



Scale: 5" / 100'
Measured Depth Log

Well Name FINAL_SHOOK 3-10-1NCH_VERT_CURVE

Location SECTION 3 T1S R67W

State COLORADO

County ADAMS

Country USA

Rig Number ENSIGN 145

API Number 05-001-09975

AFE # 1700004

Geographic Region DJ BASIN

Field WATTENBERG

Spud Date 4/9/2017

Drilling Completed 6/14/2017

Surface Coordinates NWSE SEC 3, T1S, R67W
2058' FSL x 2229' FEL

Bottom Hole Coordinates SEC 10, T1S, R67W
388' FNL, 1614' FWL

Ground Elevation 5098'

K.B. Elevation 5111'

Logged Interval 1829' **To** 8467'

Total Depth 6638'

Formation SURFACE - NIOBRARA B CHALK

Type of Drilling Fluid OBM - OIL BASED MUD

Operator

Company PetroShare

Address 7200 S Alton Way
Englewood, CO 80112



Geologist

Zone Color Coding

Name WEDGE HOWLAND, SAGE BETTS

Company TERRA GUIDANCE

Address 1298 O Road
Loma CO 81524
(970) 260-5408



Oil

Condensate

Gas

Note

Core

Pressure

Error

Water

Seal

Rock Types

UNKNOWN

ANHYDRITE

GYPSUM

SALT

SIDERITE or LIMONITE

LIMESTONE

DOLOMITE

CHERT

COAL

CHALK

MARLSTONE

CLAYSTONE

SHALE

SILTY SHALE

SHALE GRAY

SHALE COLORED

SILTSTONE

SHALY SILTSTONE

SANDSTONE

SHALY SANDSTONE

CONGLOMERATE

BRECCIA

TILL

BENTONITE

TUFF

IGNEOUS

METAMORPHIC

CEMENT

Accessories

Fossils

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

FOSSIL

GASTROPOD

OOLITE

OSTRACOD

PELECYPOD

PELLET

PISOLITE

PLANT REMAINS

PLANT SPORES

SCAPHOPOD

STROMATOPOROID

Minerals

ANHYDRITIC

ARGILLACEOUS

ARGILLITE GRAIN

BENTONITE

BITUMENOUS SUBSTANCE

BRECCIA FRAGMENTS

CALCAREOUS

CARBONACEOUS FLAKES

CHTDK

CHTLT

COAL - THIN BEDS

DOLOMITIC

FELDSPAR

FERRUGINOUS PELLET

FERRUGINOUS

GLAUCONITE

GYPSIFEROUS

HEAVY MINERAL

KAOLIN

MARLSTONE

MINERAL CRYSTALS

NODULES

PHOSPHATE PELLETS

PYRITE

SALT CAST

SANDY

SILICEOUS

SILTY

TUFFACEOUS

Stringer

ANHYDRITE STRINGER

BENTONITE STRINGER

COAL STRINGER

DOLOMITE STRINGER

GYPSUM STRINGER

LIMESTONE STRINGER

MARLSTONE (CALC) STRG

MARLSTONE (DOL) STRG

SANDSTONE STRINGER

SHALE STRINGER

SILTSTONE STRINGER

Other Symbols

Oil Show

DEAD
EVEN
QUESTIONABLE
SPOTTED STAINING

Porosity

EARTHY
FENESTRAL
FRACTURE
INTERCRYSTALLINE
INTEROOLITIC
MOLDIC

ORGANIC

PINPOINT

VUGGY

Engineering

BIT

CASING

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

SIDEWALL CORE (LEFT)

SIDEWALL CORE (RIGHT)

SLIDE

SURVEY

TRIP GAS

WIRELINE TESTED - LEFT

WIRELINE TESTED - RT

Rounding

ANGULAR
ROUNDED
SUBANG
SUBRND

Textures

BOUNDSTONE
CHALKY
CRYPTOXLN
EARTHY
FINELYXLN
GRAINSTONE

LITHOGRAPHIC

MICROXLN

MUDSTONE

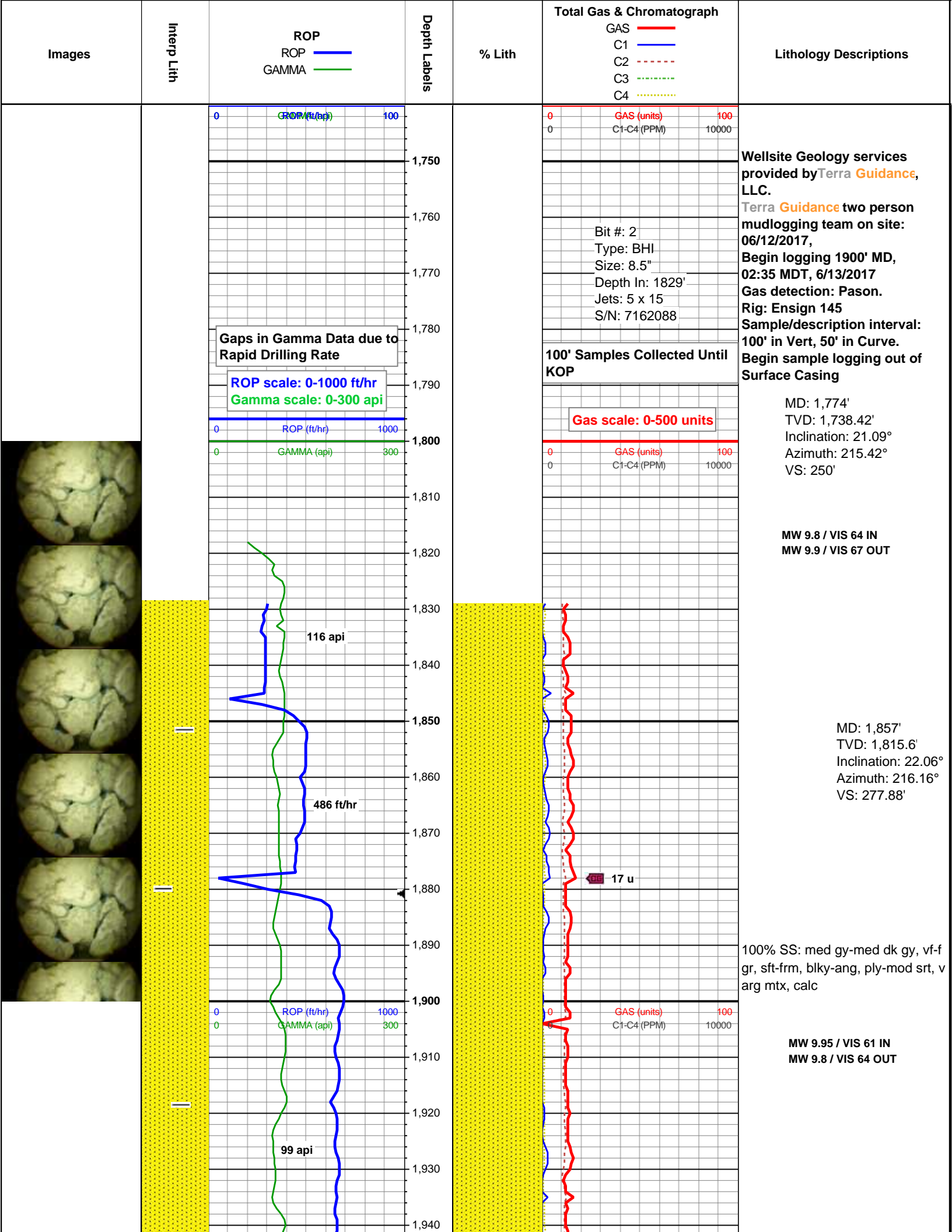
PACKSTONE

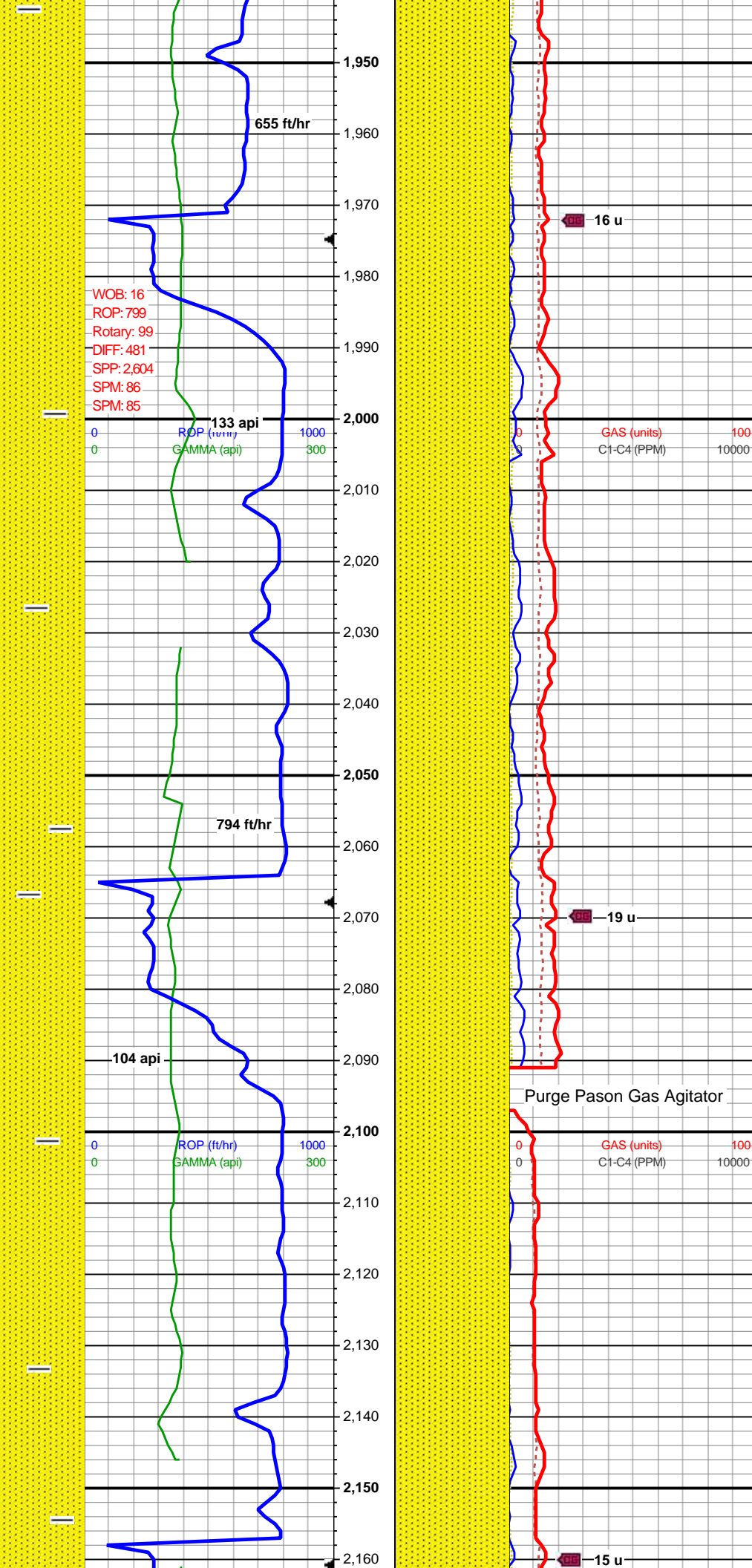
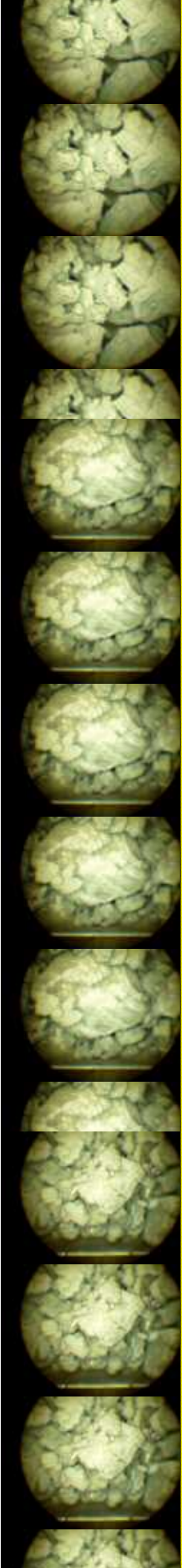
WACKSTONE

Sorting

MODERATE
POOR
WELL

SHALY SILTSTONE





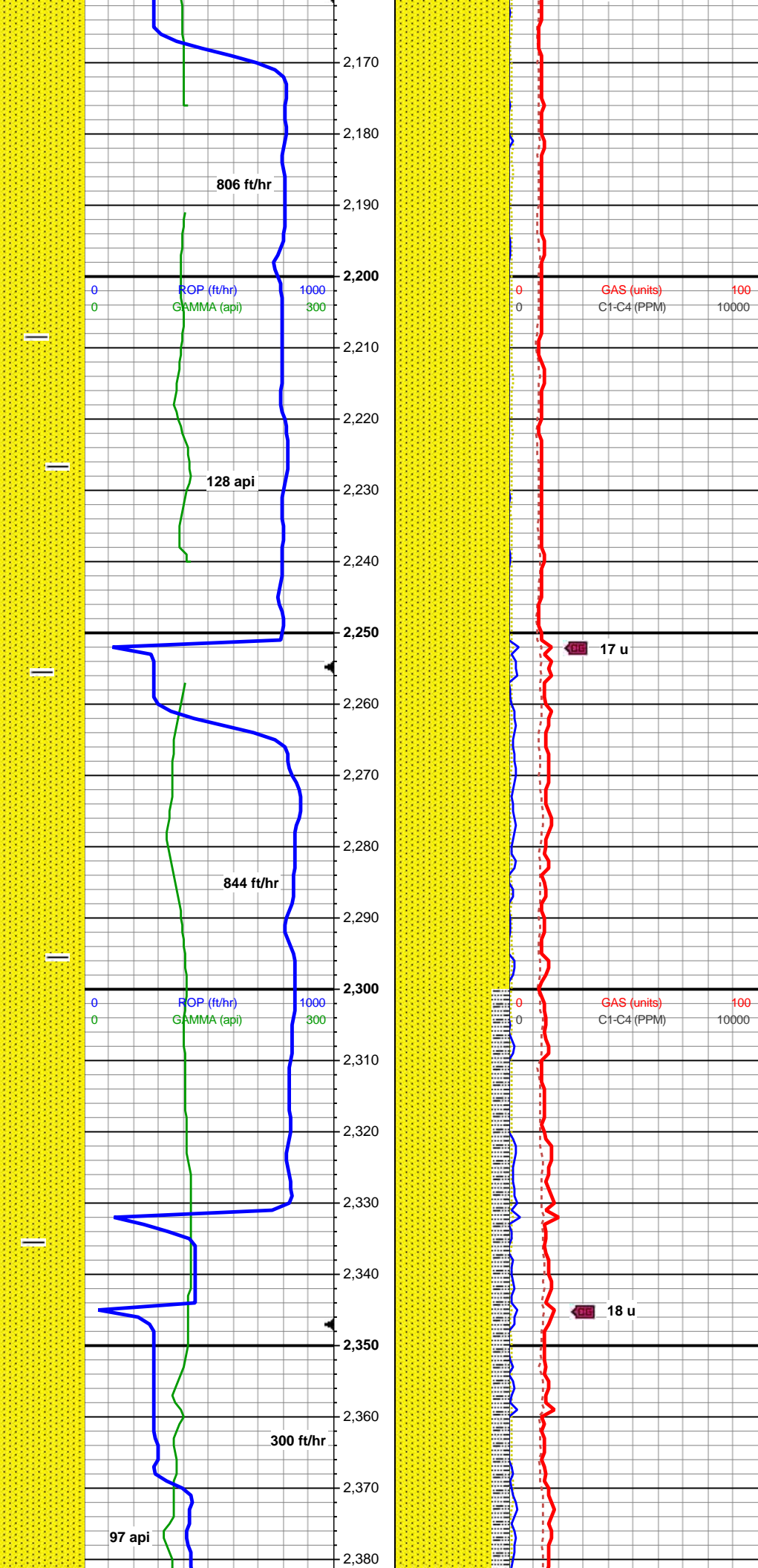
MD: 1,950'
TVD: 1,902.04'
Inclination: 21.24°
Azimuth: 214.38°
VS: 309.33'

100% SS: med gy, vf-f gr, mod
sft-frm, blk-ang, ply-mod srt, slty
txt, v arg mtx, v calc

MD: 2,044'
TVD: 1,989.61'
Inclination: 21.4°
Azimuth: 215.16°
VS: 340.79'

100% SS: med gy, vf-f gr, mod
sft-frm, blk-ang, ply-mod srt, slty
txt, v arg mtx, calc

MD: 2,137'
TVD: 2,076.27'
Inclination: 21.17°
Azimuth: 214.57°
VS: 371.84'



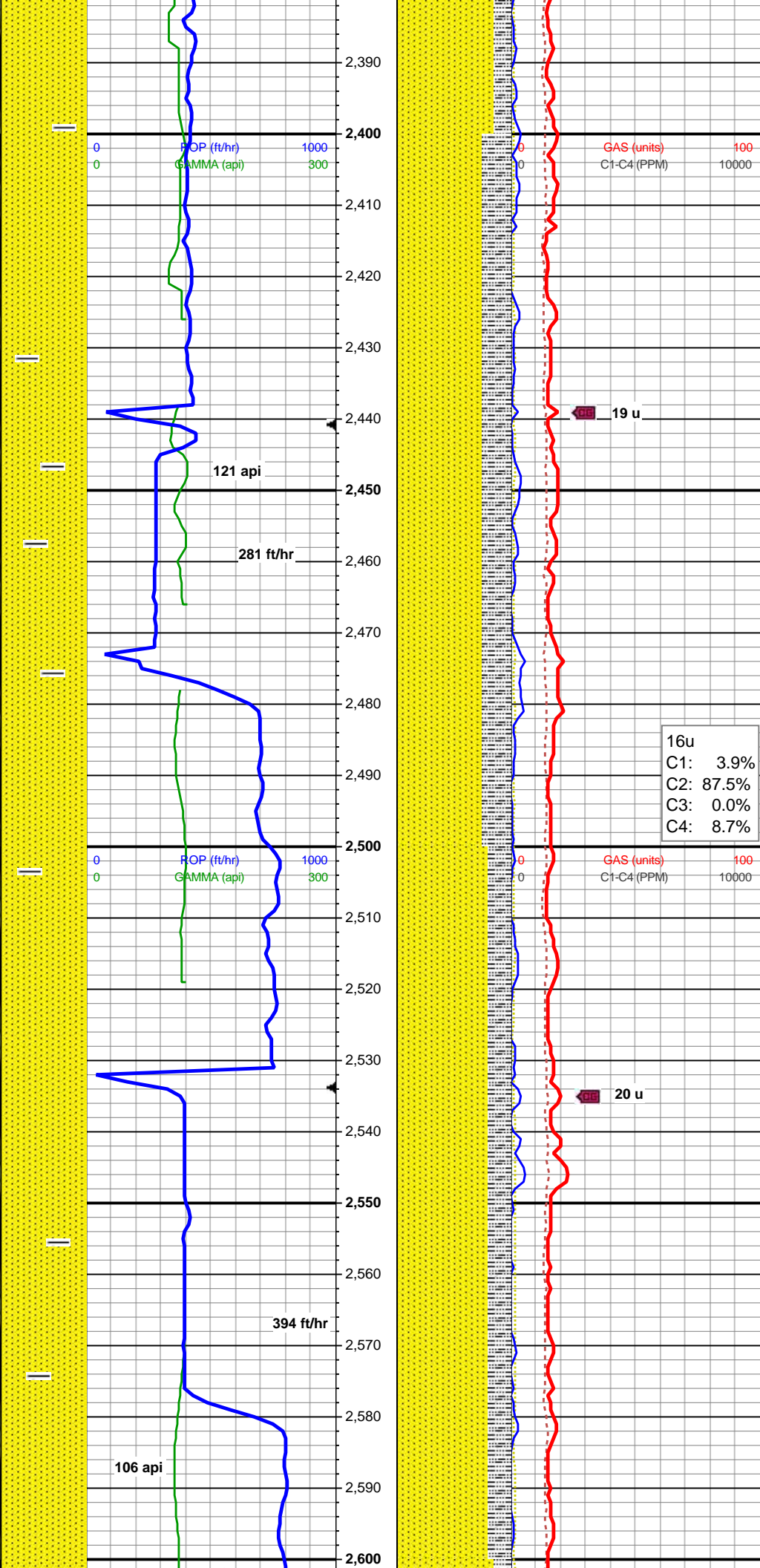
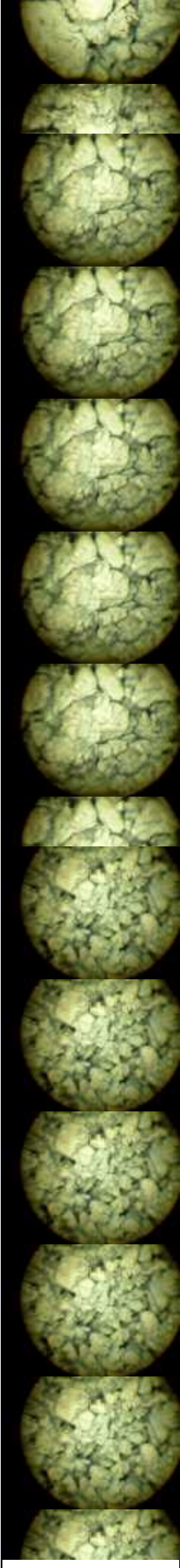
100% SS: med gy-med dk gy, vf-f
gr, mod sft-frm, blk-ang, ply-mod
srt, slty txt, v arg mtx, calc

