

COLUMBINE LOGGING

Scale: 5" / 100'
Measured Depth Log

Well Name ROHN STATE LD09-69-1HN (VERT)

Location NENE SEC 9 T9N R58W

State COLORADO

County WELD

Country UNITED STATES

Rig Number H&P 326

API Number 05-123-37546

Region DJ BASIN

Field WILDCAT

Spud Date 9/8/2013

Drilling Completed 9/10/2013

Surface Coordinates 860' FNL, 480' FEL

Bottom Hole Coordinates 330' FFNLL, 660' FFWLL

Ground Elevation 4740'

K.B. Elevation 4770'

Logged Interval 1300' To 4965'

Total Depth 4965'

Formation PIERRE, PARKMAN, SUSSEX, SHANNON, TEEPEE BUTTES

Type of Drilling Fluid LSND

Operator

Company NOBLE ENERGY, INC.

Address 1625 Broadway Suite 2200
Denver, CO 80202

Geologist

Name EVAN HOWELL

Company NOBLE ENERGY INC.

Address 1625 Broadway Suite 2200
Denver, CO 80202

Other

CHRISTIAN VENTURING

Rock Types

UNKNOWN	COAL	METAMORPHIC	SHALY SILTSTONE
ANHYDRITE	CONGLOMERATE	NO SAMPLE	SILTSTONE
BENTONITE	DOLOMITE	SALT	SILTY SHALE
BRECCIA	GRANITE	SALT- PEPPER SAND	TILL
CEMENT	GYPSUM	SANDSTONE	TUFF
CHALK	IGNEOUS	SHALE	WELDED TUFF
CHERT	LIMESTONE	SHALE COLORED	
CLAY CHOKE SAND	SIDERITE or LIMONITE	SHALE GRAY	
CLAYSTONE	MARLSTONE	SHALY SANDSTONE	

Accessories

Fossils

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

Fossils

FOSSIL
GASTROPOD
INOCERAMUS
OOLITE
OSTRACOD
PELECYPOD
PELLET
PISOLITE
PLANT REMAINS
PLANT SPORES
SCAPHOPOD
STROMATOPOROID

Minerals

Minerals

ANHYDRITIC
ARGILLACEOUS
ARGILLITE GRAIN
BENTONITE
BITUMENOUS SUBSTANCE
BRECCIA FRAGMENTS
CALCAREOUS
CARBONACEOUS FLAKES
CHTDK
CHTLT
COAL - THIN BEDS
DOLOMITIC
FELDSPAR
FERRUGINOUS PELLET

Minerals

FERRUGINOUS
GLAUCONITE
GYPSIFEROUS
HEAVY MINERAL
KAOLIN
MARLSTONE
MINERAL CRYSTALS
NODULES
PHOSPHATE PELLETS
PYRITE
SALT CAST
SANDY
SILICEOUS
SILTY

Minerals

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

Oil Show

MOLDIC
ORGANIC
PINPOINT
VUGGY

Engineering

BIT
CONNECTION (LEFT)
CONNECTION (RIGHT)
CONNECTION GAS
CORE - LOST
CORE - RECOVERED
DST INTERVAL

Other Symbols

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

Other Symbols

WIRELINE TESTED - LEFT
WIRELINE TESTED - RT

Rounding

ANGULAR
ROUNDED
SUBANG
SUBRND

Textures

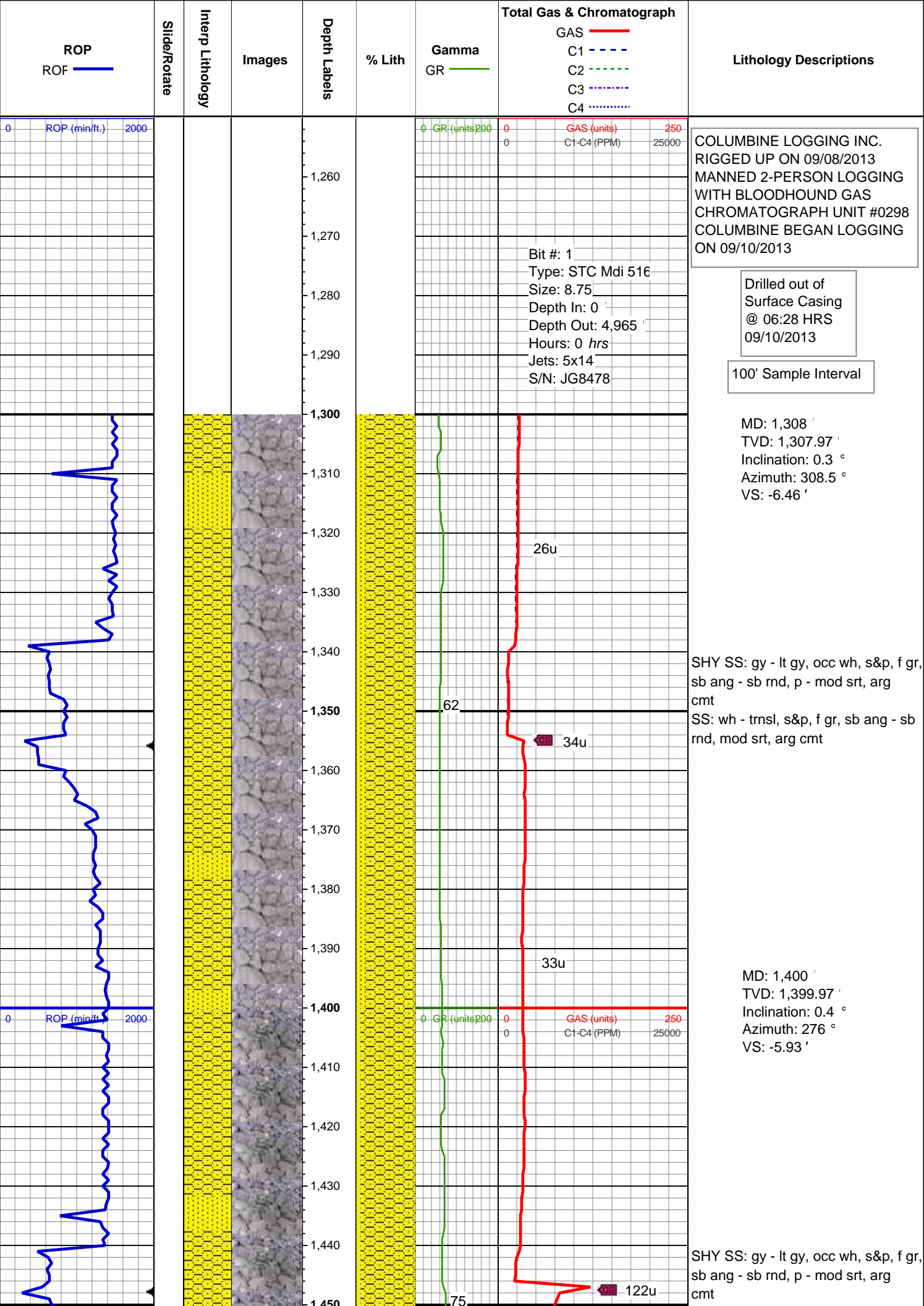
BOUNDSTONE
CHALKY
CRYPTOXLN

Other Symbols

EARTHY
FINELYXLN
GRAINSTONE
LITHOGRAPHIC
MICROXLN
MUDSTONE
PACKSTONE
WACKESTONE

Sorting

MODERATE
POOR
WELL



Bit #: 1
Type: STC Mdi 516
Size: 8.75
Depth In: 0
Depth Out: 4,965
Hours: 0 hrs
Jets: 5x14
S/N: JG8478

