

COLUMBINE LOGGING

Scale: 5" / 100'
Measured Depth Log

Well Name SUP & SHEP FEDERAL 25-11M

Location Sec 25 T9S R93W : 2510' FSL, 1946' FWL

State CO

County MESA

Country USA

Rig Number PATTERSON-UTI 306

API Number 05077102190000

AFE # 14-130

Spud Date
9/30/2014

Field VEGA

Drilling Completed 10/4/2014

Surface Coordinates 2510' FSL, 1946' FWL

Bottom Hole Coordinates 2472' FSL, 2389' FWL

Ground Elevation 8074'

K.B. Elevation 8098'

Logged Interval 160' To 8510'

Total Depth 8510'

Formation ROLLINS

Type of Drilling Fluid WBM

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

F FOSSIL

- GASTROPOD
- INOCERAMUS
- OOLITE
- OSTRACOD
- PELECYPOD
- PELLET

ANHYDRITIC

- ARGILLACEOUS
- ARGILLITE GRAIN
- BENTONITE
- BITUMENOUS SUBSTANCE
- BRECCIA FRAGMENTS
- CAI CARBONOUS








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
 ANHYDRITE
 BENTONITE
 BRECCIA
 CEMENT
 CHALK
 CHERT
 CLAY CHOKE SAND
 CLAYSTONE

 COAL
 CONGLOMERATE
 DOLOMITE
 GRANITE
 GYPSUM
 IGNEOUS
 LIMESTONE
 SIDERITE or LIMONITE
 MARLSTONE

 METAMORPHIC
 NO SAMPLE
 SALT
 SALT- PEPPER SAND
 SANDSTONE
 SHALE
 SHALE COLORED
 SHALE GRAY
 SHALY SANDSTONE

 SHALY SILTSTONE
 SILTSTONE
 SILTY SHALE
 TILL
 TUFF
 WELDED TUFF

Operator

Company Laramie Energy, Inc

Address 601 28 1/4 Rd
Grand Junction, CO
81506

Geologist

Name Andy McCarthy

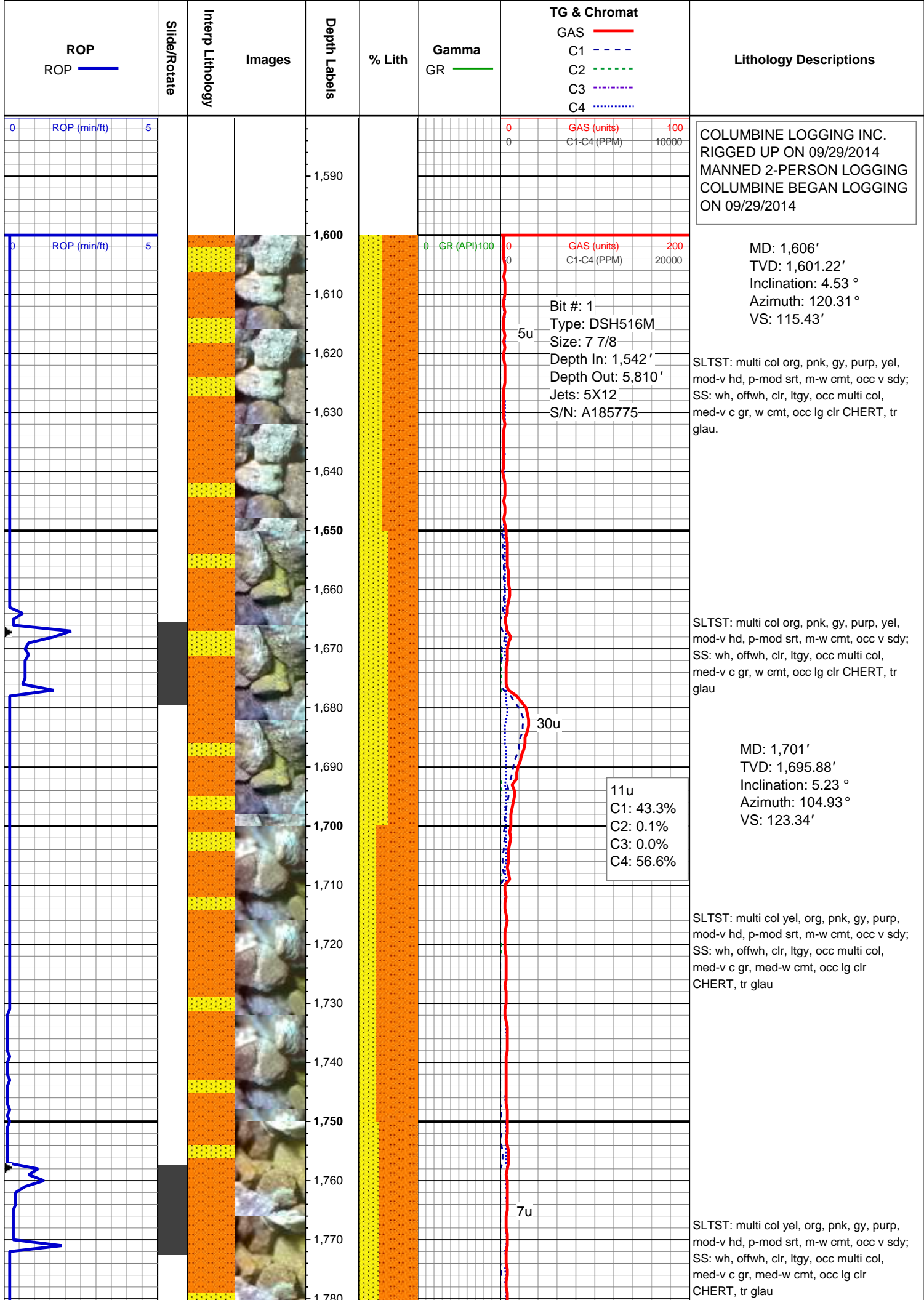
Company LARAMIE ENERGY INC.

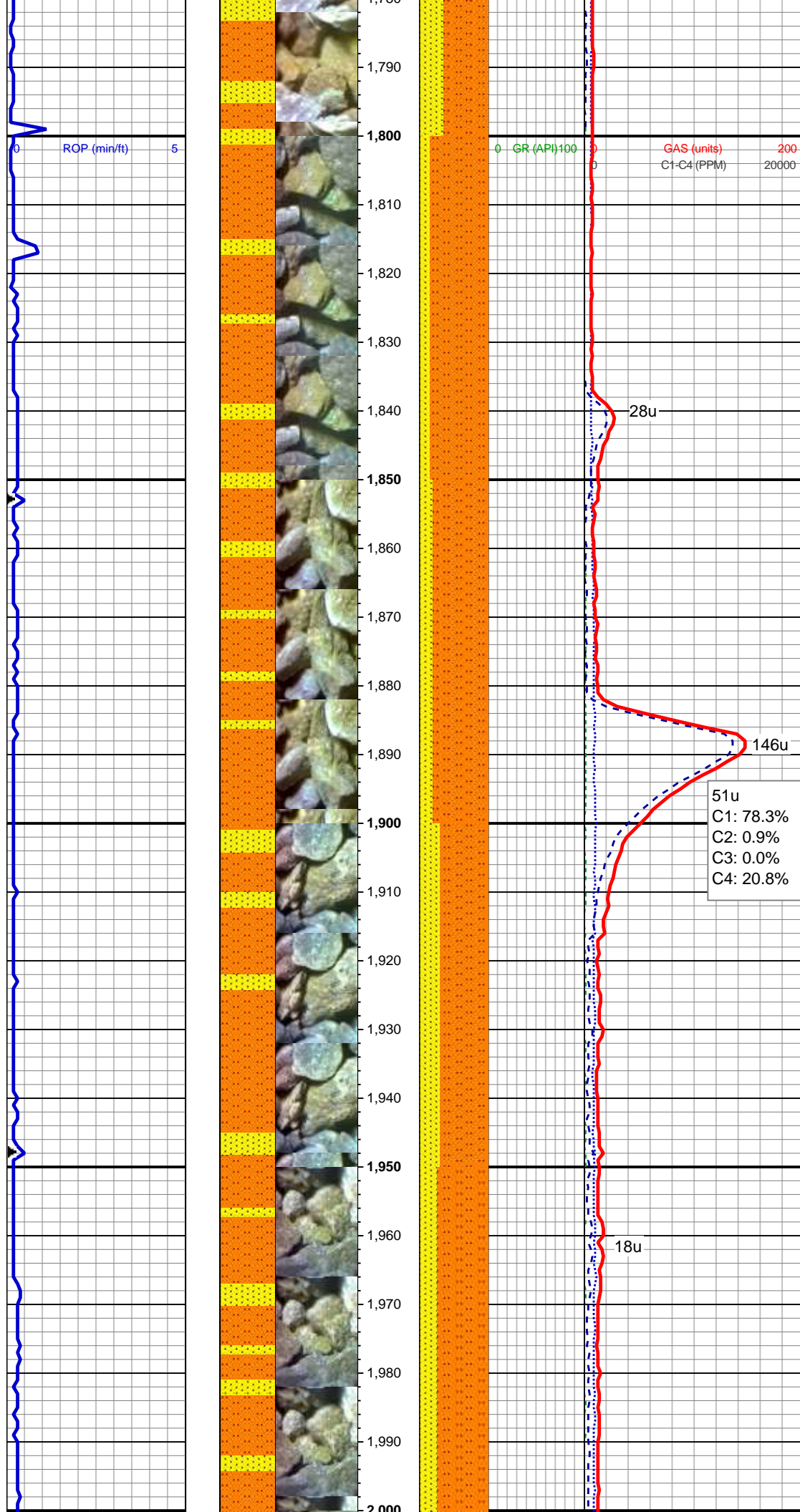
Address 601 28 1/4 Rd
Grand Junction, CO
81506

Other

WELL SITE GEOLOGIST #1 Terry Acomb

WELL SITE GEOLOGIST #2 Tim Bright





MD: 1,795'
TVD: 1,789.49'
Inclination: 5.27 °
Azimuth: 92.45 °
VS: 131.86'

SLTST: multi col yel, org, pnk, gy, purp,
mod-v hd, p-mod srt, m-w cmt, occ v sdy;
SS: wh, offwh, clr, ltgy, occ multi col,
med-v c gr, med-w cmt, occ lg clr
CHERT, occ mic, tr glau

28u

SLTST: multi col yel, org, pnk, gy, purp,
mod-v hd, p-mod srt, m-w cmt, occ v sdy;
SS: wh, offwh, clr, ltgy, occ multi col,
med-v c gr, med-w cmt, occ lg clr
CHERT, occ mic, tr glau

146u

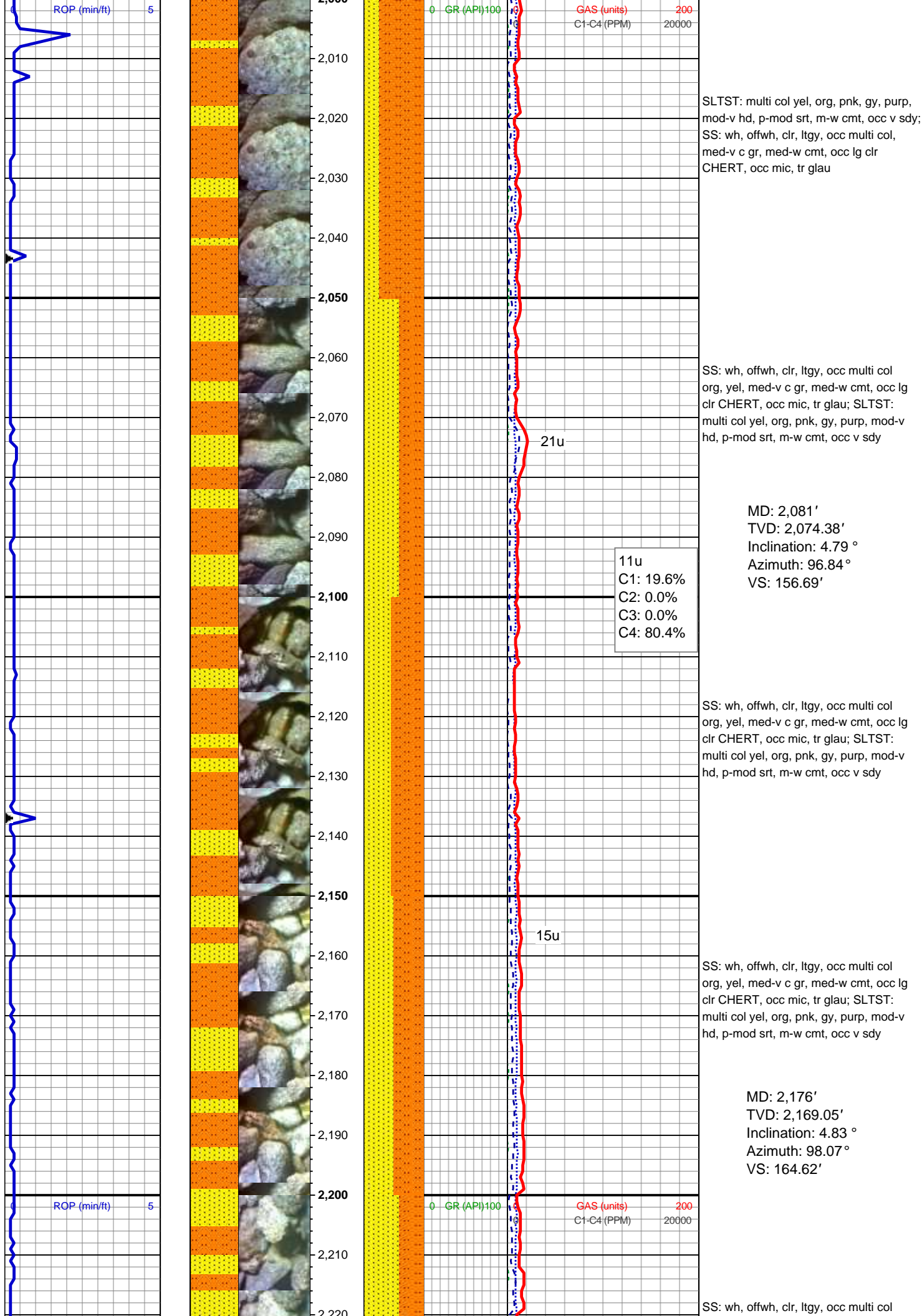
MD: 1,890'
TVD: 1,884.1'
Inclination: 5.05 °
Azimuth: 94.2 °
VS: 140.29'

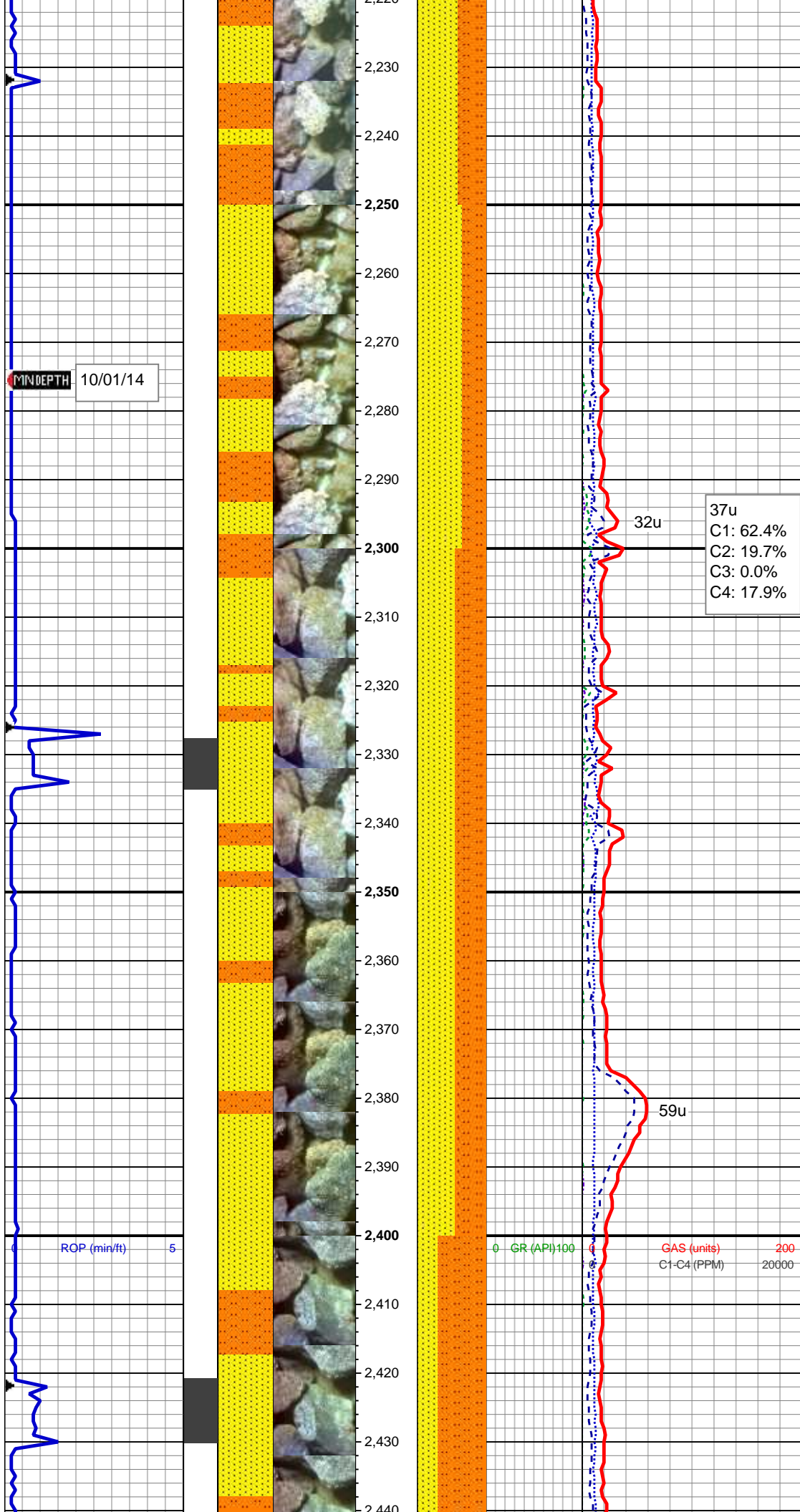
SLTST: multi col yel, org, pnk, gy, purp,
mod-v hd, p-mod srt, m-w cmt, occ v sdy;
SS: wh, offwh, clr, ltgy, occ multi col,
med-v c gr, med-w cmt, occ lg clr
CHERT, occ mic, tr glau

18u

SLTST: multi col yel, org, pnk, gy, purp,
mod-v hd, p-mod srt, m-w cmt, occ v sdy;
SS: wh, offwh, clr, ltgy, occ multi col,
med-v c gr, med-w cmt, occ lg clr
CHERT, occ mic, tr glau