MW 9.8 / VIS 57 IN
MW 9.95 / VIS 61 OUT
MD: 2,230'
TVD: 2,163.03
Inclination: 21.02°
Azimuth: 215.26°
VS: 402.62'

100% SS: med gy-med dk gy, vf-f
gr, frm, blk-ang, ply-mod srt, slty
txt, v arg mtx, calc

MD: 2,323'
TVD: 2,249.77'
Inclination: 21.27°
Azimuth: 216.37°
VS: 433.25'

MW 9.8 / VIS 57 IN
MW 9.8 / VIS 57 OUT



85% SS: lt gy-med gy, vf-f gr, sft-firm, sb blk-ly-sb rnd, slty, p-mod srt, mod cmt, v arg mt, rr calc; 15% SLTY SH: med dk-dk gy, frm, blk-ly-plty, v arg, non calc

MW 9.8 / VIS 57 IN
MW 9.8 / VIS 57 OUT
MD: 2,417'
TVD: 2,337.41'
Inclination: 21.14°
Azimuth: 216.94°
VS: 464.09'

19 u

75% SS: medgy, vf-f gr, mod sft-sft, sb blk-ly clus, ply cons, sb ang-ip sr, mod srt, cly cmt, arg mt, sl calc; 25% SLTY SH: med-drkgy, sb blk-ly-fis, mod hd-brit, arg, vfg sdy, sl calc

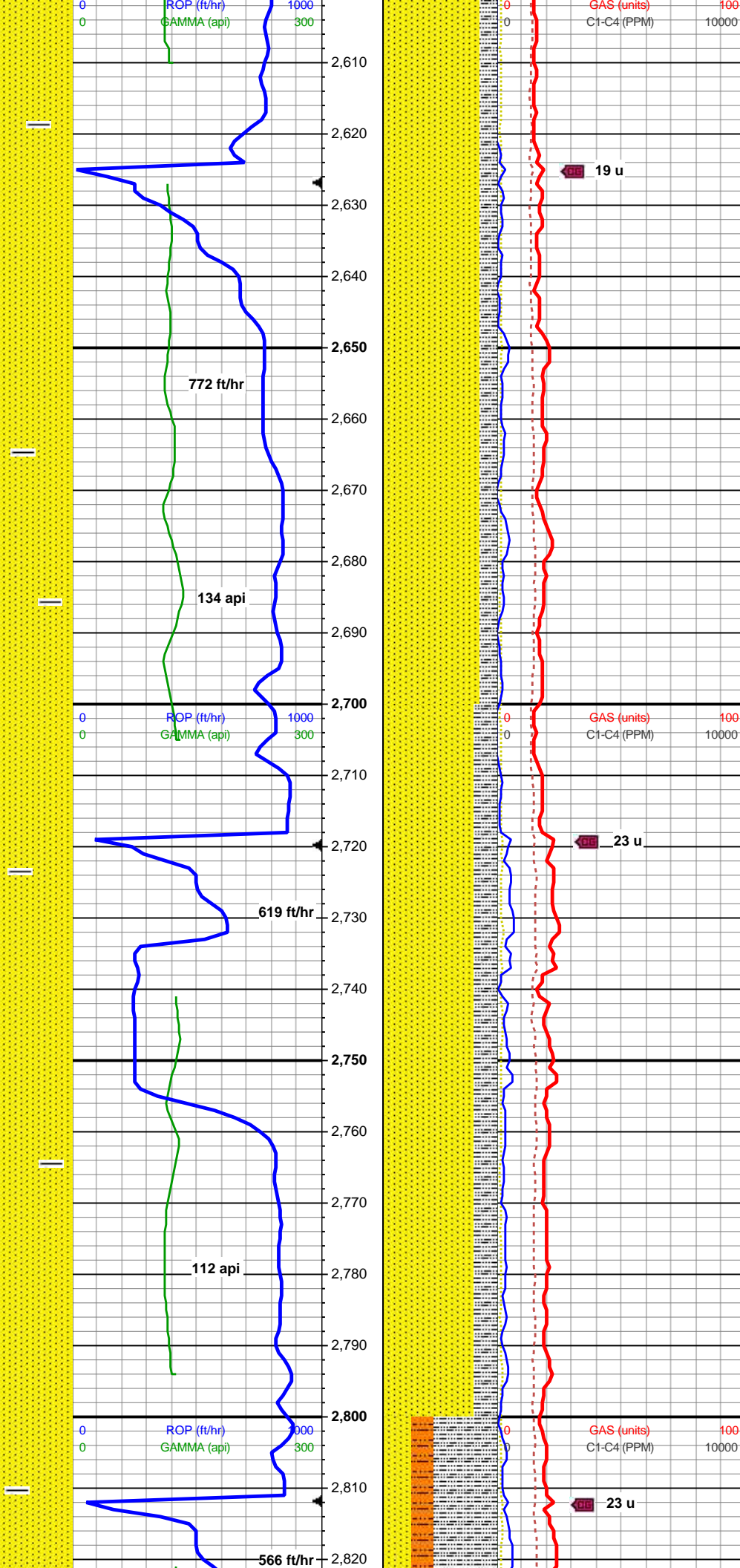
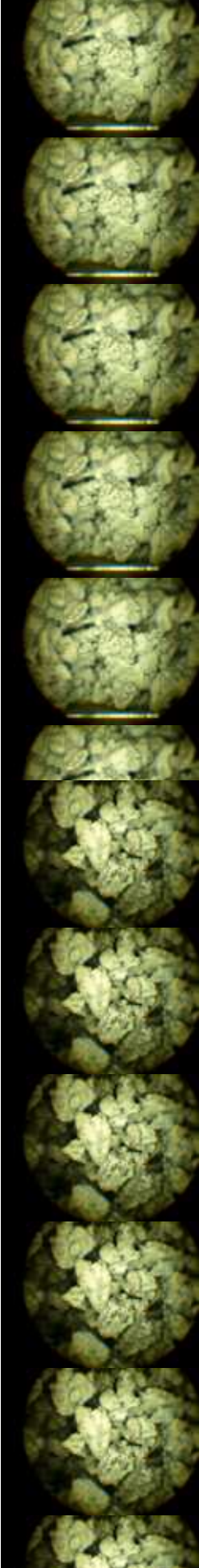
16u
C1: 3.9%
C2: 87.5%
C3: 0.0%
C4: 8.7%

20 u

80% SS: medgy, vf-f gr, mod sft-sft, sb blk-ly clus, ply cons, sb ang-ip sr, mod srt, cly cmt, arg mt, sl calc; 20% SLTY SH: med-drkgy, sb blk-ly-fis, mod hd-brit, arg, vfg sdy, sl calc

MD: 2,510'
TVD: 2,424.1'
Inclination: 21.32°
Azimuth: 219.12°
VS: 494.28'

MD: 2,603'



MD: 2,505'
TVD: 2,510.77'
Inclination: 21.19°
Azimuth: 220.94°
VS: 523.97'

MW 9.8 / VIS 57 IN
MW 9.8 / VIS 57 OUT

85% SS: medgy, vf-f gr, mod
sft-sft, sb blkly clus, ply cons, sb
ang-ip sr, mod srt, cly cmt, arg
mtx, sl calc; 15% SLTY SH:
med-drkgy, sb blkly-fis, mod
hd-brit, arg, vfg sdy, sl calc

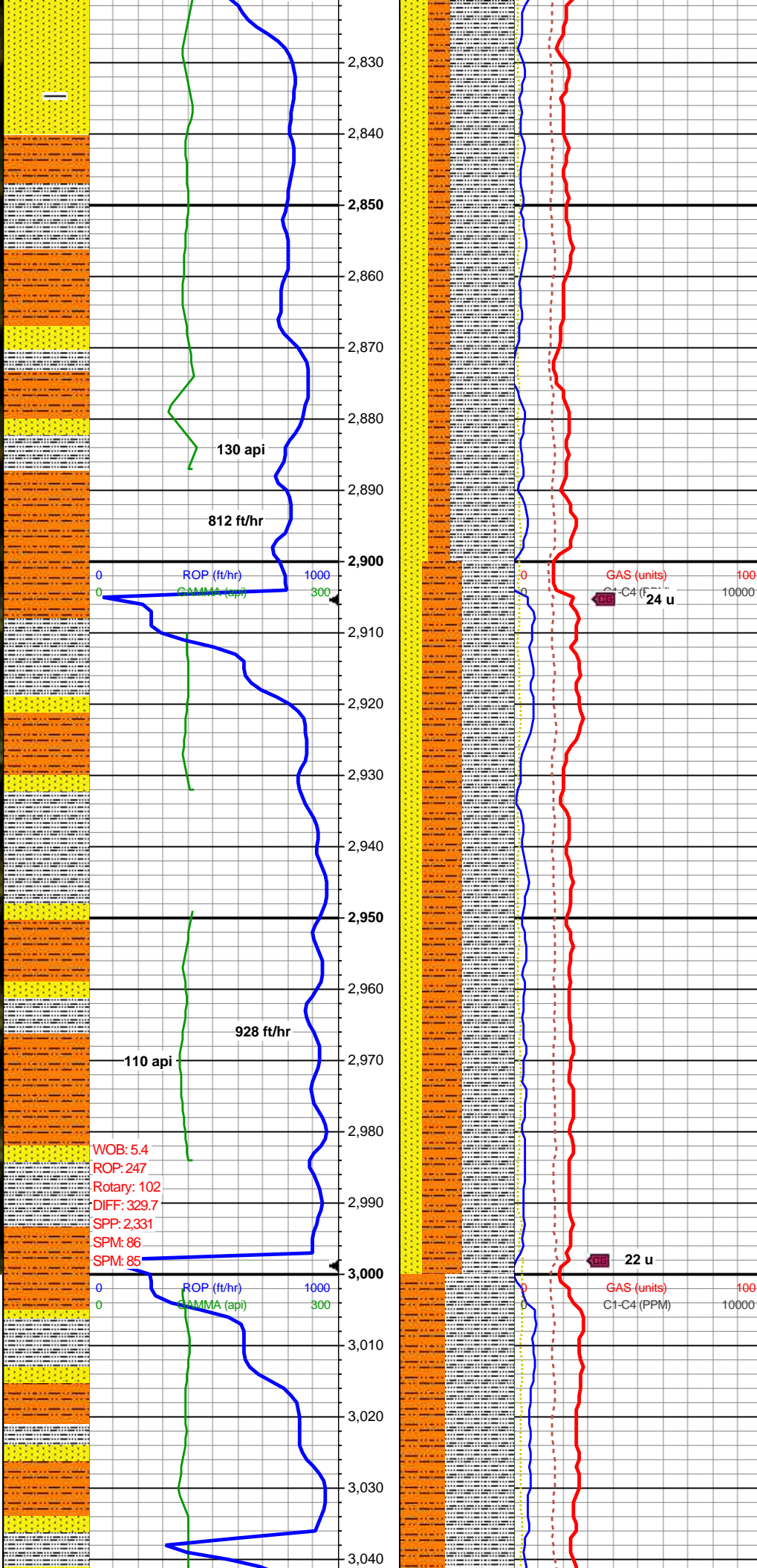
MD: 2,696'
TVD: 2,597.62'
Inclination: 20.72°
Azimuth: 221.42°
VS: 552.94'

MW 9.6+ / VIS 54 IN
MW 9.8 / VIS 57 OUT

MD: 2,789'
TVD: 2,684.41'
Inclination: 21.4°
Azimuth: 220.94°
VS: 582.05'

80% SS: medgy-sl gy/brn, vf-f gr,
mod sft-sft, sb blkly clus, ply cons,
sb ang-ip sr, mod srt, cly cmt, arg
mtx, sl calc; 20% SLTY SH:
med-drkgy, sb blkly-fis, mod
hd-brit, arg, vfg sdy, sl calc

MW 9.6+ / VIS 54 IN
MW 9.8 / VIS 57 OUT



MD: 2,882'
TVD: 2,771.1'
Inclination: 21.07°
Azimuth: 218.82°
VS: 611.75'

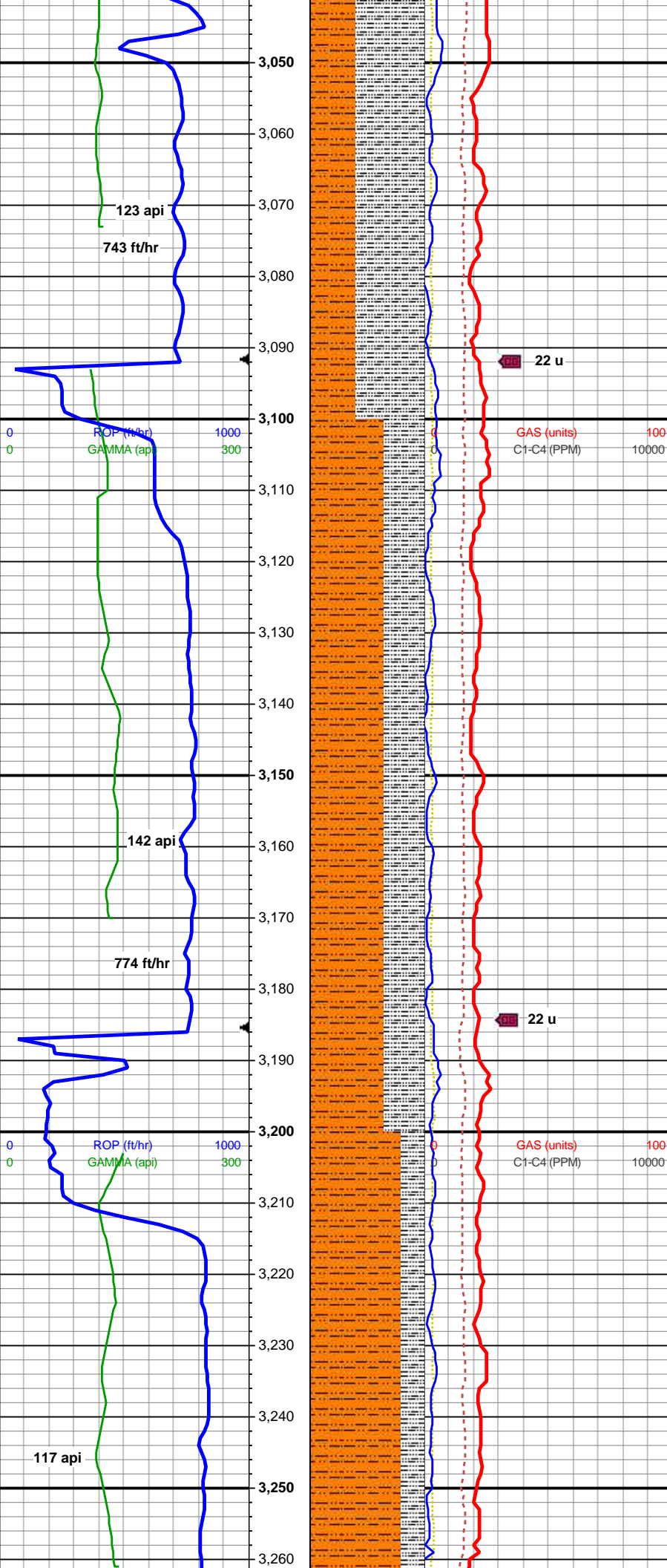
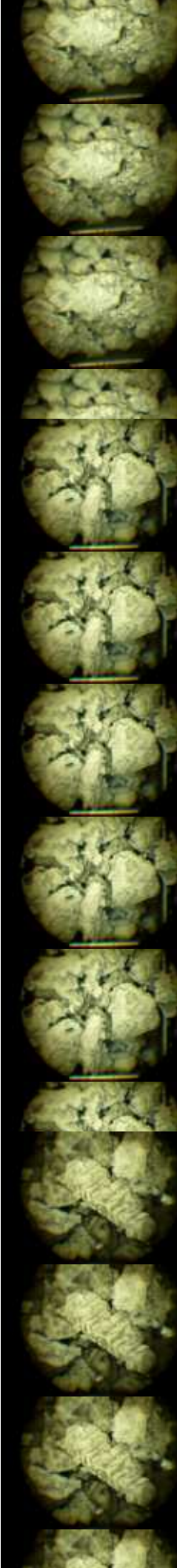
55% SLTY SH: drkgy-dk brn, sb
blky-fis, mod hd-brit, arg, vfg sdy,
sl calc; 25% SS: medgy, vf-f gr,
frm, sb blky clus, mod srt, arg cly
cmt, sl calc; 20% SHY SLTST:
lt-medgy, v sft-fri, sb blky-sb plty,
sl calc, rthy lstr, gritty-sm tex, aren
ip

MD: 2,975'
TVD: 2,857.83'
Inclination: 21.25°
Azimuth: 217.35°
VS: 641.84'

45% SLTY SH: drkgy-dk brn, sb
blky-fis, mod hd-brit, arg, vfg sdy,
sl calc; 35% SHY SLTST:
lt-medgy, v sft-fri, sb blky-sb plty,
sl calc, rthy lstr, gritty-sm tex, aren
ip; 20% SS: medgy, vf-f gr, frm, sb
blky clus, mod srt, arg cly cmt, sl
calc

MW 9.8 / VIS 52 IN
MW 9.6+ / VIS 52 OUT

WOB: 5.4
ROP: 247
Rotary: 102
DIFF: 329.7
SPP: 2,331
SPM: 86
SPM: 85



MD: 3,068'
TVD: 2,944.56'
Inclination: 21.06°
Azimuth: 214.95°
VS: 672.4'