COLUMBINE LOGGING INC.
RIGGED UP ON 09/08/2013
MANNED 2-PERSON LOGGING
WITH BLOODHOUND GAS
CHROMATOGRAPH UNIT #0298
COLUMBINE BEGAN LOGGING
ON 09/10/2013

Drilled out of
Surface Casing
@ 06:28 HRS
09/10/2013

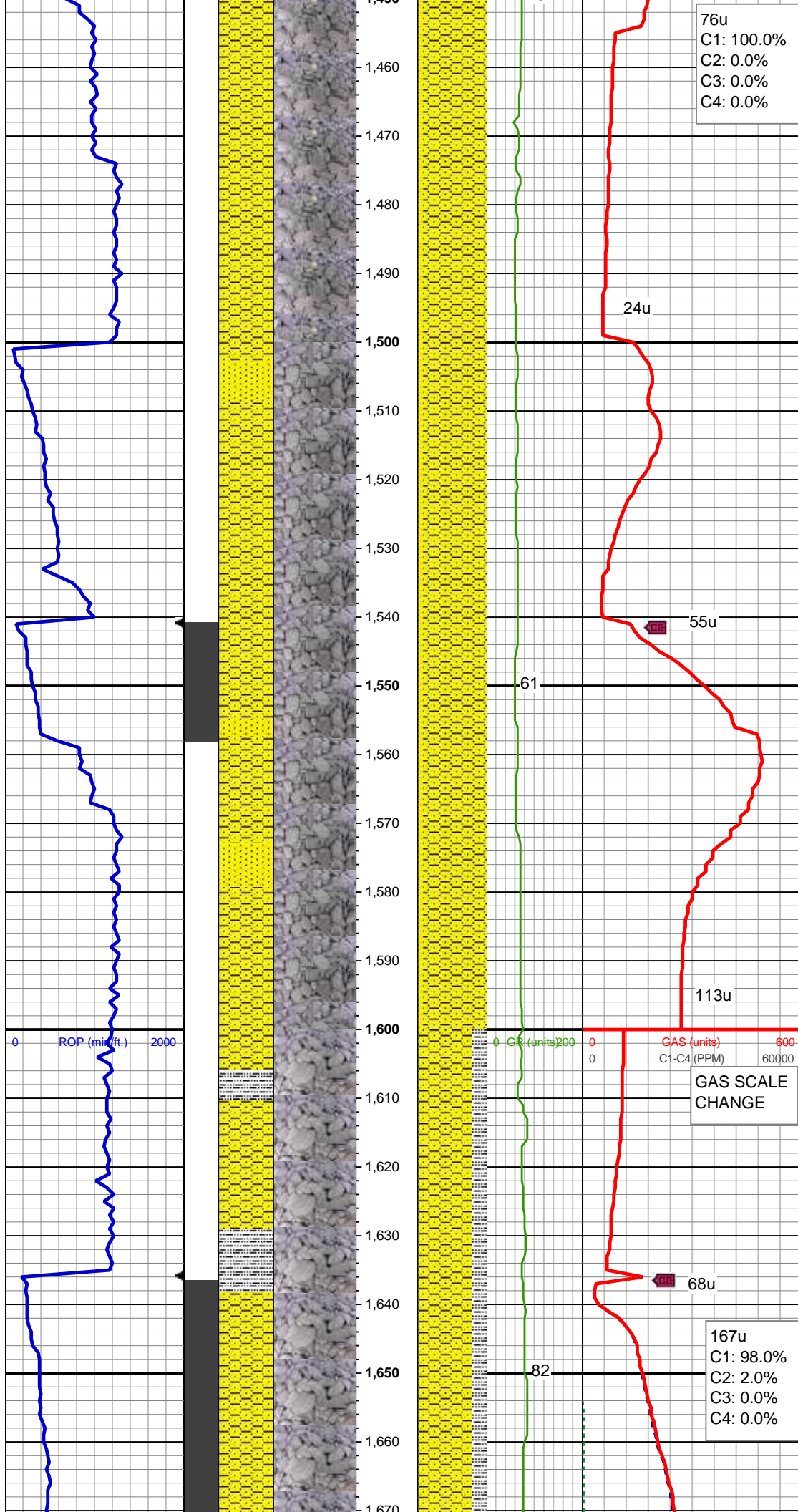
100' Sample Interval

MD: 1,308 '
TVD: 1,307.97 '
Inclination: 0.3 °
Azimuth: 308.5 °
VS: -6.46 '

SHY SS: gy - lt gy, occ wh, s&p, f gr,
sb ang - sb rnd, p - mod srt, arg
cmt
SS: wh - trnsl, s&p, f gr, sb ang - sb
rnd, mod srt, arg cmt

MD: 1,400 '
TVD: 1,399.97 '
Inclination: 0.4 °
Azimuth: 276 °
VS: -5.93 '

SHY SS: gy - lt gy, occ wh, s&p, f gr,
sb ang - sb rnd, p - mod srt, arg
cmt



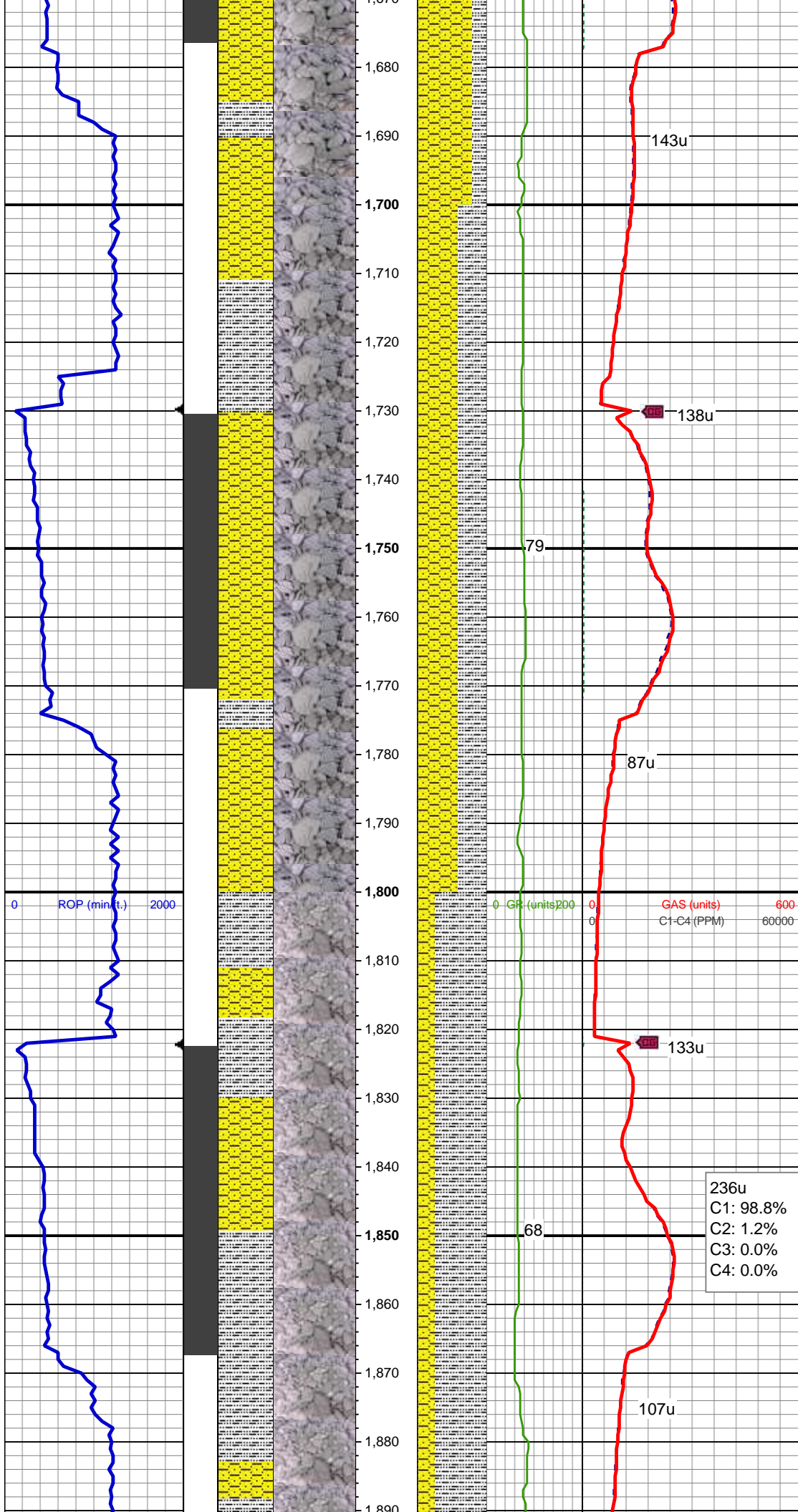
SS: wh - trnsl, s&p, f gr, sb ang - sb
rnd, mod srt, arg cmt

