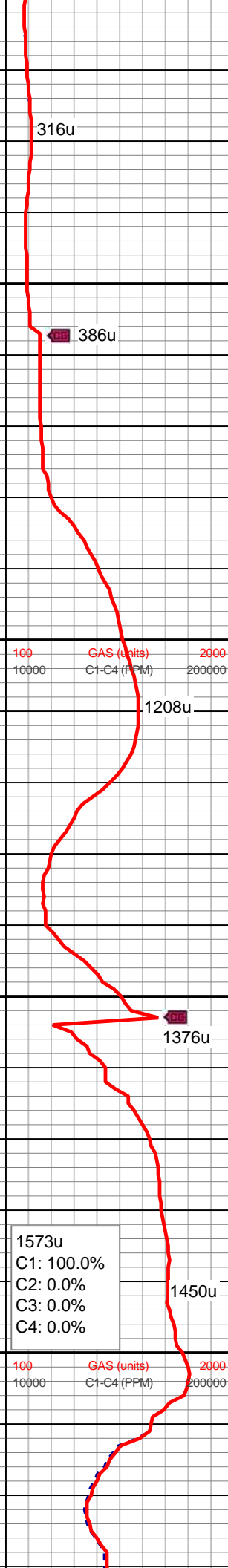
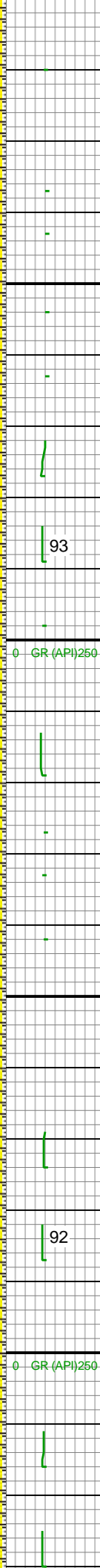
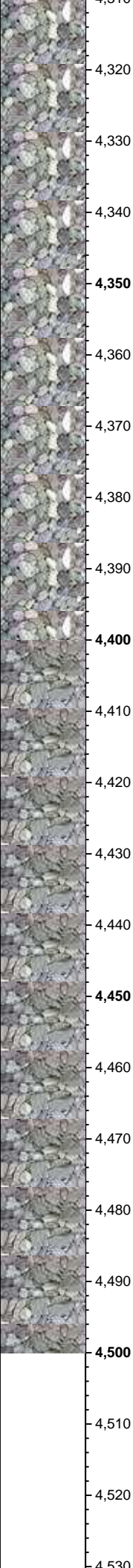
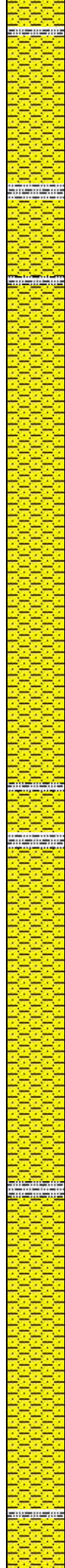
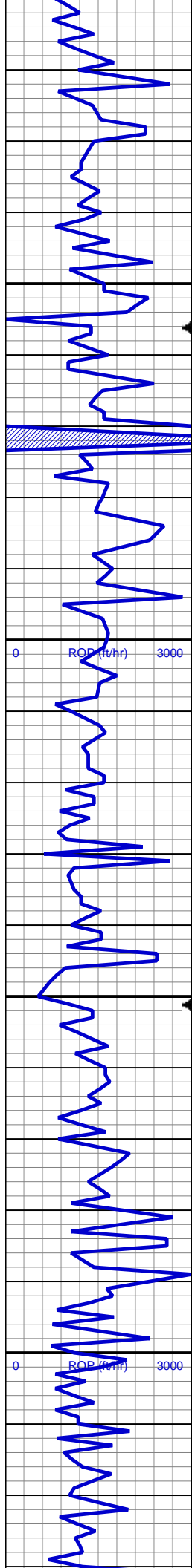
SHY SS: ltgy-gy, sb ang, v sft, v f gr, w  
rnd, mod srt, p por, arg cmt  
SLTY SH: gy-dk gy, sb blkly-sb plty, v sft,  
sly tex, arg cmt  
SS: ltgy-wh-op, sb ang, v fri, f gr - v f gr,  
mod rnd, p srt, p por, arg cmt, occ glau,  
tr lith frag, tr pyr