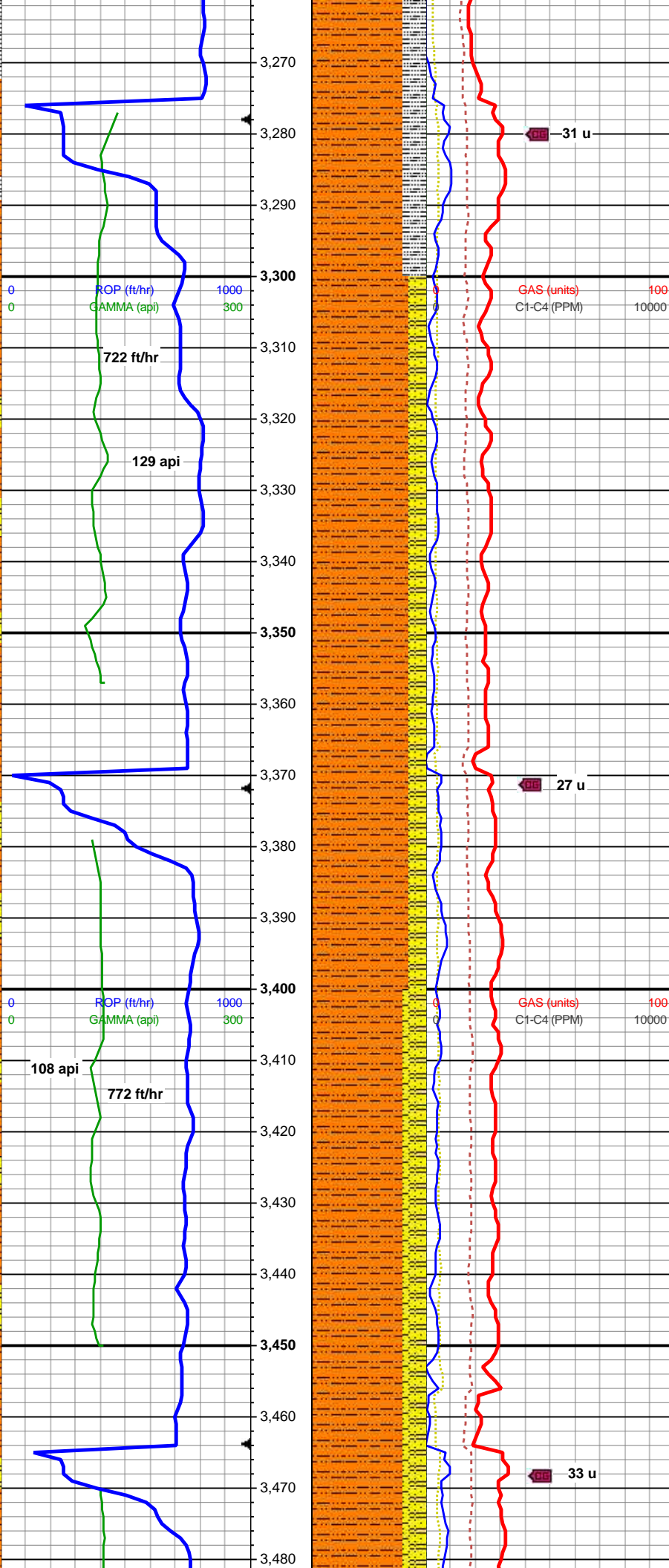
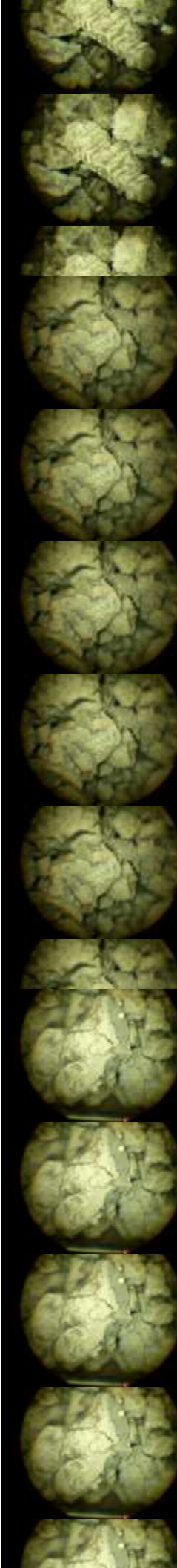
60% SLTY SH: drkgy-dk brn, sb
blky-fis, mod hd-brit, arg, vfg sdy,
sl calc; 40% SHY SLTST:
lt-medgy, v sft-fri, sb blky-sb plty,
sl calc, rthy lstr, gritty-sm tex, aren
ip

MD: 3,161'
TVD: 3,031.32'
Inclination: 21.17°
Azimuth: 212.54°
VS: 703.46'

65% SHY SLTST: med dk-dk gy,
sft, sb plty-sb rnd, rr calc; 35%
SLTY SH: dk gy, frm, sb plty-sb
rnd, v arg

MW 9.8 / VIS 52 IN
MW 9.6+ / VIS 52 OUT

MD: 3,254'
TVD: 3,118.17'
Inclination: 20.73°
Azimuth: 211.59°
VS: 734.65'



80% SHY SLTST: med dk-dk gy,
sft, sb plty-sb rnd, rr calc; 20%
SLTY SH: dk gy, frm, sb plty-sb
rnd, v arg

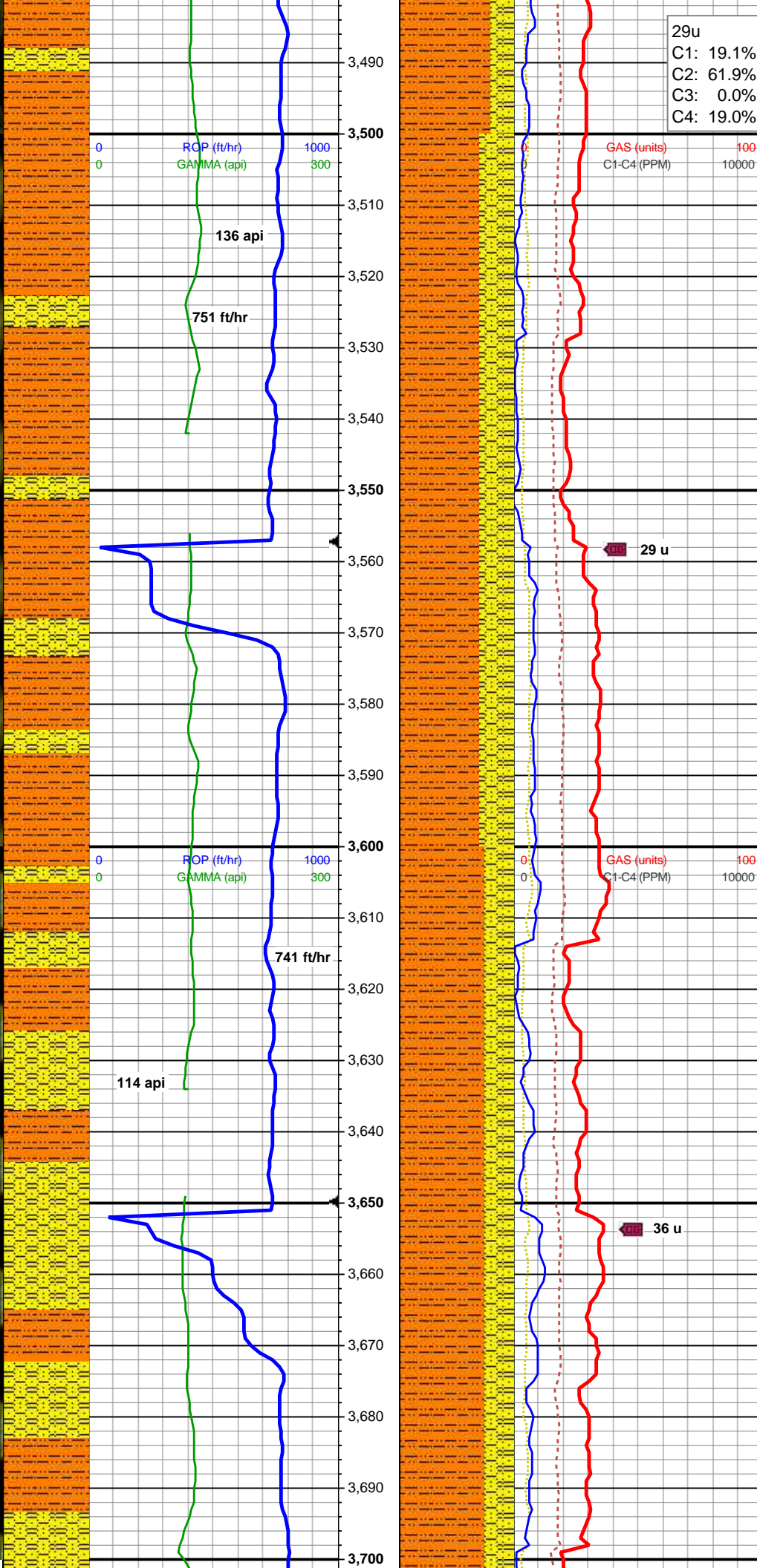
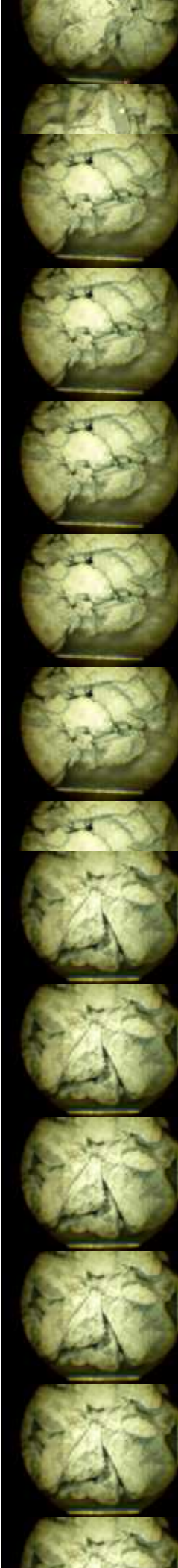
MW 9.7+ / VIS 51 IN
MW 9.7+ / VIS 51 OUT

MD: 3,347'
TVD: 3,204.96'
Inclination: 21.39°
Azimuth: 211.83°
VS: 766.06'

85% SHY SLTST: medgy, occ
drkgy, gy/brn, v sft-fri, sb blkgy-sb
plty, sl calc, rthy lstr, gritty-sm tex,
gr sdy, grdg shy-sdy; 15% SHY
SS: sl incrg abnt sd grns in mtx,
medgy, gy/brn, vfg, frm, sb blkgy,
mod srt, p cmt, lse cons, arg cly
mtx, sl calc

MD: 3,440'
TVD: 3,291.64'
Inclination: 21.09°
Azimuth: 212.32°
VS: 797.66'

80% SHY SLTST: medgy, occ
drkgy, gy/brn, v sft-fri, sb blkgy-sb
plty, sl calc, rthy lstr, gritty-sm tex,
gr sdy, grdg shy-sdy; 15% SHY
SS: sl incrg abnt sd grns in mtx,
medgy, gy/brn, vfg, frm, sb blkgy,
mod srt, p cmt, lse cons, arg cly
mtx, sl calc



plty, sl calc, rthy lstr, gritty-sm tex,
gr sdy, grdg shy-sdy; 20% SHY
SS: sl incrg abnt sd grns in mtx,
medgy, gy/brn, vfg, frm, sb blkly,
mod srt, p cmt, lse cons, arg cly
mtx, sl calc

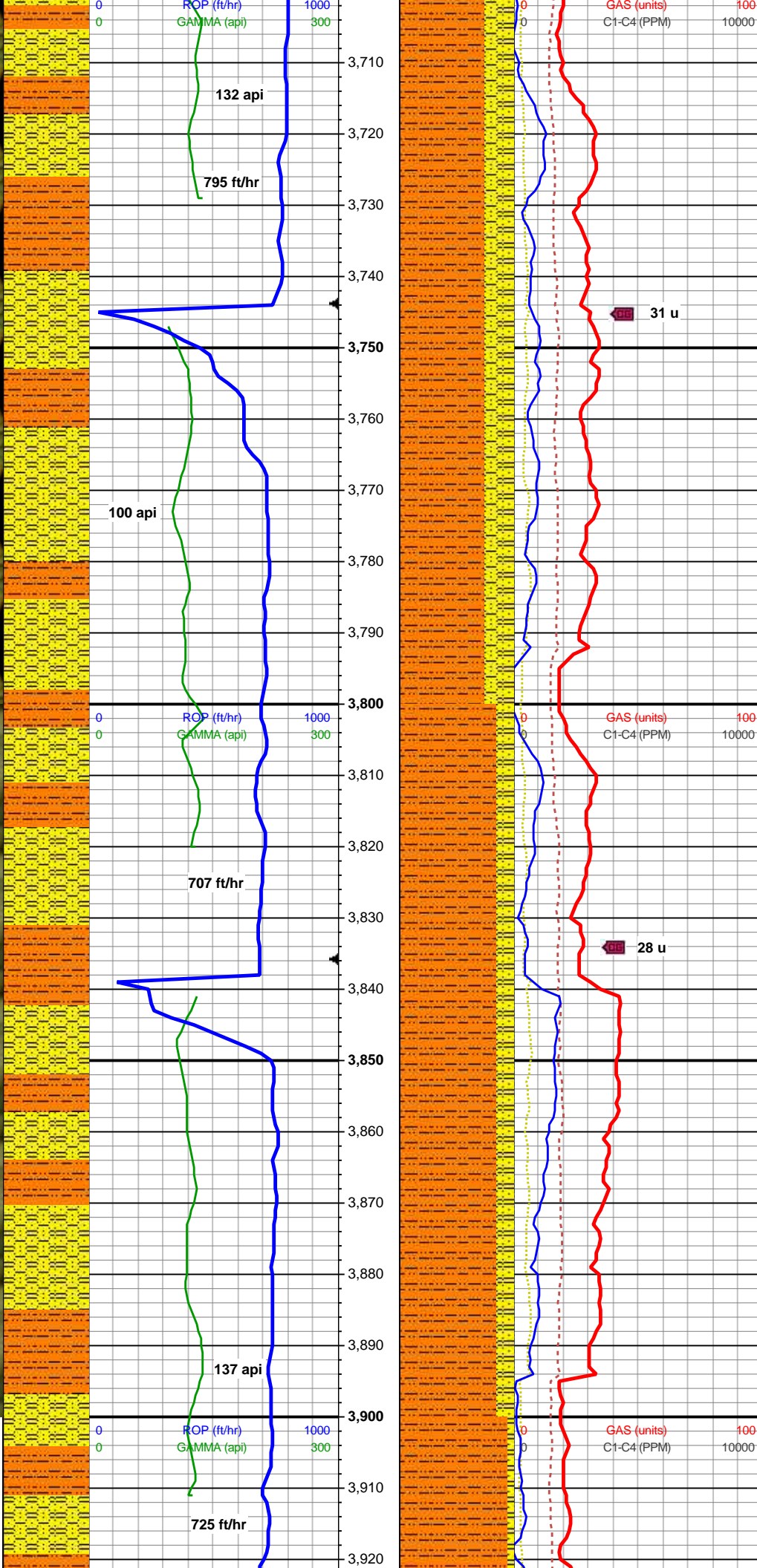
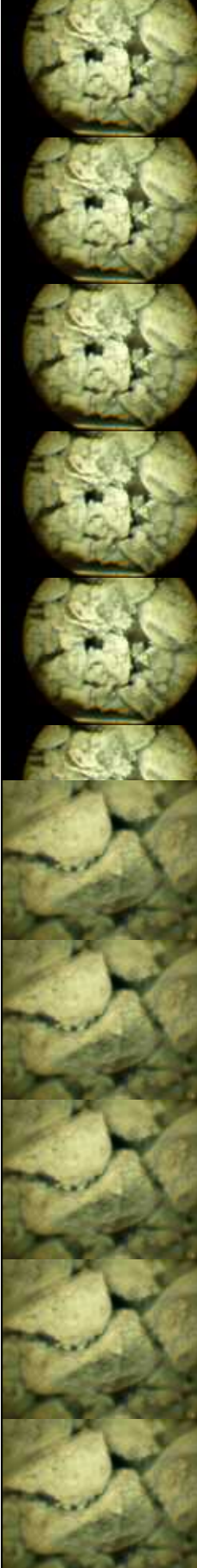
MW 9.7+ / VIS 51 IN
MW 9.7+ / VIS 51 OUT

MD: 3,533'
TVD: 3,378.39'
Inclination: 21.15°
Azimuth: 213.27°
VS: 828.93'

70% SHY SLTST: medgy, occ
drkgy, gy/brn, v sft-fri, sb blkly-sb
plty, sl calc, rthy lstr, gritty-sm tex,
gr sdy, grdg shy-sdy; 30% SHY
SS: sl incrg abnt sd grns in mtx,
medgy, gy/brn, vfg, frm, sb blkly,
mod srt, p cmt, lse cons, arg cly
mtx, sl calc

MD: 3,626'
TVD: 3,465.07'
Inclination: 21.35°
Azimuth: 212.69°
VS: 860.35'

75% SHY SLTST: medgy, occ
drkgy, gy/brn, v sft-fri, sb blkly-sb
plty, sl calc, rthy lstr, gritty-sm tex,
gr sdy, grdg shy-sdy; 25% SHY
SS: sl incrg abnt sd grns in mtx,
medgy, gy/brn, vfg, frm, sb blkly,
mod srt, p cmt, lse cons, arg cly
mtx, sl calc



MW 9.7+ / VIS 51 IN
MW 9.7+ / VIS 51 OUT

MD: 3,719'
TVD: 3,551.73'
Inclination: 21.21°
Azimuth: 213.4°
VS: 891.8'

75% SHY SLTST: medgy, occ drkgy, gy/brn, v sft-fri, sb blkly-sb plty, sl calc, rthy lstr, gritty-sm tex, gr sdy, grdg shy-sdy; 25% SHY SS: sl incrg abnt sd grns in mtx, medgy, gy/brn, vfg, frm, sb blkly, mod srt, p cmt, lse cons, arg cly mtx, sl calc

MD: 3,812'
TVD: 3,638.49'
Inclination: 21.02°
Azimuth: 212.19°
VS: 923.07'

85% SHY SLTST: med gy-dk gy brn, mot, hrd, sb blkly-sb plty, variably calc, rthy, slty tex, f gr sd, grdg shy-sdy; 15% SHY SS: lt gy brn, vfg, frm, sb blkly, mod srt, arg cly mtx

MD: 3,905'
TVD: 3,725.52'
Inclination: 20.26°
Azimuth: 211.54°
VS: 953.85'



