

COLUMBINE LOGGING

Scale: 5" / 100'
Measured Depth Log

Well Name Gunderson 29-11E

Location Sec 29 T9S R93W : 2401' FNL, 1119' FEL

State CO

County MESA

Country USA

Rig Number PATTERSON-UTI 306

API Number 05-077-09768

Field VEGA

Region PICEANCE BASIN

Drilling Completed 4/4/2015

Spud Date 3/31/2015

Surface Coordinates Lat: 39.24882
Long: -107.78773

2401' FNL, 1119' FEL

Bottom Hole Coordinates 2637' FNL, 853' FEL

Ground Elevation 7,554'

K.B. Elevation 7,578'

Logged Interval 1,160' To 7805'

Total Depth 6645'

Formation ROLLINS

Type of Drilling Fluid WBM

Other Symbols

Oil Show

- DEAD
- EVEN
- QUESTIONABLE
- SPOTTED STAINING

Porosity

- E EARTHY
- F FENESTRAL
- F FRACTURE
- INTERCRYSTALLINE
- INTEROOLITIC
- MOLDIC

ORGANIC

P PINPOINT

V VUGGY

Engineering

BIT CHANGE

CONNECTION (LEFT)

CONNECTION (RIGHT)

CONNECTION GAS

TRIP GAS

DOWN TIME GAS

CORE - LOST

CORE - RECOVERED

DST INTERVAL

FAULT

FORMATION TOP

GAS SHOW

OIL SHOW

MN DEPTH MN DEPTH

MN DEPTH MN DEPTH (RIGHT)

NORMAL FAULT

OVERTURNED STRATA

REVERSE FAULT

CASING

SIDEWALL CORE (LEFT)

SIDEWALL CORE (RIGHT)

SLIDE

SURVEY

DST DRILL STEM TEST

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

Accessories

Fossils

GASTROPOD

INOCERAMUS

ARGILLITE GRAIN

B BENTONITE

HEAVY MINERAL

K KAOLIN

Stringer

ALGAE
AMPHIPORA
BELEMNITE
BIOCLASTIC
BRACHIOPOD
BRYOZOA
CEPHALOPOD
CORAL
CRINOID
ECHINOID
FISH
FORAMINIFERA
FOSSIL

OOLITE
OSTRACOD
PELECYPOD
PELLET
PISOLITE
PLANT REMAINS
PLANT SPORES
SCAPHOPOD
STROMATOPOROID

Minerals

ANHYDRITIC
ARGILLACEOUS

BITUMENOUS SUBSTANCE
BRECCIA FRAGMENTS
CALCAREOUS
CARBONACEOUS FLAKES
CHTDK
CHTLT
COAL - THIN BEDS
DOLOMITIC
FELDSPAR
FERRUGINOUS PELLET
FERRUGINOUS
GLAUCONITE
GYPSIFEROUS

MARCASITE
MARLSTONE
MICACEOUS
MINERAL CRYSTALS
NODULES
PHOSPHATE PELLETS
PYRITE
SALT CAST
SANDY
SIDERITE
SILICEOUS
SILTY
TUFACEOUS

ANHYDRITE STRINGER
BENTONITE STRINGER
COAL STRINGER
DOLOMITE STRINGER
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
DOLOMITIC LIMESTONE
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

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

Geologist

Name Andy McCarthy

Company PICEANCE ENERGY INC.

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

Other

WELL SITE GEOLOGIST #1 Tim Bright

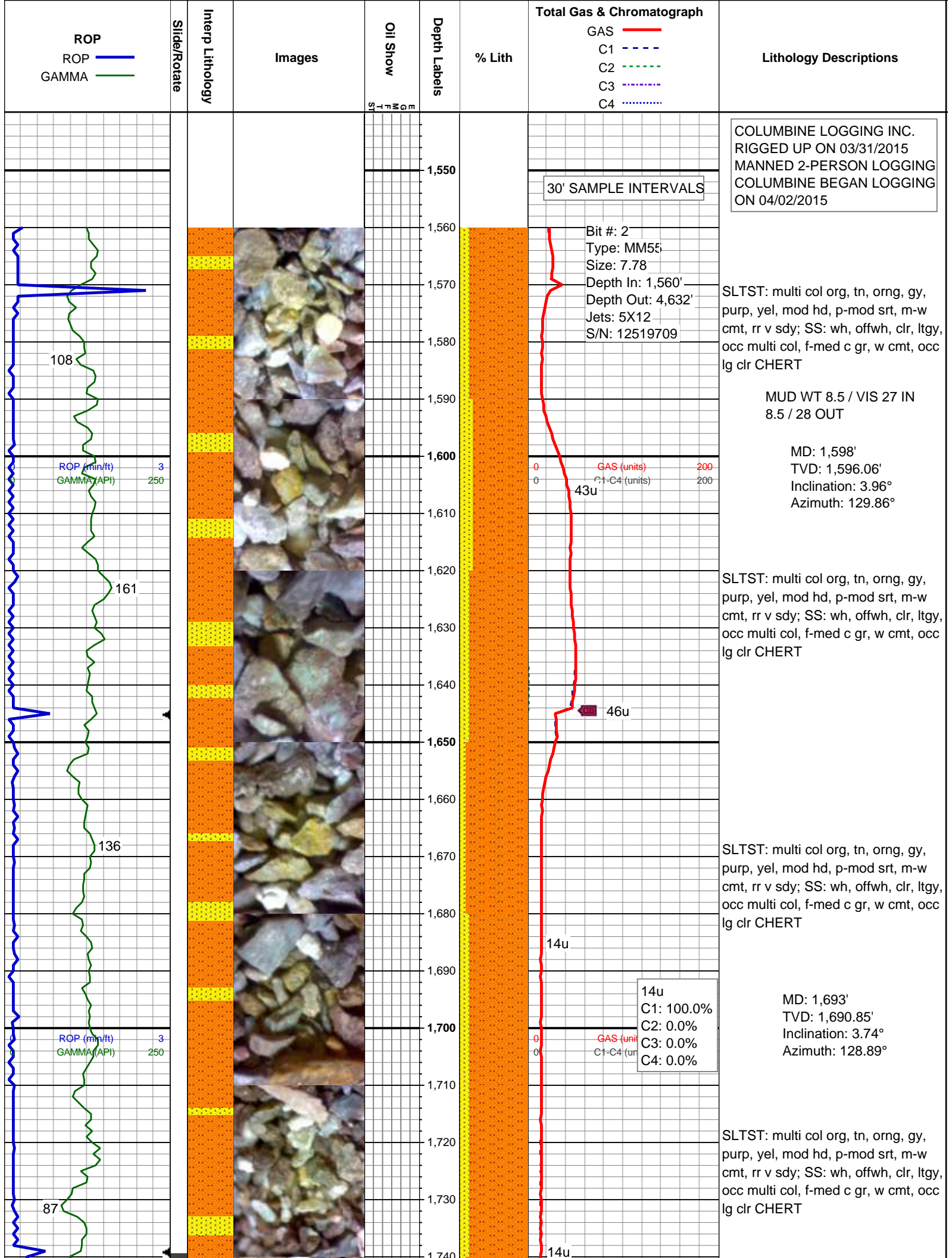
WELL SITE GEOLOGIST #2 John Sabroske

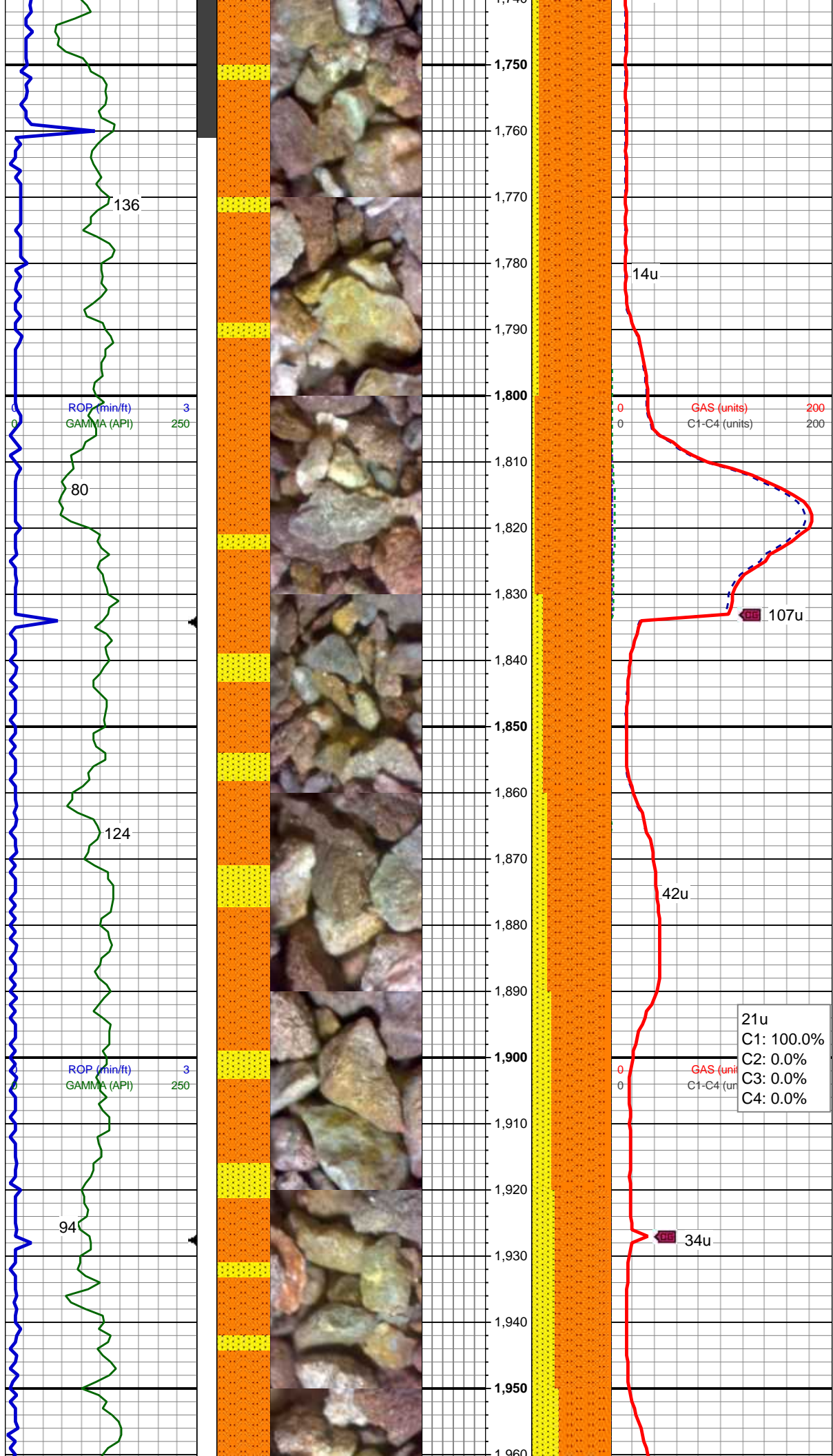
Zone Color Coding

Oil
Note
Error

Condensate
Core
Water

Gas
Pressure
Seal





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

MD: 1,788'
TVD: 1,785.53'
Inclination: 5.71°
Azimuth: 149.37°

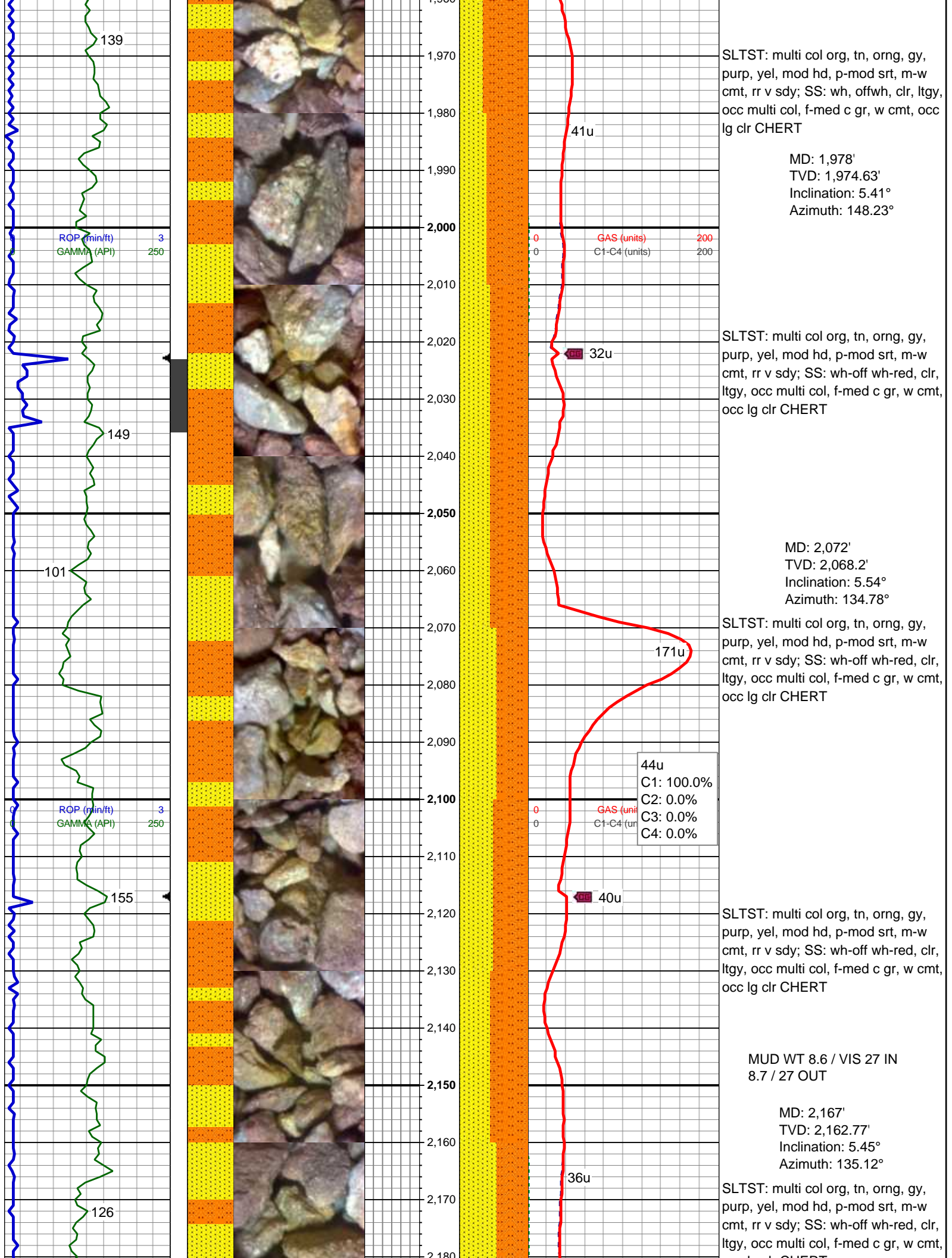
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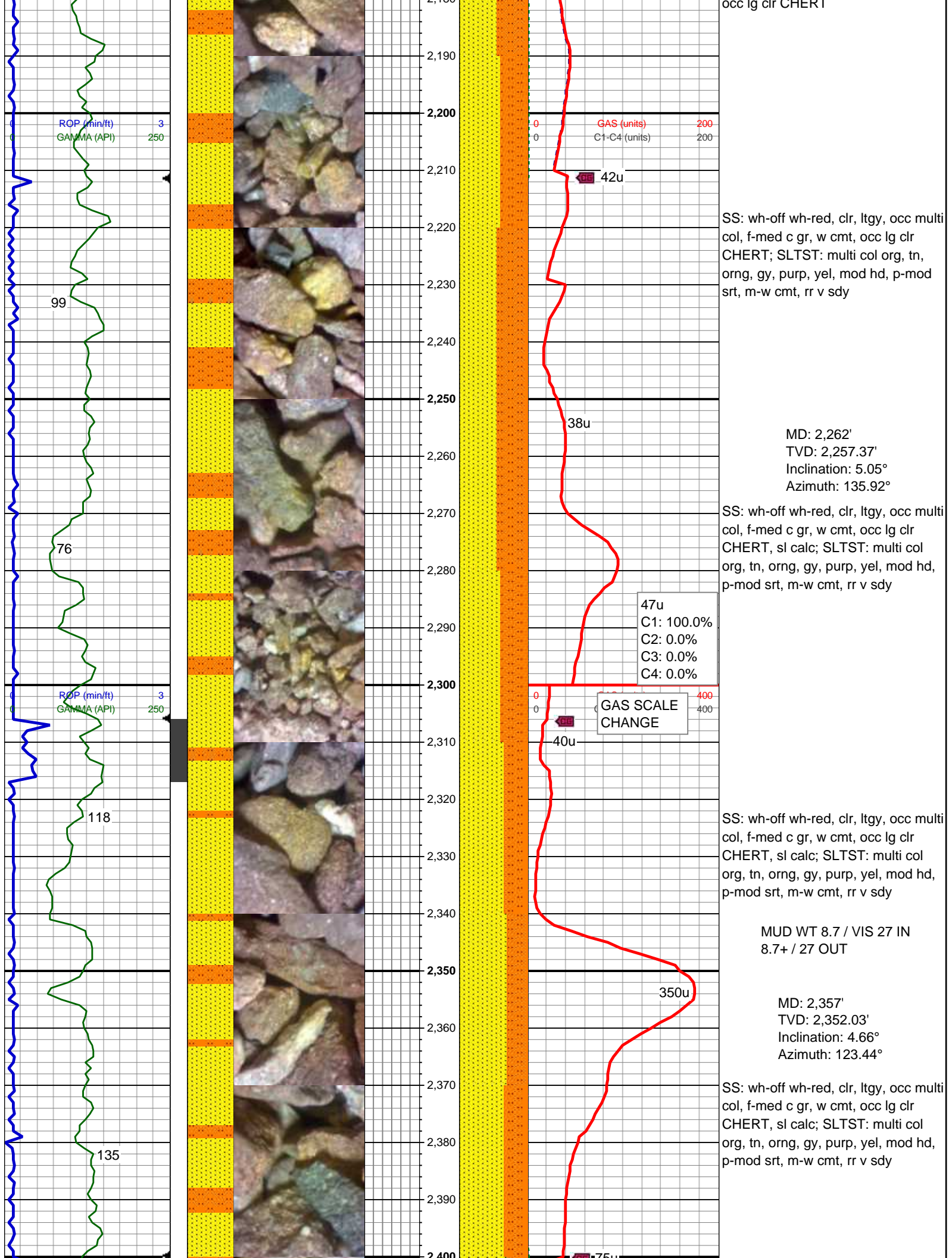
SLTST: multi col org, tn, orng, gy, purp, yel, mod hd, p-mod srt, m-w cmt, rr v sdy; SS: wh, offwh, clr, ltgy, occ multi col, f-med c gr, w cmt, occ lg clr CHERT