MD: 4,205'  
TVD: 4,165.59'  
Inclination: 8.96 °  
Azimuth: 245.18 °  
VS: -136.11'

SHY SS: ltgy-gy, sb ang, v sft, v f gr, w  
rnd, mod srt, p por, arg cmt; intbd wi occ  
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, tr pyr

MD: 4,299'  
TVD: 4,258.38'  
Inclination: 9.45 °  
Azimuth: 245.92 °  
VS: -140.26'





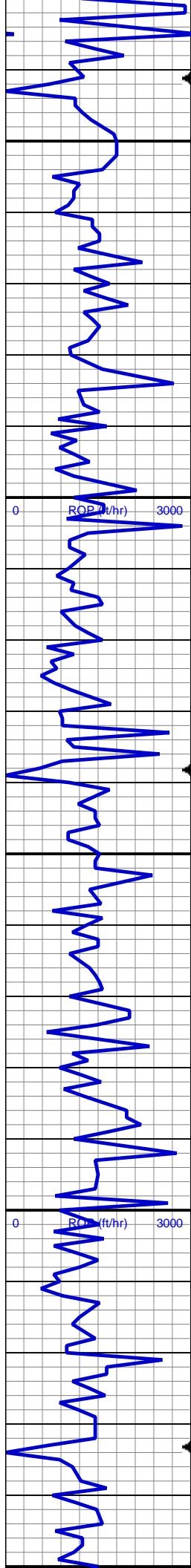
SHY SS: ltgy-gy, sb ang, v sft, v f gr, w  
rnd, mod srt, p por, arg cmt; intbd wi occ  
SS: ltgy-wh-op, sb ang, v fri, f gr - v f gr,  
mod rnd, p srt, p por, arg cmt, occ glau,  
tr lith frag  
SLTY SH: gy-dk gy, sb blkly-sb plty, v sft,  
silty tex, arg cmt, tr pyr

MD: 4,394'  
TVD: 4,352.16'  
Inclination: 8.96 °  
Azimuth: 246.52 °  
VS: -144.3'

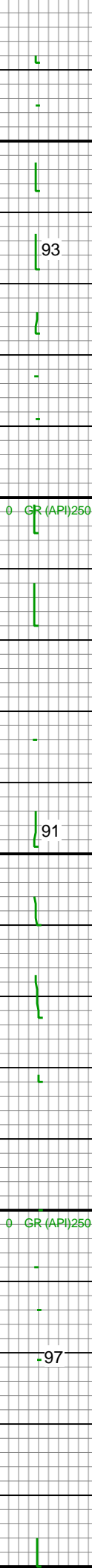
SHY SS: ltgy-gy, sb ang, v sft, v f gr, w  
rnd, mod srt, p por, arg cmt; intbd wi occ  
SLTY SH: gy-dk gy, sb blkly-sb plty, v sft,  
silty tex, arg cmt, tr pyr

MD: 4,489'  
TVD: 4,446.08'  
Inclination: 8.34 °  
Azimuth: 246.78 °  
VS: -147.99'

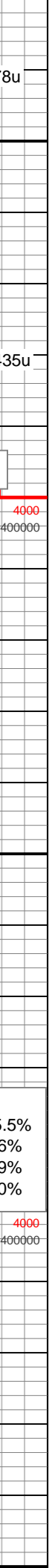
1573u  
C1: 100.0%  
C2: 0.0%  
C3: 0.0%  
C4: 0.0%