MD: 1,985'
TVD: 1,978.74'
Inclination: 5.01 °
Azimuth: 96.31 °
VS: 148.54'





org, yel, med-v c gr, med-w cmt, occ lg
clr CHERT, occ mic, tr glau; SLTST:
multi col yel, org, pnk, gy, purp, mod-v
hd, p-mod srt, m-w cmt, occ v sdy

MD: 2,271'
TVD: 2,263.73'
Inclination: 4.57 °
Azimuth: 97.11 °
VS: 172.37'

SS: wh, offwh, clr, ltgy, occ multi col
org, yel, med-v c gr, med-w cmt, occ lg
clr CHERT, occ mic, tr glau; SLTST:
multi col yel, org, pnk, gy, purp, mod-v
hd, p-mod srt, m-w cmt, occ v sdy

32u

37u
C1: 62.4%
C2: 19.7%
C3: 0.0%
C4: 17.9%

SS: wh, offwh, clr, ltgy, occ multi col
org, yel, med-v c gr, med-w cmt, occ lg
clr CHERT, occ mic, tr glau; SLTST:
multi col yel, org, pnk, gy, purp, mod-v
hd, p-mod srt, m-w cmt, occ v sdy

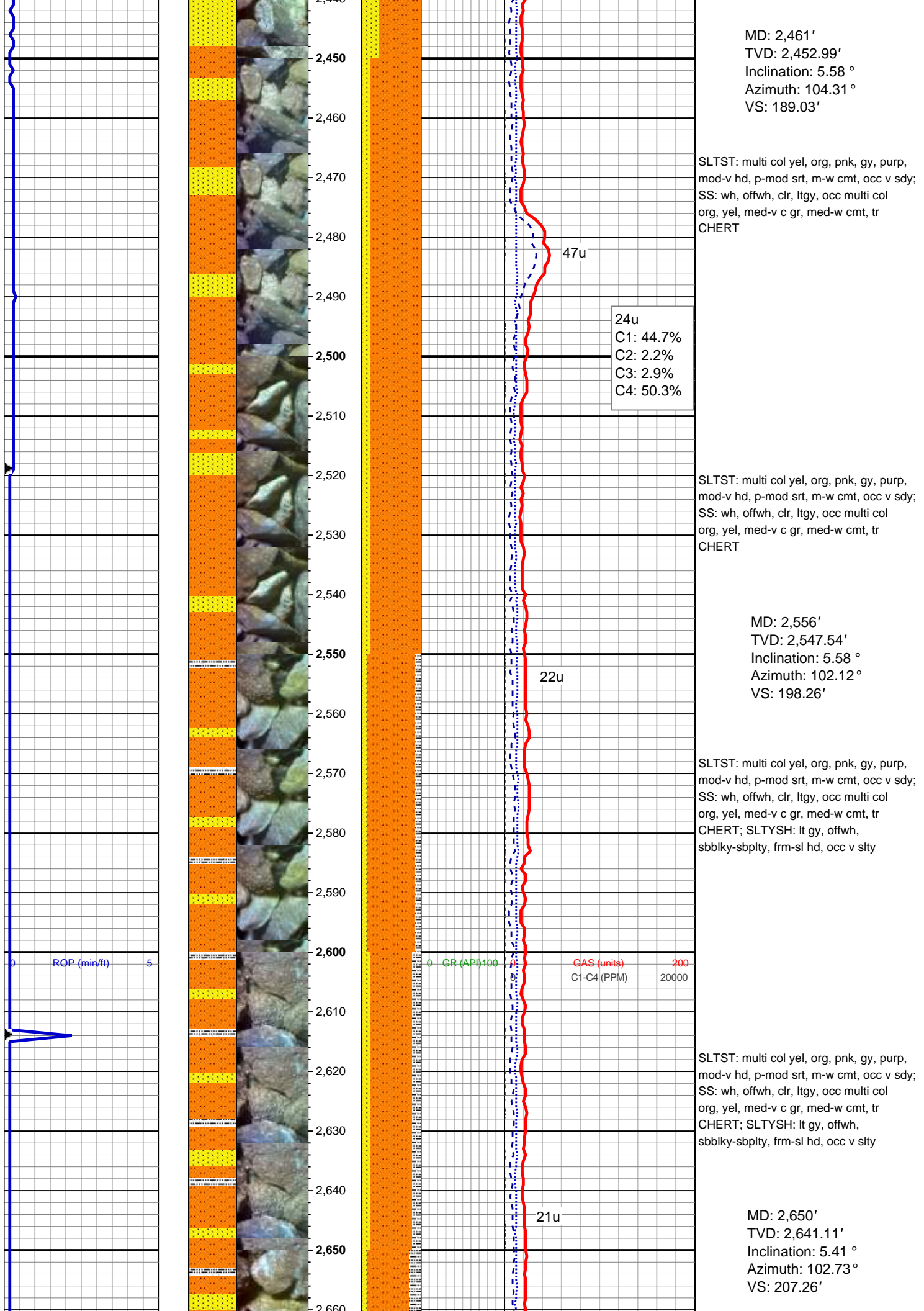
MD: 2,366'
TVD: 2,358.4'
Inclination: 5.01 °
Azimuth: 98.78 °
VS: 180.27'

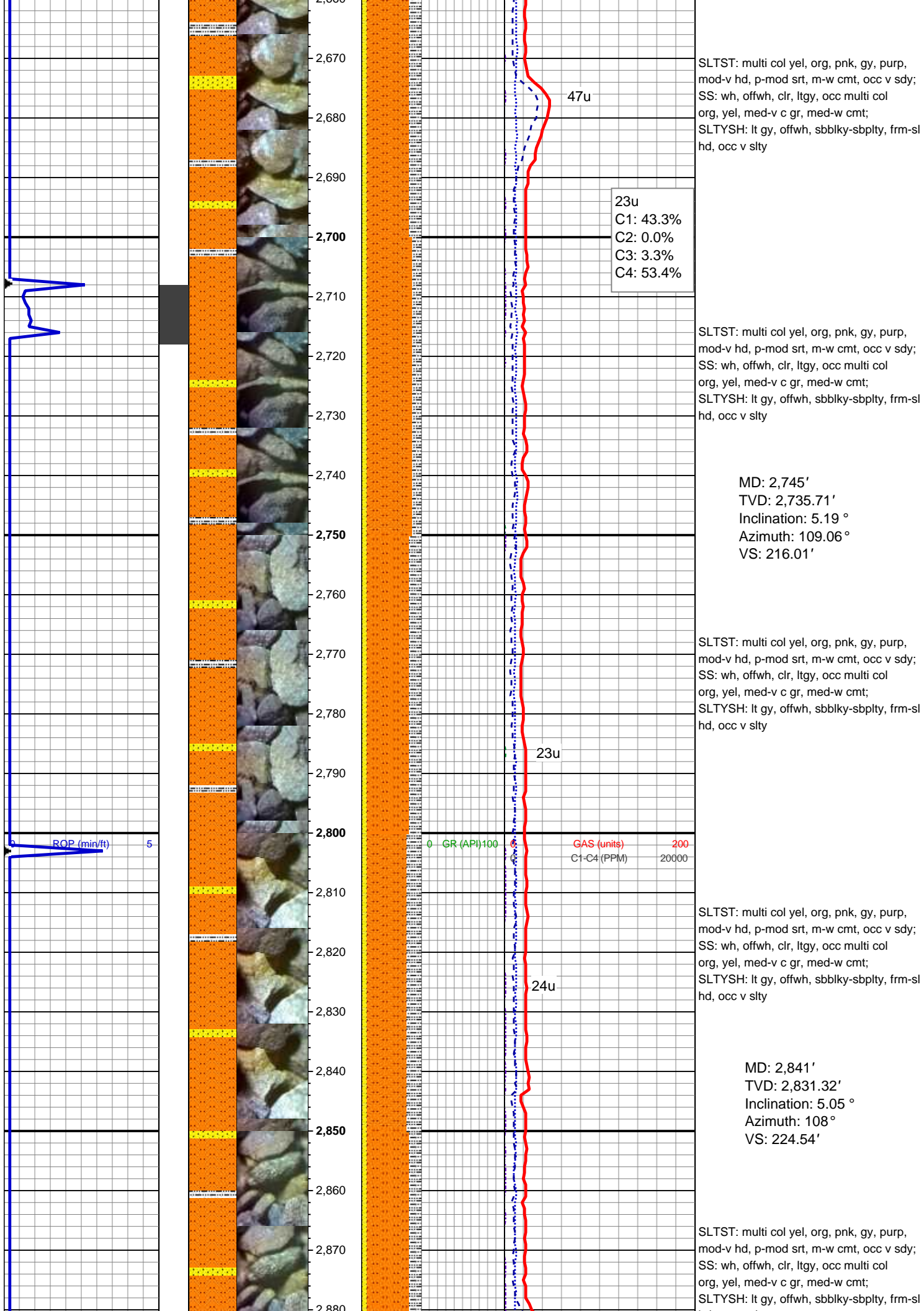
SS: wh, offwh, clr, ltgy, occ multi col
org, yel, med-v c gr, med-w cmt, occ lg
clr CHERT, occ mic, tr glau; SLTST:
multi col yel, org, pnk, gy, purp, mod-v
hd, p-mod srt, m-w cmt, occ v sdy

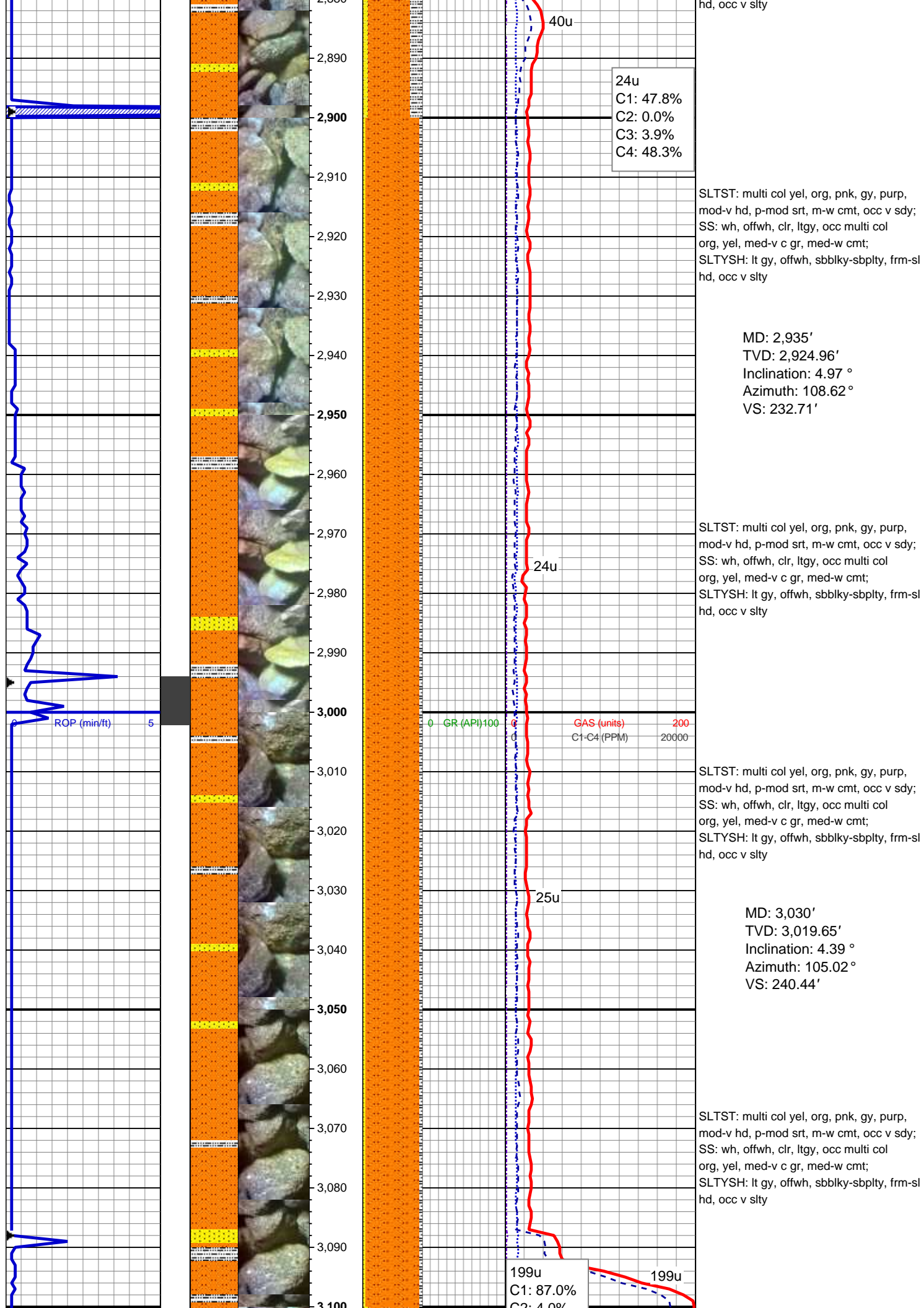
59u

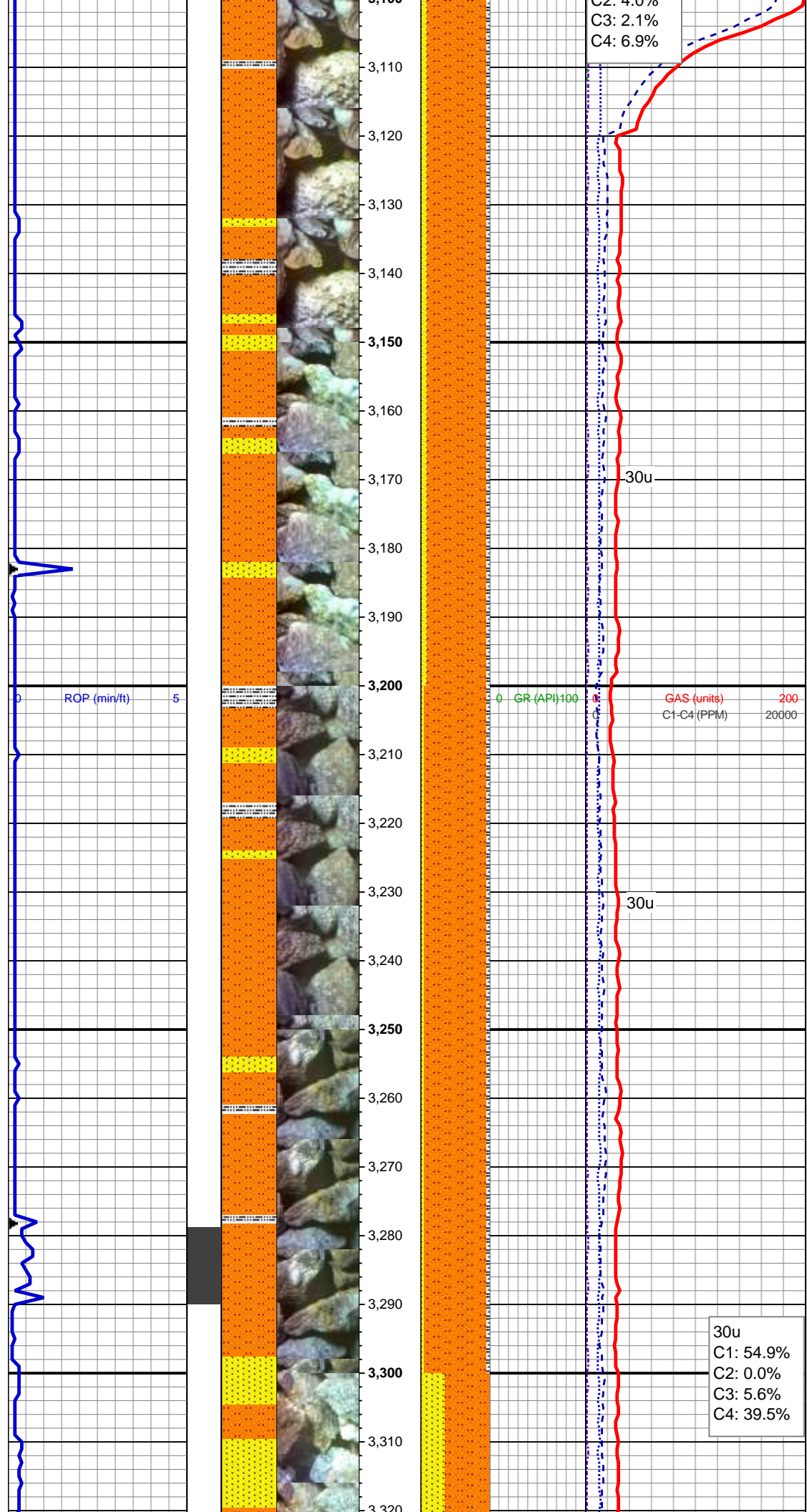
0 GR (API) 100
GAS (units) 200
C1-C4 (PPM) 20000

SLTST: multi col yel, org, pnk, gy, purp,
mod-v hd, p-mod srt, m-w cmt, occ v sdy;
SS: wh, offwh, clr, ltgy, occ multi col
org, yel, med-v c gr, med-w cmt, tr
CHERT









SLTST: multi col yel, org, pnk, gy, purp,
mod-v hd, p-mod srt, m-w cmt, occ v sdy;
SS: wh, offwh, clr, ltgy, occ multi col
org, yel, med-v c gr, med-w cmt;
SLTYSH: lt gy, offwh, sbblky-sbply, frm-sl
hd, occ v slty

MD: 3,125'
TVD: 3,114.38'
Inclination: 4.13 °
Azimuth: 106.69 °
VS: 247.49'