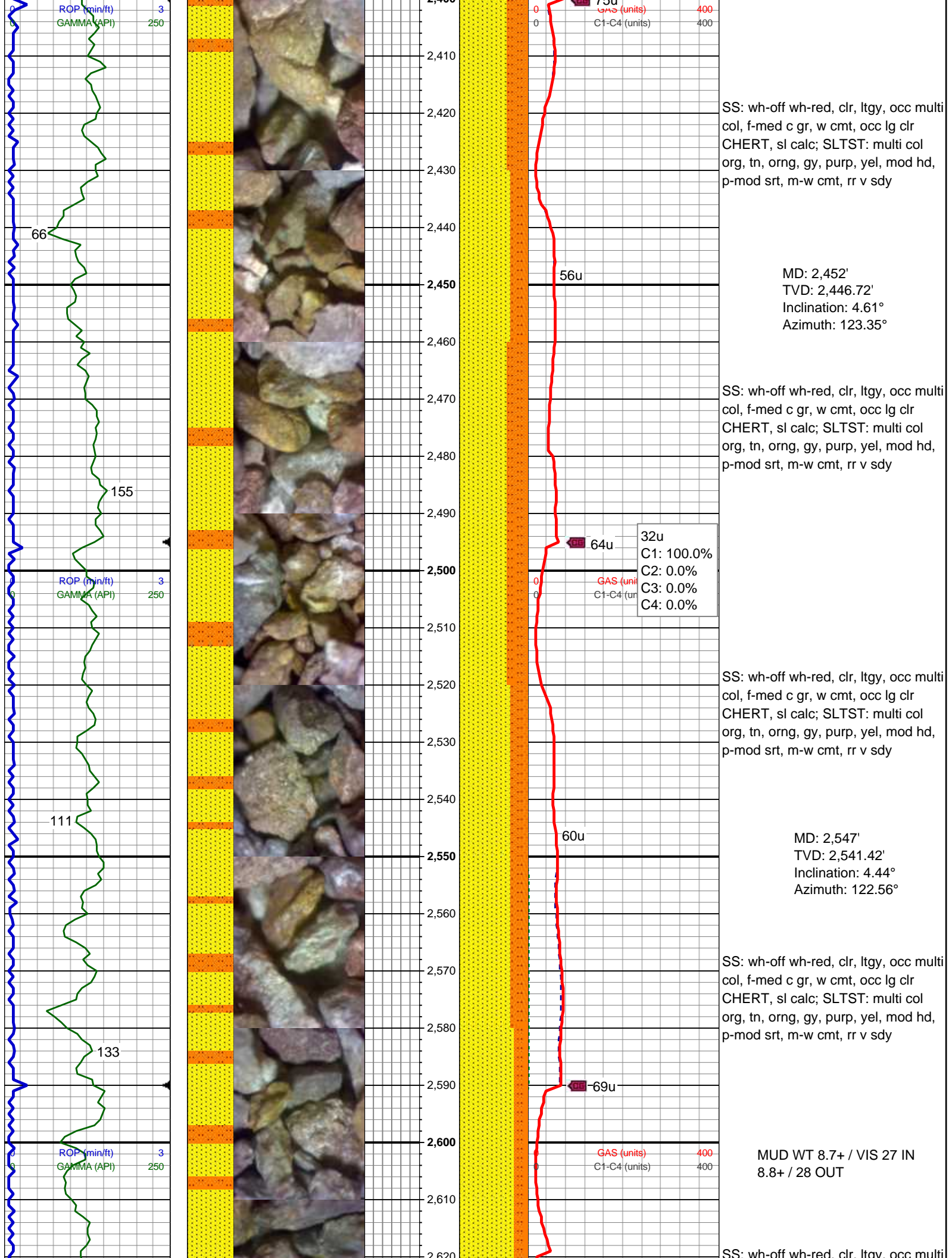
MD: 1,883'
TVD: 1,880.07'
Inclination: 5.58°
Azimuth: 149.46°

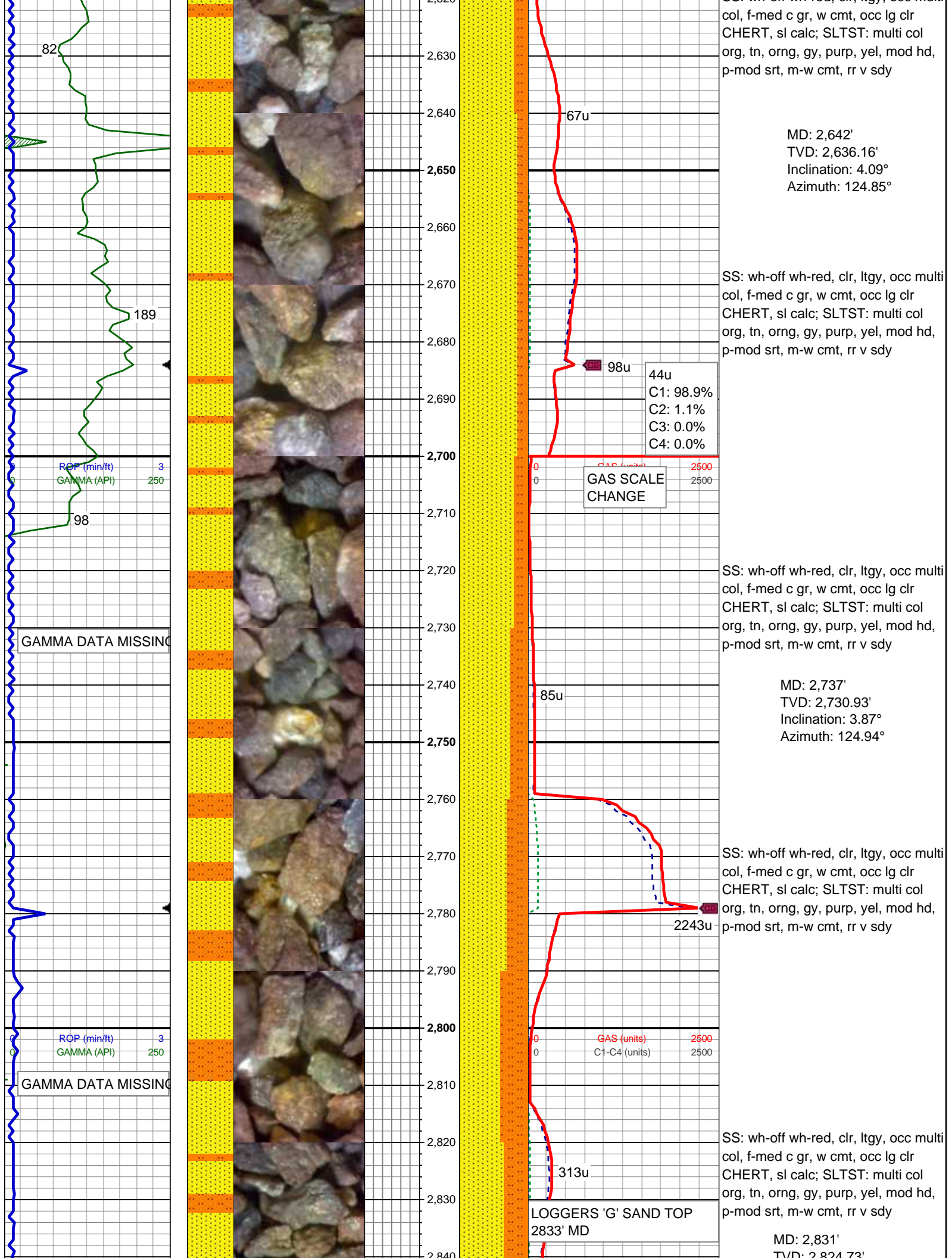
MUD WT 8.5+ / VIS 27 IN
8.6 / 27 OUT

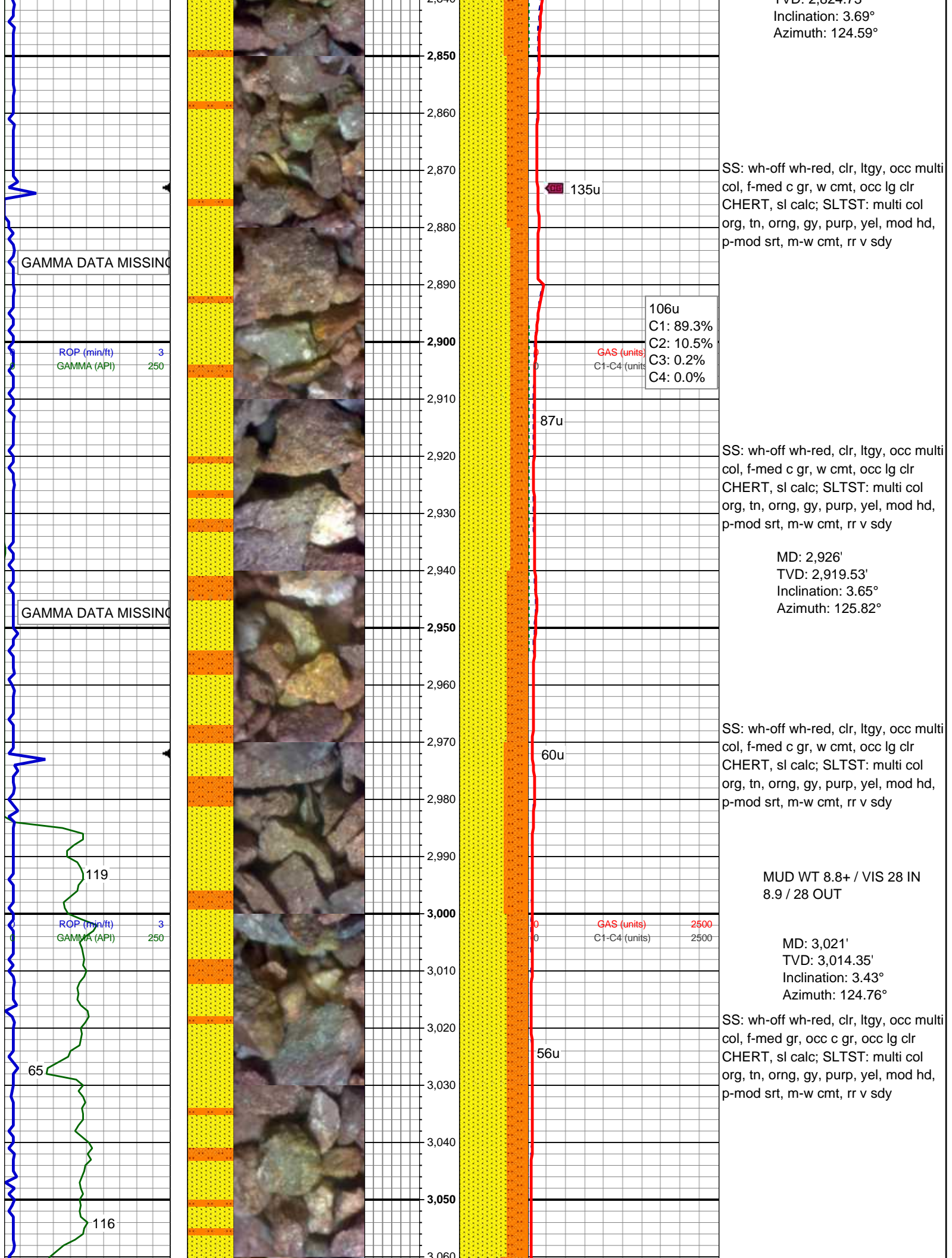
SLTST: multi col org, tn, orng, gy, purp, yel, mod hd, p-mod srt, m-w cmt, rr v sdy; SS: wh, offwh, clr, ltgy, occ multi col, f-med c gr, w cmt, occ lg clr CHERT