4,530  
4,540  
4,550  
4,560  
4,570  
4,580  
4,590  
4,600  
4,610  
4,620  
4,630  
4,640  
4,650  
4,660  
4,670  
4,680  
4,690  
4,700  
4,710  
4,720  
4,730  
4,740  
4,750



GAS SCALE CHANGE



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

MD: 4,584'  
TVD: 4,540.13'  
Inclination: 7.85 °  
Azimuth: 246.28 °  
VS: -151.48'

WT IN 9.10/ OUT 9.10  
VIS IN 28/ OUT 28

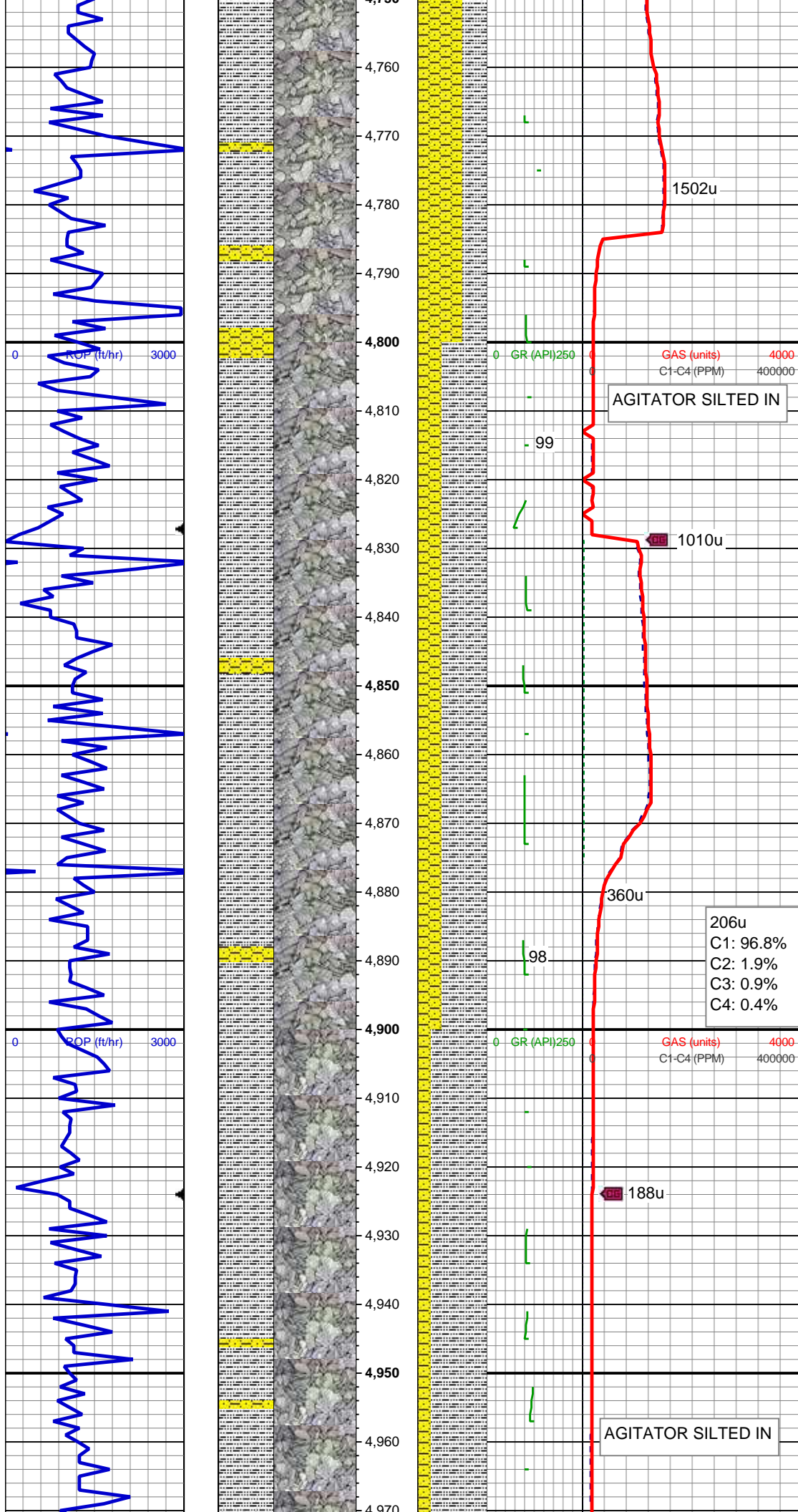
SHY SS: ltgy-gy, sb ang, v sft, v f gr, w  
rnd, mod srt, p por, arg cmt; intbd wi occ  
SLTY SH: gy-dk gy, sb blkgy-sb plty, v sft,  
silty tex, arg cmt