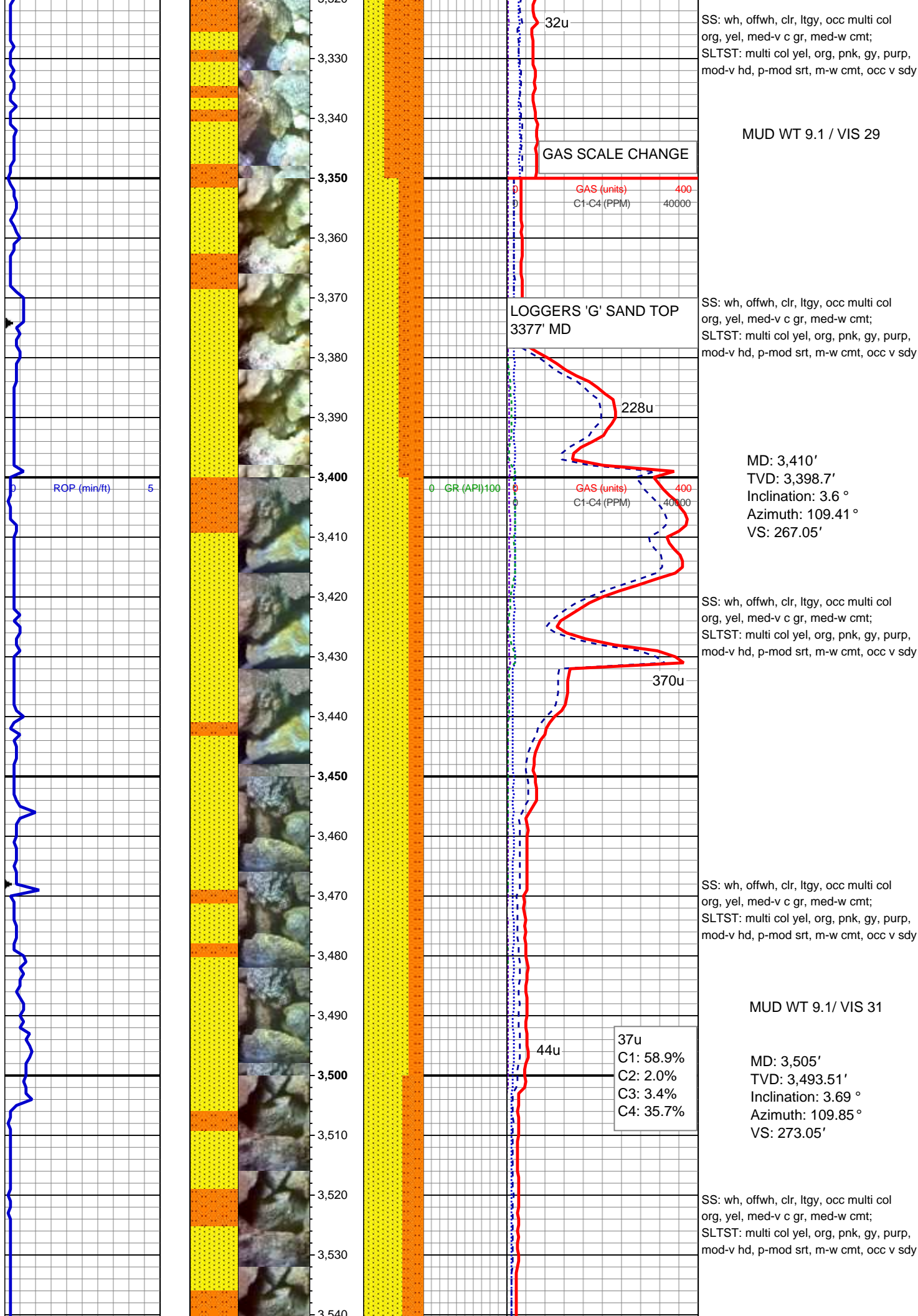
SLTST: multi col yel, org, pnk, gy, purp,
mod-v hd, p-mod srt, m-w cmt, occ v sdy;
SS: wh, offwh, clr, ltgy, occ multi col
org, yel, med-v c gr, med-w cmt;
SLTYSH: lt gy, offwh, sbblky-sbply, frm-sl
hd, occ v slty

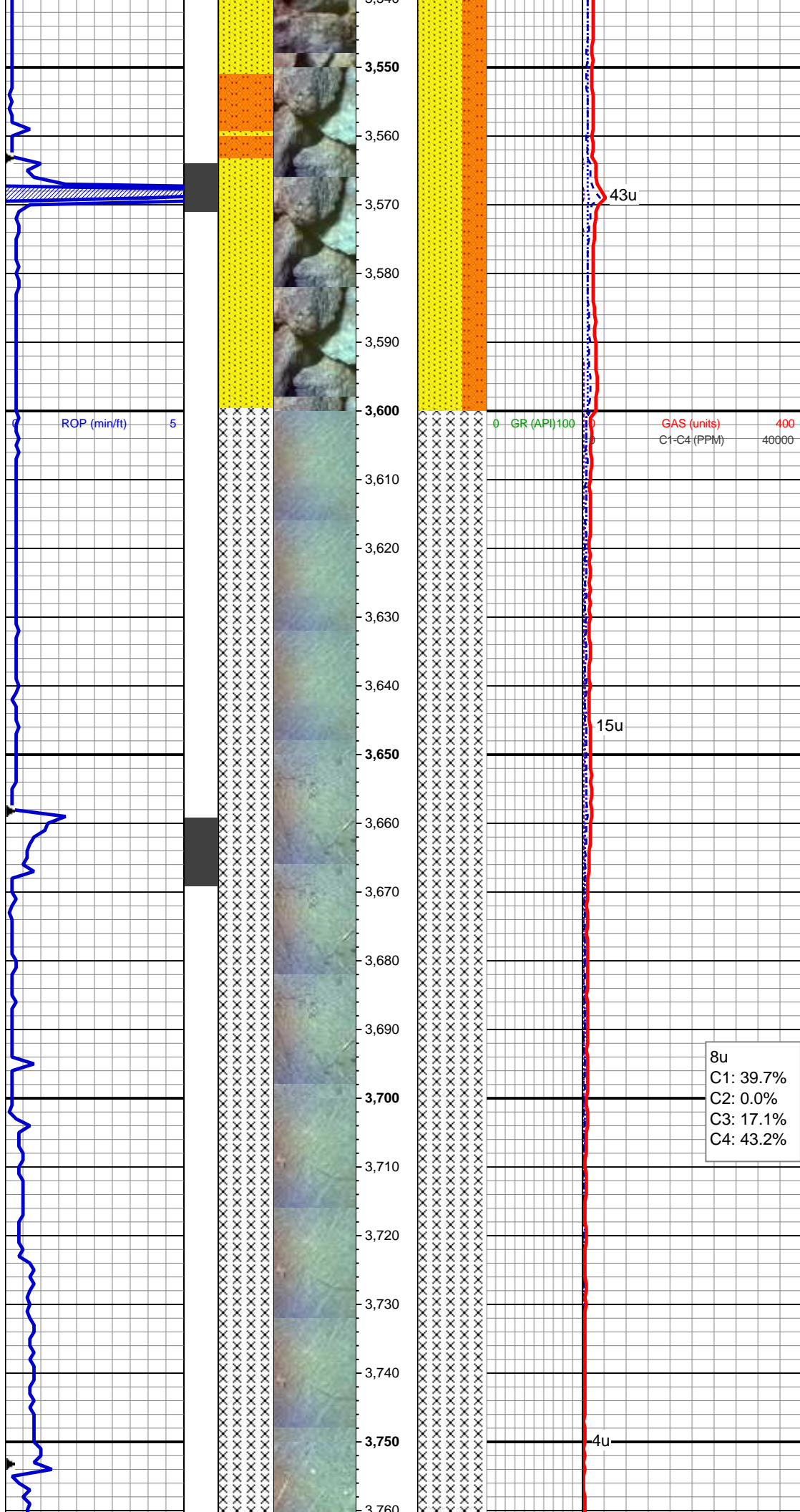
MD: 3,220'
TVD: 3,209.14'
Inclination: 4.17 °
Azimuth: 106.16 °
VS: 254.35'

SLTST: multi col yel, org, pnk, gy, purp,
mod-v hd, p-mod srt, m-w cmt, occ v sdy;
SS: wh, offwh, clr, ltgy, occ multi col
org, yel, med-v c gr, med-w cmt;
SLTYSH: lt gy, offwh, sbblky-sbply, frm-sl
hd, occ v slty

SLTST: multi col yel, org, pnk, gy, purp,
mod-v hd, p-mod srt, m-w cmt, occ v sdy;
SS: wh, offwh, clr, ltgy, occ multi col
org, yel, med-v c gr, med-w cmt;
SLTYSH: lt gy, offwh, sbblky-sbply, frm-sl
hd, occ v slty

MD: 3,316'
TVD: 3,304.9'
Inclination: 3.82 °
Azimuth: 109.76 °
VS: 261.01'





SS: wh, offwh, clr, ltgy, occ multi col
org, yel, med-v c gr, med-w cmt;
SLTST: multi col yel, org, pnk, gy, purp,
mod-v hd, p-mod srt, m-w cmt, occ v sdy

LOST FLOW

MD: 3,600'
TVD: 3,588.32'
Inclination: 3.65 °
Azimuth: 108.88 °
VS: 279.09'

NO SAMPLE DUE TO LOST CIRCULATION

NO SAMPLE DUE TO LOST CIRCULATION

MD: 3,695'
TVD: 3,683.14'
Inclination: 3.34 °
Azimuth: 94.29 °
VS: 284.83'

8u
C1: 39.7%
C2: 0.0%
C3: 17.1%
C4: 43.2%

MUD WT 9.0/ VIS 32

NO SAMPLE DUE TO LOST CIRCULATION

NO SAMPLE DUE TO LOST CIRCULATION

MD: 3,790'
TVD: 3,778'
Inclination: 2.99 °
Azimuth: 91.92 °
VS: 290'

ROP (min/ft)

0

5

GR (API)100

0

GAS (units)

400

C1-C4 (PPM)

40000

14u

SS: wh, offwh, clr, ltgy, occ multi col
org, yel, med-v c gr, med-w cmt;
SLTST: multi col yel, org, pnk, gy, purp,
mod-v hd, p-mod srt, m-w cmt, occ v sdy

SLTST: multi col yel, org, pnk, gy, purp,
mod-v hd, p-mod srt, m-w cmt, occ v sdy;
SS: wh, offwh, clr, ltgy, occ multi col
org, yel, med-v c gr, med-w cmt;
SLTYSH: lt gy, offwh, sbblky-sbply, frm-sl
hd, occ v slty

MD: 3,885'
TVD: 3,872.84'
Inclination: 3.69 °
Azimuth: 92.97 °
VS: 295.45'

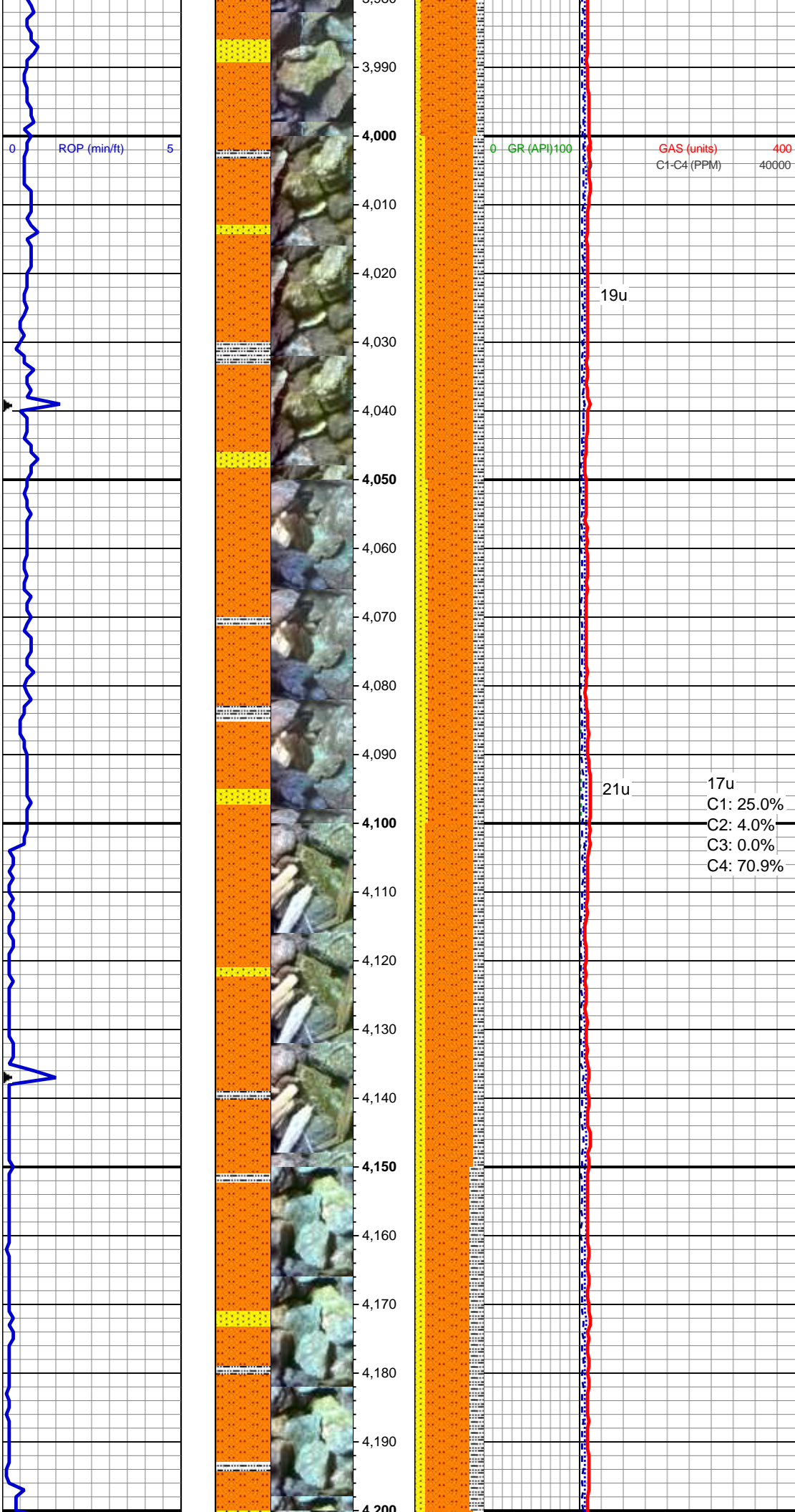
10u
C1: 29.3%
C2: 0.0%
C3: 5.2%
C4: 65.5%

10u

MUD WT 8.8/ VIS 32

SLTST: multi col yel, org, pnk, gy, purp,
mod-v hd, p-mod srt, m-w cmt, occ v sdy;
SS: wh, offwh, clr, ltgy, occ multi col
org, yel, med-v c gr, med-w cmt;
SLTYSH: lt gy, offwh, sbblky-sbply, frm-sl
hd, occ v slty

SLTST: multi col yel, org, pnk, gy, purp,
mod-v hd, p-mod srt, m-w cmt, occ v sdy;
SS: wh, offwh, clr, ltgy, occ multi col
org, yel, med-v c gr, med-w cmt;
SLTYSH: lt gy, offwh, sbblky-sbply, frm-sl
hd, occ v slty



MD: 3,980'
TVD: 3,967.62'
Inclination: 4.13 °
Azimuth: 103.43 °
VS: 301.88'

SLTST: multi col org, pnk, gy, purp,
mod-v hd, p-mod srt, m-w cmt, occ v sdy;
SS: wh, offwh, clr, ltgy, occ multi col
org, yel, med-v c gr, med-w cmt;
SLTYSH: lt gy, offwh, occ multi col,
sbbiky-sbply, frm-sl hd, occ v slty

SLTST: multi col org, pnk, gy, purp,
mod-v hd, p-mod srt, m-w cmt, occ v sdy;
SS: wh, offwh, clr, ltgy, occ multi col
org, yel, med-v c gr, med-w cmt;
SLTYSH: lt gy, offwh, occ multi col,
sbbiky-sbply, frm-sl hd, occ v slty

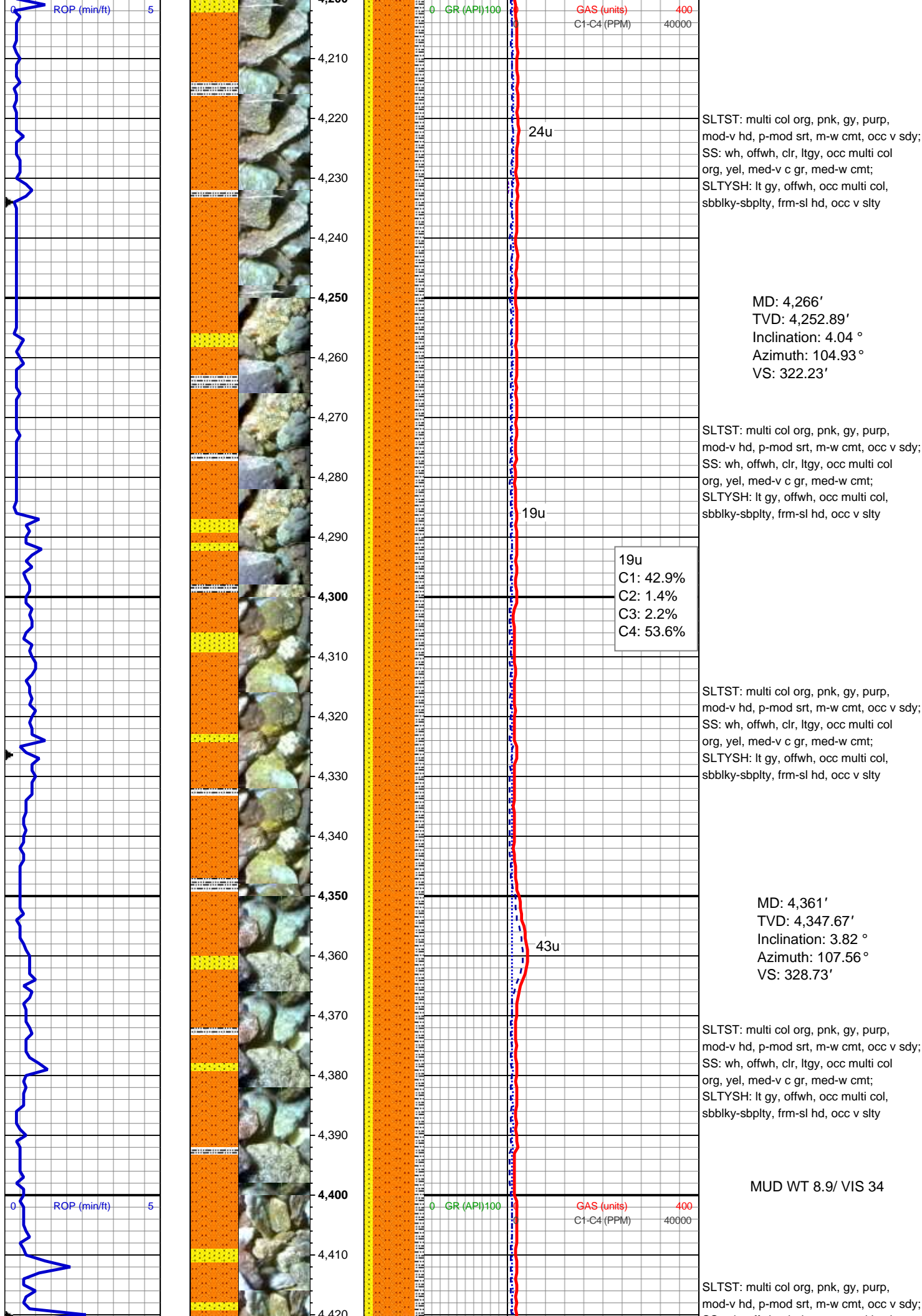
MD: 4,075'
TVD: 4,062.37'
Inclination: 4.04 °
Azimuth: 106.77 °
VS: 308.64'