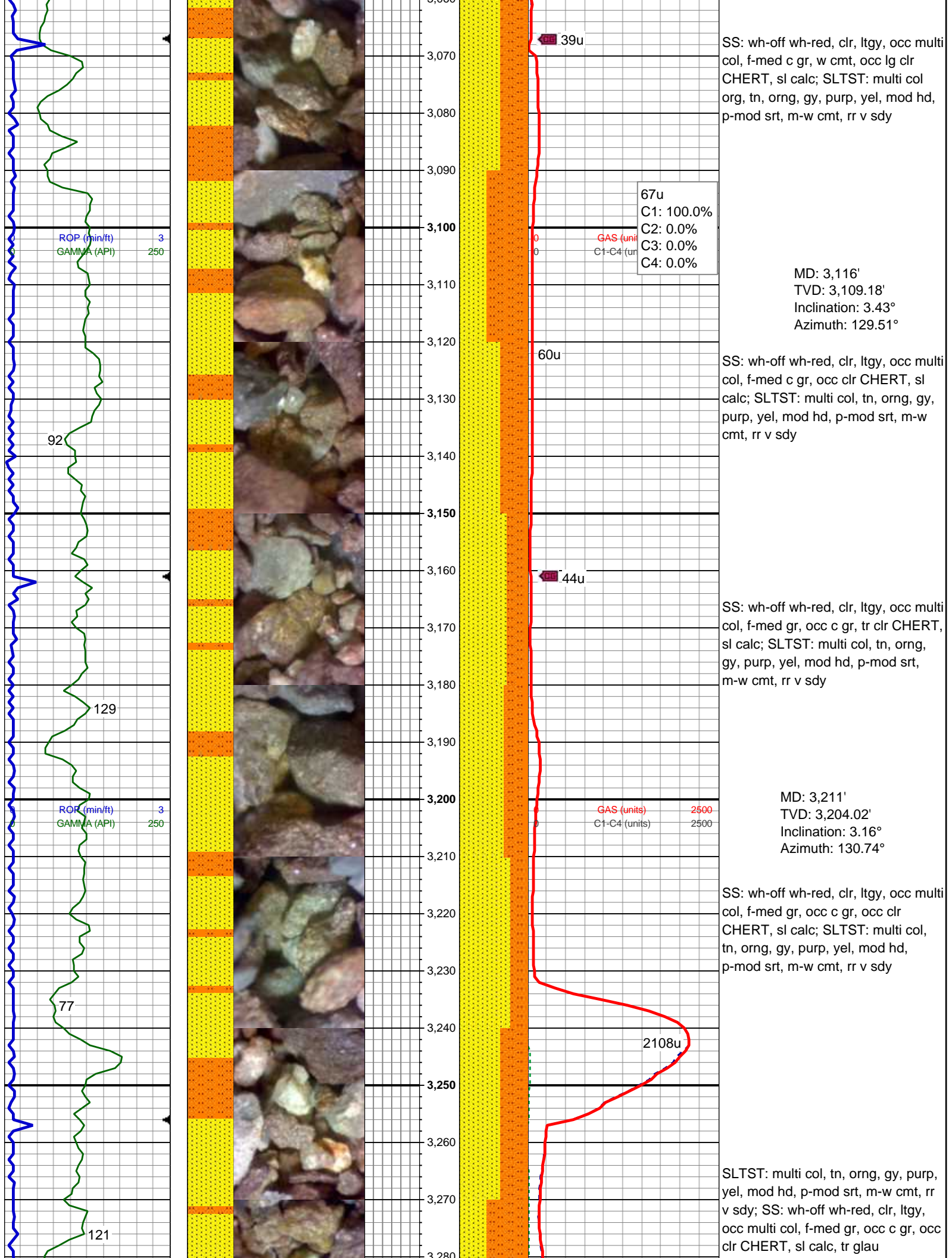


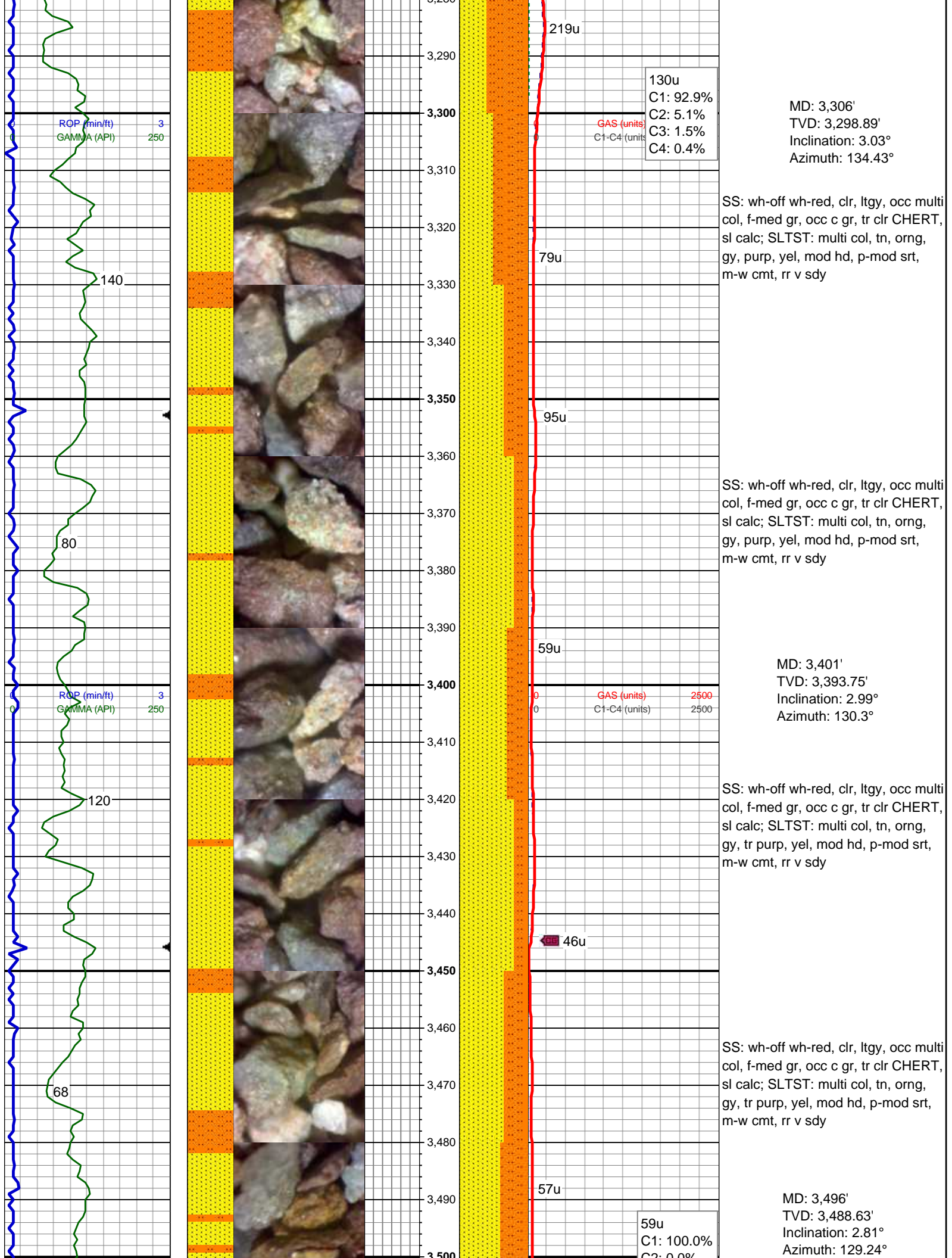


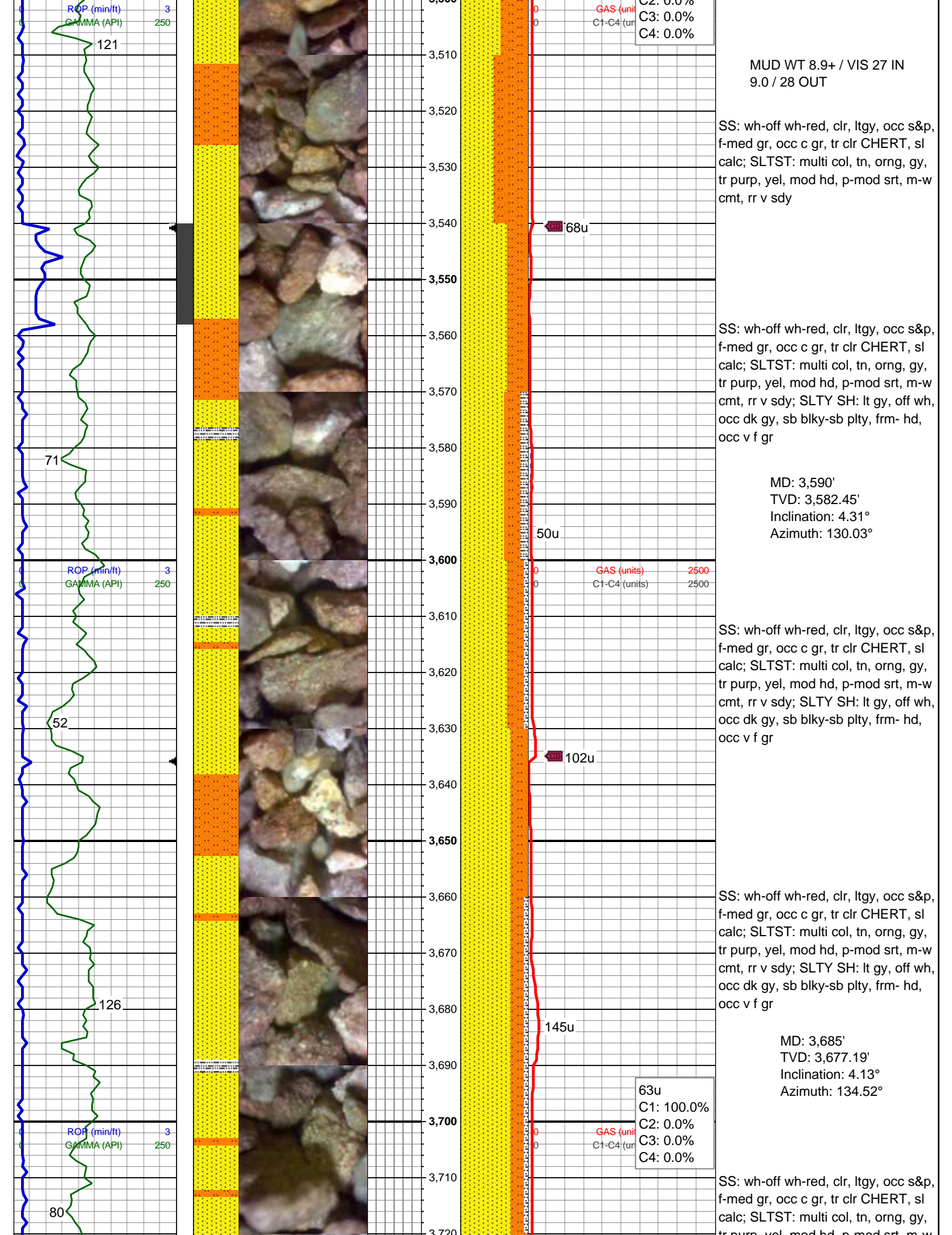


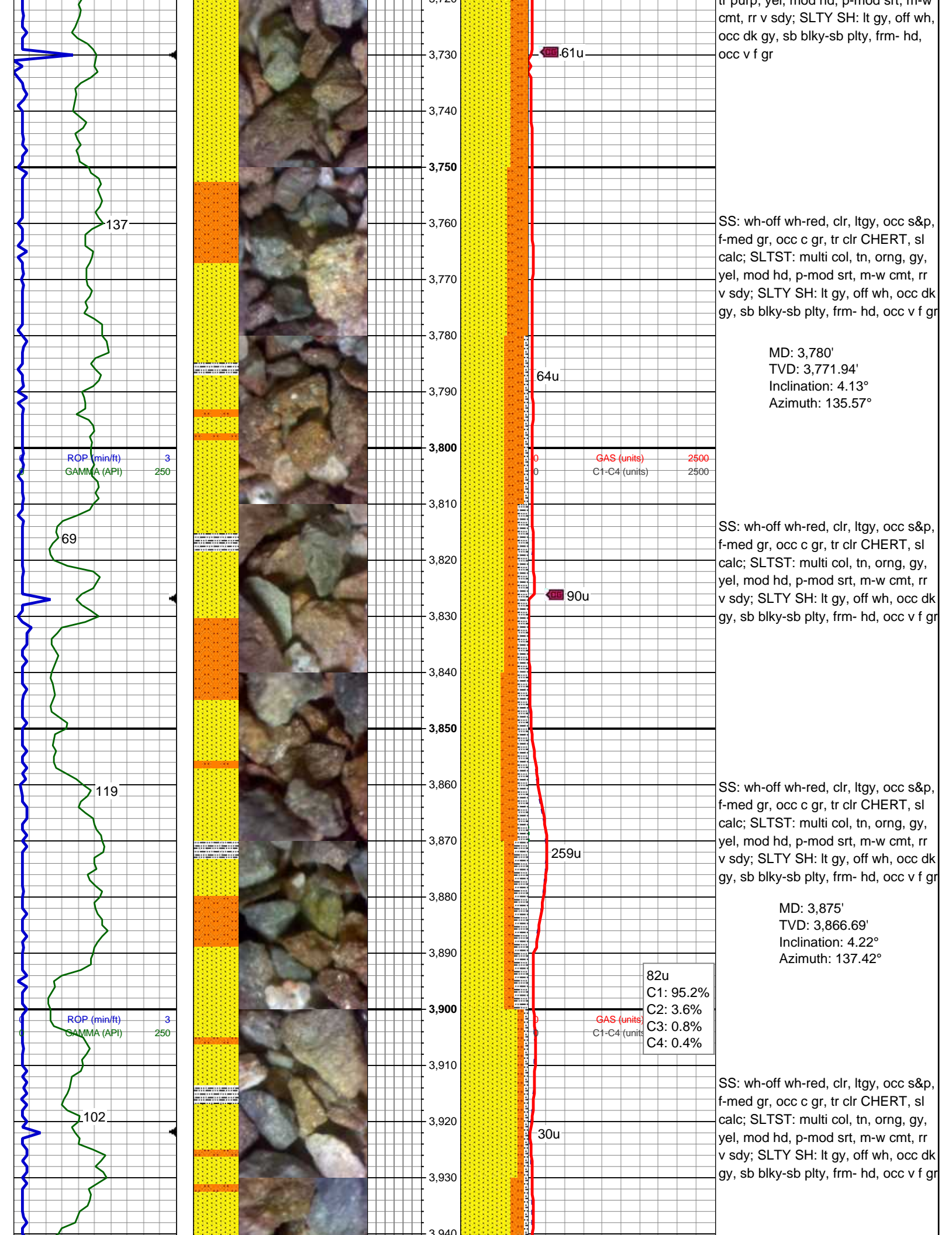


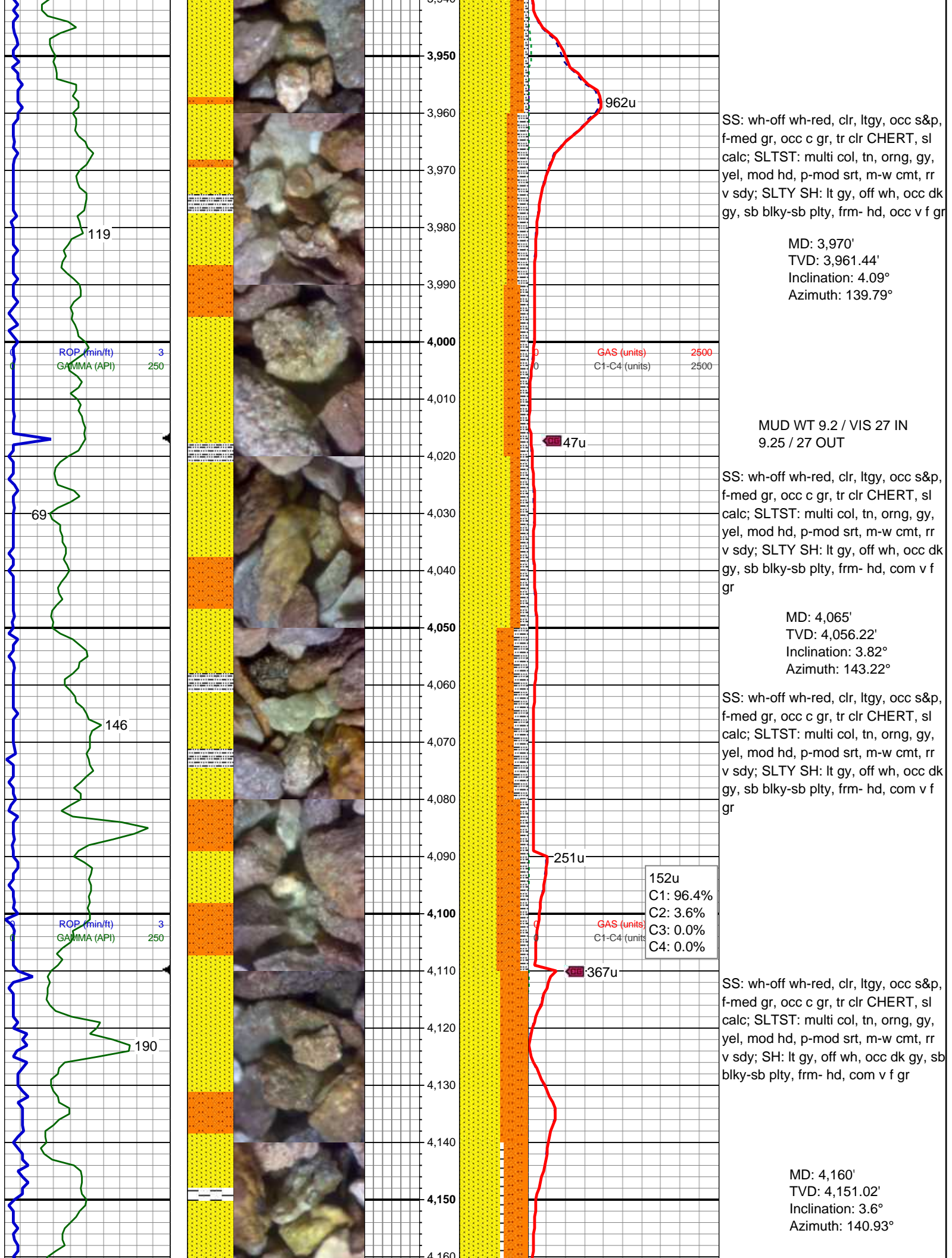


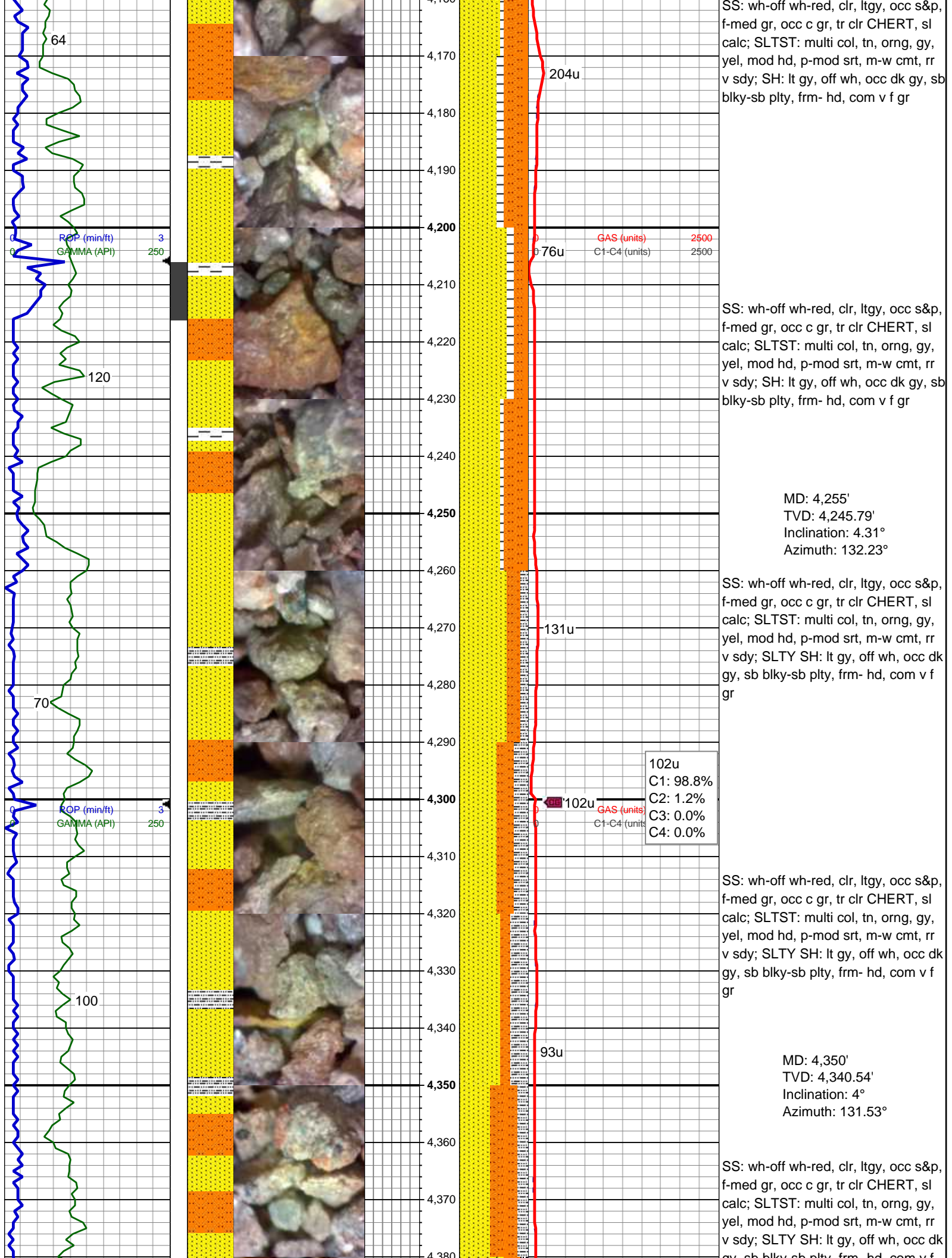


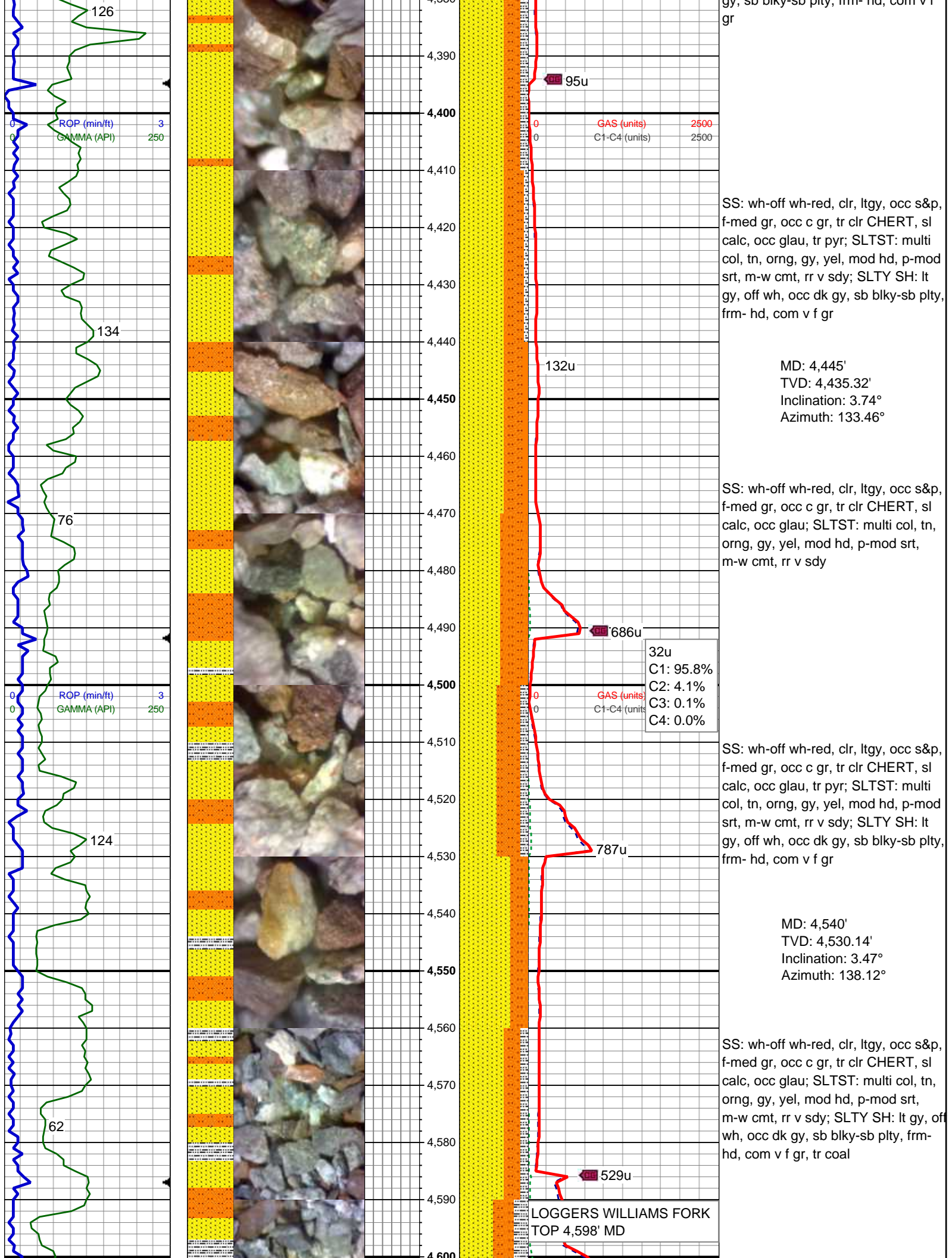


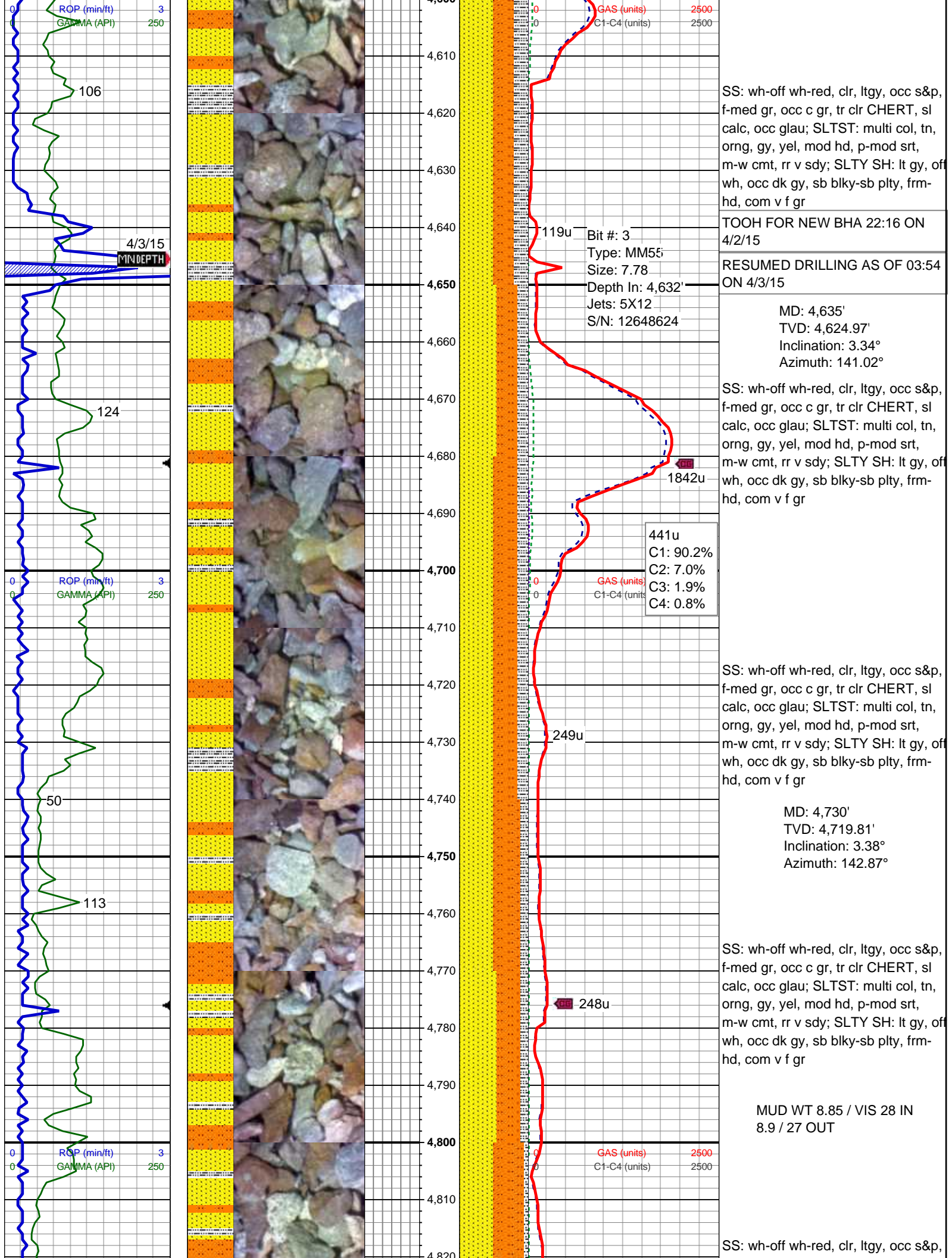