WOB: 18.4
ROP: 680.2
Rotary: 100
DIFF: 754
SPP: 3,033
SPM: 85
SPM: 85

ROP (ft/hr) 1900
GAMMA (api) 300

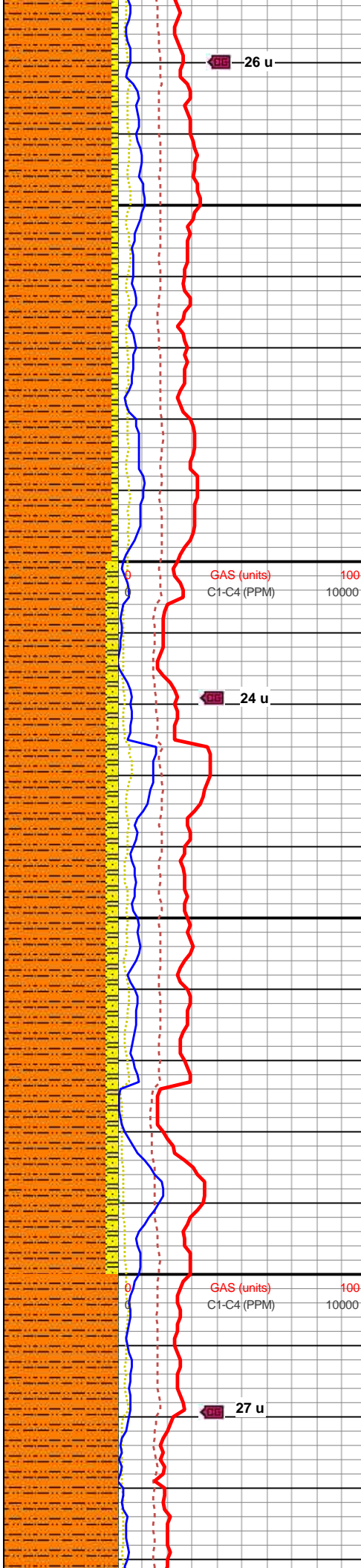
142 api

678 ft/hr

111 api

605 ft/hr

ROP (ft/hr) 1900
GAMMA (api) 300



26 u

24 u

27 u

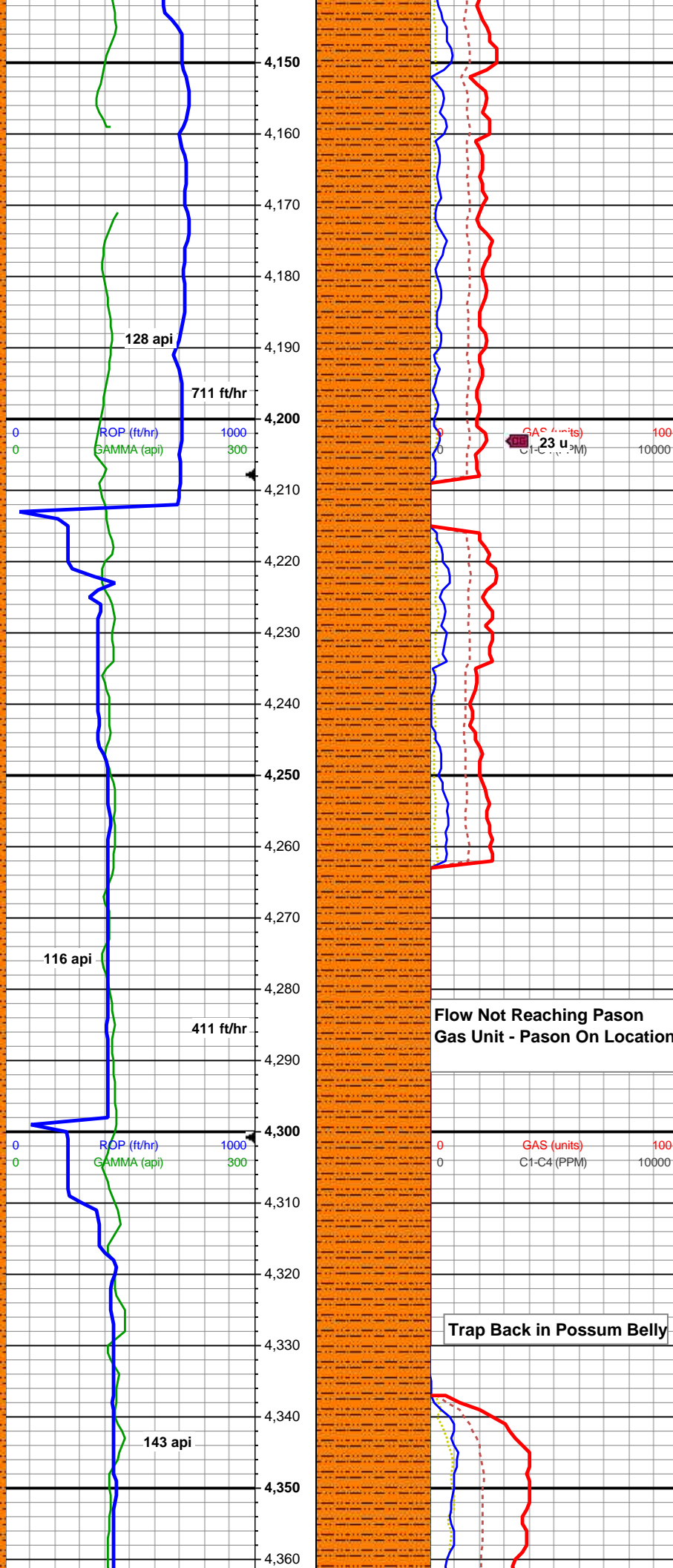
95% SHY SLTST: med gy-dk gy
brn, mot-stri, hrd, blk- plty, non
calc, rthy, slty tex, f gr sd, grdg
shy-sdy; 5% SHY SS: lt gy brn, vfg
frm, sb blk, mod srt, arg cly mtx

MD: 3,998'
TVD: 3,812.87'
Inclination: 19.88°
Azimuth: 214.34°
VS: 983.61'

MD: 4,091'
TVD: 3,900.19'
Inclination: 20.4°
Azimuth: 217.24°
VS: 1,012.84'

90% SHY SLTST: med gy-dk gy
brn, mot-stri, hrd, blk- plty, non
calc, rthy, slty tex, f gr sd, grdg
shy-sdy; 10% SHY SS: lt gy brn,
vfg, frm, sb blk, mod srt, arg cly
mtx

MW 9.7+ / VIS 50 IN
MW 9.7 / VIS 51 OUT



100% SHY SLTST: med dk gy-gy
brn, frm-hd, blk-ang, non-calc,
rthy, slty-sm tex, occ vfg sd, grdg
sh, v arg

MW 9.7+ / VIS 50 IN
MW 9.7 / VIS 51 OUT

MD: 4,277'
TVD: 4,074'
Inclination: 21.3°
Azimuth: 217.29°
VS: 1,072.59'

Flow Not Reaching Pason
Gas Unit - Pason On Location

80% SLTY SH: drkgy, gy/brn, sb
plty-sb fis, sft-sl frm, arg-slty, sl
calc; 20% SHY SLTST: drkgy-dk
brn, medgy, sft, fri-occ brit, sb
blk-ys-fis, calc, rthy lstr, occ vfg sd,
gritty tex, grdg sh

Trap Back in Possum Belly

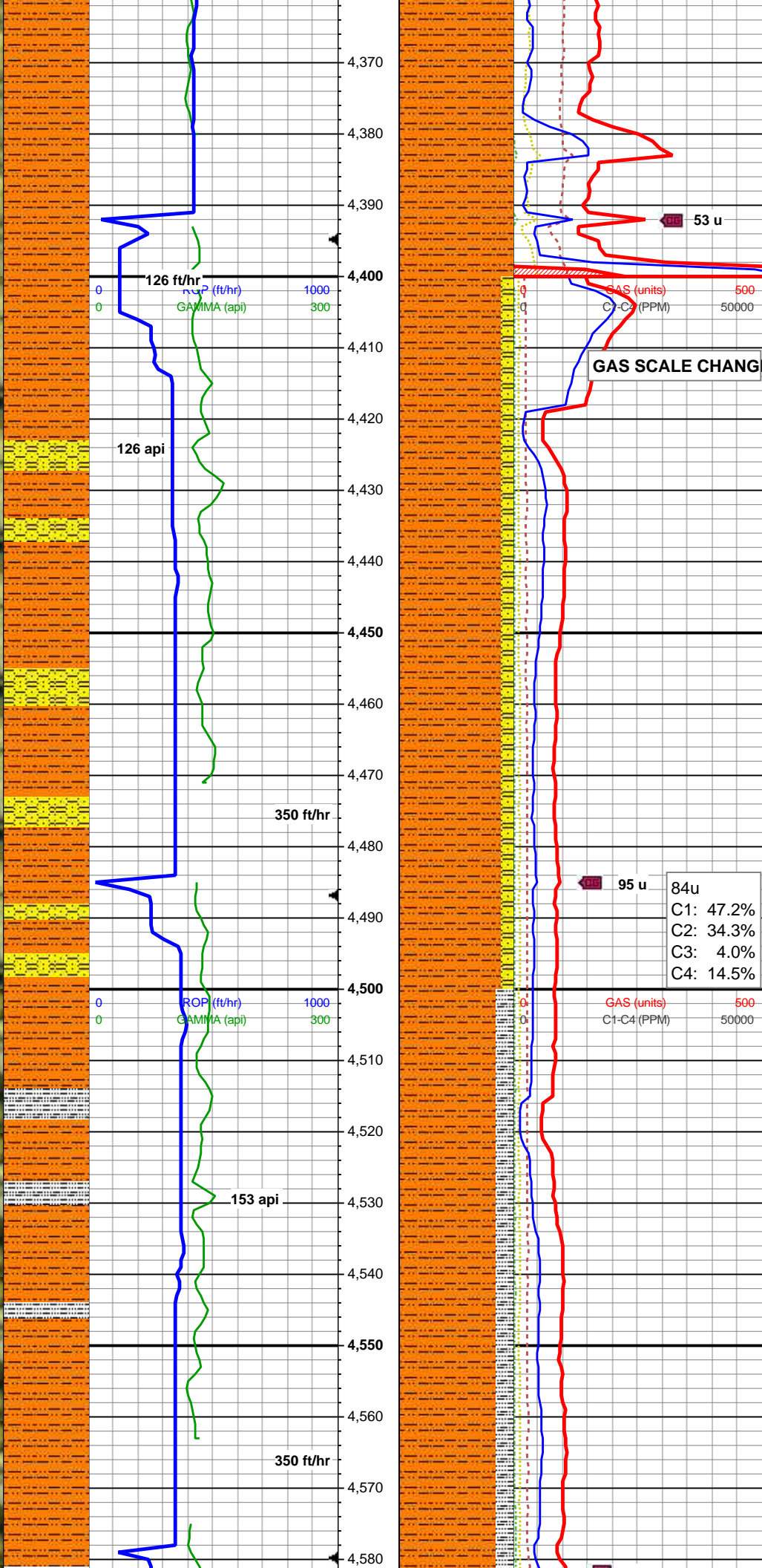
128 api

711 ft/hr

116 api

411 ft/hr

143 api



MD: 4,370'
TVD: 4,160.7'
Inclination: 21.15°
Azimuth: 211.95°
VS: 1,103.58'

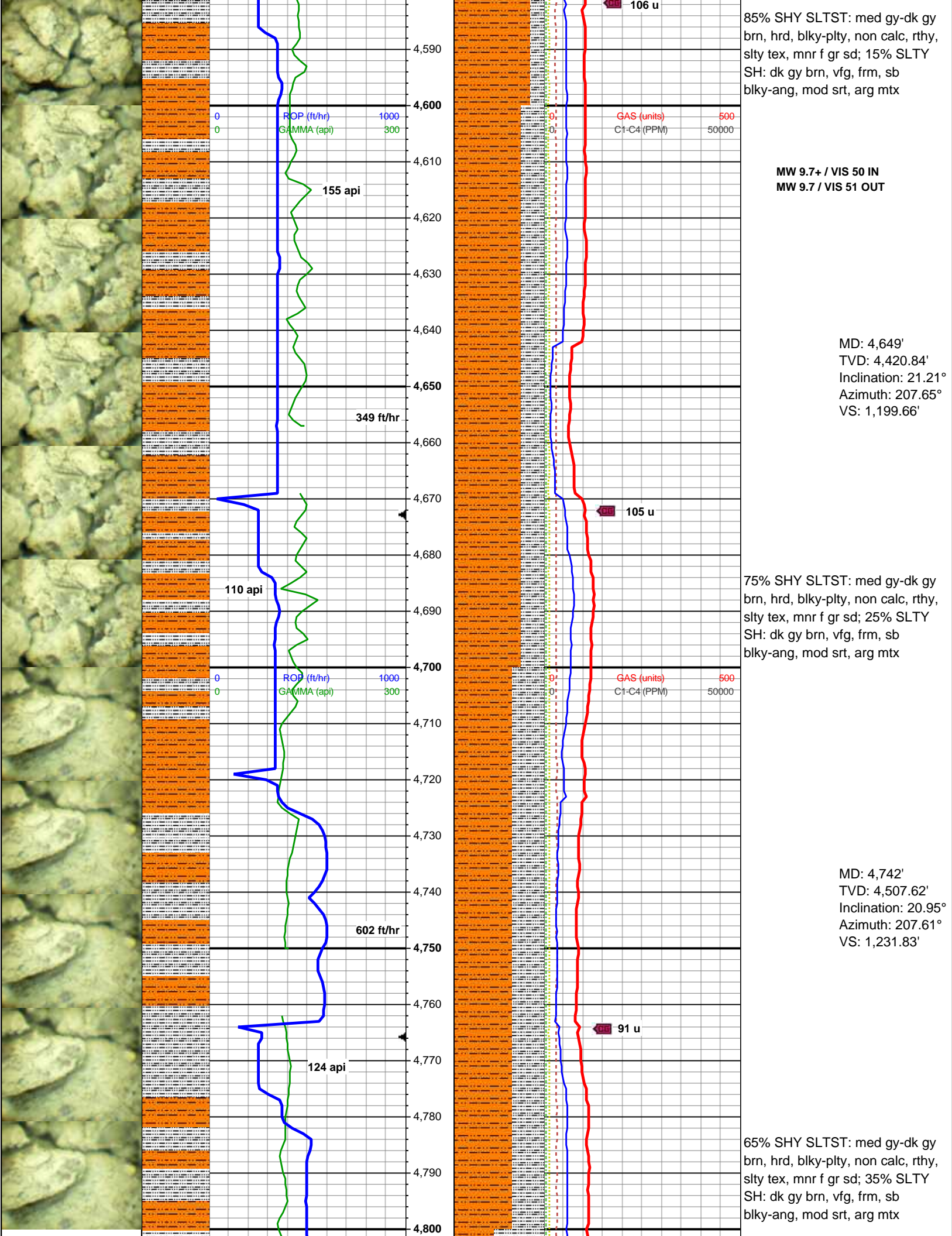
100% SHY SLTST: med dk gy-gy
brn, frm-hd, fiss ip, sb blk-ang,
non-calc, rthy, slty-sm tex, occ vfg
sd, grdg sh, v arg

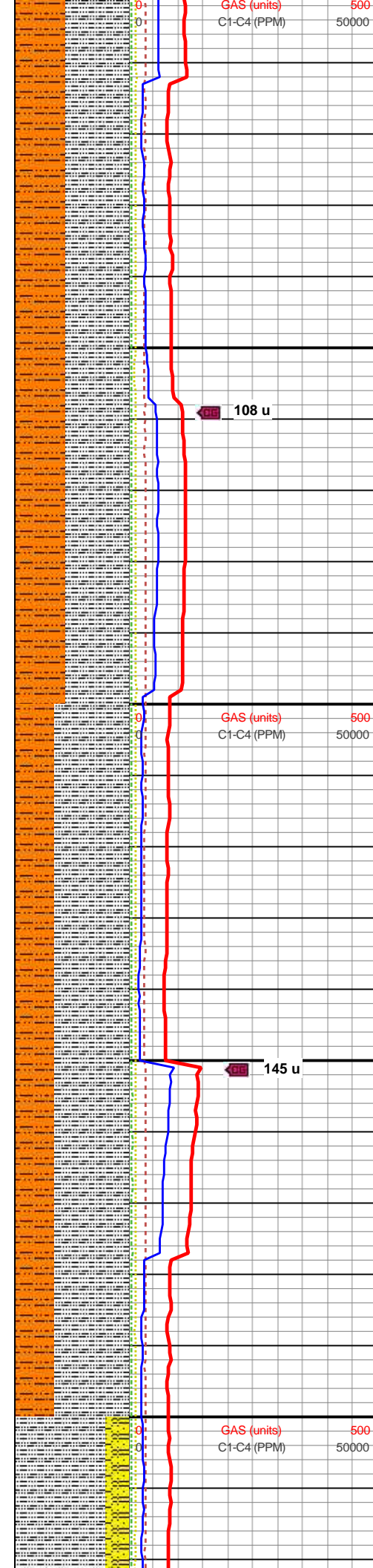
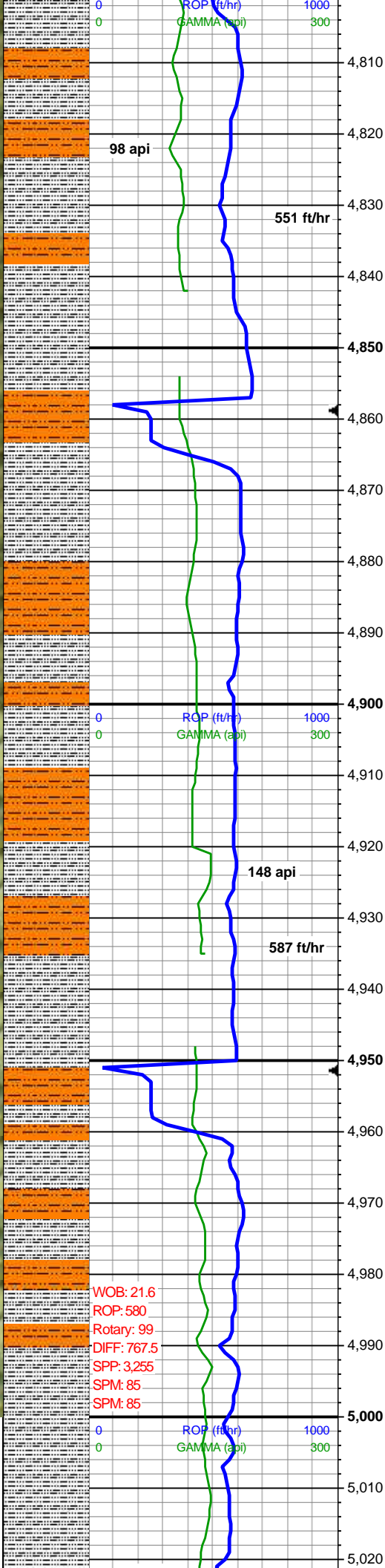
MW 9.7+ / VIS 50 IN
MW 9.7 / VIS 51 OUT

MD: 4,463'
TVD: 4,247.44'
Inclination: 21.15°
Azimuth: 209.76°
VS: 1,135.28'

90% SHY SLTST: med gy-dk gy
brn, hrd, blk- plty, non calc, rthy,
slty tex, f gr sd; 10% SHY SS: lt gy
brn, vfg, frm, sb blk-ang, mod srt,
arg cly mtx

MD: 4,556'
TVD: 4,334.15'
Inclination: 21.24°
Azimuth: 208.65°
VS: 1,167.36'





MW 9.6+ / VIS 46 IN
MW 9.7 / VIS 46 OUT

MD: 4,835'
TVD: 4,594.4'
Inclination: 21.19°
Azimuth: 208.44°
VS: 1,263.93'