MD: 4,679'  
TVD: 4,634.31'  
Inclination: 7.21 °  
Azimuth: 246.16 °  
VS: -154.78'

1398u  
C1: 95.5%  
C2: 2.6%  
C3: 1.9%  
C4: 0.0%

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





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

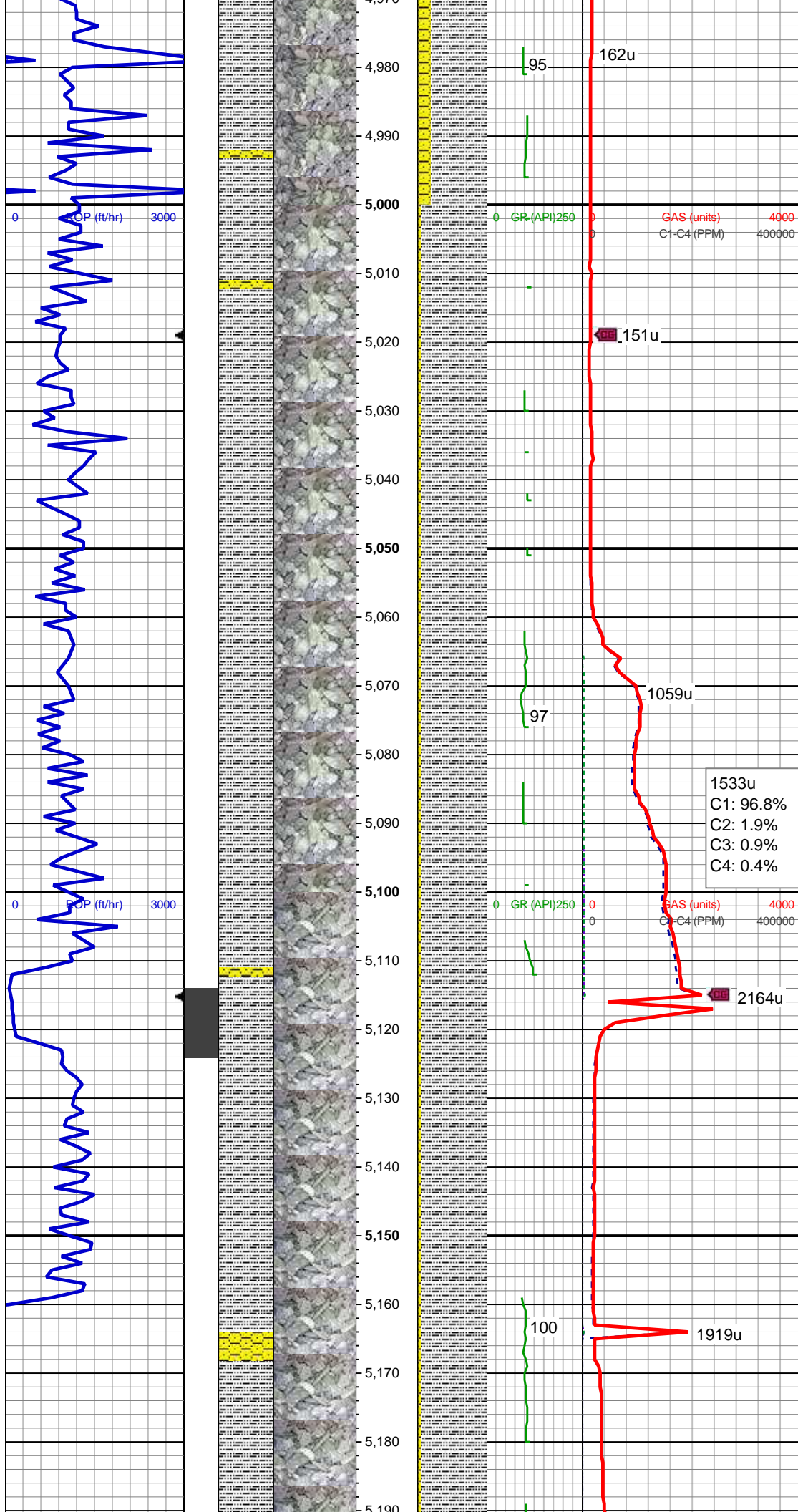
MD: 4,773'  
TVD: 4,727.64'  
Inclination: 6.48 °  
Azimuth: 247.41 °  
VS: -157.65'