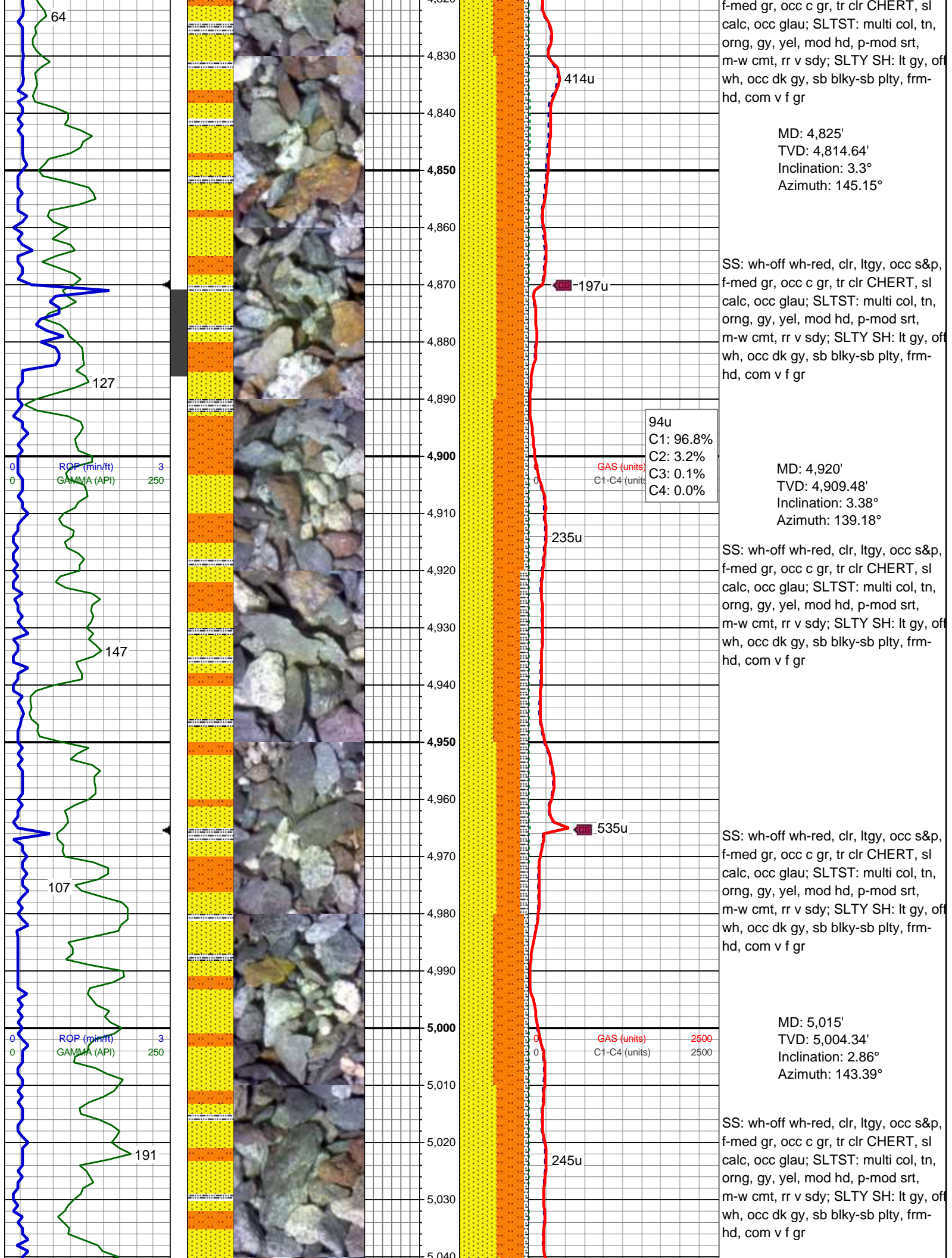


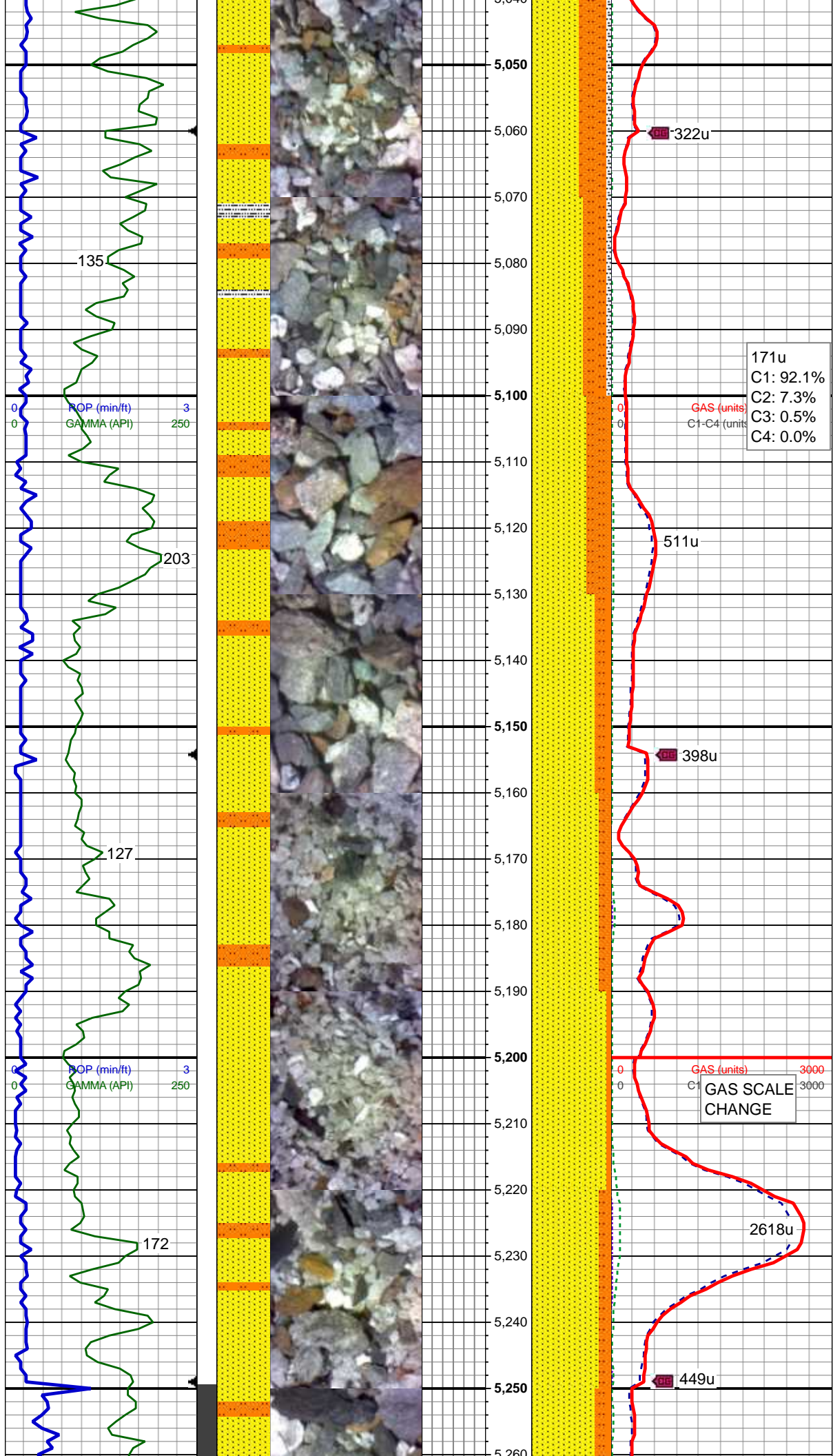












MUD WT 8.8+ / VIS 28 IN
8.9 / 28 OUT

SS: wh-off wh-red, clr, ltgy, occ s&p,
f-med gr, occ c gr, tr clr CHERT, sl
calc, occ glau; SLTST: multi col, tn,
orng, gy, yel, mod hd, p-mod srt,
m-w cmt, rr v sd; SLTY SH: lt gy, off
wh, occ dk gy, sb blk-y-sb plty, frm-