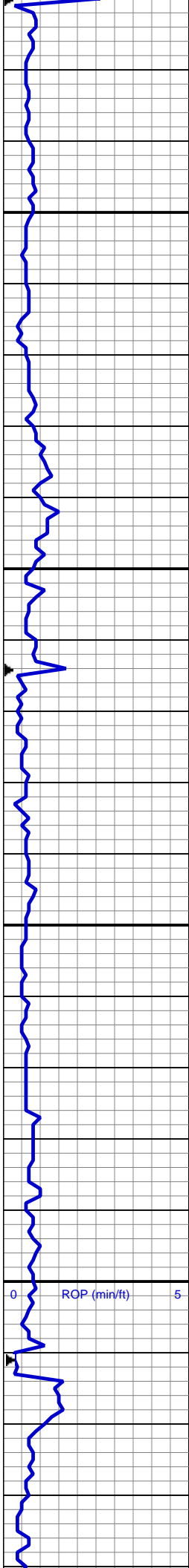
MUD WT 8.8/ VIS 34

SLTST: multi col org, pnk, gy, purp,
mod-v hd, p-mod srt, m-w cmt, occ v sdy;
SS: wh, offwh, clr, ltgy, occ multi col
org, yel, med-v c gr, med-w cmt;
SLTYSH: lt gy, offwh, occ multi col,
sbbiky-sbply, frm-sl hd, occ v slty

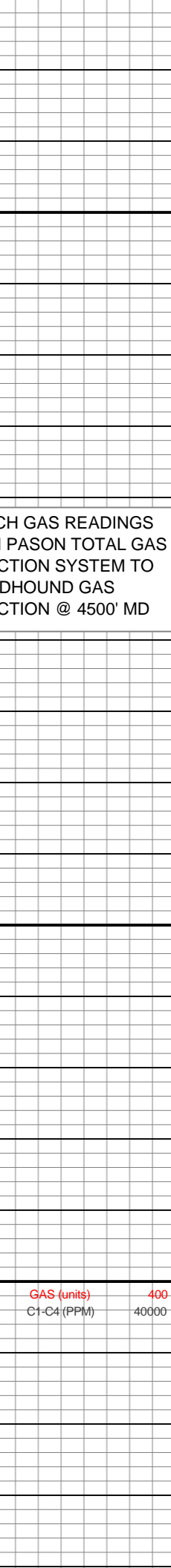
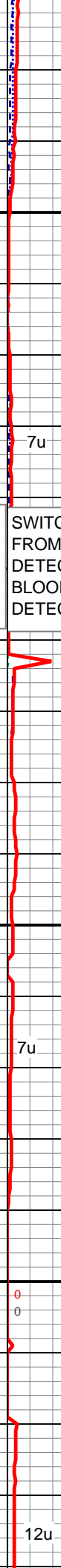
MD: 4,171'
TVD: 4,158.13'
Inclination: 4.13 °
Azimuth: 103.08 °
VS: 315.47'

SLTST: multi col org, pnk, gy, purp,
mod-v hd, p-mod srt, m-w cmt, occ v sdy;
SS: wh, offwh, clr, ltgy, occ multi col
org, yel, med-v c gr, med-w cmt;
SLTYSH: lt gy, offwh, occ multi col,
sbbiky-sbply, frm-sl hd, occ v slty





4,420
4,430
4,440
4,450
4,460
4,470
4,480
4,490
4,500
4,510
4,520
4,530
4,540
4,550
4,560
4,570
4,580
4,590
4,600
4,610
4,620
4,630
4,640



SS: wh, offwh, clr, ltgy, occ multi col
org, yel, med-v c gr, med-w cmt;
SLTYSH: lt gy, offwh, occ multi col,
sbbly-sbply, frm-sl hd, occ v slty

MD: 4,456'
TVD: 4,442.44'
Inclination: 4 °
Azimuth: 108.53 °
VS: 335.18'

SLTST: multi col org, pnk, gy, purp,
mod-v hd, p-mod srt, m-w cmt, occ v sdy;
SS: wh, offwh, clr, ltgy, occ multi col
org, yel, med-v c gr, med-w cmt;
SLTYSH: lt gy, offwh, occ multi col,
sbbly-sbply, frm-sl hd, occ v slty

4u
C1: 96.9%
C2: 1.9%
C3: 0.8%
C4: 0.3%

SWITCH GAS READINGS
FROM PASON TOTAL GAS
DETECTION SYSTEM TO
BLOODHOUND GAS
DETECTION @ 4500' MD

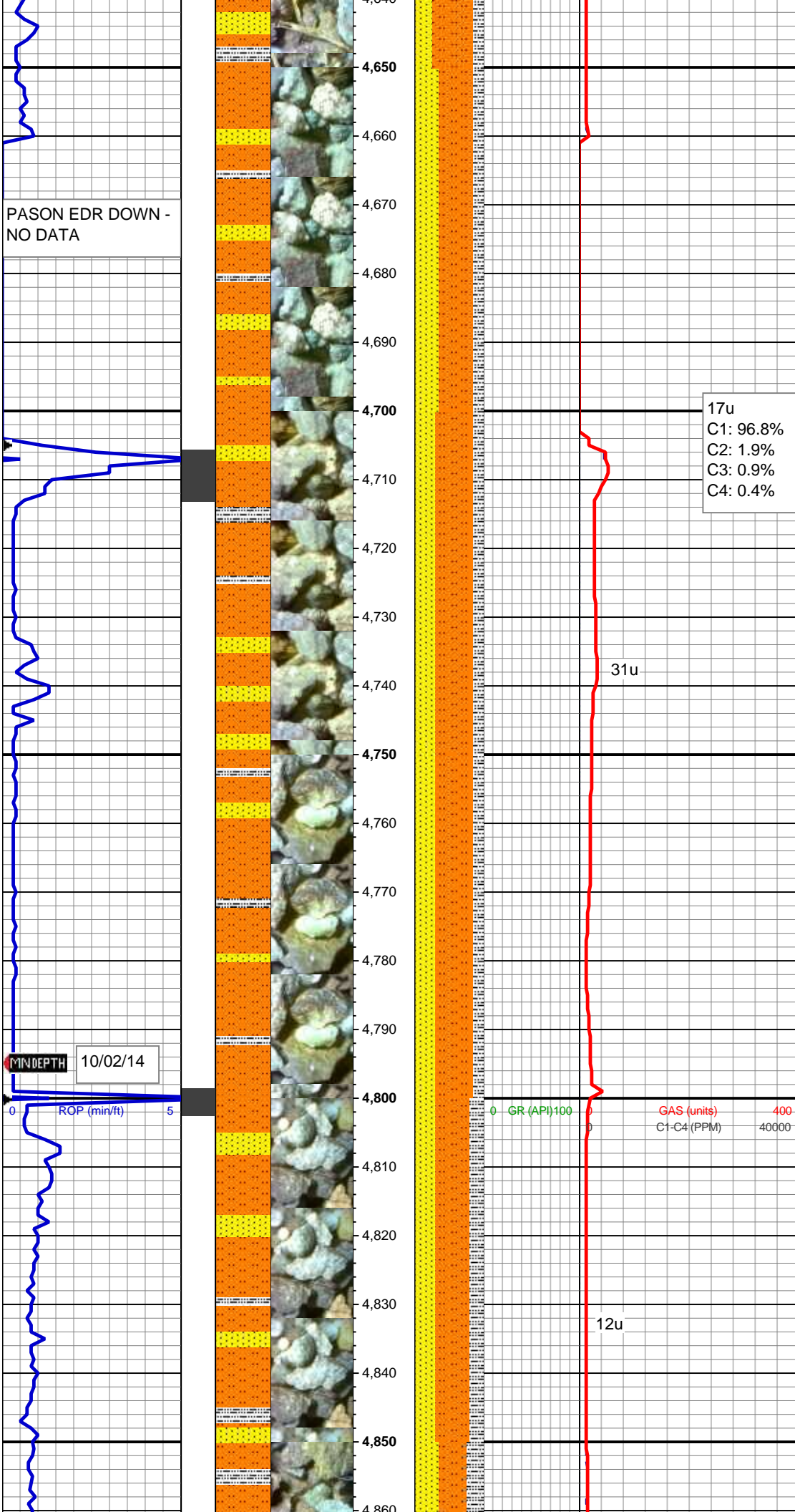
SLTST: multi col org, pnk, gy, purp,
mod-v hd, p-mod srt, m-w cmt, occ v sdy;
SS: wh, offwh, clr, ltgy, occ multi col
org, yel, med-v c gr, med-w cmt, tr-occ
clr chert; SLTYSH: lt gy, offwh, occ multi
col, sbbly-sbply, frm-sl hd, occ v slty

MD: 4,551'
TVD: 4,537.22'
Inclination: 3.87 °
Azimuth: 109.76 °
VS: 341.66'

SLTST: multi col org, pnk, gy, purp,
mod-v hd, p-mod srt, m-w cmt, occ v sdy;
SS: wh, offwh, clr, ltgy, occ multi col
org, yel, med-v c gr, med-w cmt, tr-occ
clr chert; SLTYSH: lt gy, offwh, occ multi
col, sbbly-sbply, frm-sl hd, occ v slty

MUD WT 8.8/ VIS 35

SLTST: multi col org, pnk, gy, purp,
mod-v hd, p-mod srt, m-w cmt, occ v sdy;
SS: wh, offwh, clr, ltgy, occ multi col
org, yel, med-v c gr, med-w cmt, tr-occ
clr chert; SLTYSH: lt gy, offwh, occ multi
col, sbbly-sbply, frm-sl hd, occ v slty



MD: 4,646'
TVD: 4,632.01'
Inclination: 3.69 °
Azimuth: 108.09 °
VS: 347.89'

SLTST: multi col org, pnk, gy, purp,
mod-v hd, p-mod srt, m-w cmt, occ v sdy;
SS: wh, offwh, clr, ltgy, occ multi col
org, yel, sbang-ang, med-v c gr, med-w
cmt, tr-occ clr chert; SLTYSH: lt gy,
offwh, occ multi col, sbblky-sbply, frm-sl
hd, occ v slty

17u
C1: 96.8%
C2: 1.9%
C3: 0.9%
C4: 0.4%

SLTST: multi col org, pnk, gy, purp,
mod-v hd, p-mod srt, m-w cmt, occ v sdy;
SS: wh, offwh, clr, ltgy, occ multi col
org, yel, sbang-ang, med-v c gr, med-w
cmt, tr-occ clr chert; SLTYSH: lt gy,
offwh, occ multi col, sbblky-sbply, frm-sl
hd, occ v slty

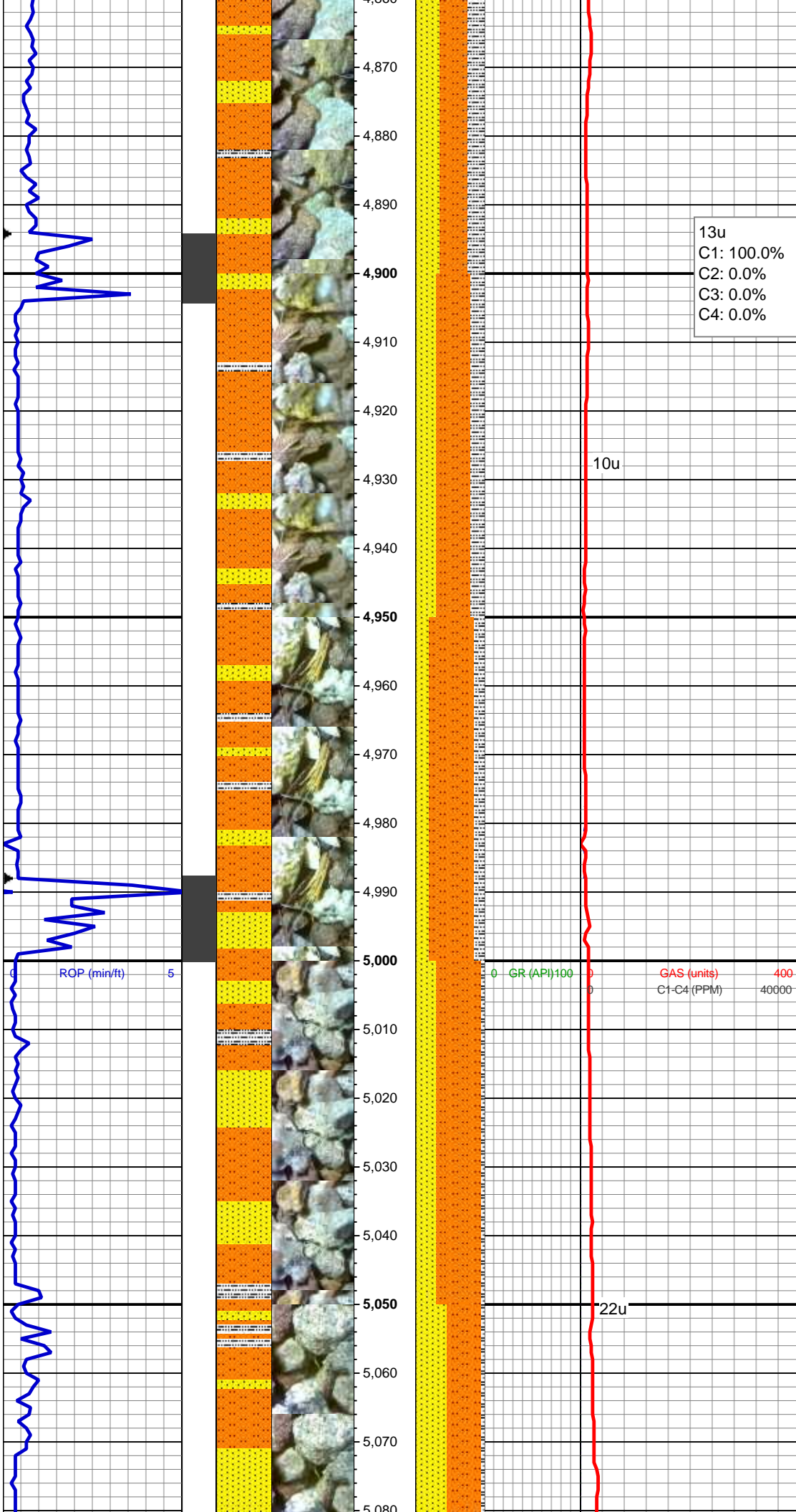
MD: 4,740'
TVD: 4,725.83'
Inclination: 3.52 °
Azimuth: 105.1 °
VS: 353.79'

SLTST: multi col org, pnk, gy, purp,
mod-v hd, p-mod srt, m-w cmt, occ v sdy;
SS: wh, offwh, clr, ltgy, occ multi col
org, yel, sbang-ang, med-v c gr, med-w
cmt, tr-occ clr chert; SLTYSH: lt gy,
offwh, occ multi col, sbblky-sbply, frm-sl
hd, occ v slty

MUD WT 8.9/ VIS 37

SLTST: multi col org, pnk, gy, purp,
mod-v hd, p-mod srt, m-w cmt, occ v sdy;
SS: wh, offwh, clr, ltgy, occ multi col
org, yel, sbang-ang, med-v c gr, med-w
cmt, tr-occ clr chert; SLTYSH: lt gy,
offwh, occ multi col, sbblky-sbply, frm-sl
hd, occ v slty

MD: 4,835'
TVD: 4,820.66'
Inclination: 3.34 °
Azimuth: 110.73 °
VS: 359.44'



SLTST: multi col org, pnk, gy, purp,
mod-v hd, p-mod srt, m-w cmt, occ v sdy;
SS: wh, offwh, clr, ltgy, occ multi col
org, yel, sbang-ang, med-v c gr, med-w
cmt, tr-occ clr chert; SLTYSH: lt gy,
offwh, occ multi col, sbbiky-sbplty, frm-sl
hd, occ v slty

SLTST: multi col org, pnk, gy, purp,
mod-v hd, p-mod srt, m-w cmt, occ v sdy;
SS: wh, offwh, clr, ltgy, occ multi col
org, yel, sbang-ang, med-v c gr, med-w
cmt, tr clr chert; SLTYSH: lt gy, offwh,
occ multi col, sbbiky-sbplty, frm-sl hd,
occ v slty

MD: 4,930'
TVD: 4,915.53'
Inclination: 2.68 °
Azimuth: 98.87 °
VS: 364.4'

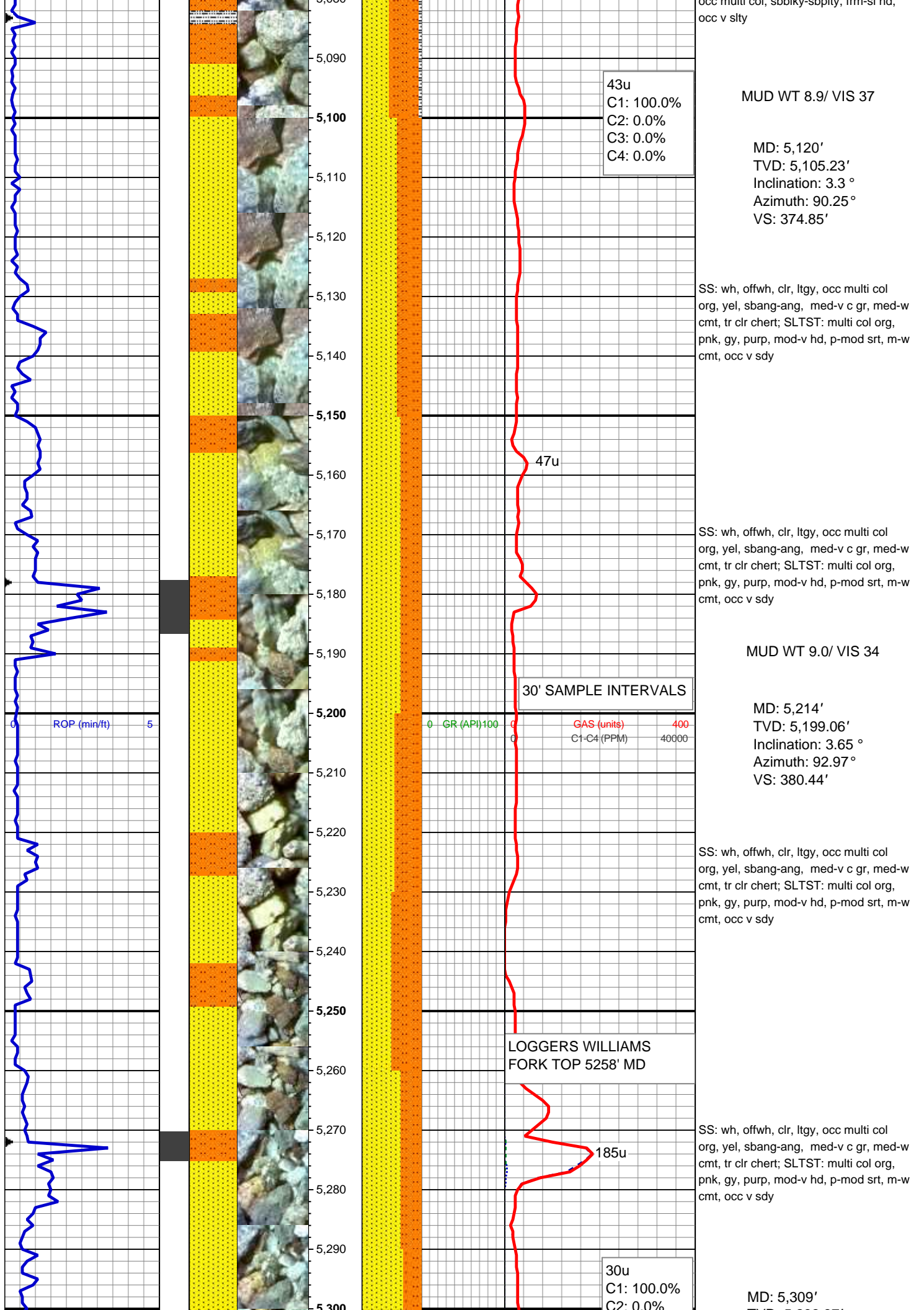
SLTST: multi col org, pnk, gy, purp,
mod-v hd, p-mod srt, m-w cmt, occ v sdy;
SS: wh, offwh, clr, ltgy, occ multi col
org, yel, sbang-ang, med-v c gr, med-w
cmt, tr clr chert; SLTYSH: lt gy, offwh,
occ multi col, sbbiky-sbplty, frm-sl hd,
occ v slty