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; intbd wi occ, tr pyr

MD: 4,868'  
TVD: 4,822.07'  
Inclination: 6.1 °  
Azimuth: 249.64 °  
VS: -160.02'

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; intbd wi occ, tr pyr

MD: 4,963'  
TVD: 4,916.57'  
Inclination: 5.58 °  
Azimuth: 246.23 °



VS: -162.29'

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; intbd wi occ, tr pyr

MD: 5,058'  
TVD: 5,011.15'  
Inclination: 5.29 °  
Azimuth: 248.61 °  
VS: -164.51'

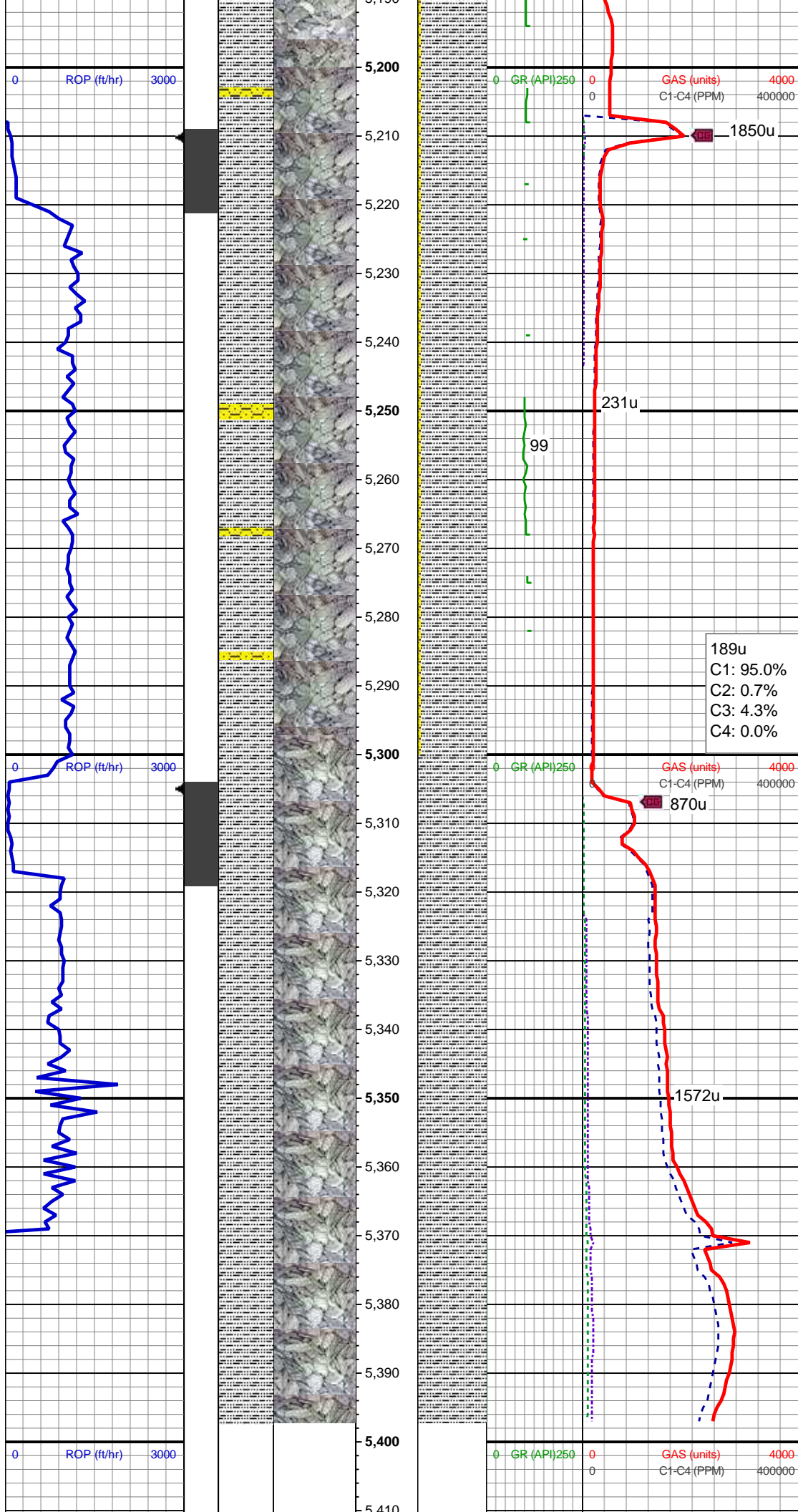
1533u  
C1: 96.8%  
C2: 1.9%  
C3: 0.9%  
C4: 0.4%