hd, com v f gr, tr coal

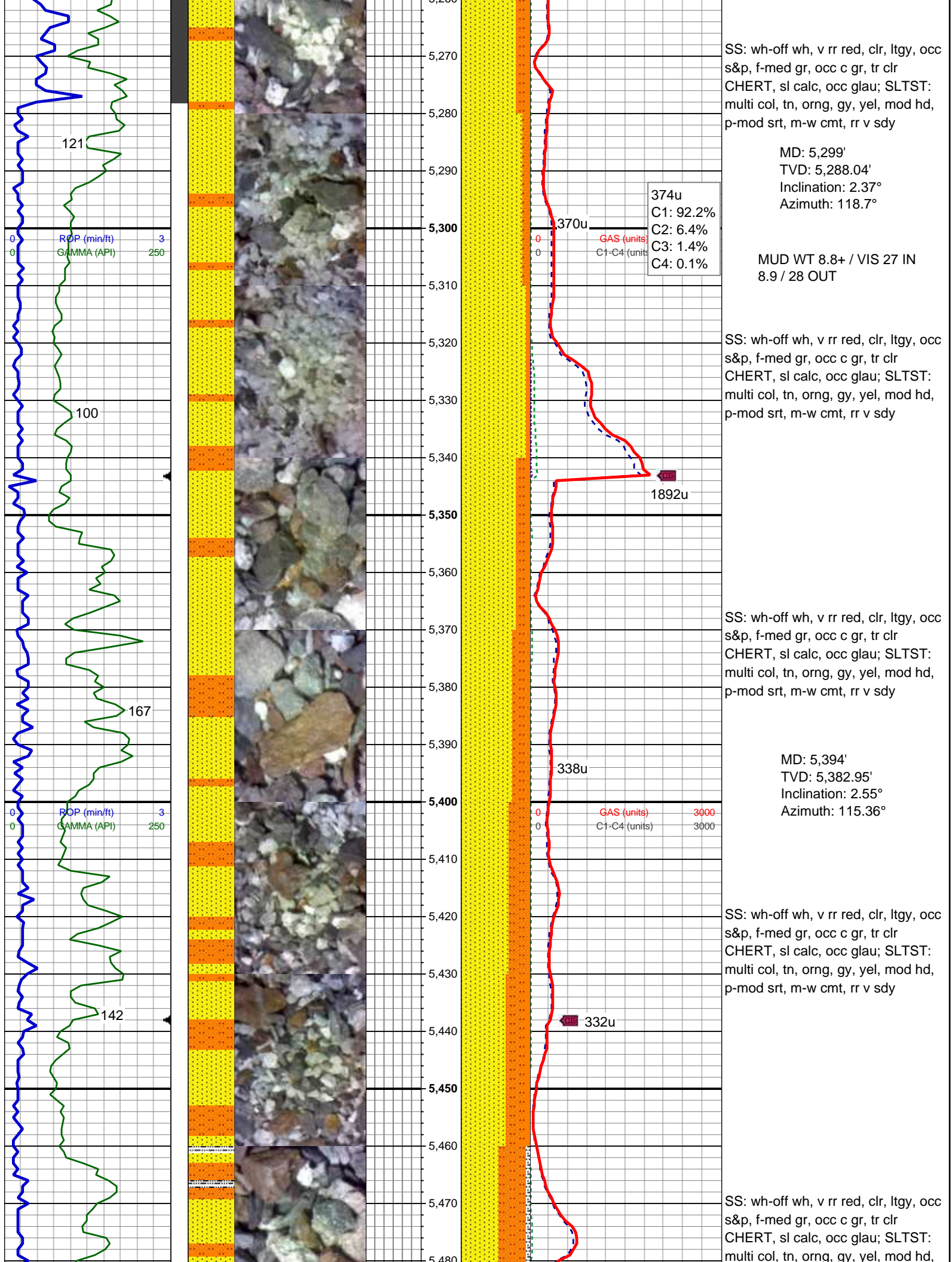
MD: 5,110'
TVD: 5,099.23'
Inclination: 2.68°
Azimuth: 146.12°

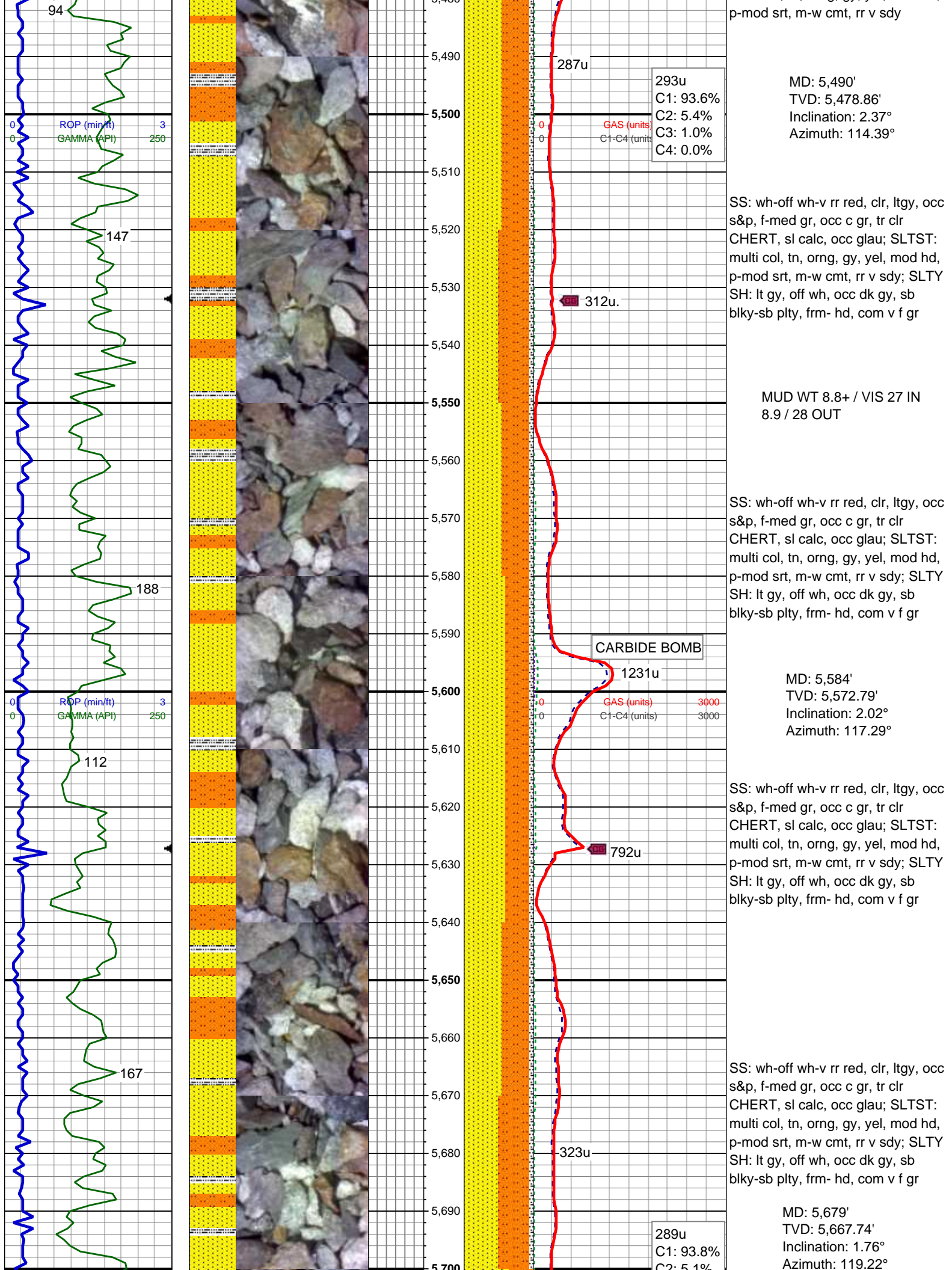
SS: wh-off wh-red, clr, ltgy, occ s&p,
f-med gr, occ c gr, tr clr CHERT, sl
calc, occ glau; SLTST: multi col, tn,
orng, gy, yel, mod hd, p-mod srt,
m-w cmt, rr v sd