MD: 1,493 '
TVD: 1,492.97 '
Inclination: 0.5 °
Azimuth: 326.1 °
VS: -5.35 '

SHY SS: gy - lt gy, occ wh, s&p, f gr,
sb ang - sb rnd, p - mod srt, arg
cmt
SS: wh - trnsl, s&p, f gr, sb ang - sb
rnd, mod srt, arg cmt

MD: 1,587 '
TVD: 1,586.94 '
Inclination: 2.4 °
Azimuth: 8.3 °
VS: -5.15 '

SHY SS: gy - lt gy, occ wh, s&p, f gr,
sb ang - sb rnd, p - mod srt, arg
cmt
SLTY SH: lt gy - gy, mod sft - mod
frm, sb blkly - sb plty, arg - rthy mtx,
shy tex, non calc



MD: 1,680 '
TVD: 1,679.78 '
Inclination: 4.1 °
Azimuth: 20.9 °
VS: -6.07 '

WT IN 8.55/ OUT 8.55
VIS IN 31/ OUT 31

SHY SS: gy - lt gy, occ wh, s&p, f gr,
sb ang - sb rnd, p - mod srt, arg
cmt
SLTY SH: lt gy - gy, mod sft - mod
frm, sb blkly - sb plty, arg - rthy mtx,
shy tex, non calc

MD: 1,772 '
TVD: 1,771.43 '
Inclination: 5.9 °
Azimuth: 11.8 °
VS: -7.36 '

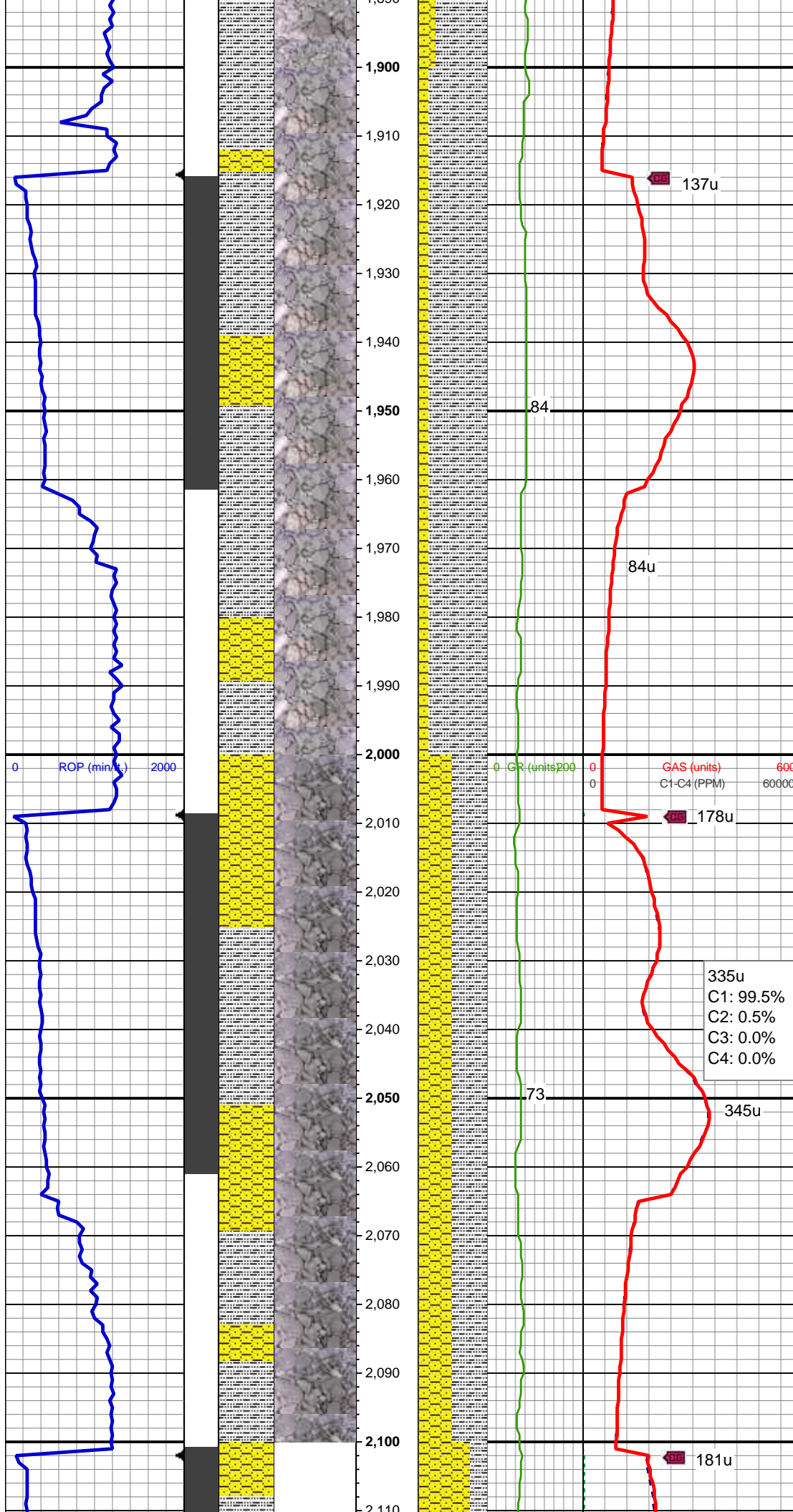
0 ROP (min ft.) 2000

0 GR (units) 200 0 GAS (units) 600
0 C1-C4 (PPM) 60000

236u
C1: 98.8%
C2: 1.2%
C3: 0.0%
C4: 0.0%

SLTY SH: lt gy - gy, mod sft - mod
frm, sb blkly - sb plty, arg - rthy mtx,
shy tex, non calc
SHY SS: gy - lt gy, occ wh, s&p, f gr,
sb ang - sb rnd, p - mod srt, arg
cmt

MD: 1,865 '
TVD: 1,863.76 '
Inclination: 7.8 °
Azimuth: 15.6 °
VS: -8.86 '



SLTY SH: lt gy - gy, mod sft - mod
frm, sb blkly - sb plty, arg - rthy mtx,
shy tex, non calc
SHY SS: gy - lt gy, occ wh, s&p, f gr,
sb ang - sb rnd, p - mod srt, arg
cmt