MD: 5,153'  
TVD: 5,105.85'  
Inclination: 3.79 °  
Azimuth: 244.98 °  
VS: -166.39'

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; intbd wi occ, tr pyr

WT IN 9.40/ OUT 9.40  
VIS IN 30/ OUT 30





MD: 5,248'  
TVD: 5,200.7'  
Inclination: 2.53 °  
Azimuth: 252.77 °  
VS: -167.61'

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; intbd wi occ,  
tr pyr

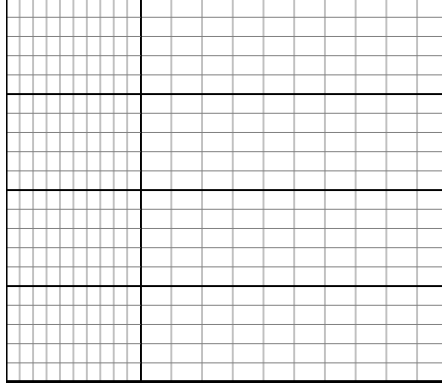
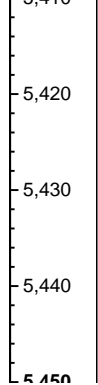
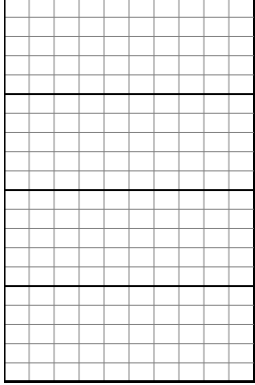
189u  
C1: 95.0%  
C2: 0.7%  
C3: 4.3%  
C4: 0.0%

WT IN 9.40+ OUT 9.40+  
VIS IN 35/ OUT 35

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

MD: 5,342'  
TVD: 5,294.65'  
Inclination: 0.95 °  
Azimuth: 233.39 °  
VS: -168.3'

TD @ 5397' MD  
07/08/2014 @ 11:40 PM



LOG CONTINUES ON MLOT  
CUTTHROAT LC28-75-1AHNB  
HORZ