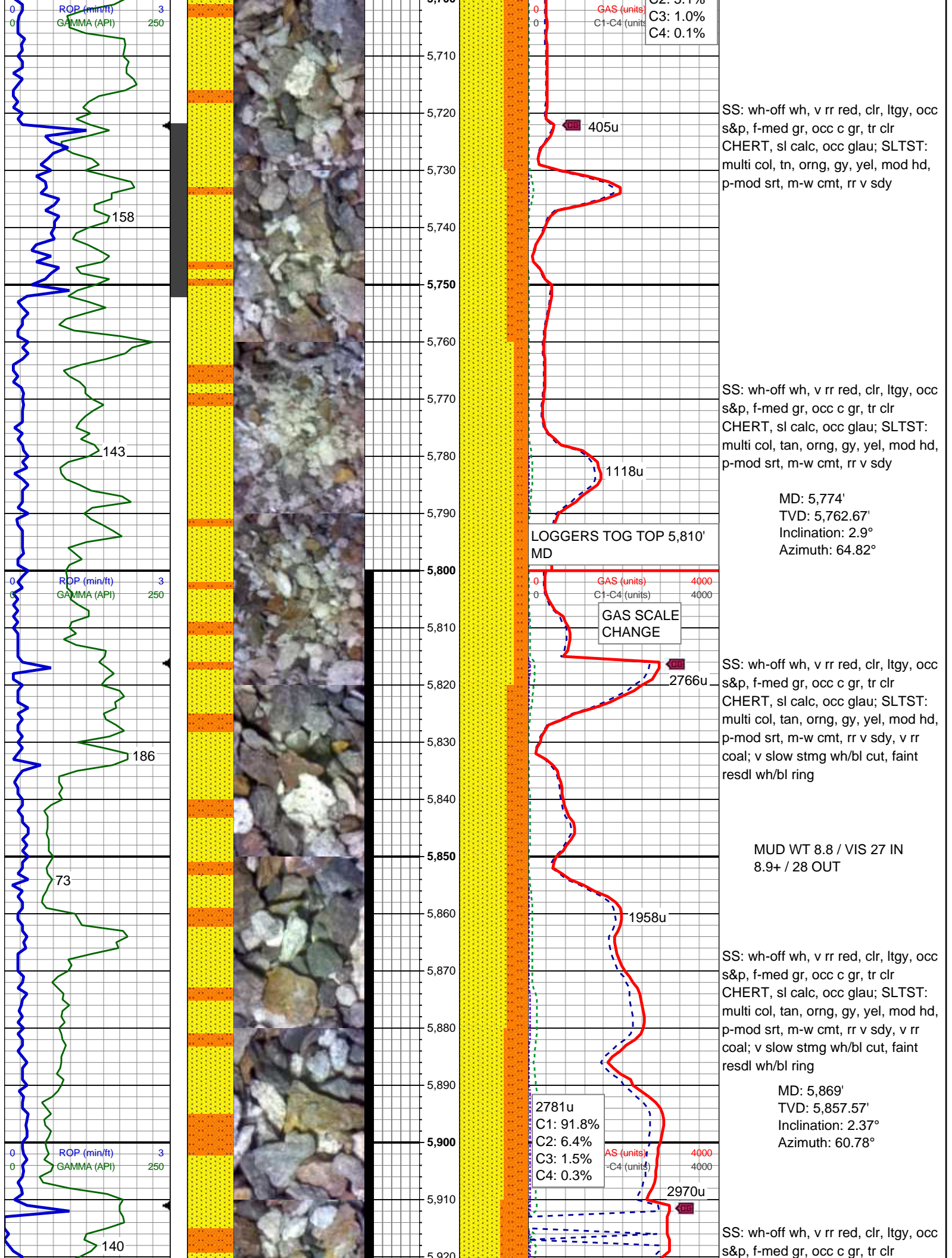
SS: wh-off wh, v rr red, clr, ltgy, occ
s&p, f-med gr, occ c gr, tr clr
CHERT, sl calc, occ glau; SLTST:
multi col, tn, orng, gy, yel, mod hd,
p-mod srt, m-w cmt, rr v sd

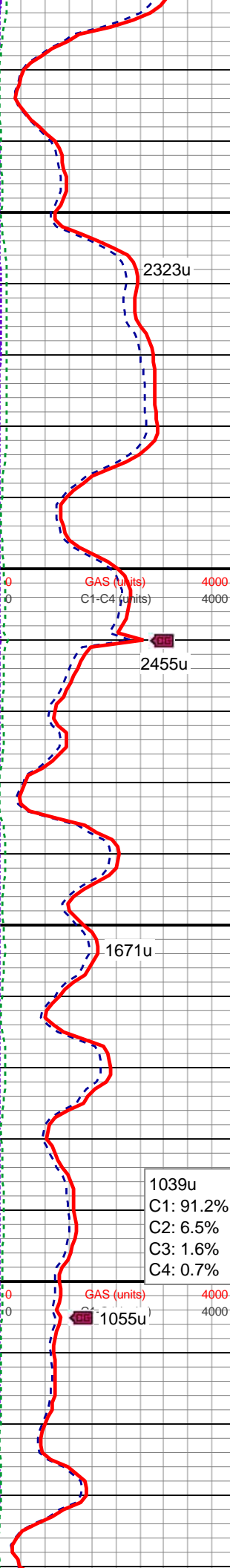
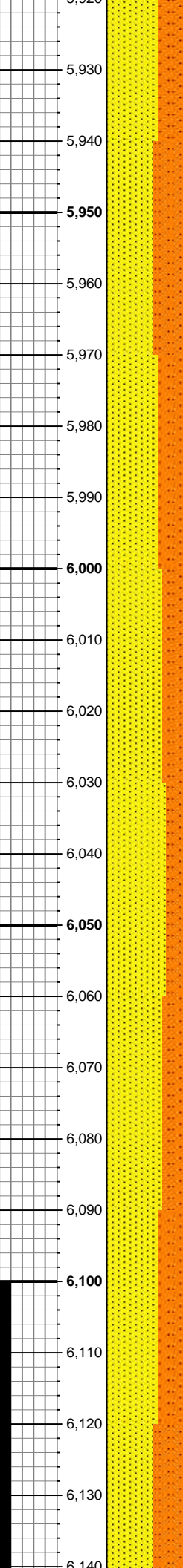
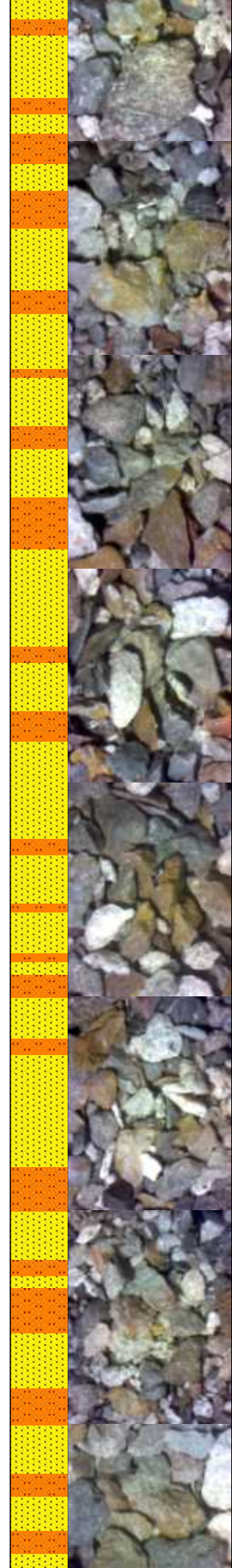
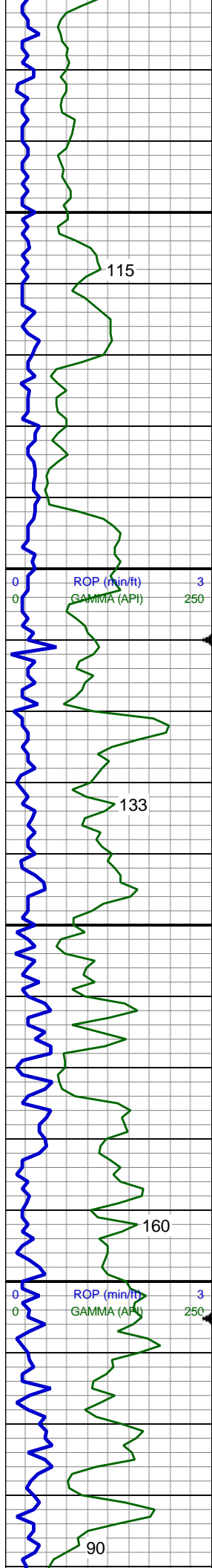
MD: 5,204'
TVD: 5,193.13'
Inclination: 2.72°
Azimuth: 146.73°

SS: wh-off wh, v rr red, clr, ltgy, occ
s&p, f-med gr, occ c gr, tr clr
CHERT, sl calc, occ glau; SLTST:
multi col, tn, orng, gy, yel, mod hd,
p-mod srt, m-w cmt, rr v sd









CHERT, sl calc, occ glau; SLTST: multi col, tan, orng, gy, yel, mod hd, p-mod srt, m-w cmt, rr v sdy; v slow stmg wh/bl cut, faint resdl wh/bl ring

MD: 5,964'
TVD: 5,952.5'
Inclination: 1.98°
Azimuth: 63.06°

SS: wh-off wh, v rr red, clr, ltgy, occ s&p, f-med gr, occ c gr, tr clr
CHERT, sl calc, occ glau; SLTST: multi col, tan, orng, gy, yel, mod hd, p-mod srt, m-w cmt, rr v sdy; v slow stmg wh/bl cut, faint resdl wh/bl ring

MUD WT 8.7+ / VIS 27 IN
8.9 / 28 OUT

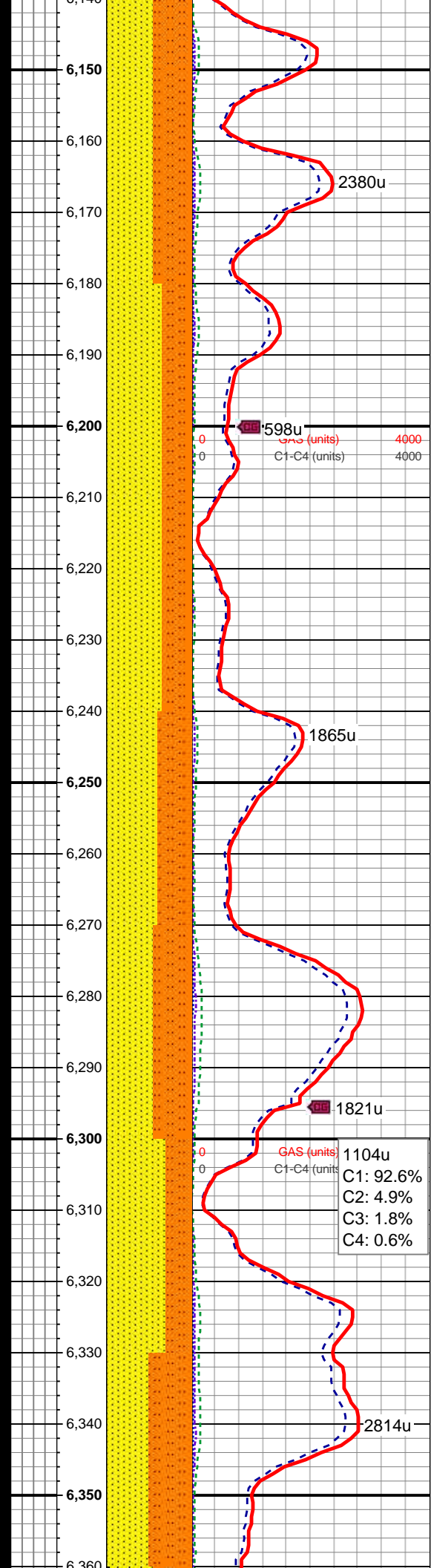
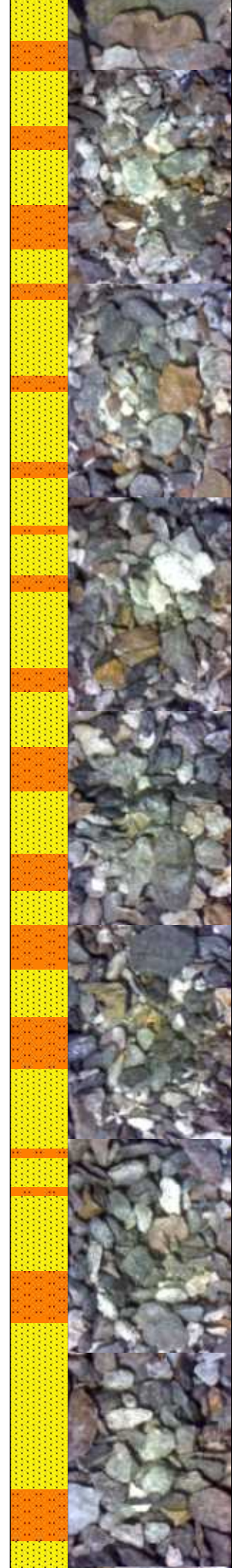
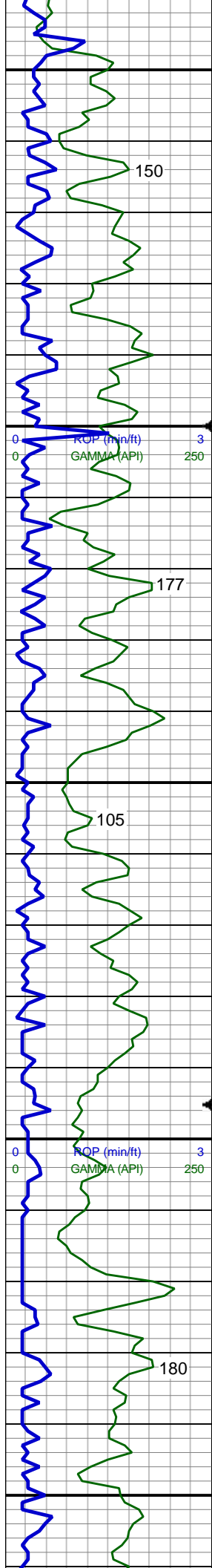
SS: wh-off wh, v rr red, clr, ltgy, occ s&p, f-med gr, occ c gr, tr clr
CHERT, sl calc, occ glau; SLTST: multi col, tan, orng, gy, yel, mod hd, p-mod srt, m-w cmt, rr v sdy; v slow stmg wh/bl cut, faint resdl wh/bl ring

MD: 6,059'
TVD: 6,047.45'
Inclination: 1.89°
Azimuth: 66.93°

SS: wh-off wh, v rr red, clr, ltgy, occ s&p, f-med gr, occ c gr, tr clr
CHERT, sl calc, occ glau; SLTST: multi col, tan, orng, gy, yel, mod hd, p-mod srt, m-w cmt, rr v sdy; v slow stmg wh/bl cut, faint resdl wh/bl ring

1039u
C1: 91.2%
C2: 6.5%
C3: 1.6%
C4: 0.7%

SS: wh-off wh, v rr red, clr, ltgy, occ s&p, f-med gr, occ c gr, tr clr
CHERT, sl calc, occ glau; SLTST: multi col, tan, orng, gy, yel, mod hd, p-mod srt, m-w cmt, rr v sdy; mod stmg/milky wh/bl cut, faint resdl wh/bl ring



MD: 6,154'
TVD: 6,142.4'
Inclination: 1.58°
Azimuth: 72.55°

SS: wh-off wh, v rr red, clr, ltgy, occ s&p, f-med gr, occ c gr, tr clr
CHERT, sl calc, occ glau; SLTST: multi col, tan, orng, gy, yel, mod hd, p-mod srt, m-w cmt, rr v sdy

SS: wh-off wh, v rr red, clr, ltgy, occ s&p, f-med gr, occ c gr, tr clr
CHERT, sl calc, occ glau; SLTST: multi col, tan, orng, gy, yel, mod hd, p-mod srt, m-w cmt, rr v sdy; mod stmg/milky wh/bl cut, faint resdl wh/bl ring