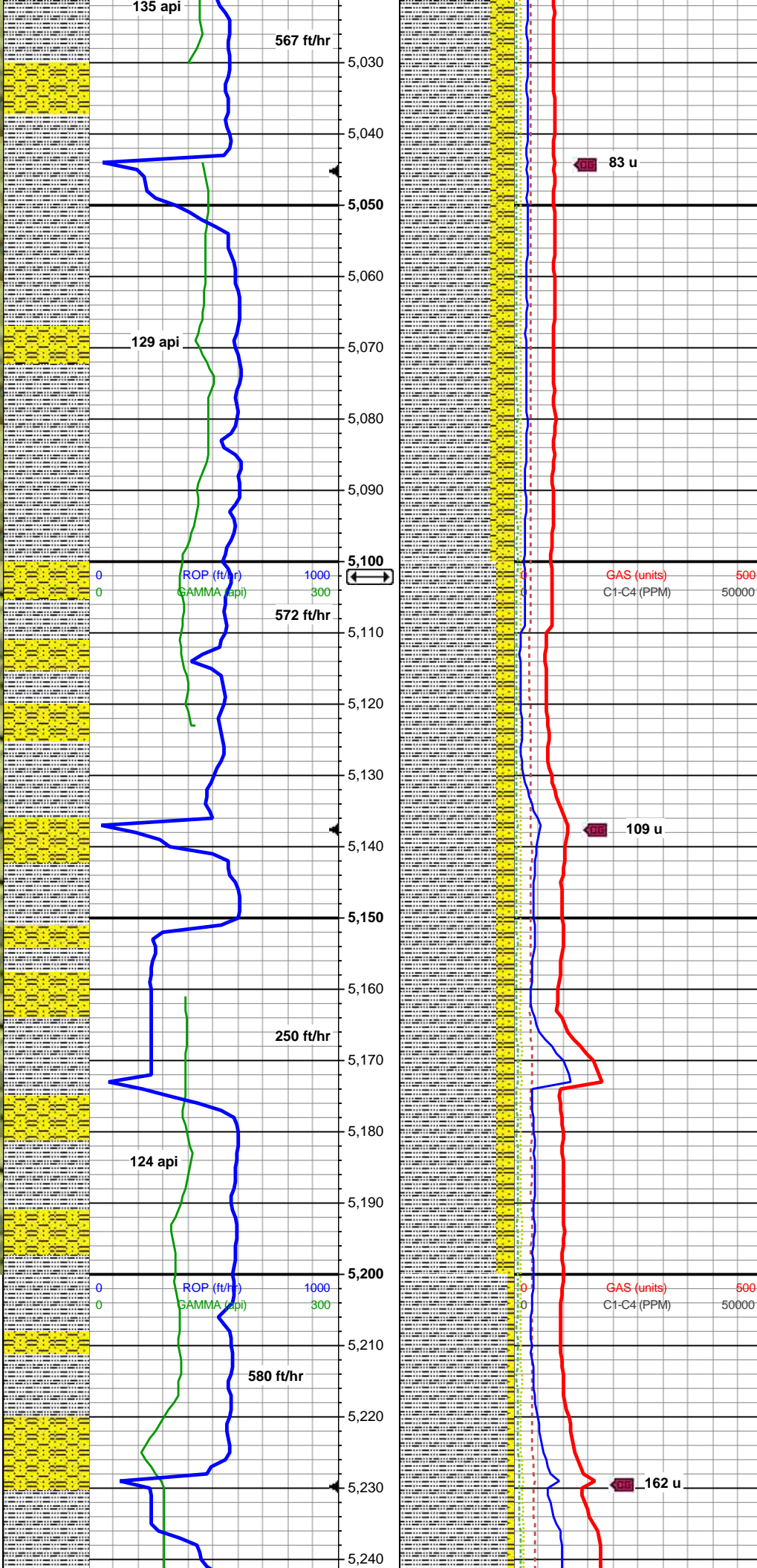
55% SLTY SH: dk gy brn, vfg,
frm-hrd, sb blk-y-sb rnd, mod srt,
arg mtx, non-calc; 45% SHY
SLTST: med-dk gy brn, stri-mot,
hrd, blk-y, non-calc, rthy, slty tex

MD: 4,928'
TVD: 4,681.12'
Inclination: 21.18°
Azimuth: 210.63°
VS: 1,295.93'

65% SLTY SH: dk gy brn, vfg,
frm-hrd, sb blk-y-sb rnd, mod srt,
arg mtx, non-calc; 35% SHY
SLTST: med-dk gy brn, stri-mot,
hrd, blk-y, non-calc, rthy, slty tex

MW 9.6+ / VIS 46 IN
MW 9.7 / VIS 46 OUT

MD: 5,021'



MD: 5,021'
TVD: 4,767.95'
Inclination: 20.79°
Azimuth: 212.77°
VS: 1,327.23'

80% SLTY SH: dk gy brn, vfg,
frm-hrd, sb blk-y-rnd, mod srt, arg
mtx, non-calc; 20% SHY SS:
lt-med gy brn, stri, sft-frm, blk-y,
non-calc, rthy, slty tex

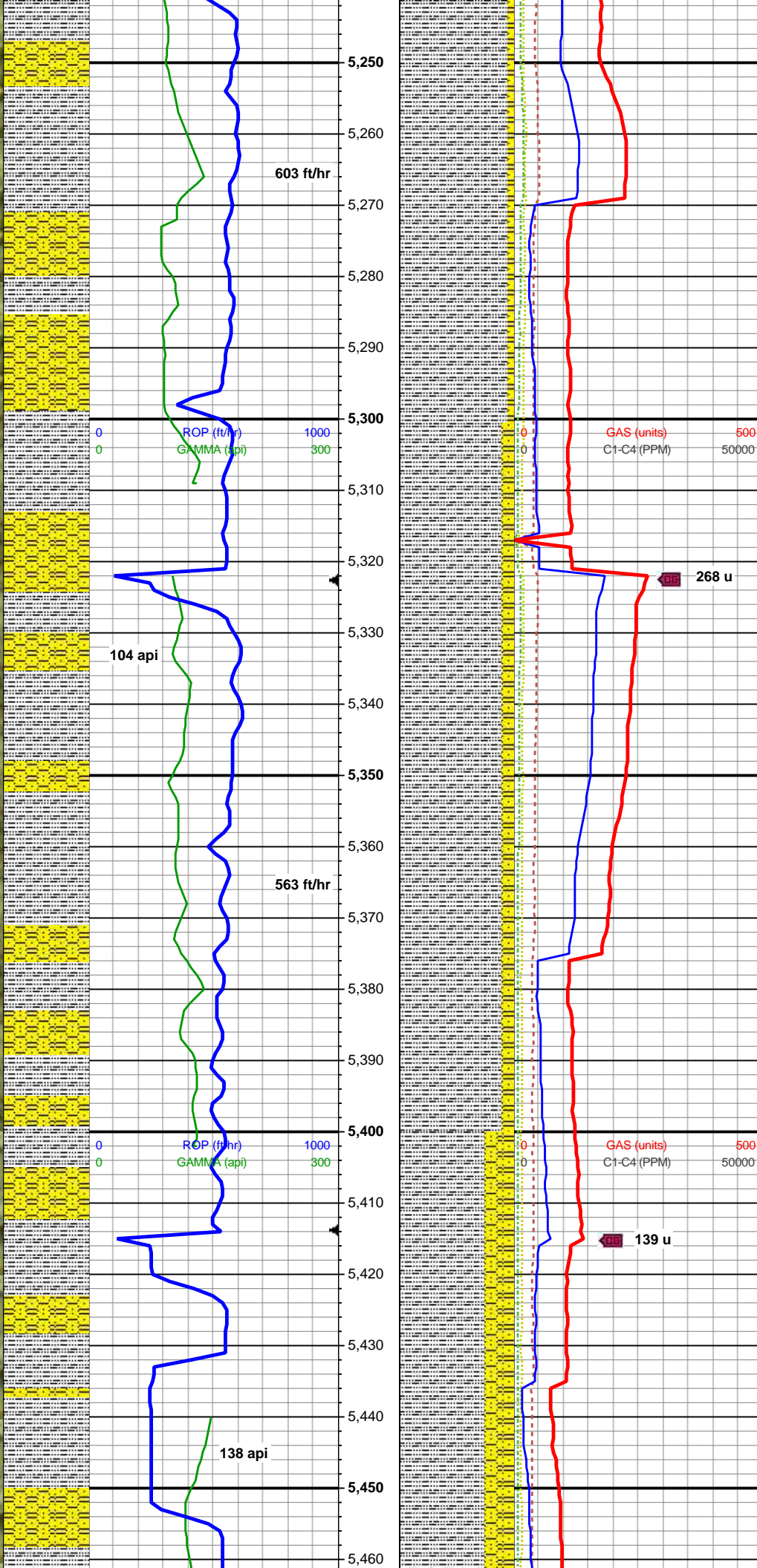
Sussex/Shannon Top
5101' MD / 4843' TVD

MD: 5,113'
TVD: 4,853.94'
Inclination: 20.87°
Azimuth: 215.48°
VS: 1,357.48'

85% SLTY SH: dk gy brn, vfg,
frm-hrd, sb blk-y-rnd, mod srt, arg
mtx, non-calc; 15% SHY SS:
lt-med gy brn, stri, sft-frm, blk-y,
non-calc, rthy, slty tex

MW 9.6+ / VIS 46 IN
MW 9.7 / VIS 46 OUT

MD: 5,206'
TVD: 4,940.76'
Inclination: 21.14°
Azimuth: 215.48°
VS: 1,388'



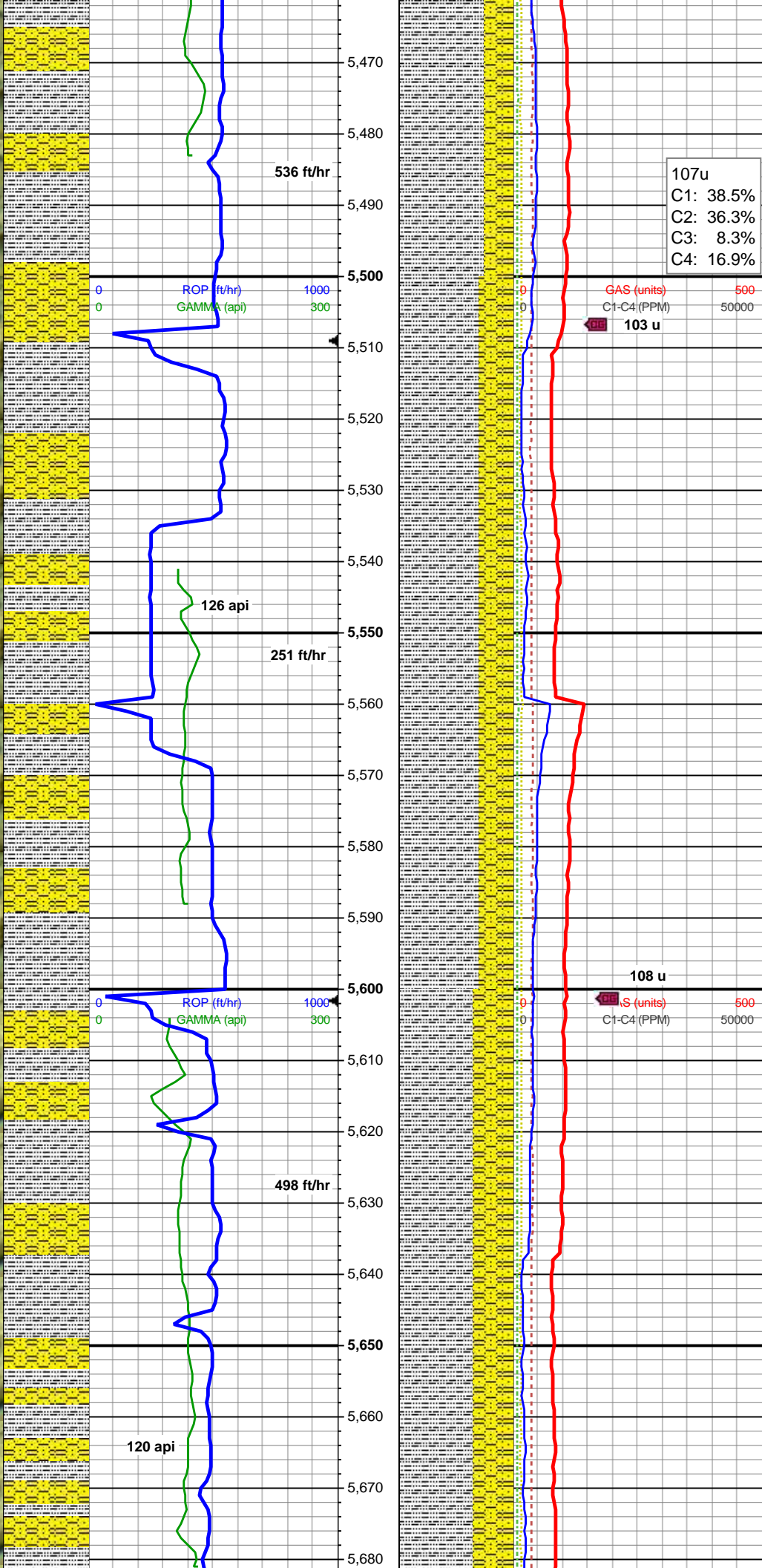
95% SLTY SH: dk gy brn, vfg, frm-hrd, sb blk-y-rnd, mod srt, arg mtz, non-calc; 5% SHY SS: lt-med gy brn, stri, sft-frm, blk-y, non-calc, rthy, slty tex

MD: 5,299'
TVD: 5,027.5'
Inclination: 21.13°
Azimuth: 214.41°
VS: 1,418.82'

MD: 5,392'
TVD: 5,114.27'
Inclination: 21.08°
Azimuth: 210.59°
VS: 1,450.12'

90% SLTY SH: dk gy brn, vfg, frm-hrd, sb blk-y-rnd, mod srt, arg mtz, non-calc; 10% SHY SS: lt-med gy brn, stri, sft-frm, blk-y, non-calc, rthy, slty tex

MW 9.6 / VIS 48 IN
MW 9.6+ / VIS 50 OUT



MD: 5,485'
TVD: 5,201.06'
Inclination: 21.05°
Azimuth: 208.47°
VS: 1,481.95'

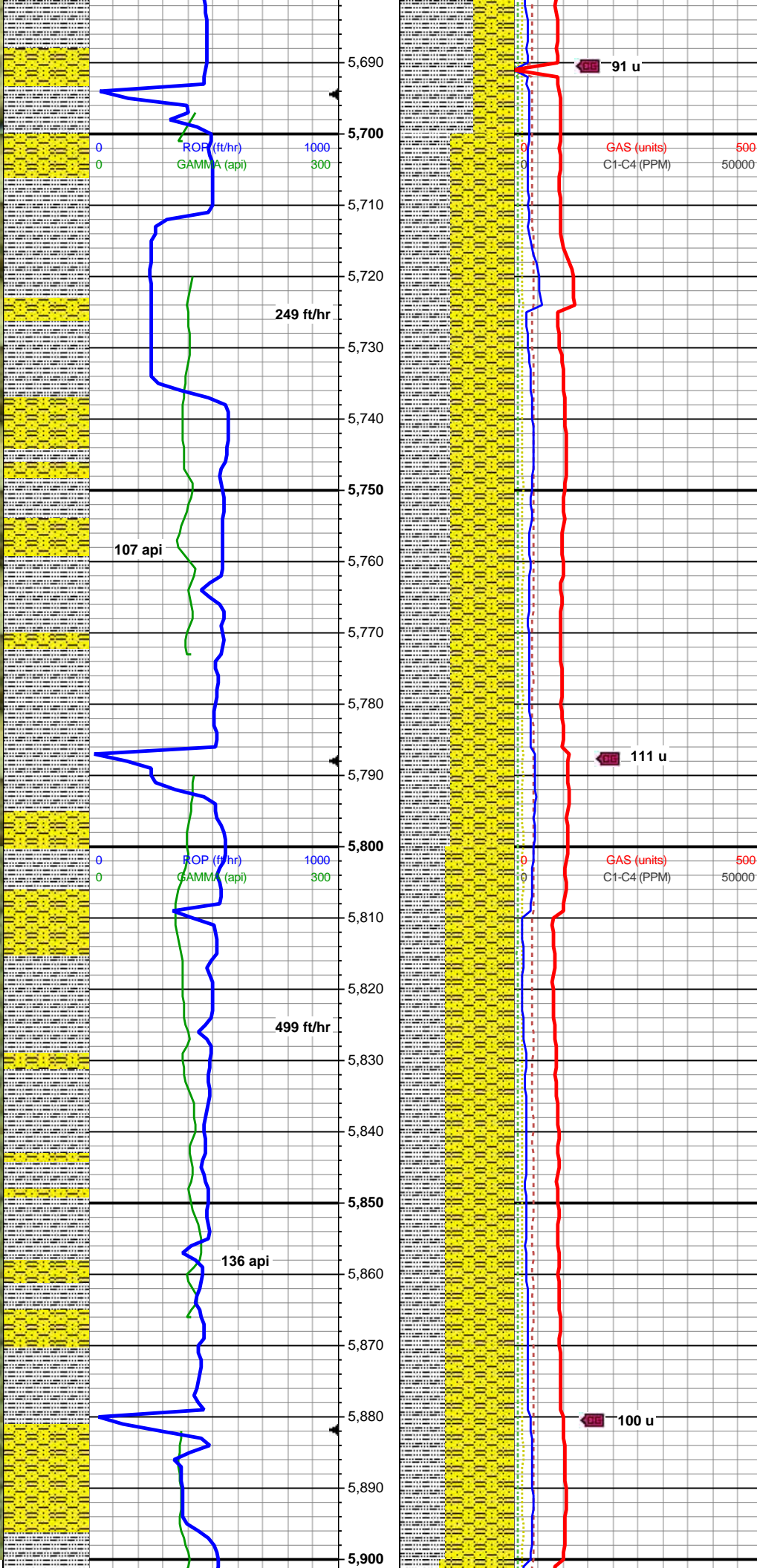
75% SLTY SH: dk gy brn, tr lt brn, vfg, frm-sl hrd, sb blk-yrnd, rr sb ang, mod srt, arg mt, mod calc;
25% SHY SS: lt gr brn-offwht, frm, blk-ang, arg mt, non-calc

MD: 5,578'
TVD: 5,287.77'
Inclination: 21.33°
Azimuth: 209.78°
VS: 1,514.03'

70% SLTY SH: dk gy brn, vfg, frm-sl hrd, sb blk-yrnd, rr sb ang, mod srt, arg mt, mod calc; 30% SHY SS: lt gr, sft, uncon, rnd-sb blk, arg mt, sl calc

MW 9.6 / VIS 48 IN
MW 9.6+ / VIS 50 OUT

MD: 5,671'
TVD: 5,374.45'
Inclination: 21.17°
Azimuth: 213.4°
VS: 1,545.72'



65% SLTY SH: dk gy brn, vfg, frm-sl hrd, sb blk-yrnd, rr sb ang, mod srt, arg mtx, mod calc; 35% SHY SS: lt gr, sft, uncons, rnd-sb blk-yr, arg mtx, sl calc