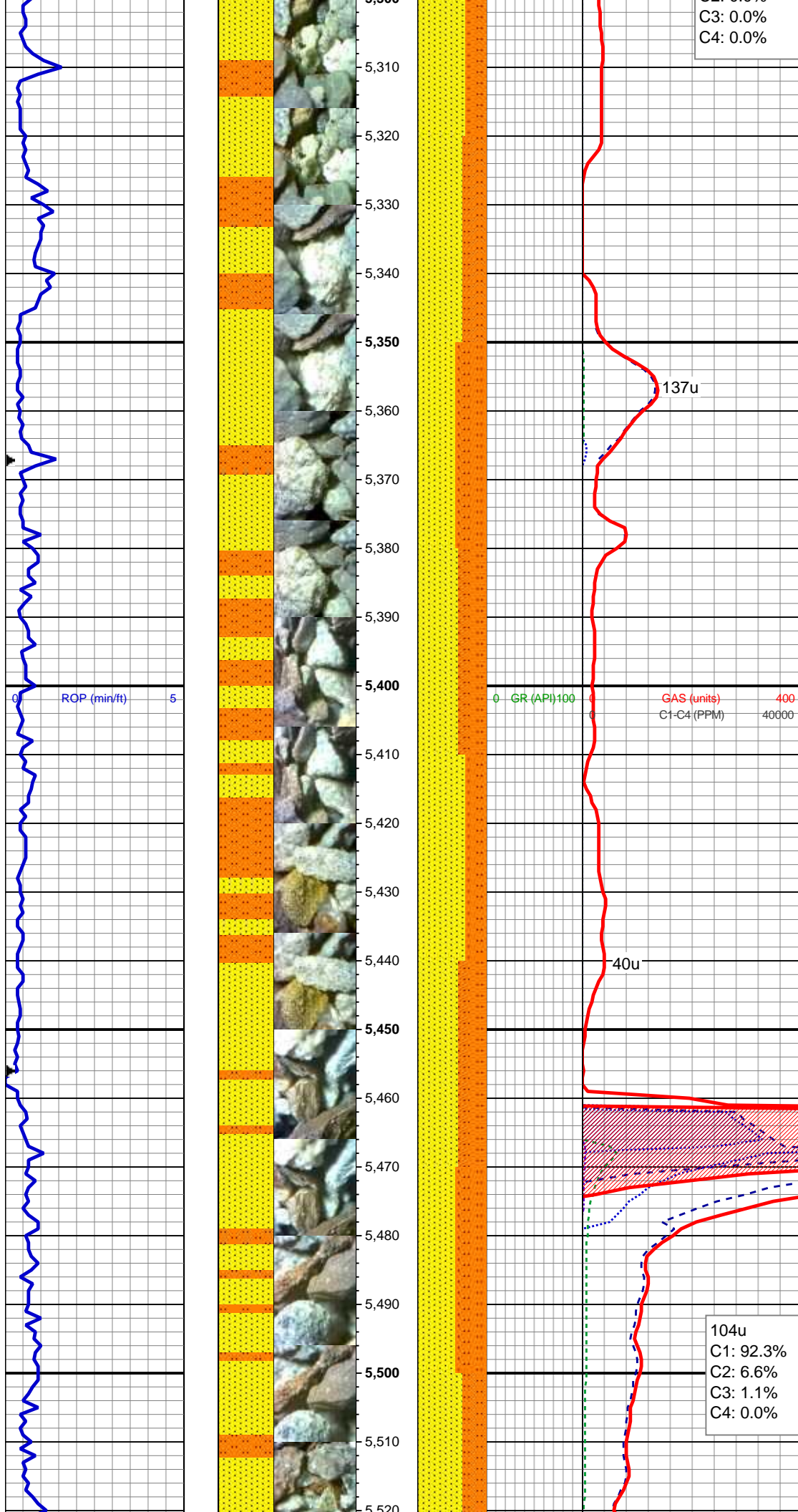
MUD WT 8.7/ VIS 33

MD: 5,025'
TVD: 5,010.39'
Inclination: 3.43 °
Azimuth: 91.3 °
VS: 369.4'

SLTST: multi col org, pnk, gy, purp,
mod-v hd, p-mod srt, m-w cmt, occ v sdy;
SS: wh, offwh, clr, ltgy, occ multi col
org, yel, sbang-ang, med-v c gr, med-w
cmt, tr clr chert; SLTYSH: lt gy, offwh,
occ multi col, sbbiky-sbplty, frm-sl hd,
occ v slty

SLTST: multi col org, pnk, gy, purp,
mod-v hd, p-mod srt, m-w cmt, occ v sdy;
SS: wh, offwh, clr, ltgy, occ multi col
org, yel, sbang-ang, med-v c gr, med-w
cmt, tr clr chert; SLTYSH: lt gy, offwh,
occ multi col, sbbiky-sbplty, frm-sl hd





TVD: 5,293.87'
Inclination: 3.6 °
Azimuth: 98.78 °
VS: 386.39'

SS: wh, offwh, clr, ltgy, occ multi col
org, yel, sbang-ang, med-v c gr, med-w
cmt, tr clr chert; SLTST: multi col org,
pnk, gy, purp, mod-v hd, p-mod srt, m-w
cmt, occ v sdy

SS: wh, offwh, clr, ltgy, occ multi col
org, yel, sbang-ang, med-v c gr, med-w
cmt, tr clr chert; SLTST: multi col org,
pnk, gy, purp, mod-v hd, p-mod srt, m-w
cmt, occ v sdy

MUD WT 8.9/ VIS 35

MD: 5,404'
TVD: 5,388.69'
Inclination: 3.47 °
Azimuth: 98.95 °
VS: 392.23'

SS: wh, offwh, clr, ltgy, occ multi col
org, yel, sbang-ang, med-v c gr, med-w
cmt, tr clr chert; SLTST: multi col org,
pnk, gy, purp, mod-v hd, p-mod srt, m-w
cmt, occ v sdy

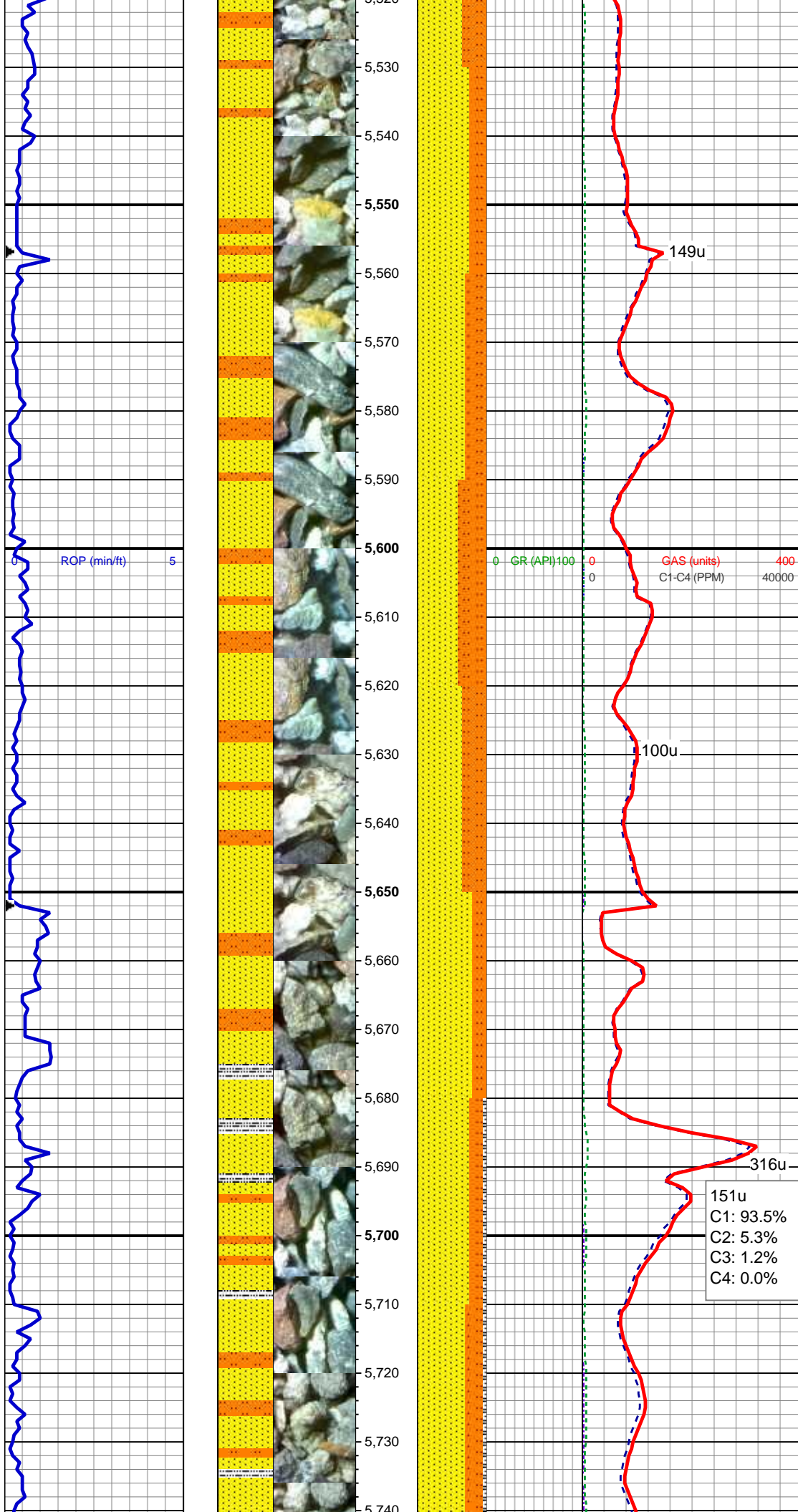
1473u

SS: wh, offwh, clr, ltgy, occ multi col
org, yel, sbang-ang, med-v c gr, med-w
cmt, tr clr chert; SLTST: multi col org,
pnk, gy, purp, mod-v hd, p-mod srt, m-w
cmt, occ v sdy

MUD WT 8.9/ VIS 35

104u
C1: 92.3%
C2: 6.6%
C3: 1.1%
C4: 0.0%

MD: 5,499'
TVD: 5,483.5'
Inclination: 3.74 °
Azimuth: 97.37 °
VS: 398.19'



SS: wh, offwh, clr, ltgy, occ multi col
org, yel, sbang-ang, med-v c gr, med-w
cmt, tr clr chert; SLTST: multi col org,
pnk, gy, purp, mod-v hd, p-mod srt, m-w
cmt, occ v sdy

SS: wh, offwh, clr, ltgy, occ multi col
org, yel, sbang-ang, med-v c gr, med-w
cmt, tr clr chert; SLTST: multi col org,
pnk, gy, purp, mod-v hd, p-mod srt, m-w
cmt, occ v sdy

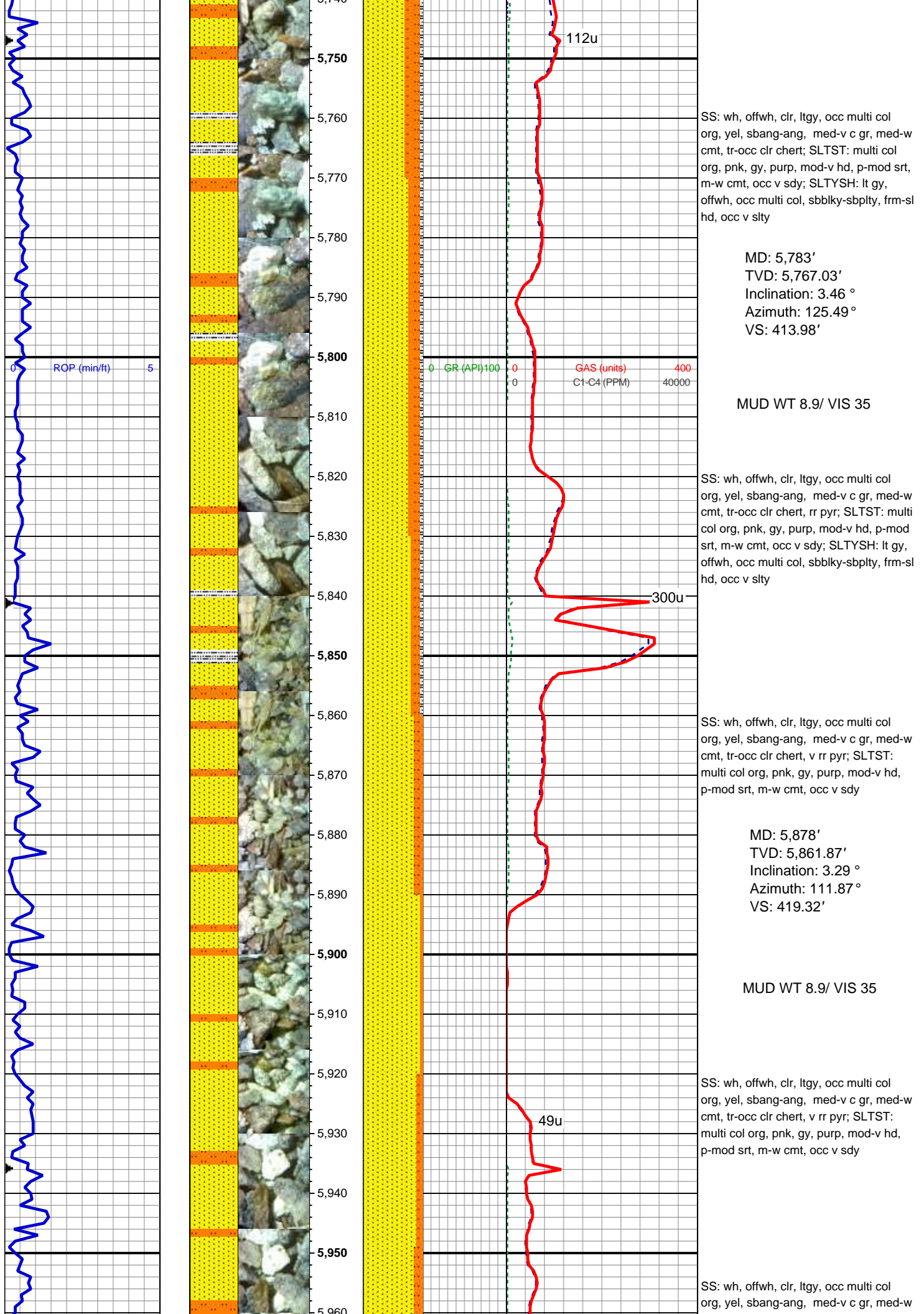
MD: 5,594'
TVD: 5,578.33'
Inclination: 3.08 °
Azimuth: 95.7 °
VS: 403.8'

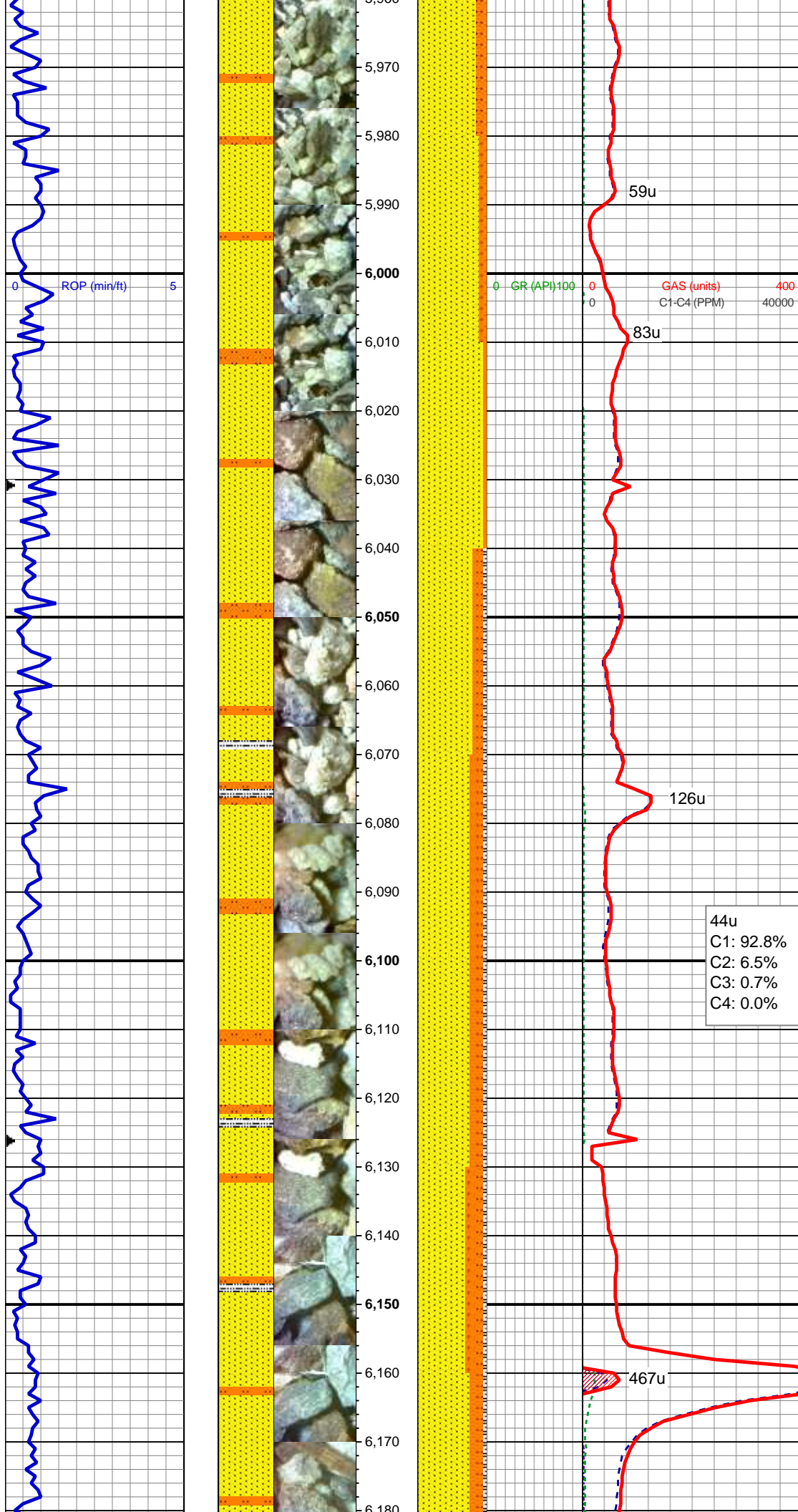
SS: wh, offwh, clr, ltgy, occ multi col
org, yel, sbang-ang, med-v c gr, med-w
cmt, tr clr chert; SLTST: multi col org,
pnk, gy, purp, mod-v hd, p-mod srt, m-w
cmt, occ v sdy