MD: 6,248'
TVD: 6,236.38'
Inclination: 1.05°
Azimuth: 79.59°

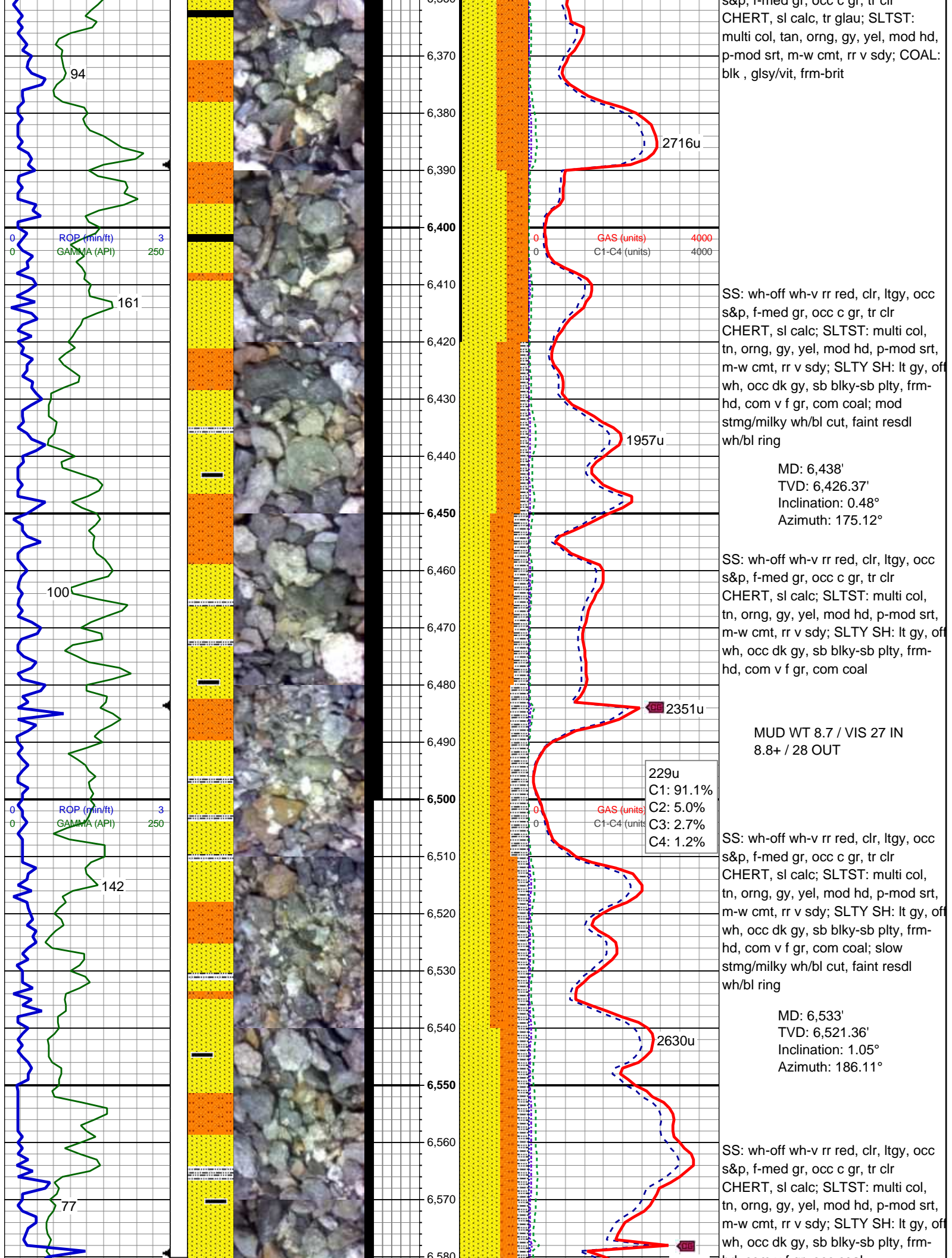
SS: wh-off wh, v rr red, clr, ltgy, occ s&p, f-med gr, occ c gr, tr clr
CHERT, sl calc, occ glau; SLTST: multi col, tan, orng, gy, yel, mod hd, p-mod srt, m-w cmt, rr v sdy, occ coal

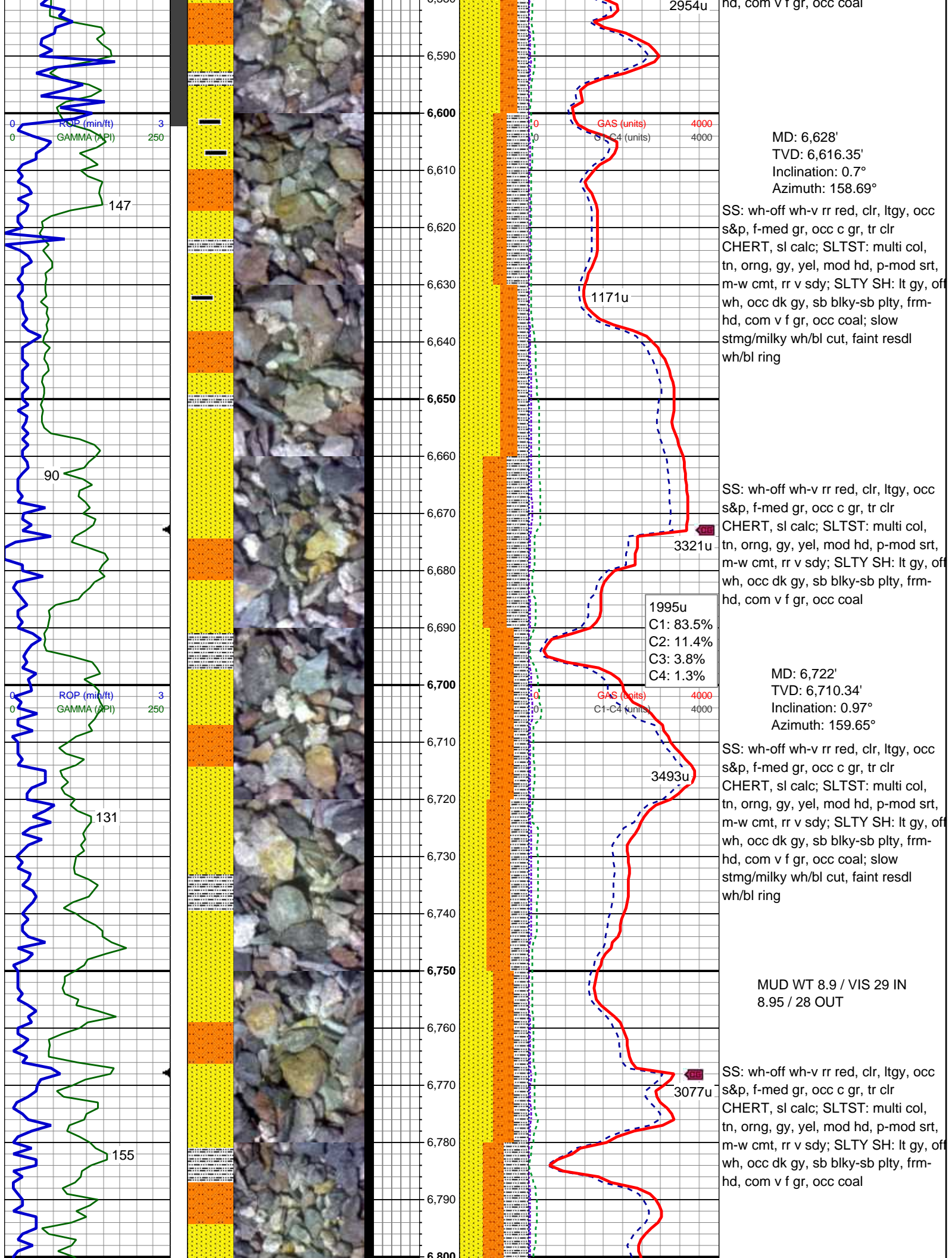
SS: wh-off wh, v rr red, clr, ltgy, occ s&p, f-med gr, occ c gr, tr clr
CHERT, sl calc, tr glau; SLTST: multi col, tan, orng, gy, yel, mod hd, p-mod srt, m-w cmt, rr v sdy, com coal; fast stmg/milky wh/bl cut, faint resdl wh/bl ring

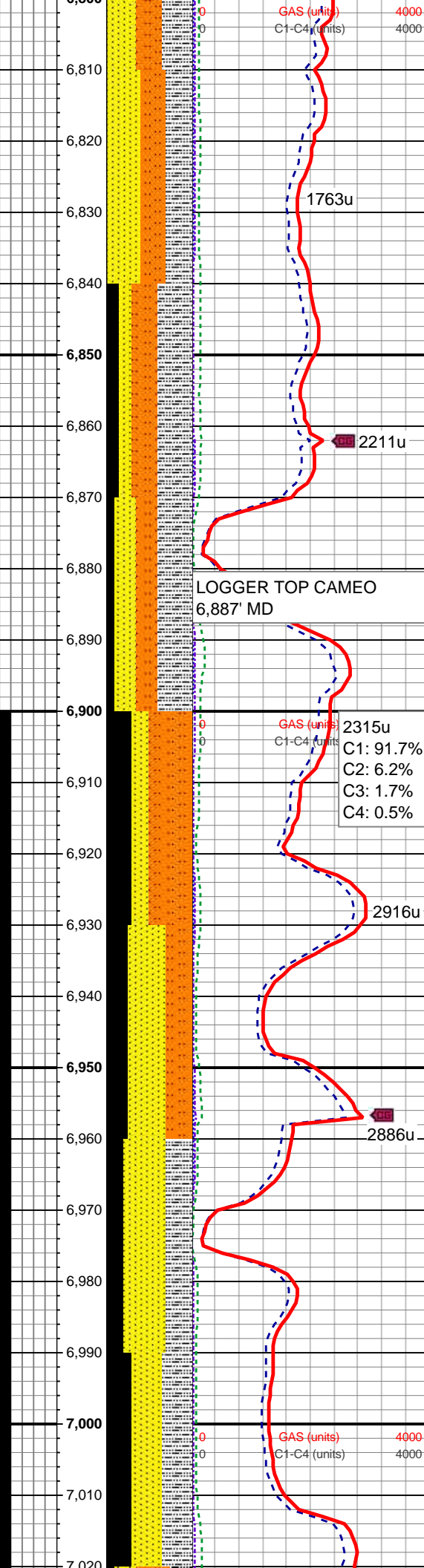
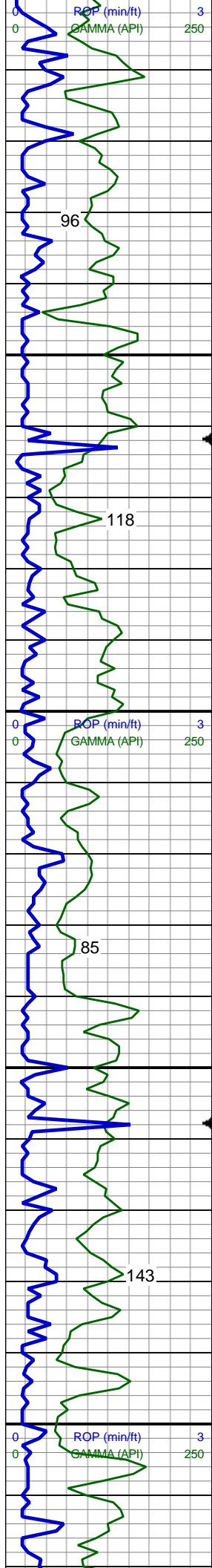
MD: 6,343'
TVD: 6,331.37'
Inclination: 0.31°
Azimuth: 99.8°

SS: wh-off wh, v rr red, clr, ltgy, occ s&p, f-med gr, occ c gr, tr clr

GAS (units)	1104u
C1-C4 (units)	
C1:	92.6%
C2:	4.9%
C3:	1.8%
C4:	0.6%







SS: wh-off wh-v rr red, clr, ltgy, occ s&p, f-med gr, occ c gr, tr clr CHERT, sl calc; SLTST: multi col, tn, orng, gy, yel, mod hd, p-mod srt, m-w cmt, rr v sdy; SLTY SH: lt gy, off wh, occ dk gy, sb blkgy-sb plty, frm-hd, com v f gr; com coal; mod stmg/milky wh/bl cut, faint resdl wh/bl ring

MD: 6,817'
TVD: 6,805.32'
Inclination: 1.23°
Azimuth: 184.09°

SS: wh-off wh-v rr red, clr, ltgy, occ s&p, f-med gr, occ c gr, tr clr CHERT, sl calc; SLTST: multi col, tn, orng, gy, yel, mod hd, p-mod srt, m-w cmt, rr v sdy; SLTY SH: lt gy, off wh, occ dk gy, sb blkgy-sb plty, frm-hd, com v f gr; COAL: blk, glsy/vit, frm-brit

MUD WT 9.0 / VIS 30 IN
9.05 / 29 OUT

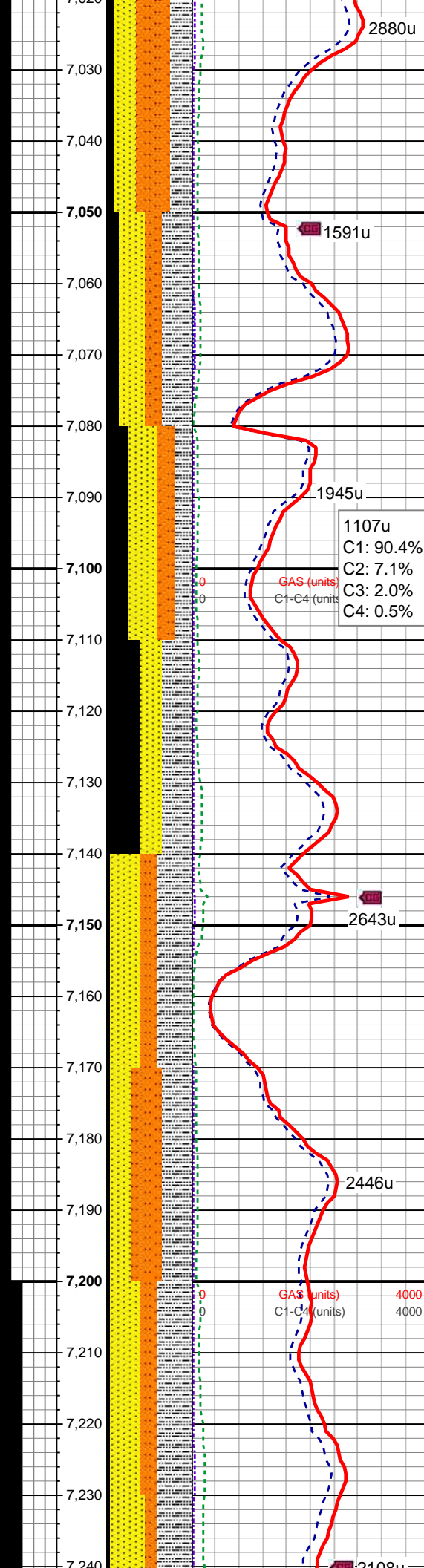
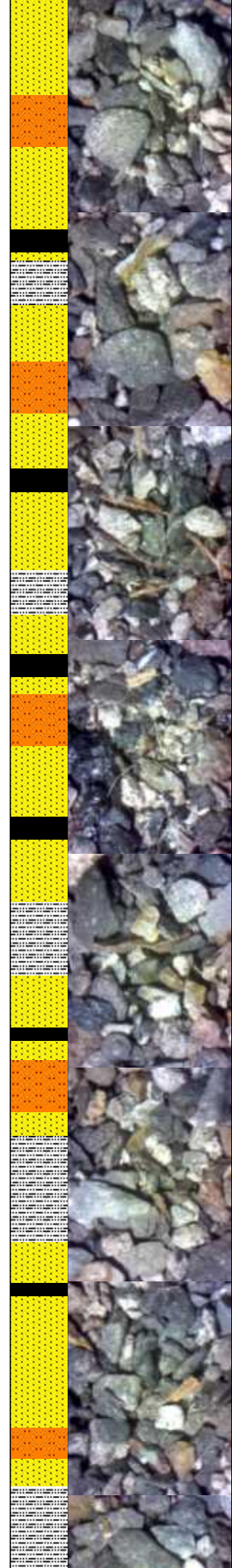
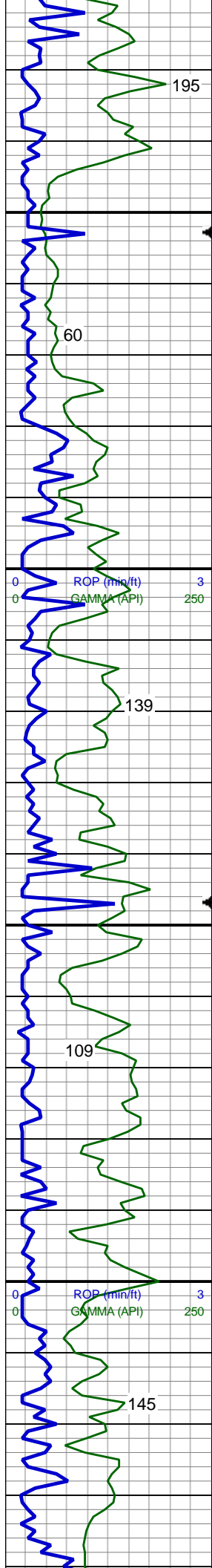
MD: 6,912'
TVD: 6,900.3'
Inclination: 1.36°
Azimuth: 198.76°