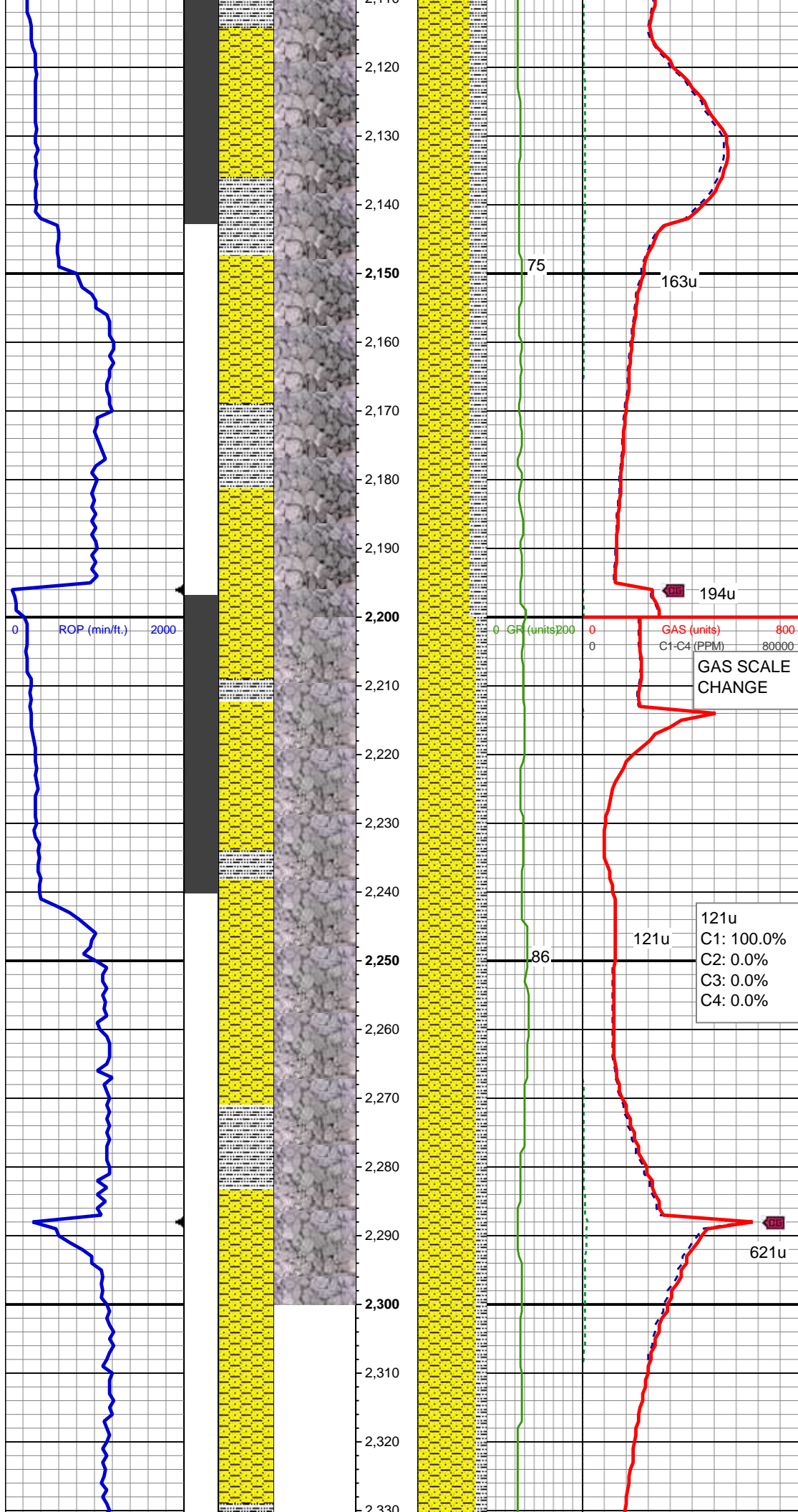
MD: 1,957 '
TVD: 1,954.76 '
Inclination: 9.1 °
Azimuth: 10 °
VS: -10.36 '

WT IN 8.6/ OUT 8.6
VIS IN 31/ OUT 31

SHY SS: gy - lt gy, occ wh, s&p, f gr,
sb ang - sb rnd, p - mod srt, arg
cmt

SLTY SH: lt gy - gy, mod sft - mod
frm, sb blkly - sb plty, arg - rthy mtx,
shy tex, non calc, tr ss

MD: 2,050 '
TVD: 2,046.29 '
Inclination: 11.3 °
Azimuth: 13.2 °
VS: 56.98 '



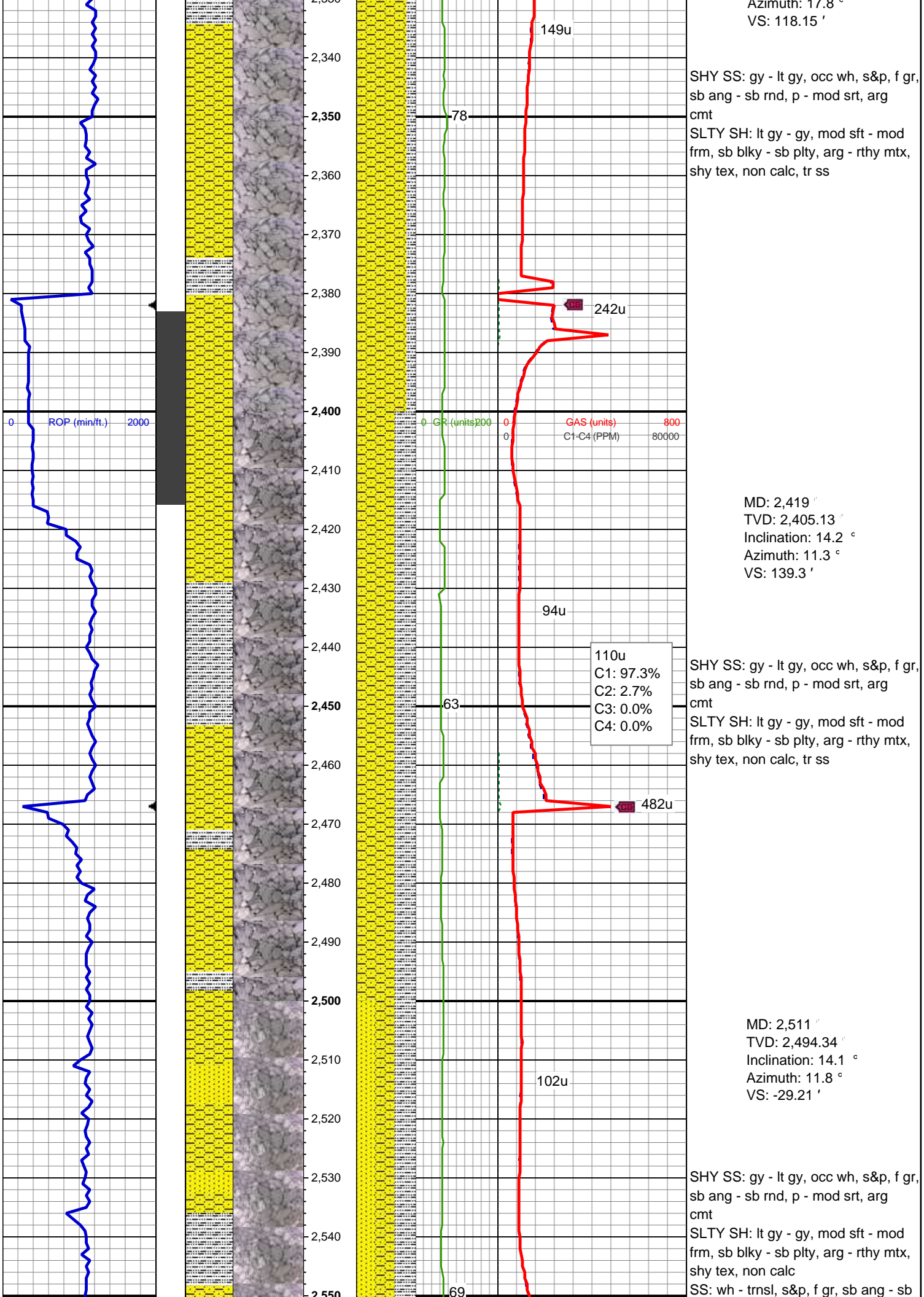
MD: 2,143 '
TVD: 2,137.15 '
Inclination: 13.3 °
Azimuth: 17.4 °
VS: 76.06 '