SS: wh, offwh, clr, ltgy, occ multi col
org, yel, sbang-ang, med-v c gr, med-w
cmt, tr clr chert; SLTST: multi col org,
pnk, gy, purp, mod-v hd, p-mod srt, m-w
cmt, occ v sdy

MD: 5,689'
TVD: 5,673.19'
Inclination: 3.16 °
Azimuth: 118.37 °
VS: 408.86'

SS: wh, offwh, clr, ltgy, occ multi col
org, yel, sbang-ang, med-v c gr, med-w
cmt, tr-occ clr chert; SLTST: multi col
org, pnk, gy, purp, mod-v hd, p-mod srt,
m-w cmt, occ v sdy; SLTYSH: lt gy,
offwh, occ multi col, sbblky-sbply, frm-sl
hd, occ v slty





cmt, tr-occ clr chert, v rr pyr; SLTST:
multi col org, pnk, gy, purp, mod-v hd,
p-mod srt, m-w cmt, occ v sdy

MD: 5,973'
TVD: 5,956.75'
Inclination: 2.42 °
Azimuth: 108.09 °
VS: 424.01'

MUD WT 8.9/ VIS 32

SS: wh, offwh, clr, ltgy, occ multi col
org, yel, sbang-ang, med-v c gr, med-w
cmt, tr-occ clr chert; SLTST: multi col
org, pnk, gy, purp, mod-v hd, p-mod srt,
m-w cmt, occ v sdy

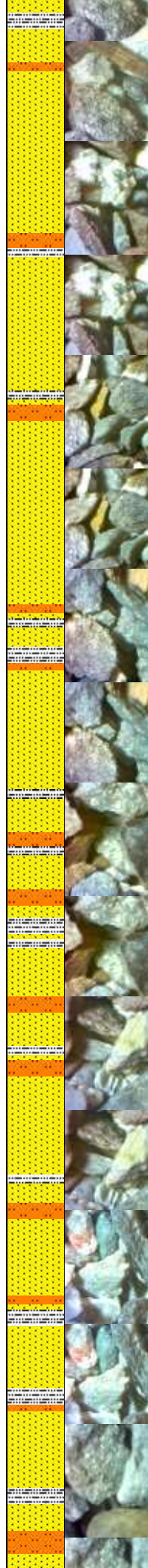
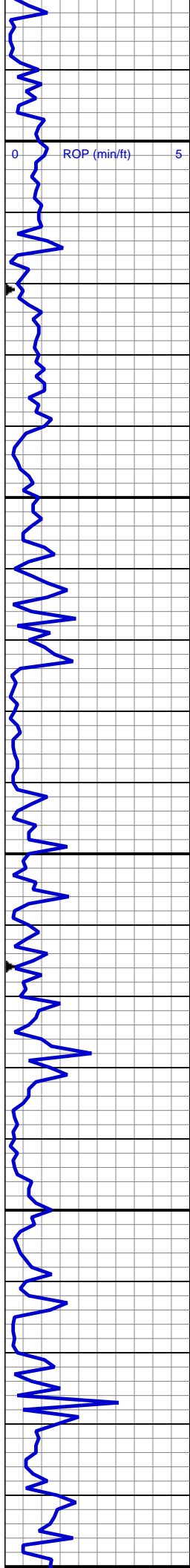
MD: 6,068'
TVD: 6,051.68'
Inclination: 2.2 °
Azimuth: 105.37 °
VS: 427.82'

SS: wh, offwh, clr, ltgy, tr multi col org,
yel, sbnd-ang, f-med gr, occ c gr,
med-w cmt, tr clr chert, rr pyr; SLTST:
multi col org, pnk, gy, purp, mod-v hd,
p-mod srt, m-w cmt, occ v sdy; SLTYSH:
lt gy, offwh, occ multi col, sbblky-sbply,
frm-sl hd, occ v slty

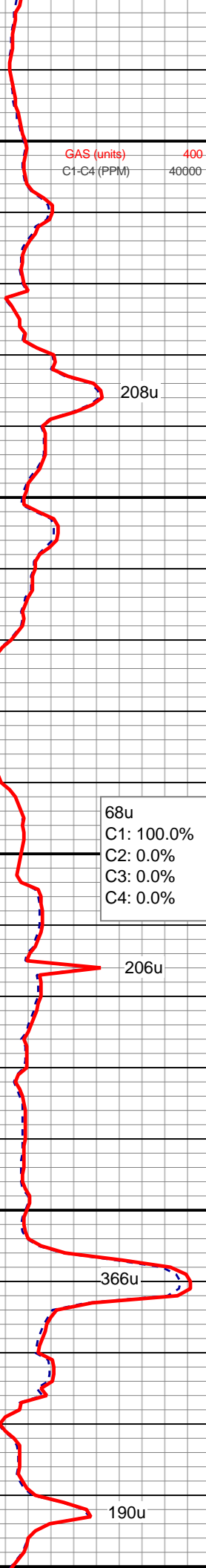
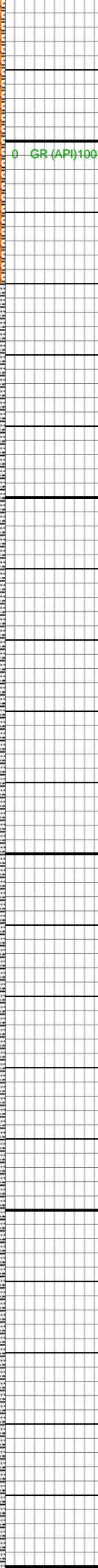
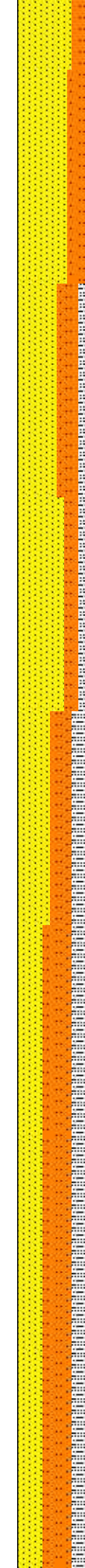
44u
C1: 92.8%
C2: 6.5%
C3: 0.7%
C4: 0.0%

SS: wh, offwh, clr, ltgy, tr multi col org,
yel, sbnd-ang, f-med gr, occ c gr,
med-w cmt, tr clr chert, rr pyr; SLTST:
multi col org, pnk, gy, purp, mod-v hd,
p-mod srt, m-w cmt, occ v sdy; SLTYSH:
lt gy, offwh, occ multi col, sbblky-sbply,
frm-sl hd, occ v slty

MD: 6,163'
TVD: 6,146.61'
Inclination: 2.02 °
Azimuth: 97.28 °
VS: 431.31'



6,180
6,190
6,200
6,210
6,220
6,230
6,240
6,250
6,260
6,270
6,280
6,290
6,300
6,310
6,320
6,330
6,340
6,350
6,360
6,370
6,380
6,390
6,400



SS: wh, offwh, clr, ltgy, tr multi col org, yel, sbrnd-ang, f-med gr, occ c gr, med-w cmt, tr clr chert, rr pyr; SLTST: multi col org, pnk, gy, purp, mod-v hd, p-mod srt, m-w cmt, occ v sdy; SLTYSH: lt gy, offwh, occ multi col, sbbkly-sbply, frm-sl hd, occ v slty

MUD WT 9.1/ VIS 36

MD: 6,258'
TVD: 6,241.56'
Inclination: 1.89 °
Azimuth: 97.54 °
VS: 434.54'

SS: wh, offwh, clr, ltgy, tr multi col, sbrnd-ang, f-med gr, occ c gr, med-w cmt, tr clr chert, rr pyr; SLTST: multi col org, pnk, gy, purp, mod-v hd, p-mod srt, m-w cmt, occ v sdy; SLTYSH: lt gy, offwh, occ multi col, sbbkly-sbply, frm-sl hd, occ v slty

68u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%

SS: wh, offwh, clr, ltgy, tr multi col, sbrnd-ang, f-med gr, occ c gr, med-w cmt, tr clr chert, rr pyr; SLTST: multi col org, pnk, gy, purp, mod-v hd, p-mod srt, m-w cmt, occ v sdy; SLTYSH: lt gy, offwh, occ multi col, sbbkly-sbply, frm-sl hd, occ v slty

MD: 6,353'
TVD: 6,336.51'
Inclination: 1.49 °
Azimuth: 99.83 °
VS: 437.33'

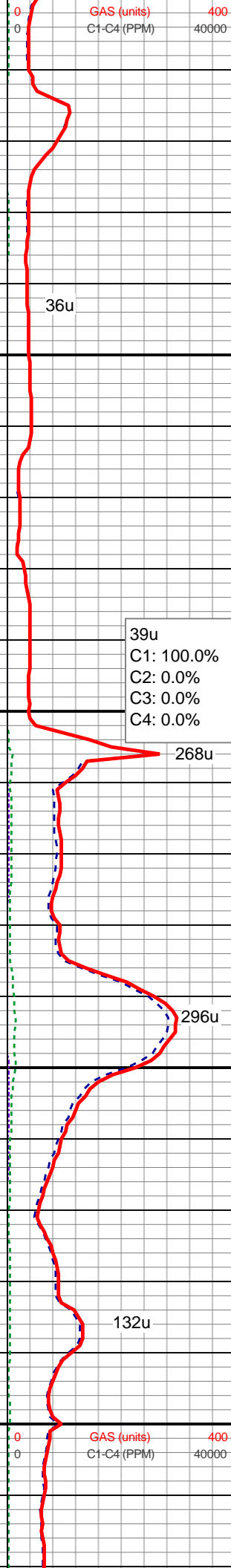
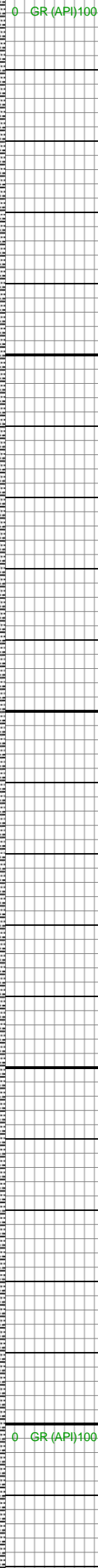
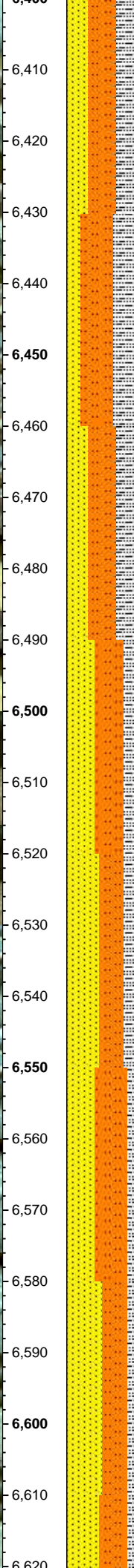
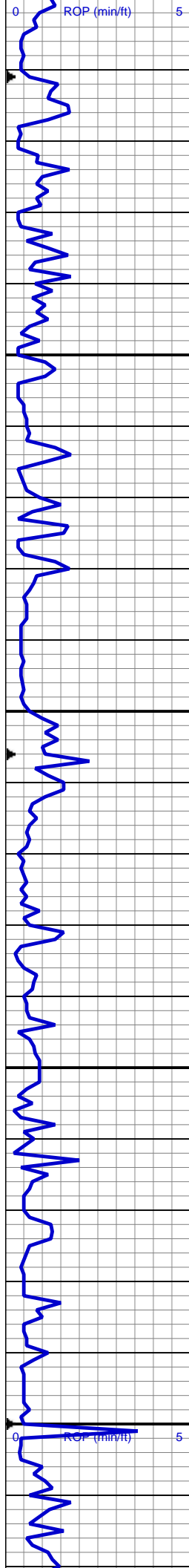
SS: wh, offwh, clr, ltgy, tr multi col, sbrnd-ang, f-med gr, occ c gr, med-w cmt, tr clr chert, rr pyr; SLTST: multi col org, pnk, gy, purp, mod-v hd, p-mod srt, m-w cmt, occ v sdy; SLTYSH: lt gy, offwh, occ multi col, sbbkly-sbply, frm-sl hd, occ v slty

208u

206u

366u

190u



MUD WT 9.1/ VIS 35

SS: wh, offwh, clr, ltgy, sbrnd-ang, f-med
gr, occ c gr, med-w cmt, tr clr chert, rr
pyr; SLTST: multi col org, pnk, gy, purp,
mod-v hd, p-mod srt, m-w cmt, occ v sdy;
SLTYSH: lt gy, offwh, occ multi col org,
yel, sbbly-sbply, frm-sl hd, occ v slty

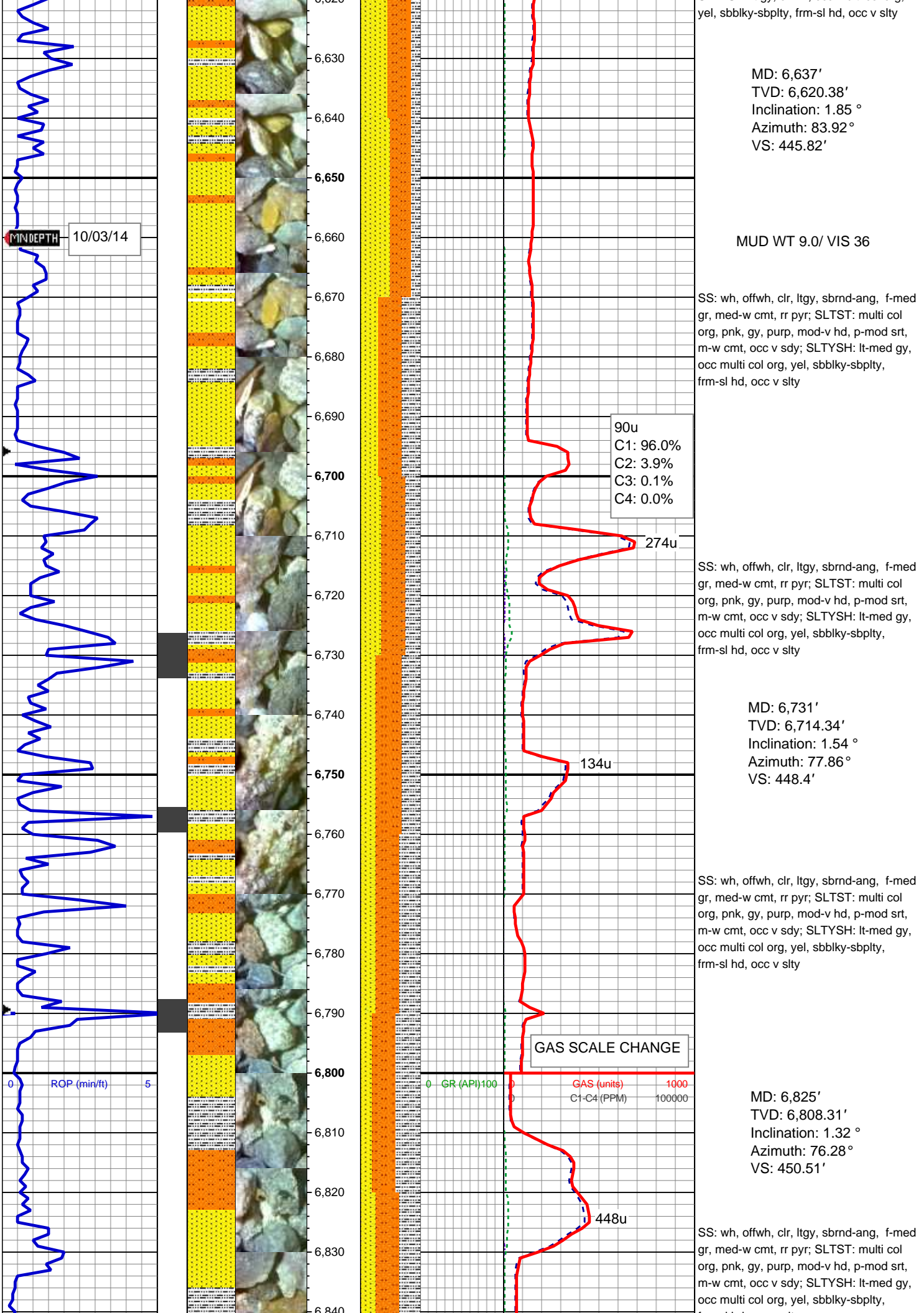
MD: 6,447'
TVD: 6,430.48'
Inclination: 1.8 °
Azimuth: 87.88 °
VS: 439.98'

MUD WT 9.1/ VIS 35

MD: 6,542'
TVD: 6,525.43'
Inclination: 1.85 °
Azimuth: 87 °
VS: 442.89'

SS: wh, offwh, clr, ltgy, sbrnd-ang, f-med
gr, occ c gr, med-w cmt, tr clr chert, rr
pyr; SLTST: multi col org, pnk, gy, purp,
mod-v hd, p-mod srt, m-w cmt, occ v sdy;
SLTYSH: lt gy, offwh, occ multi col org,
yel, sbbly-sbply, frm-sl hd, occ v slty

SS: wh, offwh, clr, ltgy, sbrnd-ang, f-med
gr, occ c gr, med-w cmt, tr clr chert, rr
pyr; SLTST: multi col org, pnk, gy, purp,
mod-v hd, p-mod srt, m-w cmt, occ v sdy;
SLTYSH: lt gy, offwh, occ multi col org,



MD: 6,637'
TVD: 6,620.38'
Inclination: 1.85 °
Azimuth: 83.92 °
VS: 445.82'

MUD WT 9.0/ VIS 36

SS: wh, offwh, clr, ltgy, sbrnd-ang, f-med
gr, med-w cmt, rr pyr; SLTST: multi col
org, pnk, gy, purp, mod-v hd, p-mod srt,
m-w cmt, occ v sdy; SLTYSH: lt-med gy,
occ multi col org, yel, sbbly-sbply,
frm-sl hd, occ v slty

90u
C1: 96.0%
C2: 3.9%
C3: 0.1%
C4: 0.0%

274u

SS: wh, offwh, clr, ltgy, sbrnd-ang, f-med
gr, med-w cmt, rr pyr; SLTST: multi col
org, pnk, gy, purp, mod-v hd, p-mod srt,
m-w cmt, occ v sdy; SLTYSH: lt-med gy,
occ multi col org, yel, sbbly-sbply,
frm-sl hd, occ v slty