MW 9.6+ / VIS 50 IN
MW 9.6+ / VIS 50 OUT

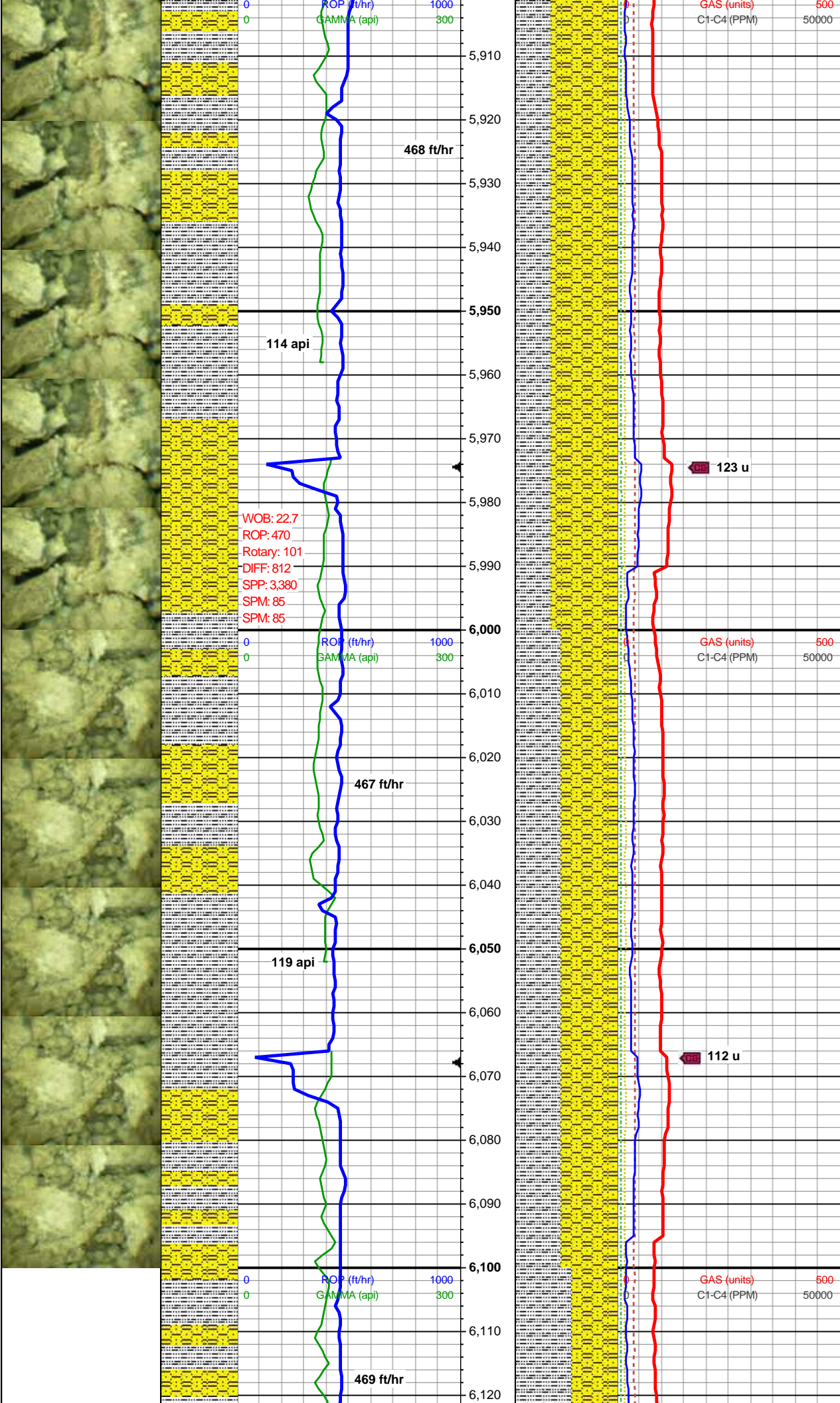
MD: 5,764'
TVD: 5,461.14'
Inclination: 21.27°
Azimuth: 216.11°
VS: 1,576.7'

55% SHY SS: lt gr, sft, uncons, rnd-sb blk-yr, arg mtx, sl calc; 45% SLTY SH: dk gy brn, vfg, frm-sl hrd, sb blk-yrnd, rr sb ang, mod srt, arg mtx, mod calc

MW 9.6+ / VIS 50 IN
MW 9.6+ / VIS 50 OUT

MD: 5,857'
TVD: 5,547.84'
Inclination: 21.18°
Azimuth: 217.25°
VS: 1,607.24'

60% SHY SS: lt gr, sft, uncons, rnd-sb blk-yr, arg mtx, sl calc; 40% SLTY SH: dk gy brn, vfg, frm-sl hrd, sb blk-yrnd, rr sb ang, mod srt, arg mtx, mod calc



MW 9.6 / VIS 50 IN
MW 9.6 / VIS 50 OUT

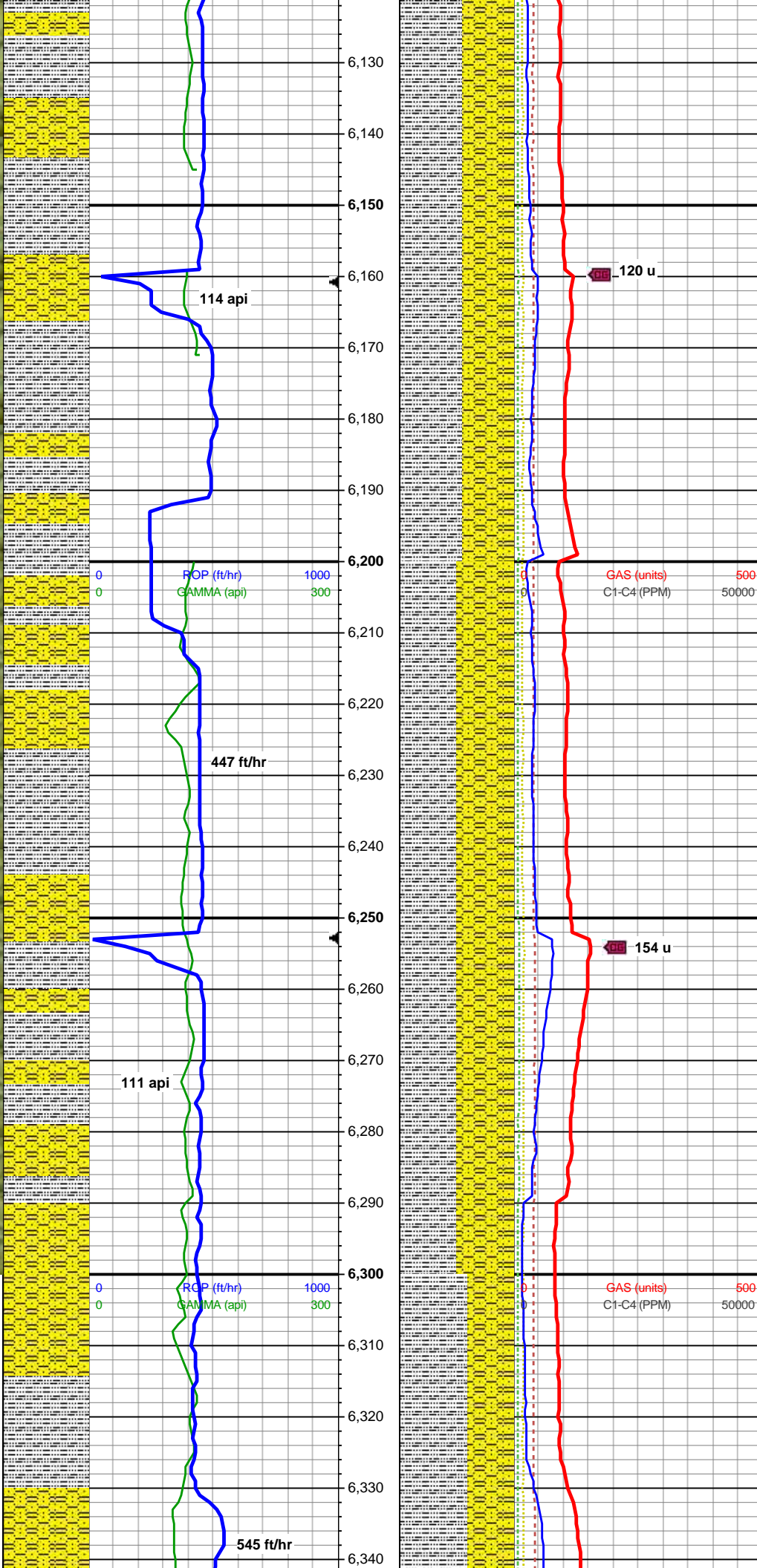
MD: 5,950'
TVD: 5,634.55'
Inclination: 21.18°
Azimuth: 218.86°
VS: 1,637.36'

65% SHY SS: lt gr, sft, unconc,
rnd-sb blk, arg mtx, sl calc; 35%
SLTY SH: dk gy brn, vfg, frm-sl
hrd, sb blk-rnd, rr sb ang, mod
srt, arg mtx, mod calc

MW 9.6 / VIS 49 IN
MW 9.6 / VIS 50 OUT

MD: 6,044'
TVD: 5,722.22'
Inclination: 21.15°
Azimuth: 220.7°
VS: 1,667.31'

55% SHY SS: lt gr, sft, unconc,
rnd-sb blk, arg mtx, sl calc; 45%
SLTY SH: dk gy brn, vfg, frm-sl
hrd, sb blk-rnd, rr sb ang, mod
srt, arg mtx, mod calc

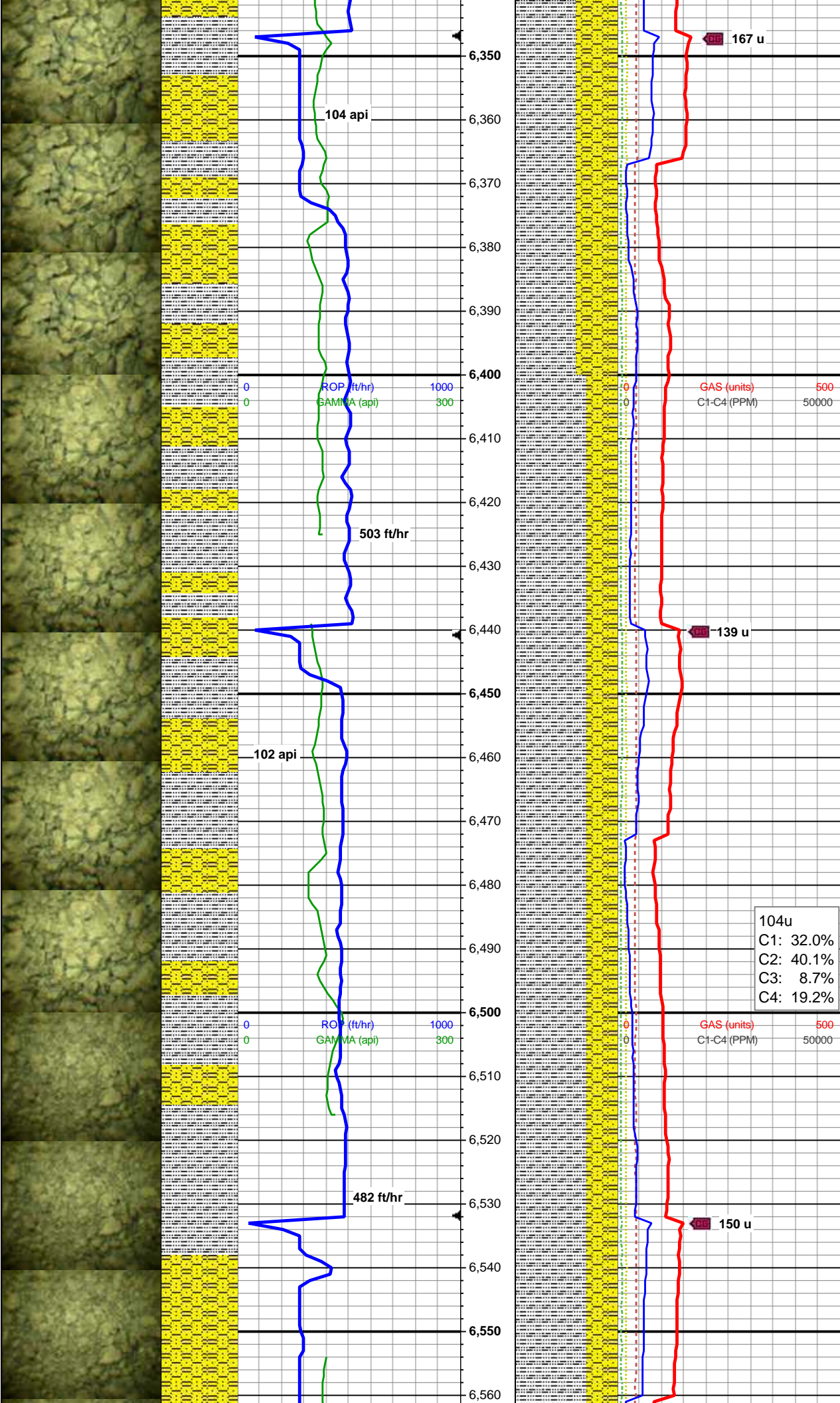


MD: 6,137'
TVD: 5,808.99'
Inclination: 21.02°
Azimuth: 222.56°
VS: 1,696.32'

55% SLTY SH: dk gy brn, vfg,
frm-sl hrd, sb blk-y-rnd, rr sb ang,
mod srt, arg mtx, mod calc; 45%
SHY SS: lt gr, sft, uncons, rnd-sb
blk-y, arg mtx, sl calc

50% SLTY SH: dk gy brn-med gy,
vfg, frm-sl hrd, sb blk-y-rnd, rr sb
ang, mod srt, arg mtx, mod calc;
50% SHY SS: lt gr, sft, uncons,
rnd-sb blk-y, arg mtx, calc

MD: 6,323'
TVD: 5,982.53'
Inclination: 21.17°
Azimuth: 223.61°
VS: 1,753.51'



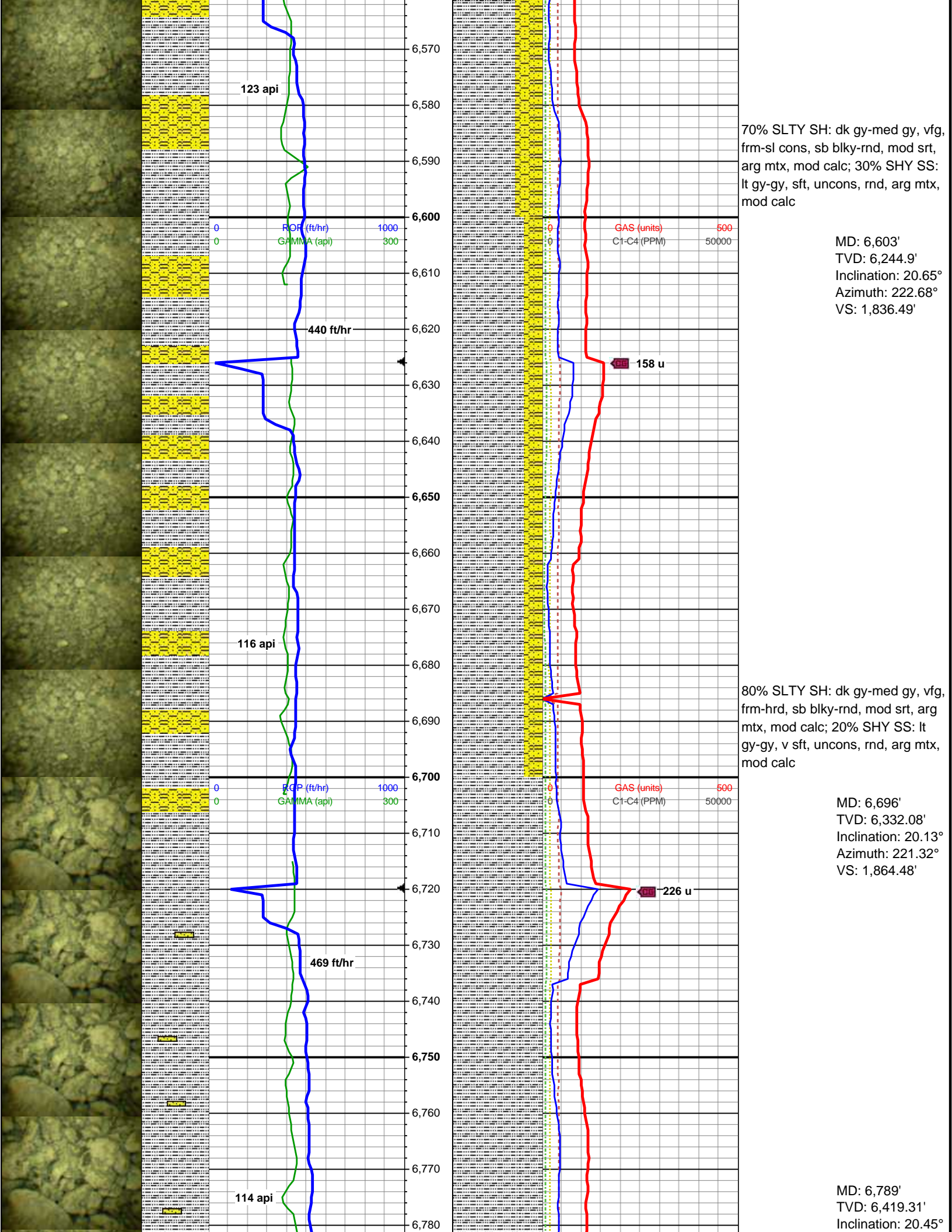
60% SLTY SH: dk gy brn-med gy, vfg, frm-sl cons, sb blk-y-rnd, mod srt, arg mtx, v calc; 40% SHY SS: lt gr, sft, uncon, rnd, arg mtx, calc

MD: 6,417'
TVD: 6,070.45'
Inclination: 20.24°
Azimuth: 223.25°
VS: 1,781.79'

70% SLTY SH: dk gy-med gy, vfg, frm-sl cons, sb blk-y-rnd, mod srt, arg mtx, v calc; 30% SHY SS: lt gy-gy, sft, uncon, rnd, arg mtx, calc

MW 9.5 / VIS 50 IN
MW 9.55 / VIS 48 OUT

MD: 6,510'
TVD: 6,157.74'
Inclination: 20.15°
Azimuth: 224.62°
VS: 1,808.96'



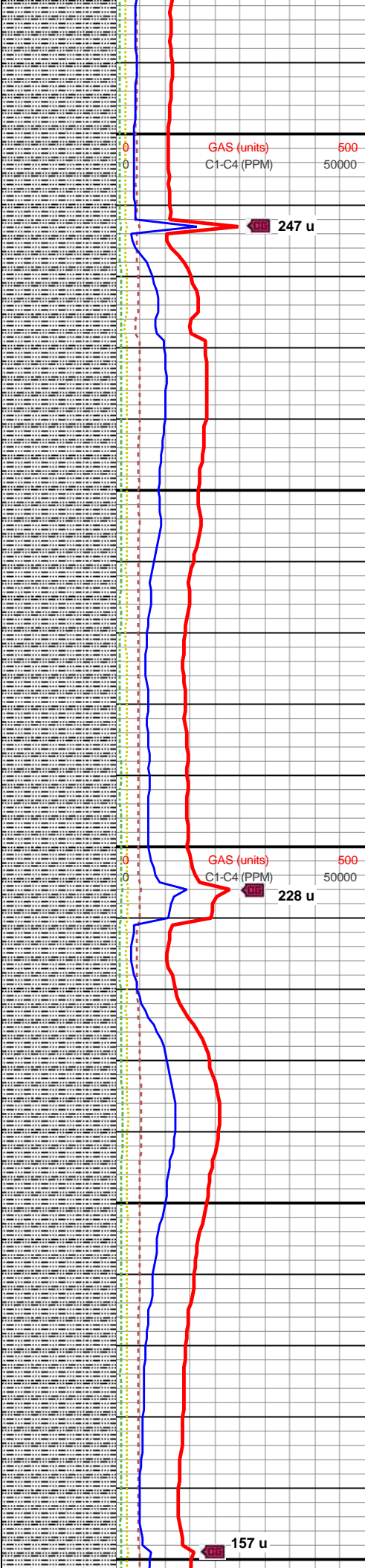
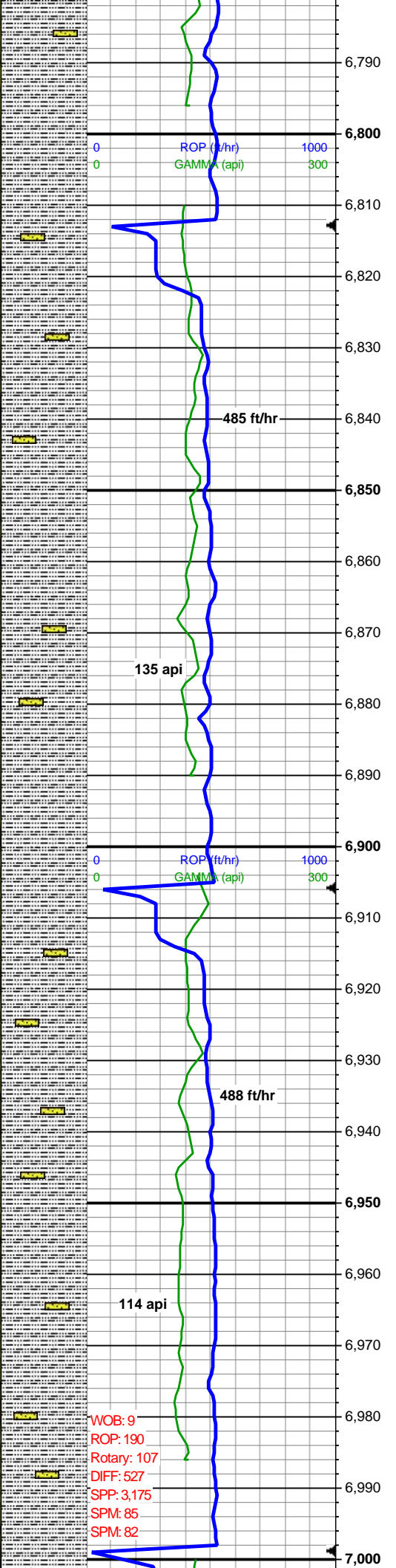
70% SLTY SH: dk gy-med gy, vfg, frm-sl cons, sb blk-y-rnd, mod srt, arg mtx, mod calc; 30% SHY SS: lt gy-gy, sft, uncon, rnd, arg mtx, mod calc