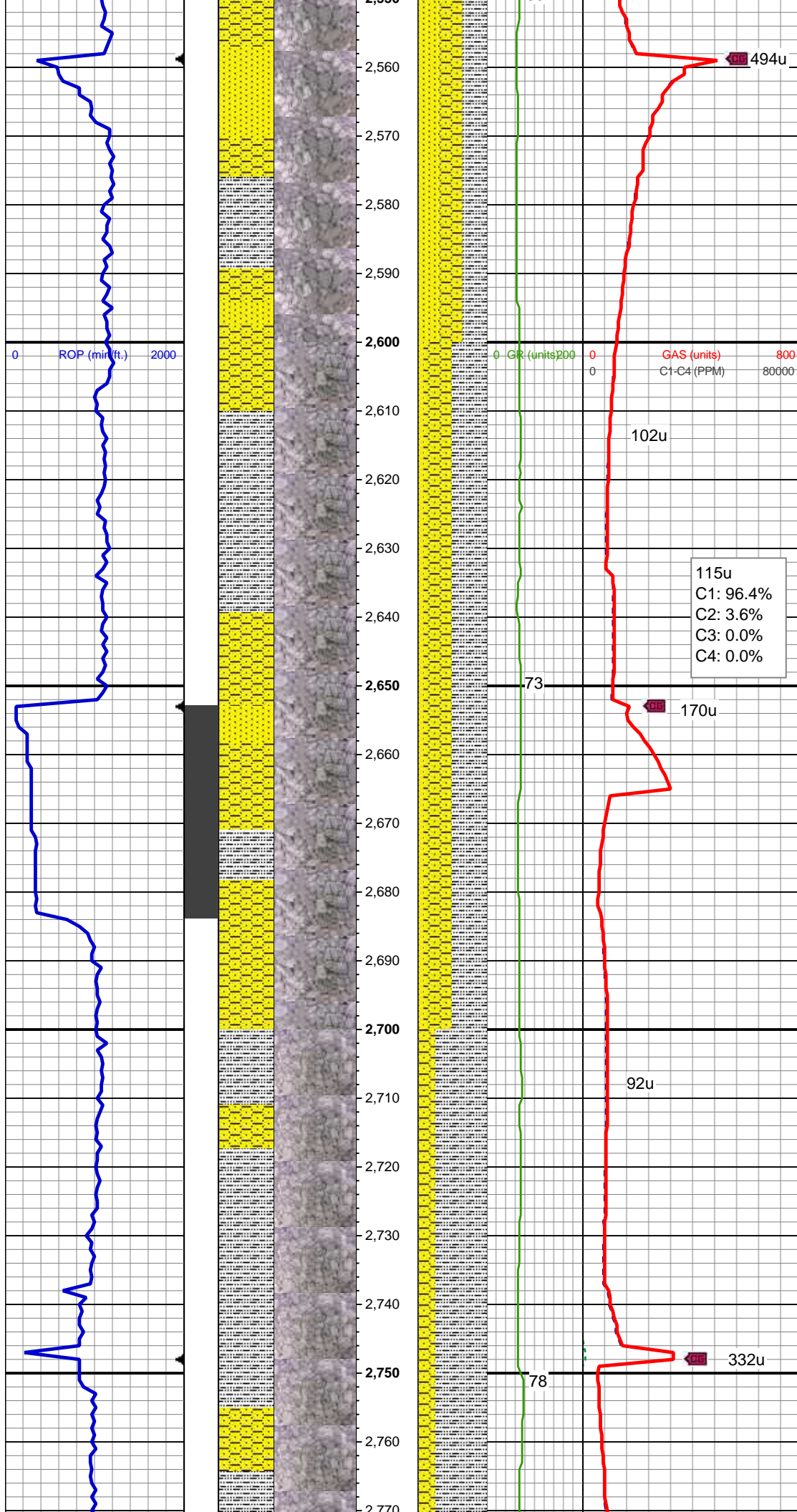
SHY SS: gy - lt gy, occ wh, s&p, f gr,
sb ang - sb rnd, p - mod srt, arg
cmt
SLTY SH: lt gy - gy, mod sft - mod
frm, sb blkly - sb plty, arg - rthy mtx,
shy tex, non calc, tr ss

MD: 2,235 '
TVD: 2,226.46 '
Inclination: 14.5 °
Azimuth: 17.9 °
VS: 97.12 '

SHY SS: gy - lt gy, occ wh, s&p, f gr,
sb ang - sb rnd, p - mod srt, arg
cmt
SLTY SH: lt gy - gy, mod sft - mod
frm, sb blkly - sb plty, arg - rthy mtx,
shy tex, non calc, tr ss

MD: 2,327 '
TVD: 2,315.76 '
Inclination: 13.3 °
Azimuth: 17.8 °
VS: 76.06 '





rd, p - mod srt, tr glau, arg cmt

WT IN 8.7/ OUT 8.7
VIS IN 29/ OUT 29

MD: 2,604 '
TVD: 2,584.59 '
Inclination: 13.8 °
Azimuth: 10.2 °
VS: -31.08 '

102u

115u
C1: 96.4%
C2: 3.6%
C3: 0.0%
C4: 0.0%

73

170u

SLTY SH: lt gy - gy, mod sft - mod
frm, sb blkly - sb plty, arg - rthy mtx,
shy tex, non calc
SHY SS: gy - lt gy, occ wh, s&p, f gr,
sb ang - sb rnd, p - mod srt, arg
cmt
SS: wh - trnsl, s&p, f gr, sb ang - sb
rnd, p - mod srt, tr glau, arg cmt