SS: wh-off wh-v rr red, clr, ltgy, occ s&p, f-med gr, occ c gr, tr clr CHERT, sl calc; SLTST: multi col, tn, orng, gy, yel, mod hd, p-mod srt, m-w cmt, rr v sdy; COAL: blk, glsy/vit, frm-brit; fast stmg/milky wh/bl cut, faint resdl wh/bl ring

SS: wh-off wh-v rr red, clr, ltgy, occ s&p, f-med gr, occ c gr, tr clr CHERT, sl calc; SLTY SH: lt gy, off wh, occ dk gy, sb blkgy-sb plty, frm-hd, com v f gr; SLTST: multi col, tn, orng, gy, yel, mod hd, p-mod srt, m-w cmt, rr v sdy; COAL: blk, glsy/vit, frm-brit

MD: 7,007'
TVD: 6,995.27'
Inclination: 1.63°
Azimuth: 211.77°

SS: wh-off wh-v rr red, clr, ltgy, occ s&p, f-med gr, occ c gr, tr clr CHERT, sl calc; SLTST: multi col, tn, orng, gy, yel, mod hd, p-mod srt,



m-w cmt, rr v sdy; SLTY SH: lt gy, off wh, occ dk gy, sb blk-y-sb plty, frm-hd, com v f gr; COAL: blk, glsy/vit, frm-brit; mod stmg/milky wh/bl cut, mod resdl wh/bl ring

SS: wh-off wh-v rr red, clr, ltgy, occ s&p, f-med gr, occ c gr, tr clr CHERT, sl calc; SLTST: multi col, tn, orng, gy, yel, mod hd, p-mod srt, m-w cmt, rr v sdy; SLTY SH: lt gy, off wh, occ dk gy, sb blk-y-sb plty, frm-hd, com v f gr; COAL: blk, glsy/vit, frm-brit

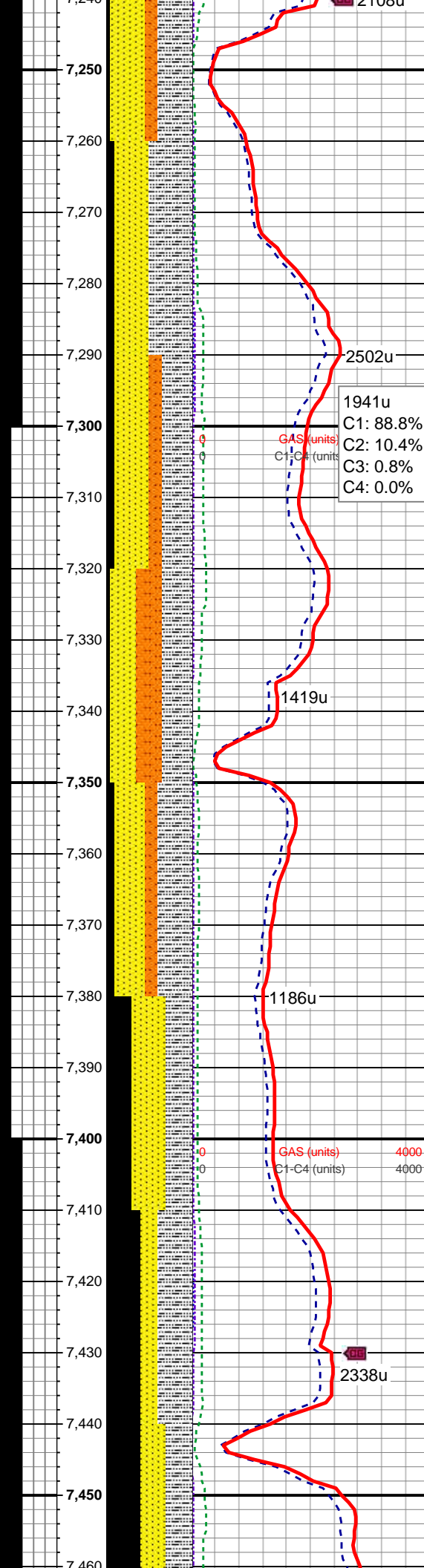
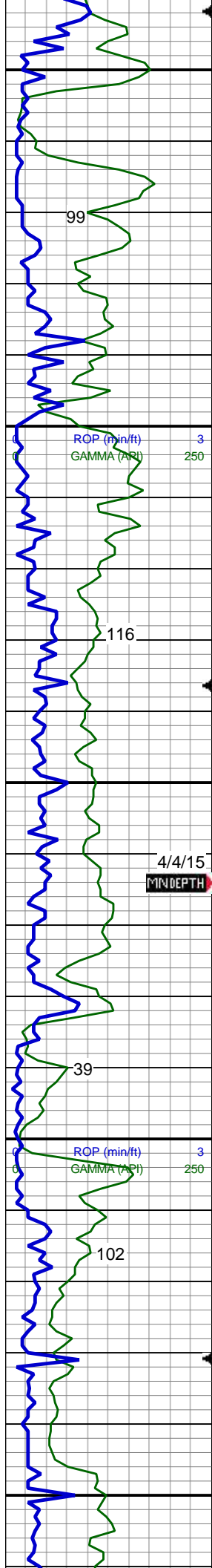
MD: 7,102'
TVD: 7,090.23'
Inclination: 1.54°
Azimuth: 211.42°

COAL: blk, glsy/vit, frm-brit; SS: wh-off wh-v rr red, clr, ltgy, occ s&p, f-med gr, occ c gr, tr clr CHERT, sl calc; SLTST: multi col, tn, orng, gy, yel, mod hd, p-mod srt, m-w cmt, rr v sdy; SLTY SH: lt gy, off wh, occ dk gy, sb blk-y-sb plty, frm-hd, com v f gr; mod stmg/milky wh/bl cut, mod resdl wh/bl ring

SS: wh-off wh-v rr red, clr, ltgy, occ s&p, f-med gr, occ c gr, tr clr CHERT, sl calc; SLTY SH: lt gy, off wh, occ dk gy, sb blk-y-sb plty, frm-hd, com v f gr; SLTST: multi col, tn, orng, gy, yel, mod hd, p-mod srt, m-w cmt, rr v sdy; COAL: blk, glsy/vit, frm-brit

MD: 7,197'
TVD: 7,185.18'
Inclination: 2.11°
Azimuth: 226.71°

SS: wh-off wh-v rr red, clr, ltgy, occ s&p, f-med gr, occ c gr, tr clr CHERT, sl calc; SLTST: multi col, tn, orng, gy, yel, mod hd, p-mod srt, m-w cmt, rr v sdy; SLTY SH: lt gy, off wh, occ dk gy, sb blk-y-sb plty, frm-hd, com v f gr; COAL: blk, glsy/vit, frm-brit; fast stmg/milky wh/bl cut, mod resdl wh/bl ring



SS: wh-off wh-v rr red, clr, ltgy, occ s&p, f-med gr, occ c gr, tr clr
CHERT, sl calc; SLTY SH: lt gy, off wh, occ dk gy, sb blkgy-sb plty, frm-hd, com v f gr; SLTST: multi col, tn, orng, gy, yel, mod hd, p-mod srt, m-w cmt, rr v sdy; COAL: blk, glsy/vit, frm-brit;

MD: 7,291'
TVD: 7,279.1'
Inclination: 2.55°
Azimuth: 225.13°

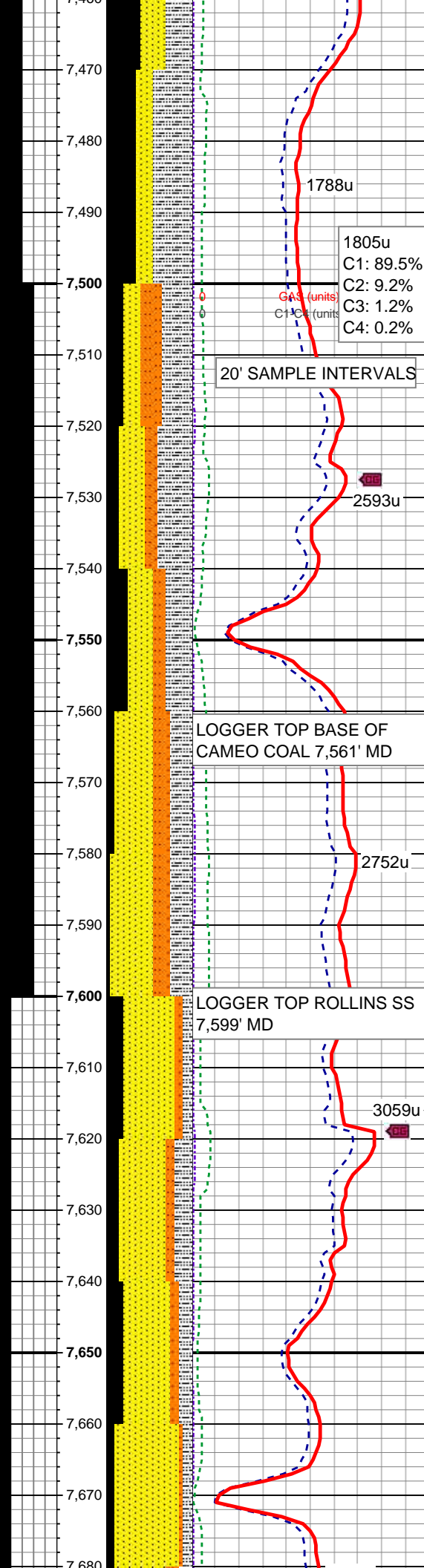
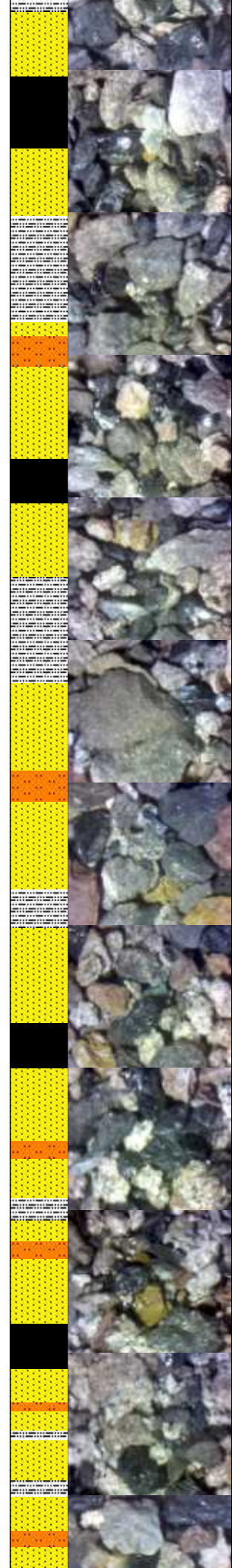
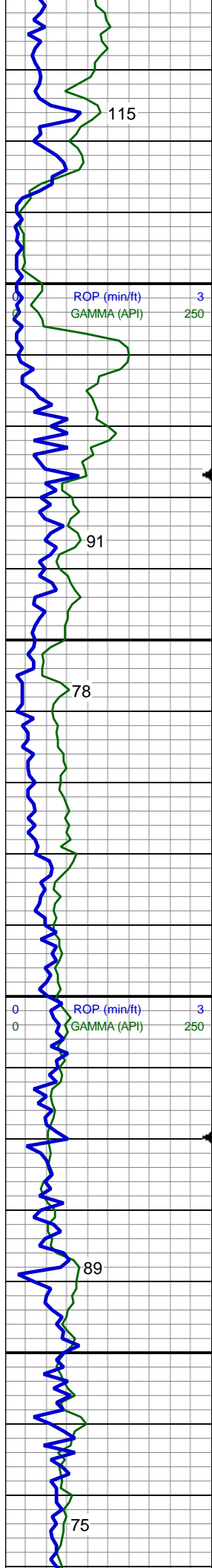
SS: wh-off wh-v rr red, clr, ltgy, occ s&p, f-med gr, occ c gr, tr clr
CHERT, sl calc; SLTY SH: lt gy, off wh, occ dk gy, sb blkgy-sb plty, frm-hd, com v f gr; SLTST: multi col, tn, orng, gy, yel, mod hd, p-mod srt, m-w cmt, rr v sdy; COAL: blk, glsy/vit, frm-brit; mod stmg/milky wh/bl cut, mod resdl wh/bl ring

SS: wh-off wh-v rr red, clr, ltgy, occ s&p, f-med gr, occ c gr, tr clr
CHERT, sl calc; SLTY SH: lt gy, off wh, occ dk gy, sb blkgy-sb plty, frm-hd, com v f gr; SLTST: multi col, tn, orng, gy, yel, mod hd, p-mod srt, m-w cmt, rr v sdy; COAL: blk, glsy/vit, frm-brit;

MD: 7,386'
TVD: 7,373.99'
Inclination: 2.99°
Azimuth: 219.24°

SS: wh-off wh-v rr red, clr, ltgy, occ s&p, f-med gr, occ c gr, tr clr
CHERT, sl calc; COAL: blk, glsy/vit, frm-brit; SLTY SH: lt gy, off wh, occ dk gy/brn, sb blkgy-sb plty, frm-hd, occ v f gr; mod stmg/milky wh/bl cut, g resdl wh/bl ring

SS: wh-off wh-v rr red, clr, ltgy, occ



SS: wh-off wh-v rr red, clr, ltgy, occ s&p, f-med gr, occ c gr, tr clr
CHERT, sl calc; COAL: blk, glsy/vit, frm-brit; SLTY SH: lt gy, off wh, occ dk gy/brn, sb blkgy-sb plty, frm- hd, occ v f gr;

MD: 7,481'
TVD: 7,468.86'
Inclination: 3.08°
Azimuth: 221.02°

MUD WT 9.45 / VIS 55 IN
9.5 / 48 OUT

SLTY SH: lt gy, off wh, occ dk gy, sb blkgy-sb plty, frm- hd, com v f gr; SS: wh-off wh-v rr red, clr, ltgy, occ s&p, f-med gr, occ c gr, sl calc; SLTST: multi col, tn, orng, gy, yel, mod hd, p-mod srt, m-w cmt, rr v sdy; COAL: blk, glsy/vit, frm-brit; fast stmg/milky wh/bl cut, g resdl wh/bl ring

MD: 7,576'
TVD: 7,563.69'
Inclination: 3.74°
Azimuth: 220.21°

SLTY SH: lt gy, off wh, occ dk gy, sb blkgy-sb plty, frm- hd, com v f gr; SS: wh-off wh-v rr red, clr, ltgy, occ s&p, f-med gr, occ c gr, sl calc; SLTST: multi col, tn, orng, gy, yel, mod hd, p-mod srt, m-w cmt, rr v sdy; COAL: blk, glsy/vit, frm-brit;

SS: wh-off wh-v rr red, clr, ltgy, occ s&p, f-med gr, occ c gr, sl calc, tr pyr; SLTY SH: lt gy, off wh, occ dk gy, sb blkgy-sb plty, frm- hd, com v f gr; SLTST: multi col, tn, orng, gy, yel, mod hd, p-mod srt, m-w cmt, rr v sdy; COAL: blk, glsy/vit, frm-brit; mod stmg/milky wh/bl cut, mod resdl wh/bl ring

MUD WT 9.8 / VIS 50 IN
9.8 / 49 OUT

SS: wh-off wh, clr, ltgy, occ s&p, mot, f-med gr, occ c gr, sl calc; SLTY SH: lt gy, off wh, occ dk gy, sb blkgy-sb plty, frm- hd, com v f gr; SLTST: multi col, tn, orng, gy, yel,