MD: 6,731'
TVD: 6,714.34'
Inclination: 1.54 °
Azimuth: 77.86 °
VS: 448.4'

134u

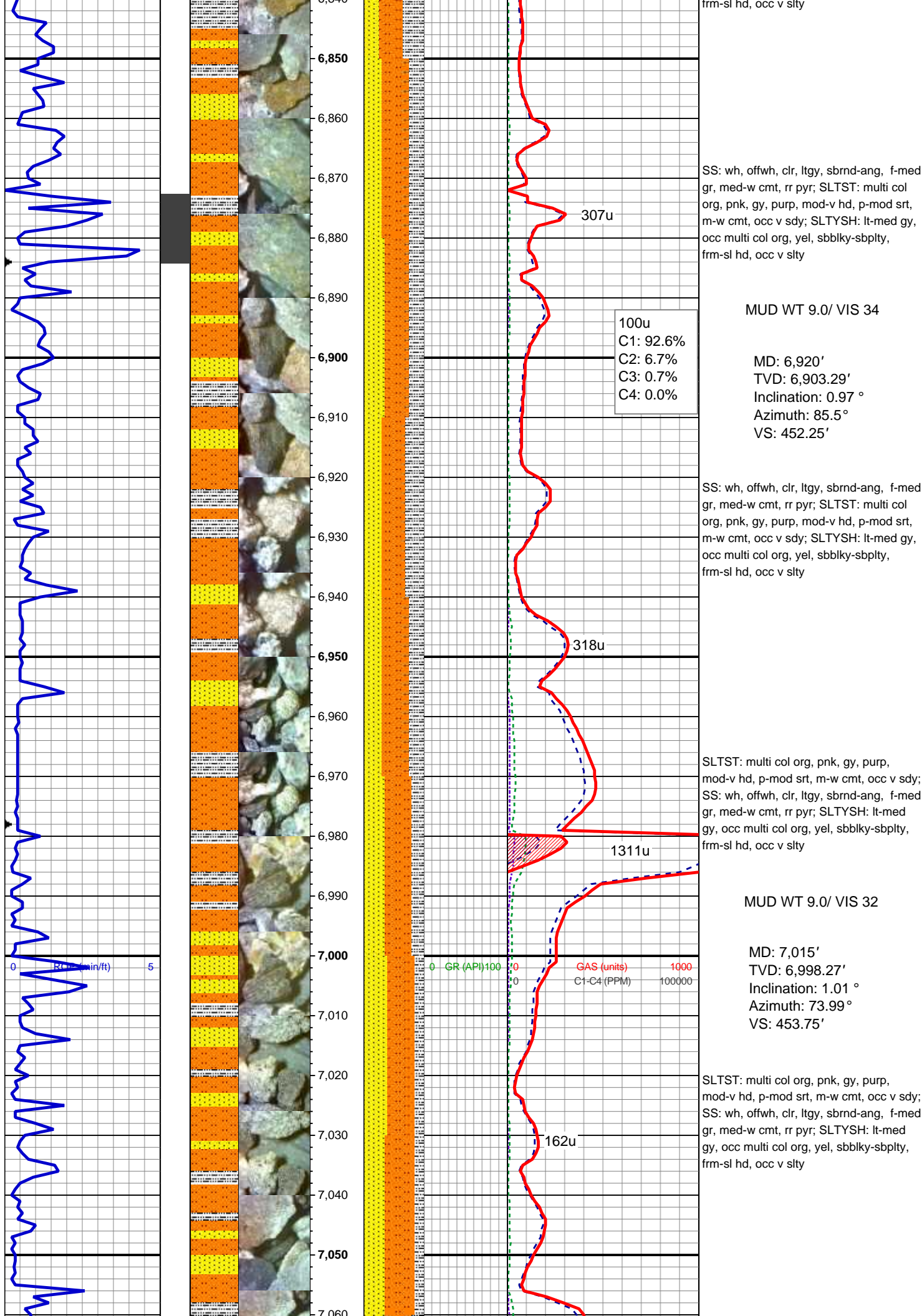
SS: wh, offwh, clr, ltgy, sbrnd-ang, f-med
gr, med-w cmt, rr pyr; SLTST: multi col
org, pnk, gy, purp, mod-v hd, p-mod srt,
m-w cmt, occ v sdy; SLTYSH: lt-med gy,
occ multi col org, yel, sbbly-sbply,
frm-sl hd, occ v slty

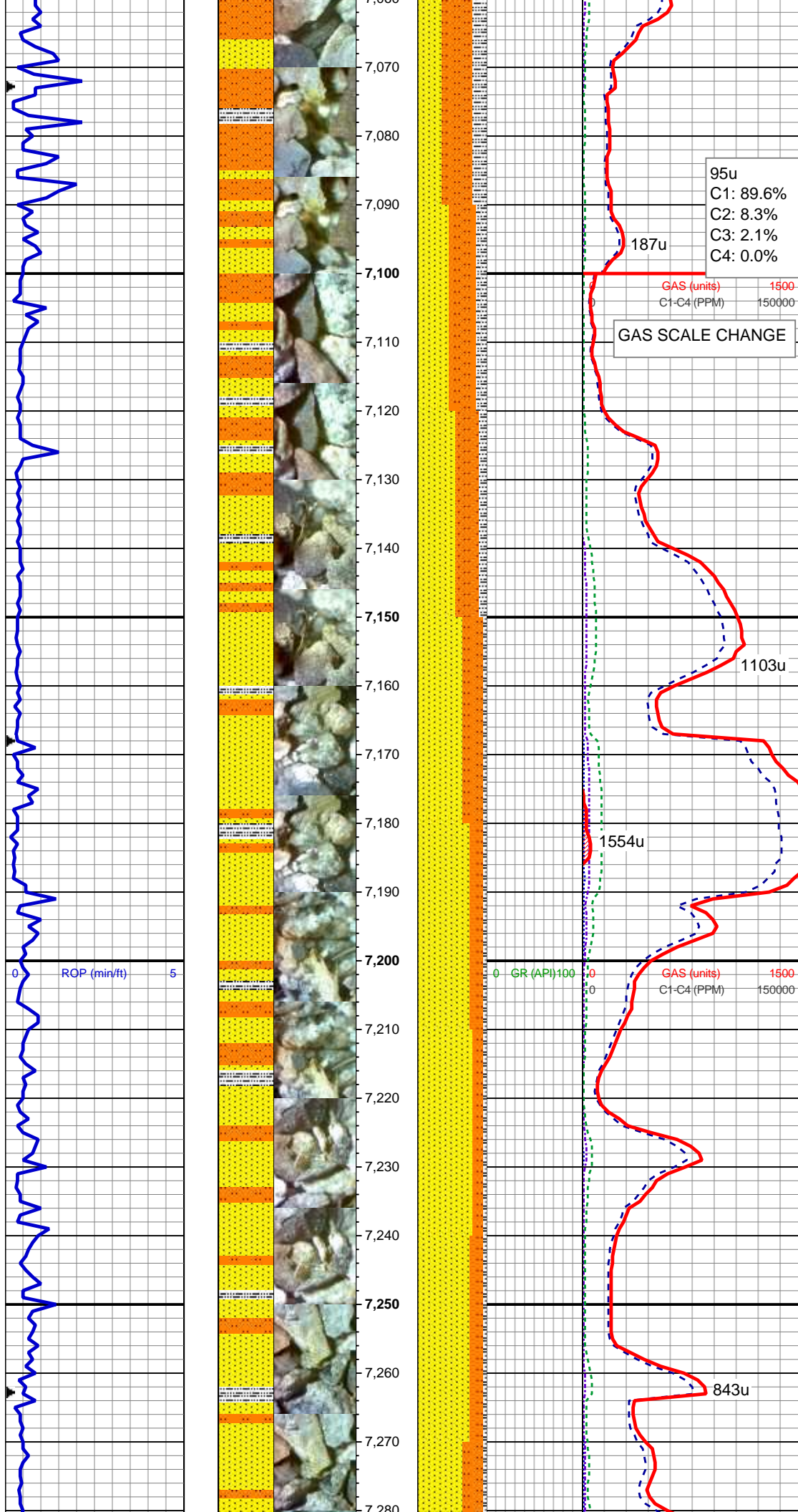
GAS SCALE CHANGE

MD: 6,825'
TVD: 6,808.31'
Inclination: 1.32 °
Azimuth: 76.28 °
VS: 450.51'

448u

SS: wh, offwh, clr, ltgy, sbrnd-ang, f-med
gr, med-w cmt, rr pyr; SLTST: multi col
org, pnk, gy, purp, mod-v hd, p-mod srt,
m-w cmt, occ v sdy; SLTYSH: lt-med gy,
occ multi col org, yel, sbbly-sbply,





SLTST: multi col org, pnk, gy, purp,
mod-v hd, p-mod srt, m-w cmt, occ v sdy;
SS: wh, offwh, clr, ltgy, sbrnd-ang, f-med
gr, med-w cmt, rr pyr; SLTYSH: lt-med
gy, occ multi col org, yel, sbblky-sbplty,
frm-sl hd, occ v slty

MD: 7,110'
TVD: 7,093.27'
Inclination: 0.31 °
Azimuth: 72.76 °
VS: 454.71'

SS: wh, offwh, clr, ltgy, sbrnd-ang, f-med
gr, med-w cmt, rr pyr; SLTST: multi col
org, pnk, gy, purp, mod-v hd, p-mod srt,
m-w cmt, occ v sdy; SLTYSH: lt-med gy,
occ multi col org, yel, sbblky-sbplty,
frm-sl hd, occ v slty

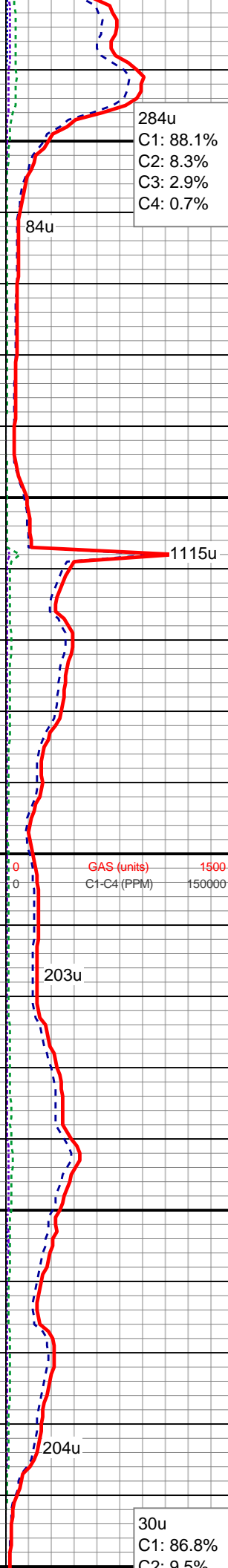
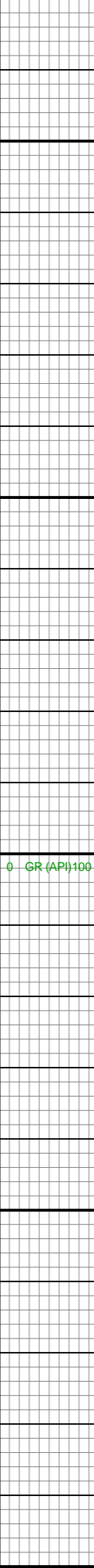
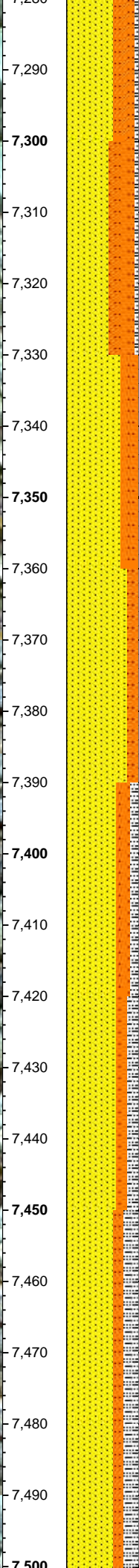
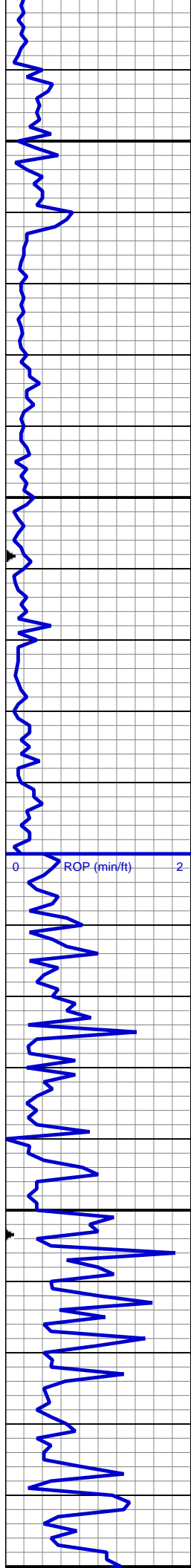
SS: wh, offwh, clr, ltgy, sbrnd-ang, f-med
gr, med-w cmt, rr pyr; SLTST: multi col
org, pnk, gy, purp, mod-v hd, p-mod srt,
m-w cmt, occ v sdy; SLTYSH: lt-med gy,
occ multi col org, yel, sbblky-sbplty,
frm-sl hd, occ v slty

MD: 7,205'
TVD: 7,188.27'
Inclination: 0.4 °
Azimuth: 99.83 °
VS: 455.26'

SS: wh, offwh, clr, ltgy, sbrnd-ang, f-med
gr, med-w cmt, rr pyr; SLTST: multi col
org, pnk, gy, purp, mod-v hd, p-mod srt,
m-w cmt, occ v sdy; SLTYSH: lt-med gy,
occ multi col org, yel, sbblky-sbplty,
frm-sl hd, occ v slty

MUD WT 8.9+ VIS 33

SS: wh, offwh, clr, ltgy, sbrnd-ang, f-med
gr, med-w cmt, rr pyr; SLTST: multi col
org, pnk, gy, purp, mod-v hd, p-mod srt,
m-w cmt, occ v sdy; SLTYSH: lt-med gy,
occ multi col org, yel, sbblky-sbplty,



frm-sl hd, occ v slty

MD: 7,300'
TVD: 7,283.26'
Inclination: 0.53 °
Azimuth: 131.7 °
VS: 455.98'

SS: wh, offwh, clr, ltgy, sbrnd-ang, f-med
gr, med-w cmt, rr pyr; SLTST: multi col
org, pnk, gy, purp, mod-v hd, p-mod srt,
m-w cmt, occ v sdy; SLTYSH: lt-med gy,
occ multi col org, yel, sbblky-sbply,
frm-sl hd, occ v slty

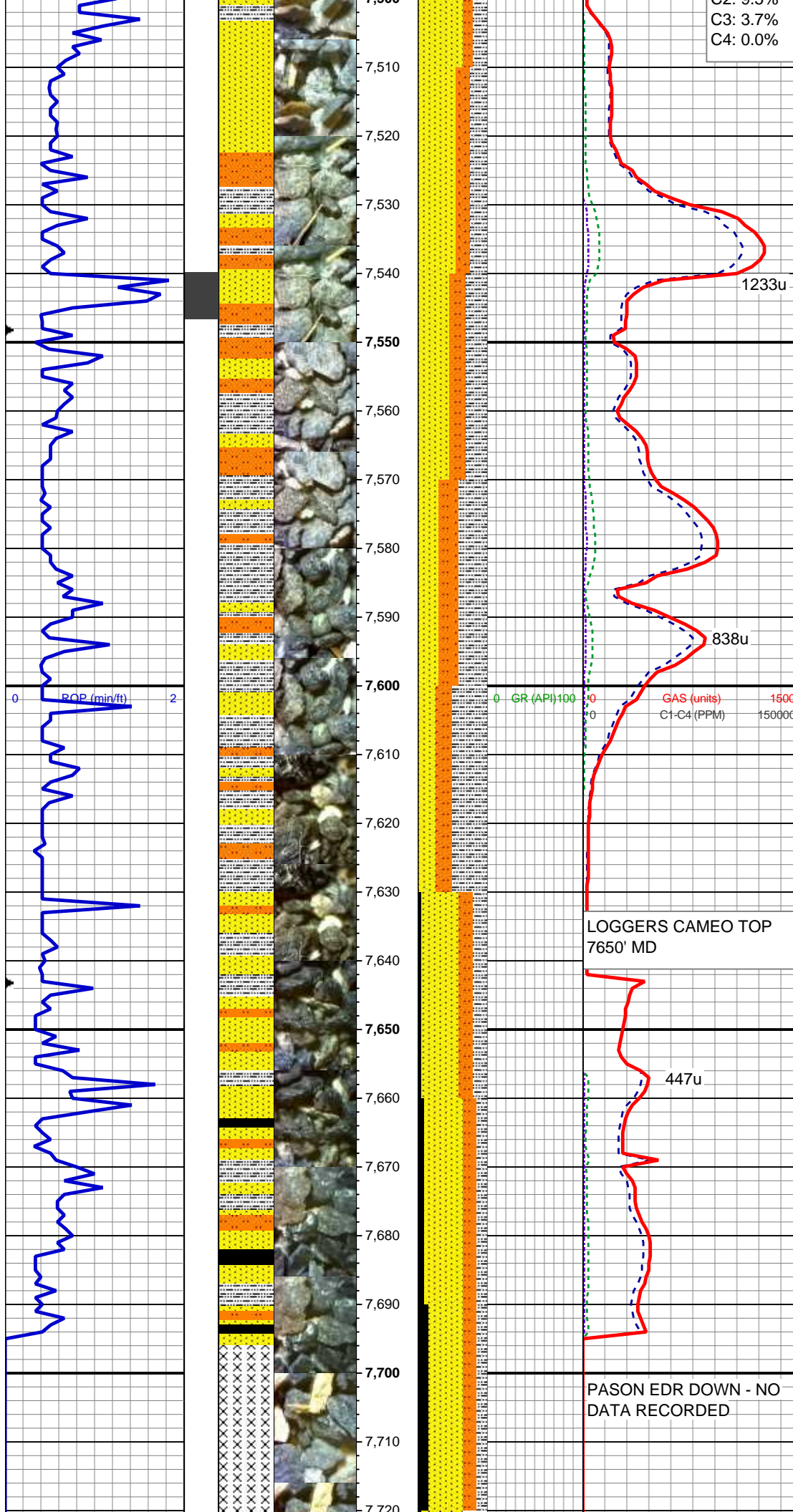
MD: 7,395'
TVD: 7,378.26'
Inclination: 0.75 °
Azimuth: 132.35 °
VS: 456.91'

SS: wh, offwh, clr, ltgy, occ multi col
org, yel, sbang-ang, med-v c gr, med-w
cmt, tr-occ clr chert; SLTST: multi col
org, pnk, gy, purp, mod-v hd, p-mod srt,
m-w cmt, occ v sdy