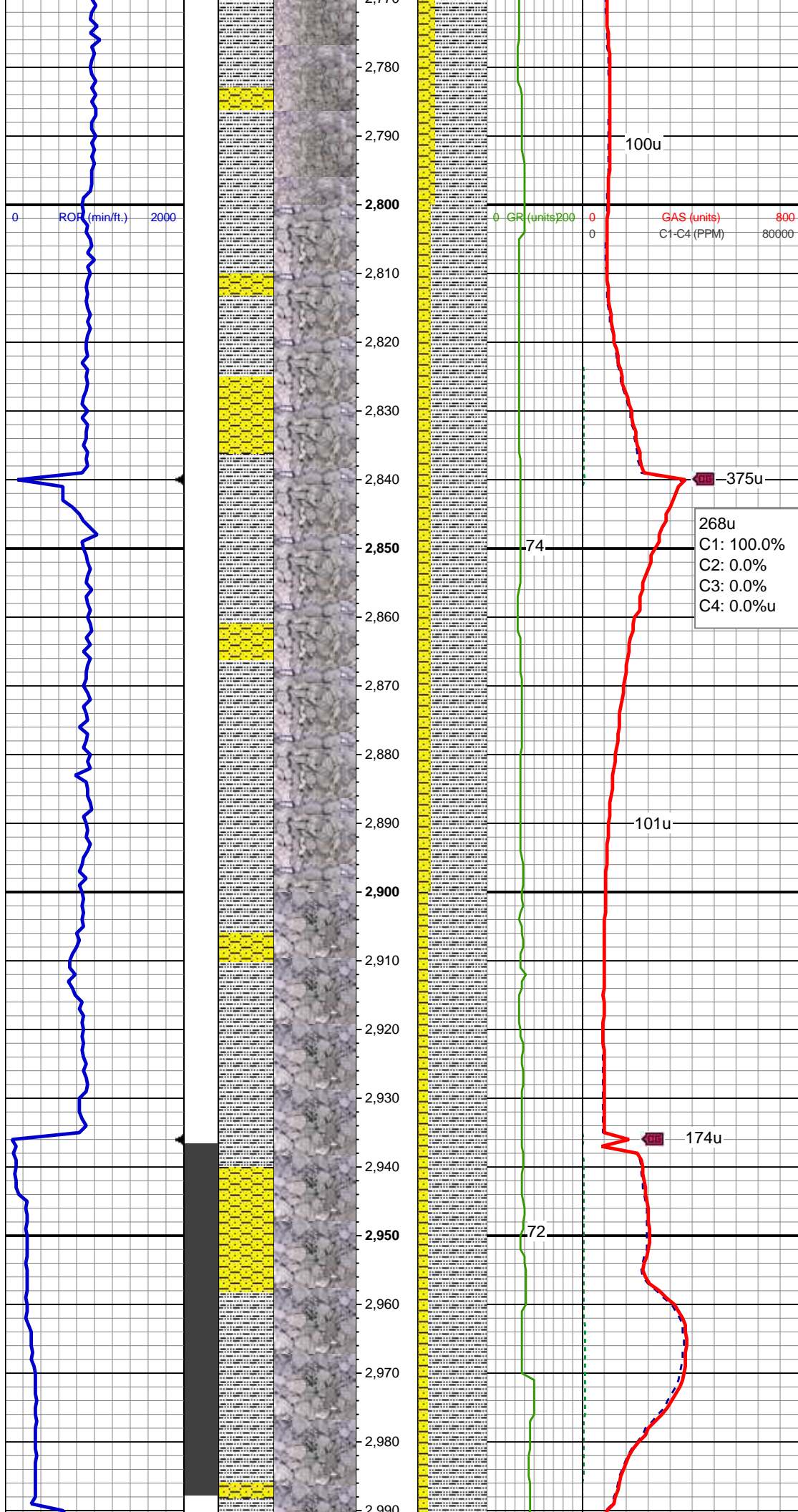
MD: 2,697 '
TVD: 2,674.71 '
Inclination: 14.8 °
Azimuth: 12.3 °
VS: -33.11 '

92u

78

332u

SLTY SH: lt gy - gy, mod sft - mod
frm, sb blkly - sb plty, arg - rthy mtx,
shy tex, non calc
SHY SS: gy - lt gy, occ wh, s&p, f gr,
sb ang - sb rnd, p - mod srt, arg
cmt, tr ss



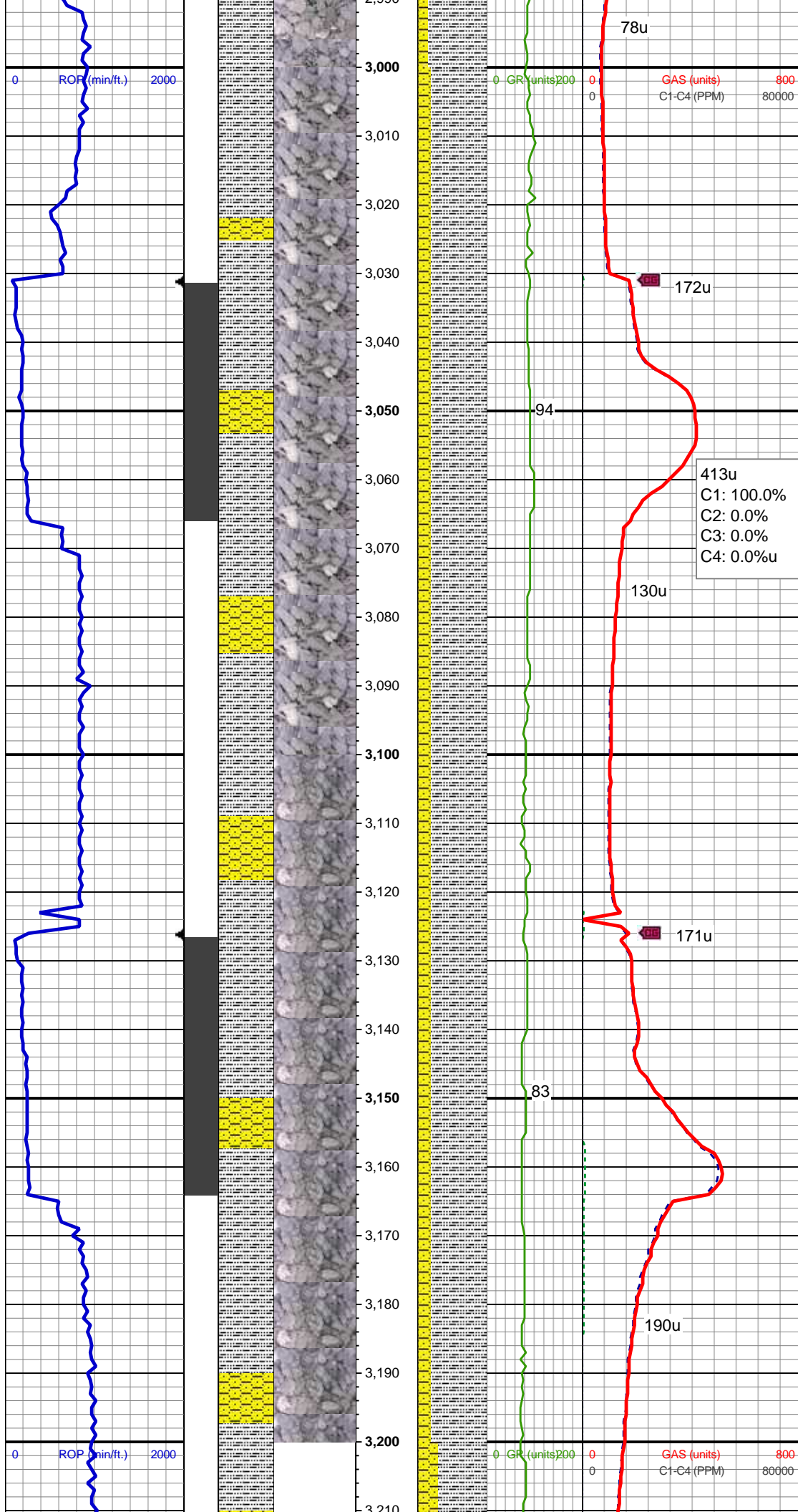
MD: 2,790 '
TVD: 2,764.81 '
Inclination: 13.9 °
Azimuth: 12.5 °
VS: -35.6 '

SLTY SH: lt gy - gy, mod sft - mod frm, sb blkly - sb plty, arg - rthy mtx, shy tex, non calc
SHY SS: gy - lt gy, occ wh, s&p, f gr, sb ang - sb rnd, p - mod srt, arg cmt, tr ss

MD: 2,885 '
TVD: 2,857.37 '
Inclination: 12.1 °
Azimuth: 9.1 °
VS: -37.35 '

SLTY SH: lt gy - gy, mod sft - mod frm, sb blkly - sb plty, arg - rthy mtx, shy tex, non calc
SHY SS: gy - lt gy, occ wh, s&p, f gr, sb ang - sb rnd, p - mod srt, arg cmt, tr ss