MD: 6,603'
TVD: 6,244.9'
Inclination: 20.65°
Azimuth: 222.68°
VS: 1,836.49'

80% SLTY SH: dk gy-med gy, vfg, frm-hrd, sb blk-y-rnd, mod srt, arg mtx, mod calc; 20% SHY SS: lt gy-gy, v sft, uncon, rnd, arg mtx, mod calc

MD: 6,696'
TVD: 6,332.08'
Inclination: 20.13°
Azimuth: 221.32°
VS: 1,864.48'

MD: 6,789'
TVD: 6,419.31'
Inclination: 20.45°



Azimuth: 221.48°
VS: 1,892.51'

100% SLTY SH: dk brn gy-med gy, vfg, sft frm, sb blk-ly-sb plty, mod srt, arg mt, mod calc

MW 9.5 / VIS 46 IN
MW 9.5 / VIS 48 OUT

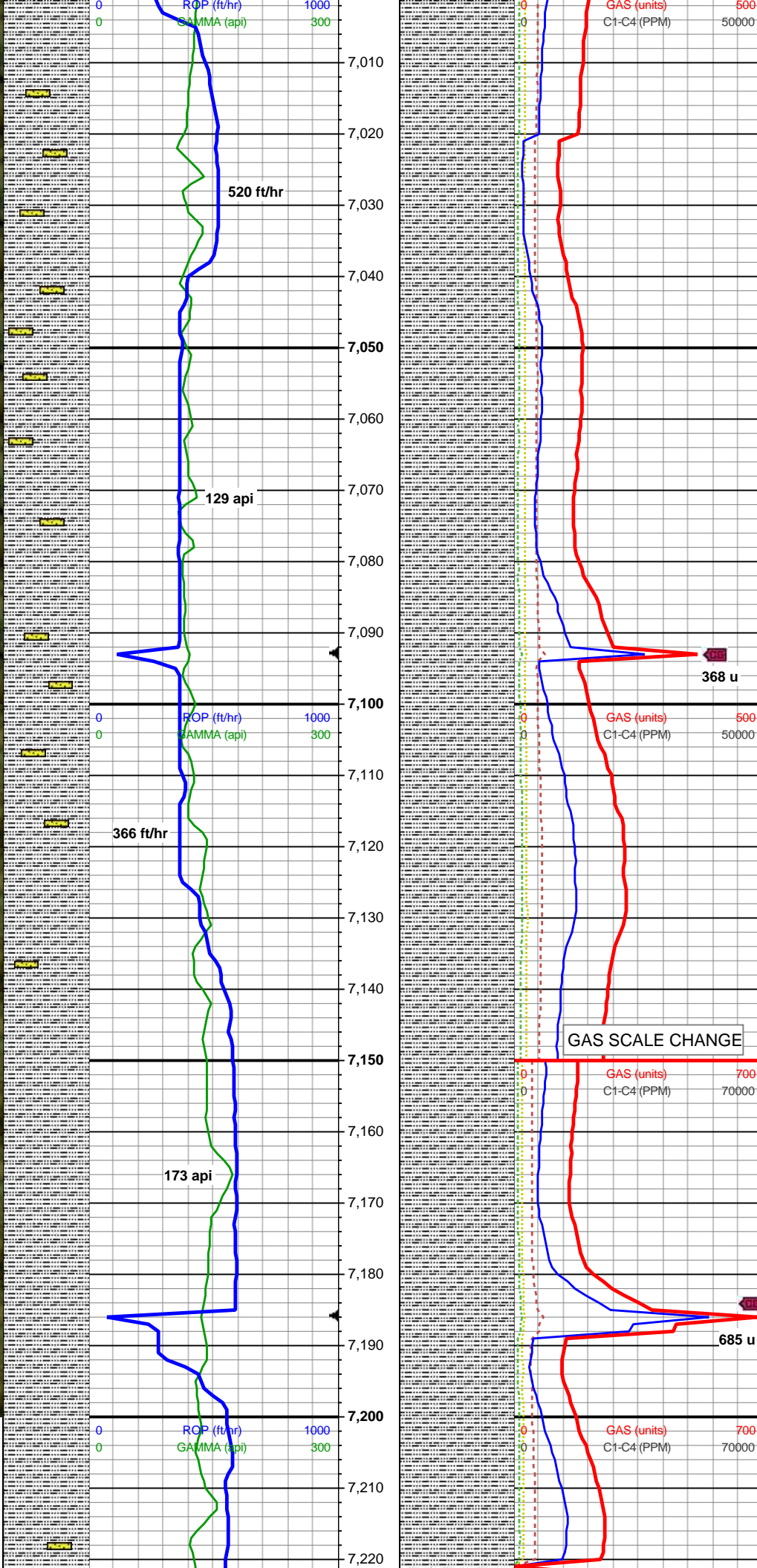
MD: 6,882'
TVD: 6,506.46'
Inclination: 20.42°
Azimuth: 218.64°
VS: 1,921.09'

100% SLTY SH: dk brn gy-med gy, vfg, frm, sb blk-ly-plty, mod srt, arg mt, v sl calc

MD: 6,976'
TVD: 6,594.73'
Inclination: 19.77°
Azimuth: 218.01°
VS: 1,949.97'

100% SLTY SH: dk gy-med gy, vfg, frm, sb blk-ly-plty, mod srt, arg mt, v sl calc

WOB: 9
ROP: 190
Rotary: 107
DIFF: 527
SPP: 3,175
SPM: 85
SPM: 82

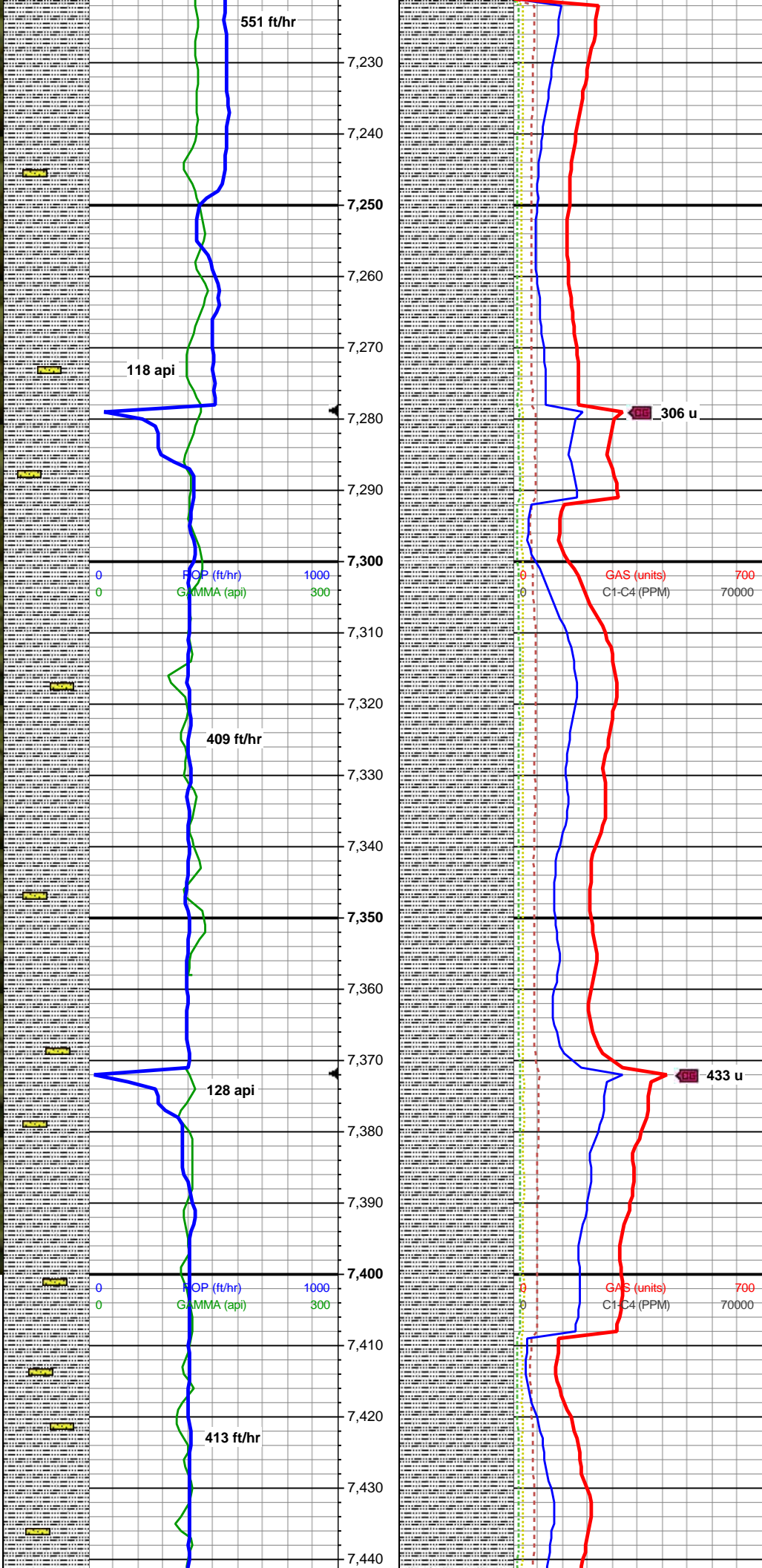


MD: 7,069'
TVD: 6,682.22'
Inclination: 19.89°
Azimuth: 216.8°
VS: 1,978.41'

100% SLTY SH: dk gy-med gy,
vfg, frm, sb blk-y-pty, mod srt, arg
mtx, sl calc, tr lse cal

MD: 7,162'
TVD: 6,769.43'
Inclination: 20.76°
Azimuth: 213.85°
VS: 2,008.02'

100% SLTY SH: dk gy-med gy,
vfg, frm, sb blk-y-pty, mod srt, arg
mtx, sl calc, tr lse cal xls, tr pos
Inoc frags



MD: 7,255'
TVD: 6,856.7'
Inclination: 19.69°
Azimuth: 212.06°
VS: 2,037.99'

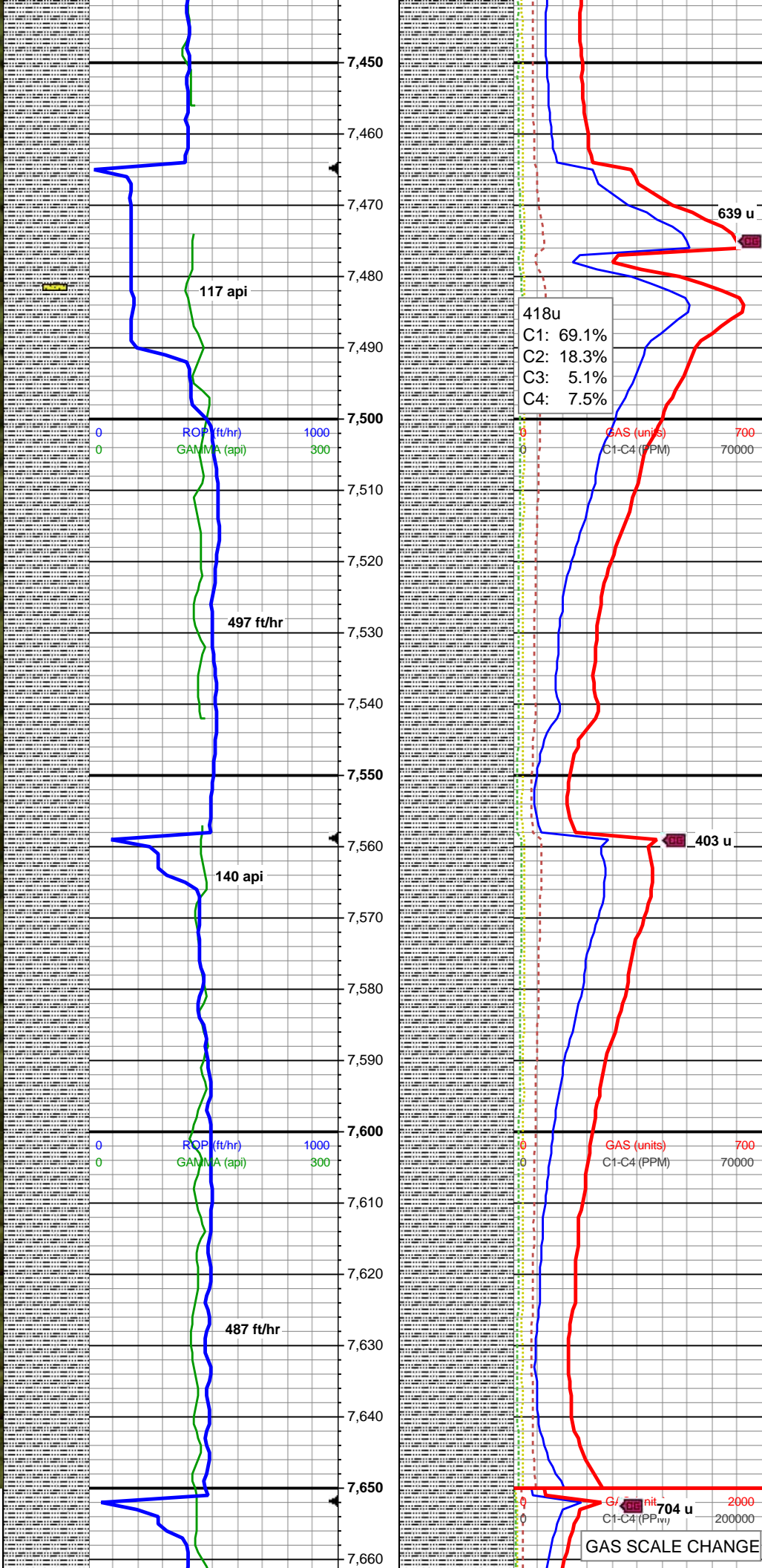
100% SLTY SH: dk gy-med gy,
vfg, frm, sb blk-y-rnd, mod srt, arg
mtx, sl calc, tr lse cal xls

MW 9.55 / VIS 45 IN
MW 9.55 / VIS 44 OUT

MD: 7,348'
TVD: 6,944.23'
Inclination: 19.78°
Azimuth: 209.82°
VS: 2,067.64'

100% SLTY SH: dk gy-med gy,
vfg, frm, sb blk-y-rnd, mod srt, arg
mtx, sl calc, tr lse cal xls, tr foram
foss

MD: 7,441'
TVD: 7,031.82'



TVD: 7,031.82'
Inclination: 19.5°
Azimuth: 207.93°
VS: 2,097.51'

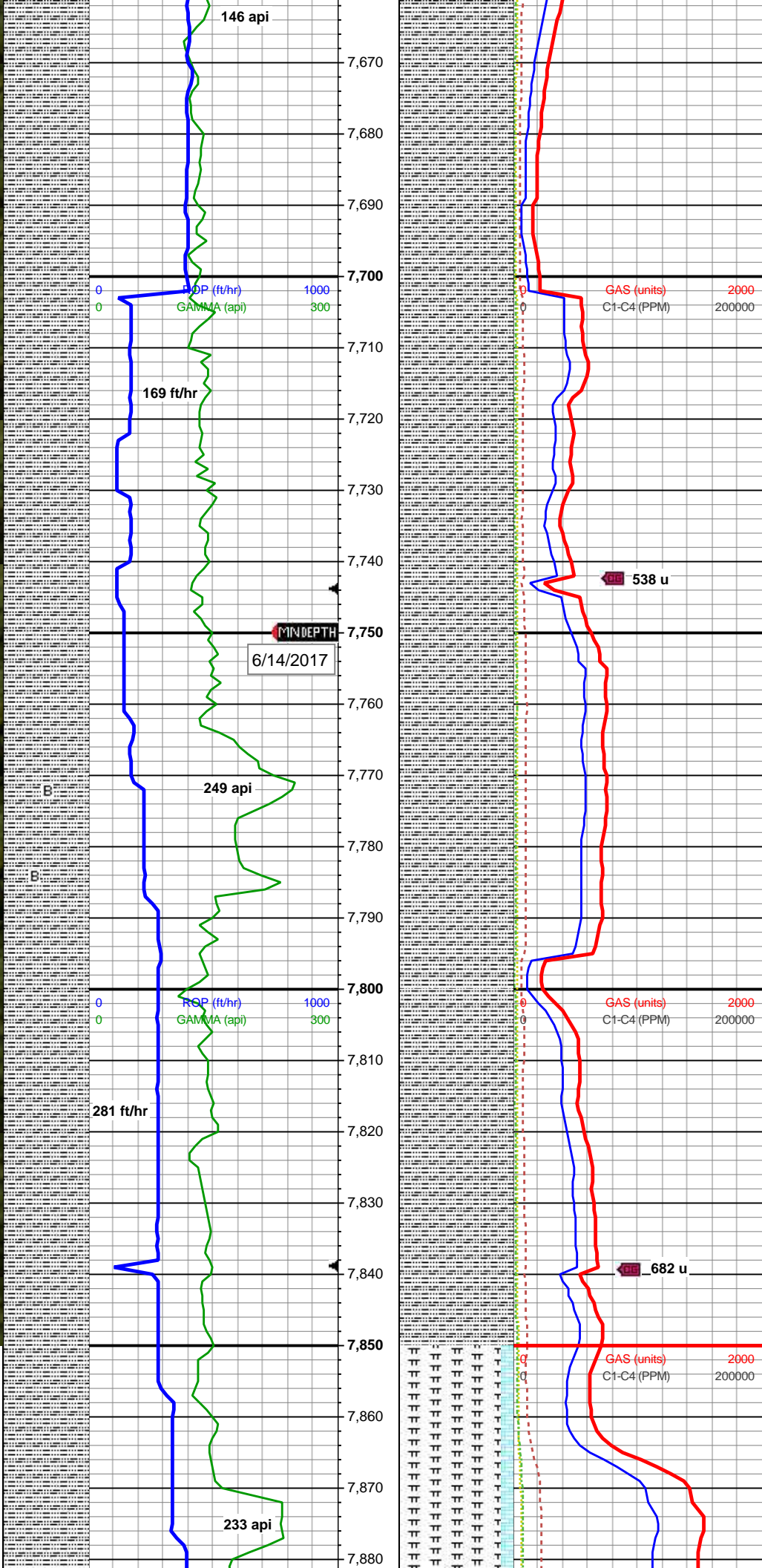
100% SLTY SH: dk gy-med gy,
vfg, frm, sb blk-y-rnd, mod srt, arg
mtx, sl calc, tr lse cal xls

MD: 7,535'
TVD: 7,120.02'
Inclination: 20.97°
Azimuth: 205.7°
VS: 2,128.91'