MD: 7,490'
TVD: 7,473.25'
Inclination: 0.62 °
Azimuth: 144.39 °

MUD WT 9.0+ VIS 32

SS: wh, offwh, clr, ltgy, sbrnd-ang, f-med
gr, med-w cmt, rr pyr; SLTYSH: lt-med
gy, occ multi col org, yel, sbblky-sbply,
frm-sl hd, occ v slty; SLTST: multi col
org, pnk, gy, purp, mod-v hd, p-mod srt,
m-w cmt, occ v sdy



VS: 457.83'

SS: wh, offwh, clr, ltgy, sbrnd-ang, f-med
gr, med-w cmt, rr pyr; SLTYSH: lt-med
gy, occ multi col org, yel, sbblky-sbplty,
frm-sl hd, occ v slty; SLTST: multi col
org, pnk, gy, purp, mod-v hd, p-mod srt,
m-w cmt, occ v sdy

SS: wh, offwh, clr, ltgy, sbrnd-ang, f-med
gr, med-w cmt, rr pyr; SLTYSH: lt-med
gy, occ multi col org, yel, sbblky-sbplty,
frm-sl hd, occ v slty; SLTST: multi col
org, pnk, gy, purp, mod-v hd, p-mod srt,
m-w cmt, occ v sdy

MD: 7,585'
TVD: 7,568.24'
Inclination: 0.75 °
Azimuth: 165.13 °
VS: 458.51'

MUD WT 9.1/ VIS 34

SLTYSH: lt-med gy, occ multi col org,
yel, sbblky-sbplty, frm-sl hd, occ v slty;
SS: wh, offwh, clr, ltgy, sbrnd-ang, f-med
gr, med-w cmt, rr pyr; SLTST: multi col
org, pnk, gy, purp, mod-v hd, p-mod srt,
m-w cmt, occ v sdy

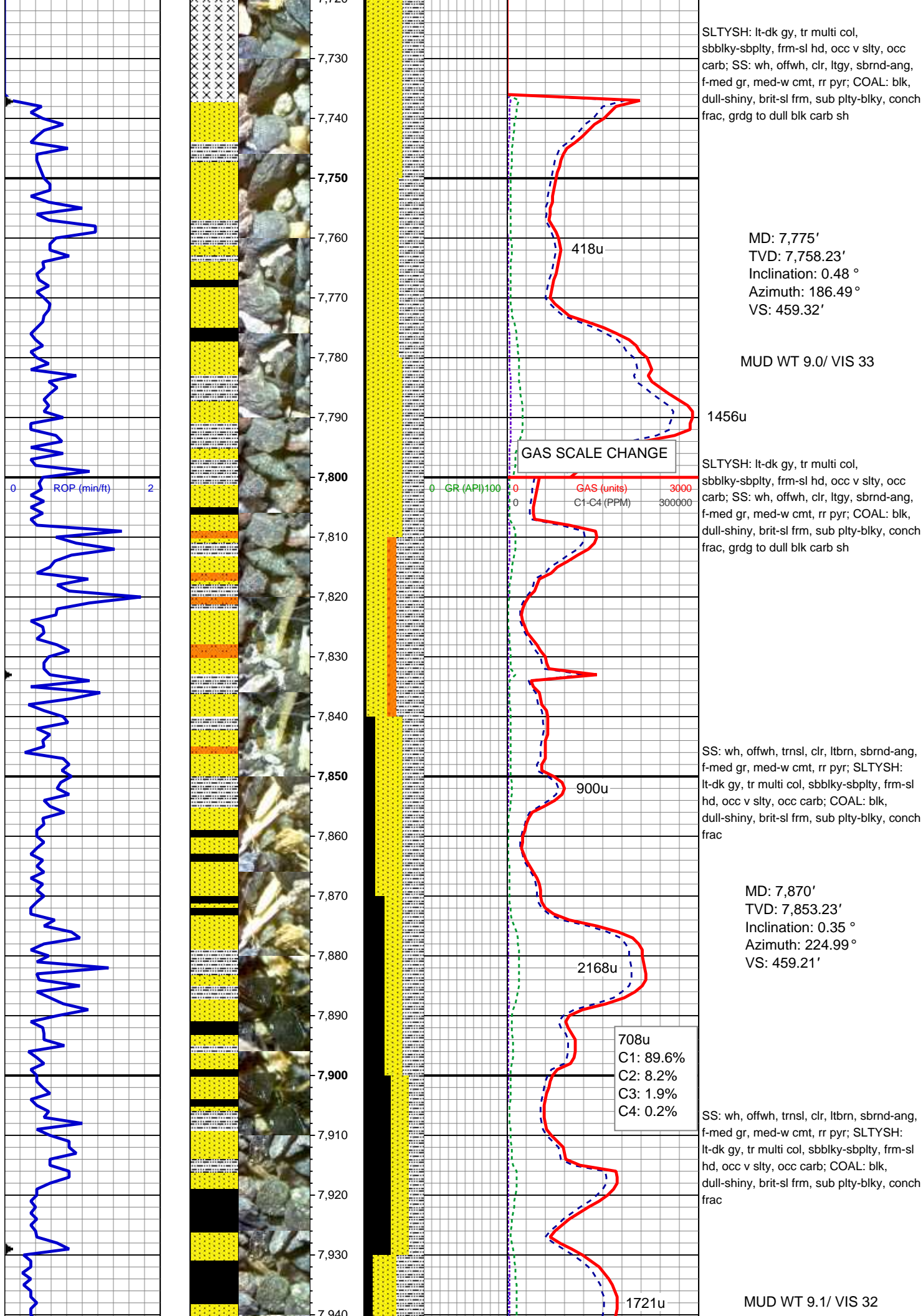
LOGGERS CAMEO TOP
7650' MD

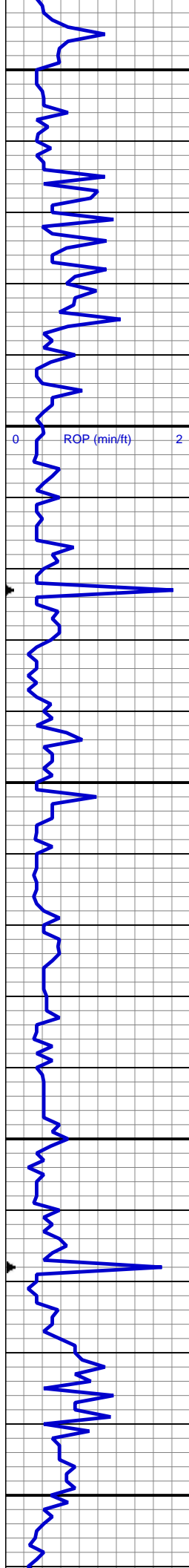
MUD WT 9.0/ VIS 33

SLTYSH: lt-med gy, occ multi col org,
yel, sbblky-sbplty, frm-sl hd, occ v slty;
SS: wh, offwh, clr, ltgy, sbrnd-ang, f-med
gr, med-w cmt, rr pyr; SLTST: multi col
org, pnk, gy, purp, mod-v hd, p-mod srt,
m-w cmt, occ v sdy; COAL: dk gy-blk,
dull-shiny, brit-sl frm, sub plty-blky, tr
conch frac, occ-abnt grd to dull blk
carb sh

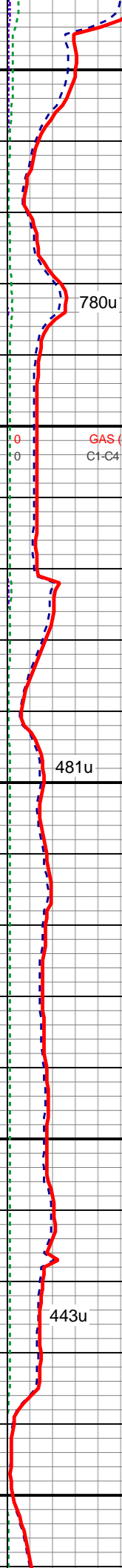
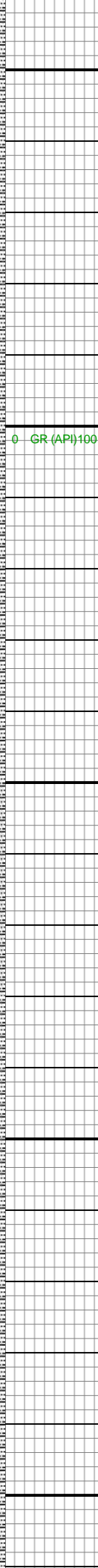
MD: 7,679'
TVD: 7,662.23'
Inclination: 0.83 °
Azimuth: 172.52 °
VS: 459.03'

PASON EDR DOWN - NO
DATA RECORDED





7,940
7,950
7,960
7,970
7,980
7,990
8,000
8,010
8,020
8,030
8,040
8,050
8,060
8,070
8,080
8,090
8,100
8,110
8,120
8,130
8,140
8,150
8,160



520u
C1: 92.6%
C2: 6.9%
C3: 0.5%
C4: 0.0%

MD: 7,965'
TVD: 7,948.22'
Inclination: 0.35 °
Azimuth: 231.84 °
VS: 458.87'

SS: wh, offwh, trnsl, clr, ltbrn, sbrnd-ang, f-med gr, med-w cmt, rr pyr; SLTYSH: lt-dk gy, tr multi col, sbblky-sbplty, frm-sl hd, occ v slty, occ carb; COAL: blk, dull-shiny, brit-sl frm, sub plty-blky, conch frac

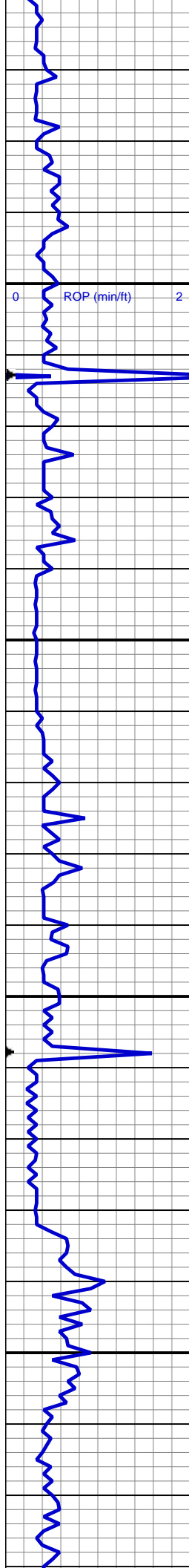
SS: wh, offwh, trnsl, clr, ltbrn, sbrnd-ang, f-med gr, med-w cmt, rr pyr; SLTYSH: lt-dk gy, tr multi col, sbblky-sbplty, frm-sl hd, occ v slty, occ carb; COAL: blk, dull-shiny, brit-sl frm, sub plty-blky, conch frac

MD: 8,060'
TVD: 8,043.22'
Inclination: 0.48 °
Azimuth: 252.67 °
VS: 458.35'

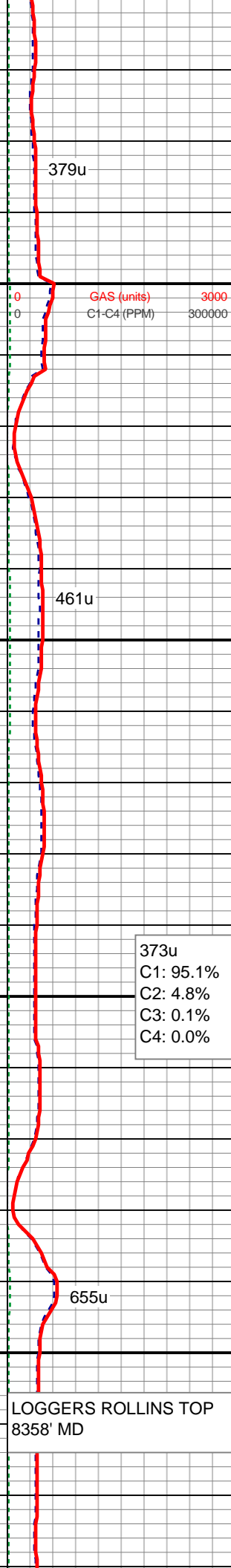
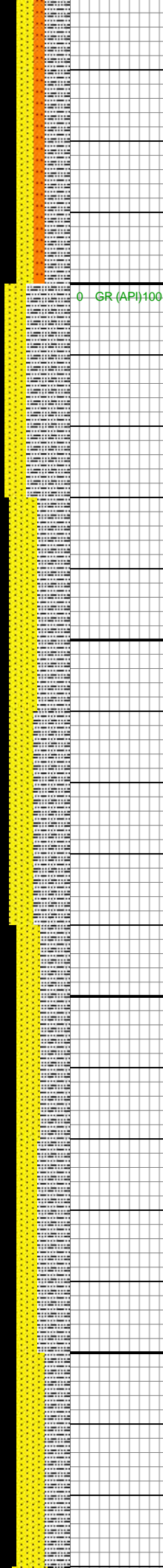
SS: wh, offwh, trnsl, clr, ltbrn, sbrnd-ang, f-med gr, med-w cmt, rr pyr; SLTYSH: lt-dk gy, tr multi col, sbblky-sbplty, frm-sl hd, occ v slty, occ carb; SLTST: multi col org, gy, purp, mod-v hd, p-mod srt, m-w cmt, occ v sdy; COAL: blk, dull-shiny, brit-sl frm, sub plty-blky, conch frac

MUD WT 9.1/ VIS 35

SS: wh, offwh, trnsl, clr, ltbrn, sbrnd-ang, f-med gr, med-w cmt, rr pyr; SLTYSH: lt-dk gy, tr multi col, sbblky-sbplty, frm-sl hd, occ v slty, occ carb; SLTST: multi col org, gy, purp, mod-v hd, p-mod srt, m-w cmt, occ v sdy; COAL: blk, dull-shiny, brit-sl frm, sub plty-blky, conch frac



8,160
8,170
8,180
8,190
8,200
8,210
8,220
8,230
8,240
8,250
8,260
8,270
8,280
8,290
8,300
8,310
8,320
8,330
8,340
8,350
8,360
8,370
8,380



MD: 8,154'
TVD: 8,137.22'
Inclination: 0.22 °
Azimuth: 317.1 °
VS: 457.86'

379u

SS: wh, offwh, trnsl, clr, ltbrn, sbrnd-ang, f-med gr, med-w cmt, rr pyr; SLTYSH: lt-dk gy, tr multi col, sbblky-sbply, frm-sl hd, occ v slty, occ carb; COAL: blk, dull-shiny, brit-sl frm, sub pty-blky, conch frac

MD: 8,250'
TVD: 8,233.22'
Inclination: 0.48 °
Azimuth: 339.51 °
VS: 457.48'

461u

SS: wh, offwh, trnsl, clr, ltbrn, sbrnd-ang, f-med gr, med-w cmt, rr pyr; SLTYSH: lt-dk gy, tr multi col, sbblky-sbply, frm-sl hd, occ v slty, occ carb; COAL: blk, dull-shiny, brit-sl frm, sub pty-blky, conch frac

373u
C1: 95.1%
C2: 4.8%
C3: 0.1%
C4: 0.0%

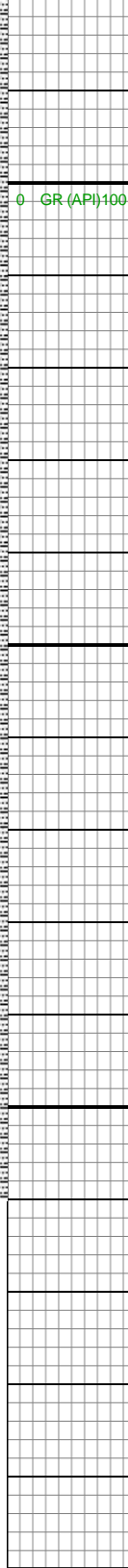
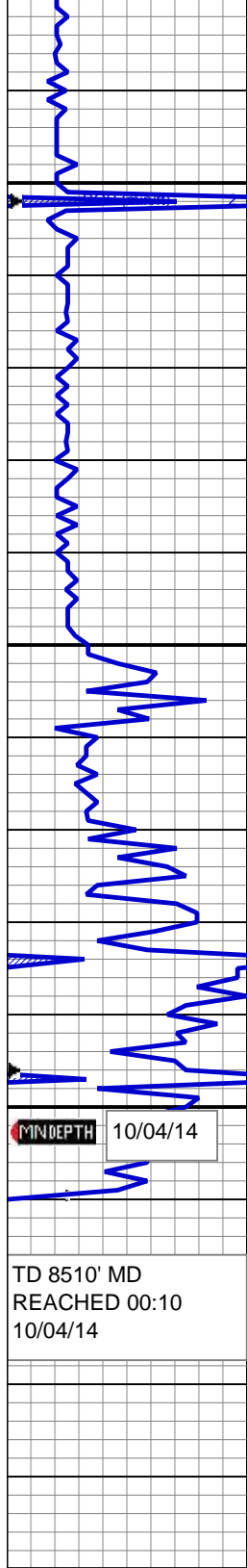
MUD WT 9.0/ VIS 38

SS: wh, offwh, trnsl, clr, ltbrn, sbrnd-ang, f-med gr, med-w cmt, rr pyr; SLTYSH: lt-dk gy, tr multi col, sbblky-sbply, frm-sl hd, occ v slty, occ carb; COAL: blk, dull-shiny, brit-sl frm, sub pty-blky, conch frac

655u

LOGGERS ROLLINS TOP
8358' MD

SS: wh, sbrnd-ang, f-med gr, med-w cmt; SLTYSH: lt-dk gy, tr multi col, sbblky-sbply, frm-sl hd, occ v slty, occ



416u

459u

457u
C1: 93.7%
C2: 6.1%
C3: 0.2%
C4: 0.0%

carb; COAL: blk, shiny-dull, brit-sl frm, sub plty-blky, conch frac

SS: wh, sbrnd-ang, f-med gr, med-w cmt;
SLTYSH: lt-dk gy, tr multi col, sbbkly-sbply, frm-sl hd, occ v slty, occ carb; COAL: blk, shiny-dull, brit-sl frm, sub plty-blky, conch frac

MD: 8,439'
TVD: 8,422.21'
Inclination: 0.53 °
Azimuth: 279.83 °
VS: 456.4'

MUD WT 9.1/ VIS 39

SS: wh, offwh, trns, clr, ltbrn, sbrnd-ang, f-med gr, med-w cmt, rr pyr; SLTYSH: lt-dk gy, tr multi col, sbbkly-sbply, frm-sl hd, occ v slty, occ carb; SLTST: multi col org, gy, purp, mod-v hd, p-mod srt, m-w cmt, occ v sdy; COAL: blk, dull-shiny, brit-sl frm, sub plty-blky, conch frac

PROJECTED SURVEY
MD: 8,510'
TVD: 8,493.2'
Inclination: 1.4 °
Azimuth: 254.32 °
VS: 455.31'

Thank You for Choosing
Columbine Logging Inc.