MD: 2,979 '
TVD: 2,949.19 '
Inclination: 12.7 °
Azimuth: 17.8 °
VS: -39.92 '



WT IN 8.7/ OUT 8.7
VIS IN 29/ OUT 29

SLTY SH: lt gy - gy, mod sft - mod
frm, sb blkly - sb plty, arg - rthy mtx,
shy tex, non calc
SHY SS: gy - lt gy, occ wh, s&p, f gr,
sb ang - sb rnd, p - mod srt, arg
cmt, tr ss

MD: 3,074 '
TVD: 3,041.7 '
Inclination: 13.6 °
Azimuth: 16.9 °
VS: -44.09 '

SLTY SH: lt gy - gy, mod sft - mod
frm, sb blkly - sb plty, arg - rthy mtx,
shy tex, non calc
SHY SS: gy - lt gy, occ wh, s&p, f gr,
sb ang - sb rnd, p - mod srt, arg
cmt, tr ss

MD: 3,169 '
TVD: 3,133.81 '
Inclination: 14.7 °
Azimuth: 15.3 °
VS: -48.07 '

WT IN 8.8/ OUT 8.8
VIS IN 31/ OUT 31

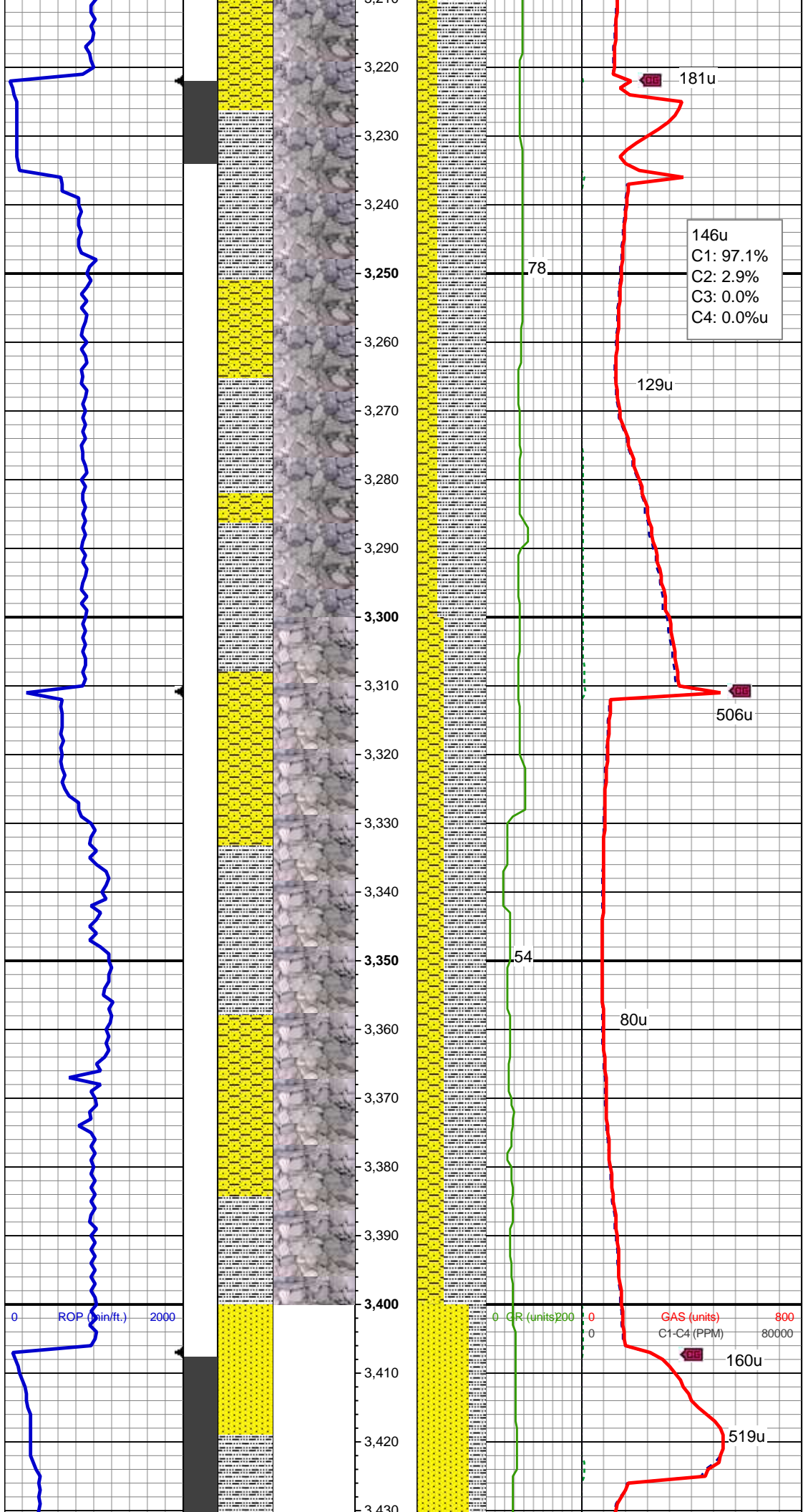
SLTY SH: lt gy - gy, mod sft - mod
frm, sb blkly - sb plty, arg - rthy mtx,
shy tex, non calc
SHY SS: gy - lt gy, occ wh, s&p, f gr,
sb ang - sb rnd, p - mod srt, arg
cmt, tr ss

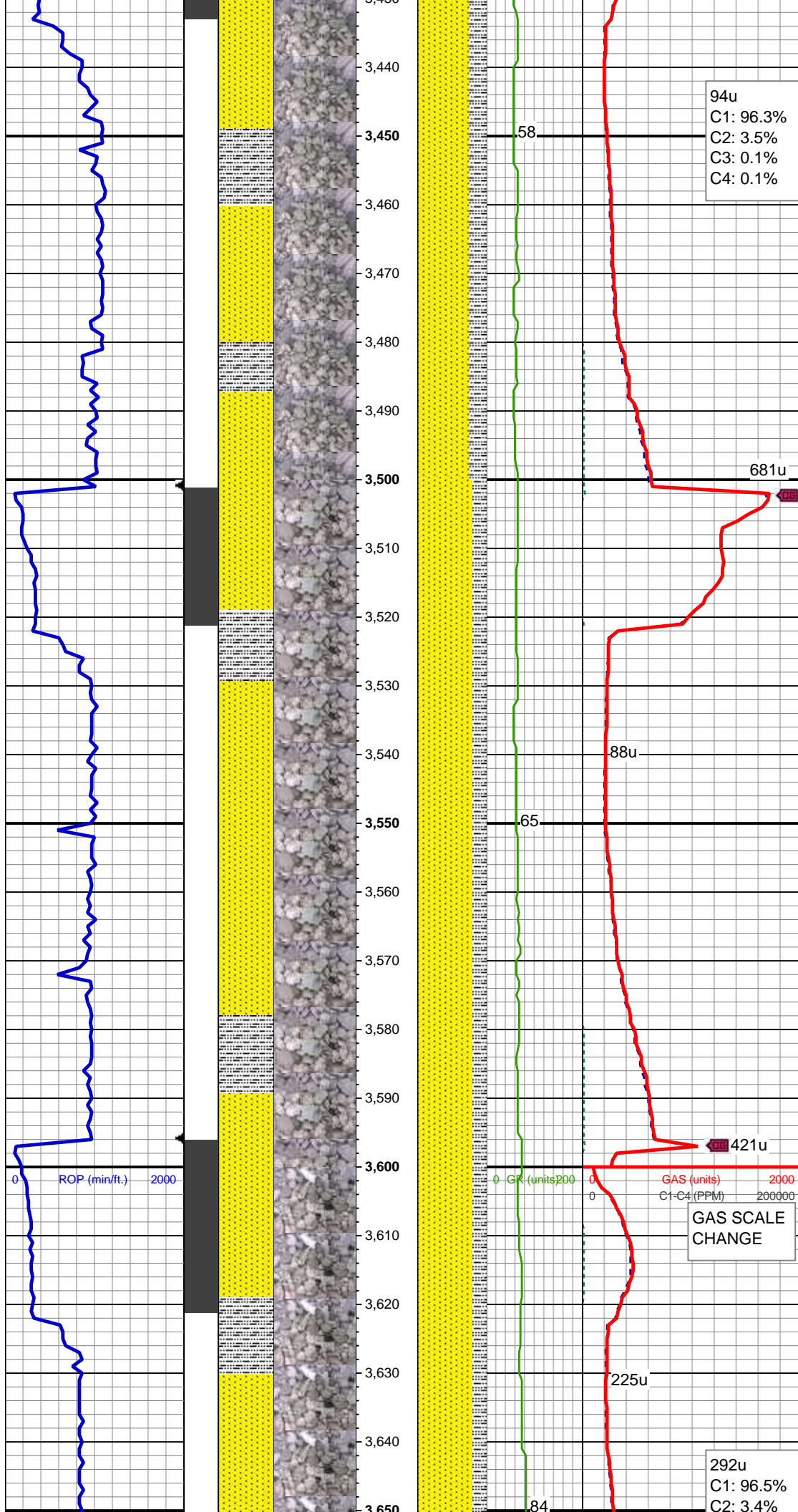
MD: 3,263 '
TVD: 3,224.59 '
Inclination: 15.4 °
Azimuth: 14.6 °
VS: -51.77 '