100% SLTY SH: dk gy-med gy,
vfg, frm-hrd, sb blk-y-rnd, mod srt,
arg mtx, sl-variable calc cmt

MD: 7,628'
TVD: 7,207.01'
Inclination: 20.48°
Azimuth: 207.7°
VS: 2,160.7'

MW 9.7 / VIS 47 IN
MW 9.65 / VIS 47 OUT



100% SLTY SH: dk gy-med gy, vfg, frm-hrd, sb blk-y-rnd-pty, mod srt, arg mtx, variable calc cmt

**KOP Reached 7702' MD
Begin 50' Sample Collection**

MD: 7,721'
TVD: 7,293.4'
Inclination: 22.96°
Azimuth: 207.36°
VS: 2,193.82'

100% SLTY SH: dk gy-med gy, vfg, frm-hrd, sb blk-y-rnd-pty, mod srt, arg mtx, non-calc cmt, tr bent

ON GAS BUSTER

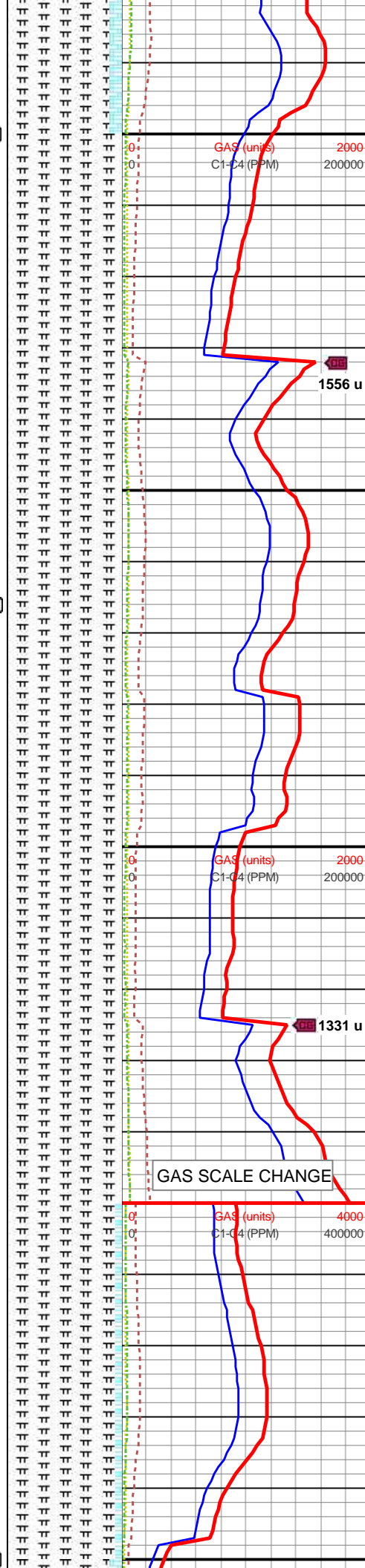
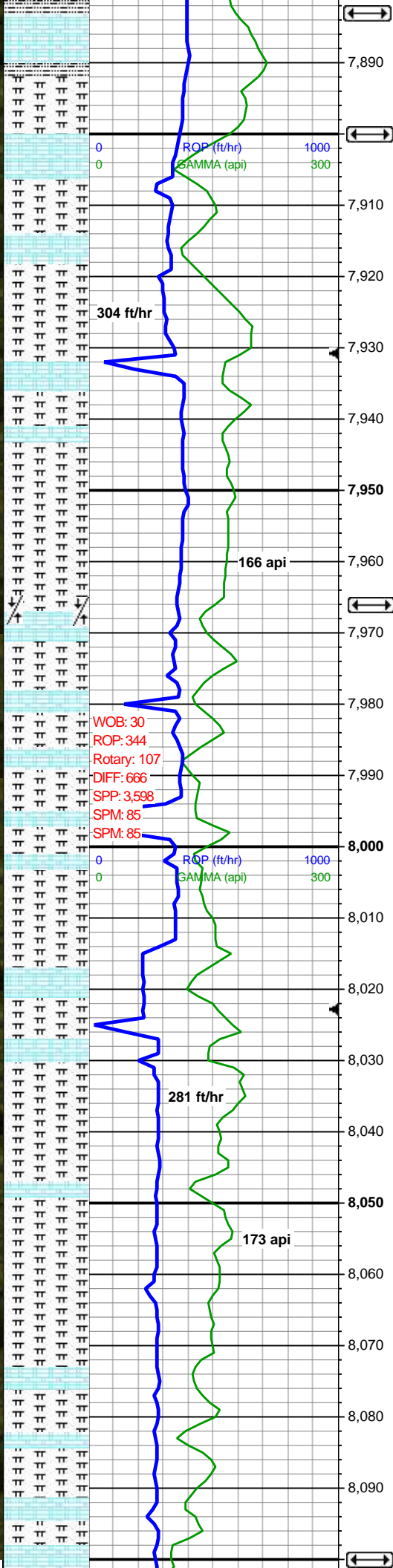
100% SLTY SH: dk gy-med gy, frm-hrd, blk-y-sb rnd, com pty, slty, mod srt, arg mtx, non-calc cmt, mn'r bent

MD: 7,814'
TVD: 7,375.3'
Inclination: 33.37°
Azimuth: 199.03°
VS: 2,236.8'

**MW 9.75 / VIS 47 IN
MW 9.7 / VIS 47 OUT**

100% SLTY SH: dk gy-med gy, frm-hrd, blk-y-sb pty, mn'r ang, slty, mod srt, arg mtx, v calc cmt, mn'r bent

**Niobrara Top
7891' MD / 7437' TVD**



90% MRLST: dk brn gy, frm-hrd, blk-y-sb plty, mn-r rnd, slty, arg mt-x, calc cmt, mn-r bent; 10% CHK: med gy, sft, sb blk-y, rthy, slty, tr slty sh

MD: 7,907'
TVD: 7,448.96'
Inclination: 41.81°
Azimuth: 192.03°
VS: 2,293.3'

Niobrara A Chalk Top
7900' MD / 7444' TVD

100% MRLST: dk brn gy-med gy, frm-hrd, blk-y-sb rnd, slty, arg mt-x, calc cmt, mn-r bent, mn-r pyr nod, lam pyr wi tr chk or pos cal repl foss

Niobrara A Marl Top
Faulted Thru

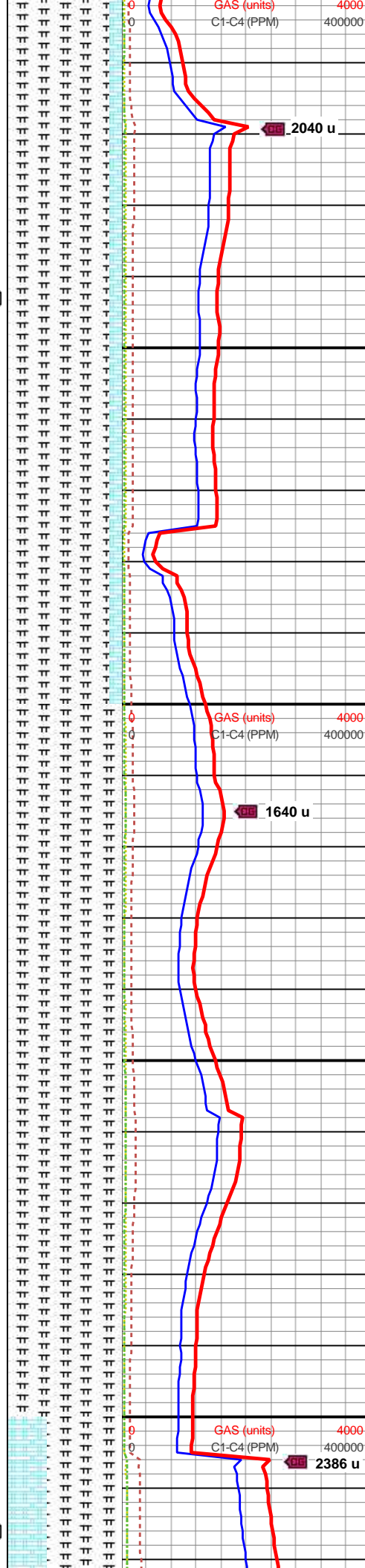
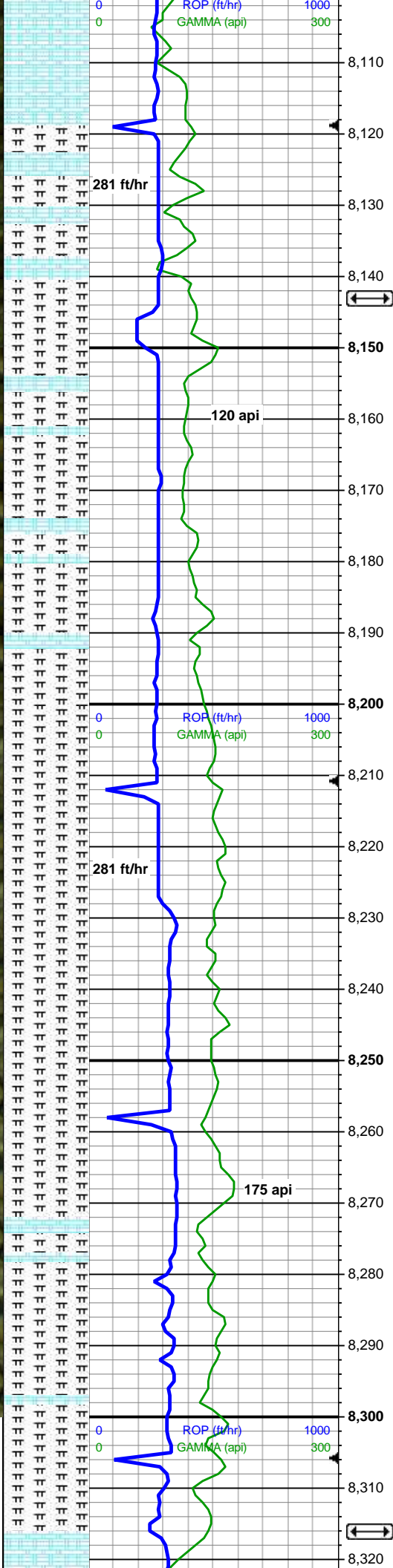
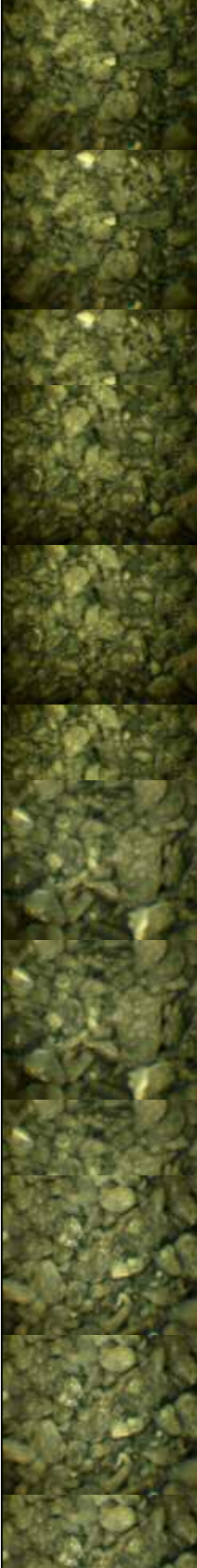
100% MRLST: dk brn gy-med gy, frm-hrd, blk-y-ang, mn-r sb rnd, slty, v arg mt-x, calc cmt

MD: 8,001'
TVD: 7,515.73'
Inclination: 47.63°
Azimuth: 188.9°
VS: 2,359.38'

100% MRLST: dk brn gy, hrd, sb blk-y-ang, mn-r sb rnd, slty, v arg mt-x, calc cmt, mn-r Inoc fos frags, rr pyr nod

MW 9.8 / VIS 47 IN
MW 9.8 / VIS 44 OUT
MD: 8,094'
TVD: 7,574.29'
Inclination: 54.27°
Azimuth: 186.89°
VS: 2,431.38'

95% MRLST: dk brn gy, hrd, sb blk-y-ang, mn-r sb rnd, slty, v arg mt-x, calc cmt, mn-r Inoc fos frags, rr pyr nod; 5% CHK: lt gy-bri wht, frm-hrd, blk-y-sb rnd, rthy-xl, stri, intbdd



Niobrara B Chalk Top
8100' MD / 7578' TVD

90% MRLST: dk brn gy, hrd, sb
blky-ang, mnrr plty, mnrr sb rnd,
slty, v arg mtx, calc cmt, mnrr Inoc
fos frags, rr pyr nod; 10% CHK: lt
gy-bri wht, frm-hrd, blky-sb rnd,
rthy-xl, stri, intbdd, v calc

Niobrara B Marl Top
8143' MD / 7601' TVD

MD: 8,187'
TVD: 7,621.93
Inclination: 64.03°
Azimuth: 184.19°
VS: 2,510.64'

90% MRLST: dk brn gy, hrd, sb
blky-ang, mnrr plty, slty, v arg mtx,
calc cmt, mnrr Inoc fos frags, rr pyr
nod; 10% CHK: lt gy-bri wht,
frm-hrd, blky-sb rnd, rthy-xl, stri,
intbdd, v calc

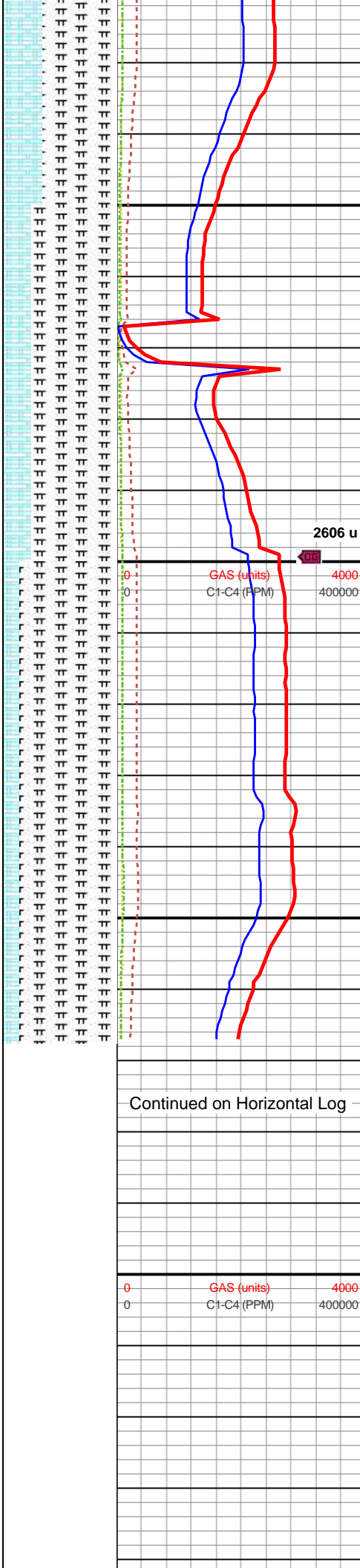
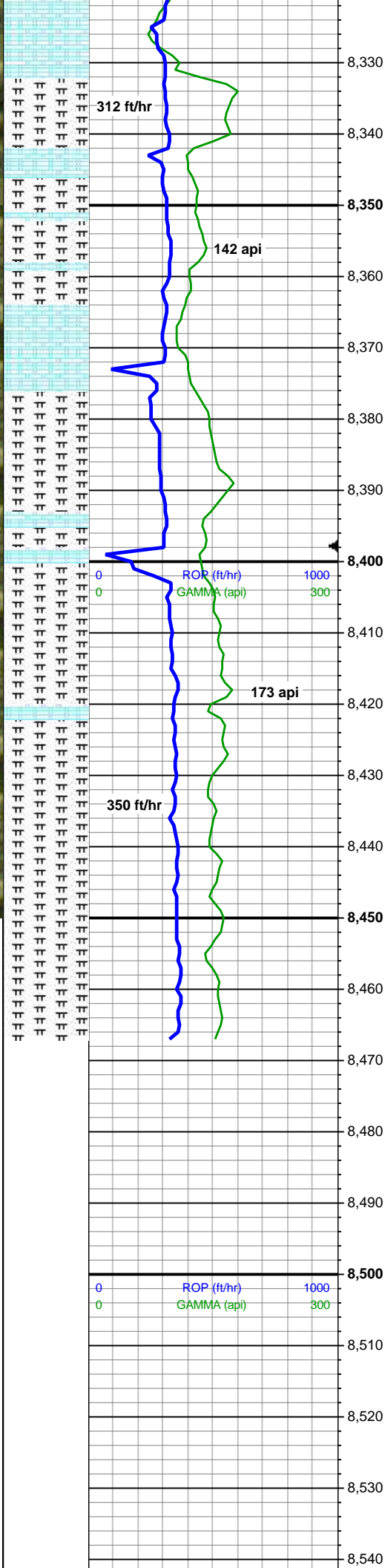
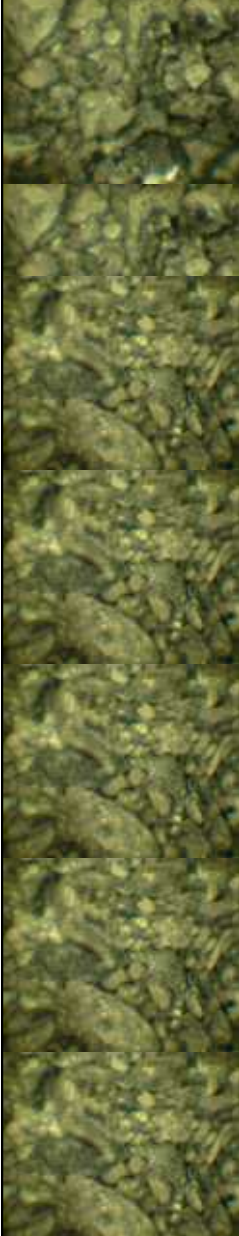
100% MRLST: dk brn gy-dk gy,
hrd, sb blky-ang, mnrr sb rnd, slty,
v arg mtx, calc cmt, rr pyr nod

MD: 8,281'
TVD: 7,654.51'
Inclination: 75.35°
Azimuth: 182.88°
VS: 2,597.74'

100% MRLST: dk brn gy-dk gy,
hrd, sb blky-ang, mnrr sb rnd, slty,
v arg mtx, calc cmt, rr Inoc fos
frags, rr pyr nod, rr bent frags

MW 9.8 / VIS 48 IN
MW 9.8 / VIS 46 OUT

Niobrara C Chalk Top
8316' MD / 7662' TVD



65% MRLST: med-dk gy, frm, sb
blky-sb plty, slty, mot-stri tex v
calc; 35% CHK: medgy, pred sft,
sb blky, wxy-rthy-sl stri tex, slty, v r
bent

MD: 8,374'
TVD: 7,670.62'
Inclination: 84.67°
Azimuth: 181.82°
VS: 2,687.99'

75% MRLST: med-dk gy, frm, sb
blky-sb plty, slty, mot-stri tex v
calc; 25% CHK: medgy, pred sft,
sb blky, wxy-rthy-sl stri tex, slty, v r
bent

MW 9.9 / VIS 45 IN
MW 9.9 / VIS 46 OUT

85% MRLST: dk brn gy, hrd, sb
blky-blky, sb ang-plty, slty, v arg
mtx, calc cmt, rr Inoc fos frags,
mnr pyr nod; 15% CHK: lt gy-bri
wht, frm-hrd, blky-sb rnd, rthy-xl,
stri, intbdd wi mrlst, v calc

Projected to Bit & Curve
Landing - 04:04 MDT - 6/14/2017

MD: 8,467'
TVD: 7,674.67'
Inclination: 90.34°
Azimuth: 180.4°
VS: 2,779.26'

Continued on Horizontal Log

Thank you for using Terra
Guidance LLC.