SLTY SH: lt gy - gy, mod sft - mod
frm, sb blkly - sb plty, arg - rthy mtx,
shy tex, non calc
SHY SS: gy - lt gy, occ wh, s&p, f gr,
sb ang - sb rnd, p - mod srt, arg
cmt, tr ss

MD: 3,358 '
TVD: 3,316.11 '
Inclination: 15.7 °
Azimuth: 14.1 °
VS: -55.38 '

SS: lt gy - wh trnsl, s&p, f gr, sb ang





- sb rnd, p - mod srt, tr glau, arg cmt
SLTY SH: lt gy - gy, mod sft - mod
frm, sb blk - sb plty, arg - rthy mtx,
shy tex, non calc, tr slty sh

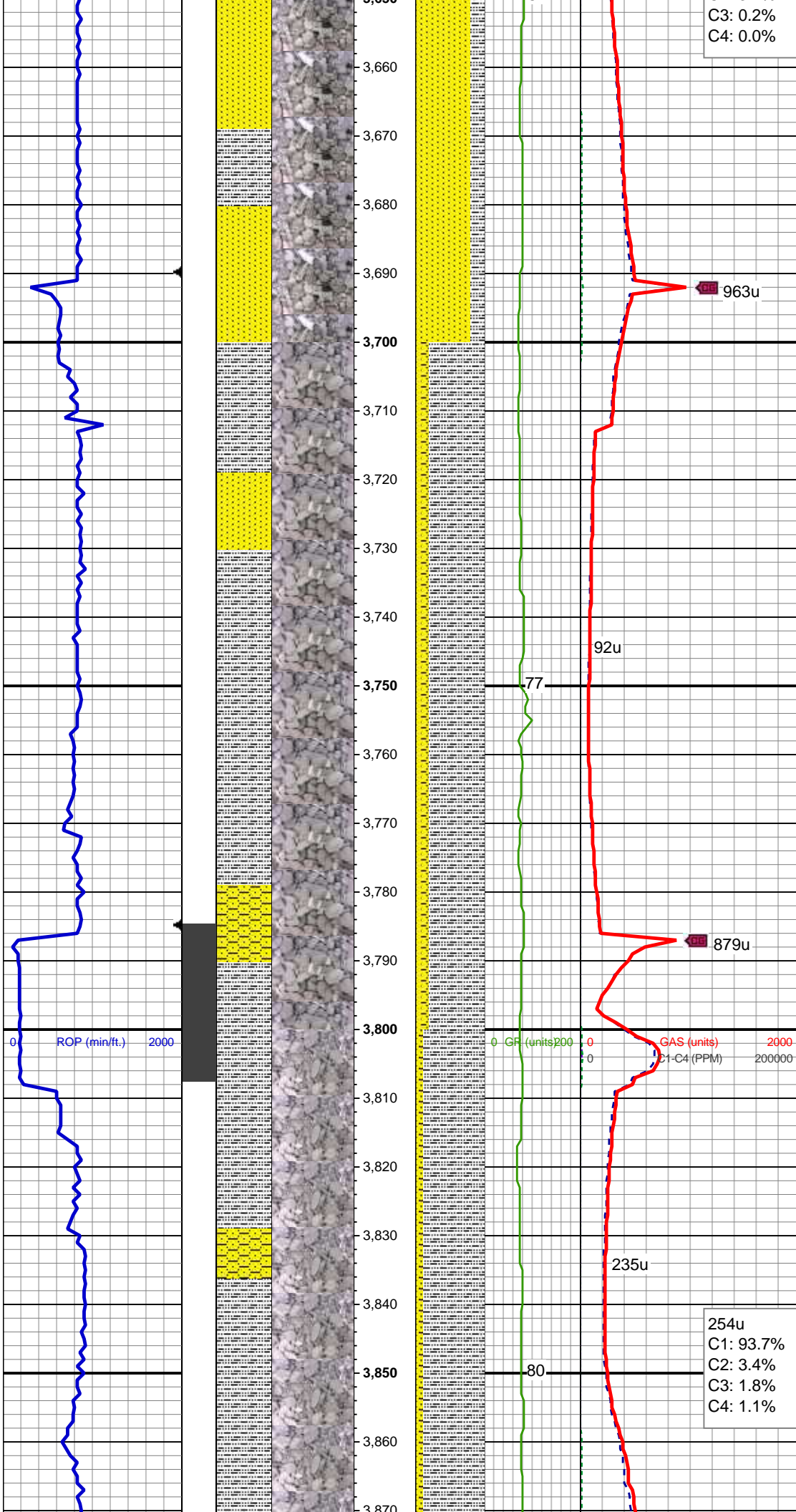
MD: 3,453 '
TVD: 3,407.53 '
Inclination: 15.9 °
Azimuth: 20 °
VS: -60.24 '

WT IN 8.85/ OUT 8.85
VIS IN 30/ OUT 30

MD: 3,547 '
TVD: 3,497.98 '
Inclination: 15.7 °
Azimuth: 24.4 °
VS: -67.28 '

SS: lt gy - wh trnsl, s&p, f gr, sb ang
- sb rnd, p - mod srt, tr glau, arg cmt
SLTY SH: lt gy - gy, mod sft - mod
frm, sb blk - sb plty, arg - rthy mtx,
shy tex, non calc, tr slty sh

MD: 3,642 '
TVD: 3,589.91 '
Inclination: 13.5 °
Azimuth: 25.5 °
VS: -74.96 '



C3: 0.2%
C4: 0.0%

SS: lt gy - wh trnsl, s&p, f gr, sb ang
- sb rnd, p - mod srt, tr glau, arg cmt
SLTY SH: lt gy - gy, mod sft - mod
frm, sb blkly - sb plty, arg - rthy mtx,
shy tex, non calc, tr slty sh

MD: 3,736 '
TVD: 3,681.57 '
Inclination: 12.1 °
Azimuth: 28 °
VS: -82.24 '

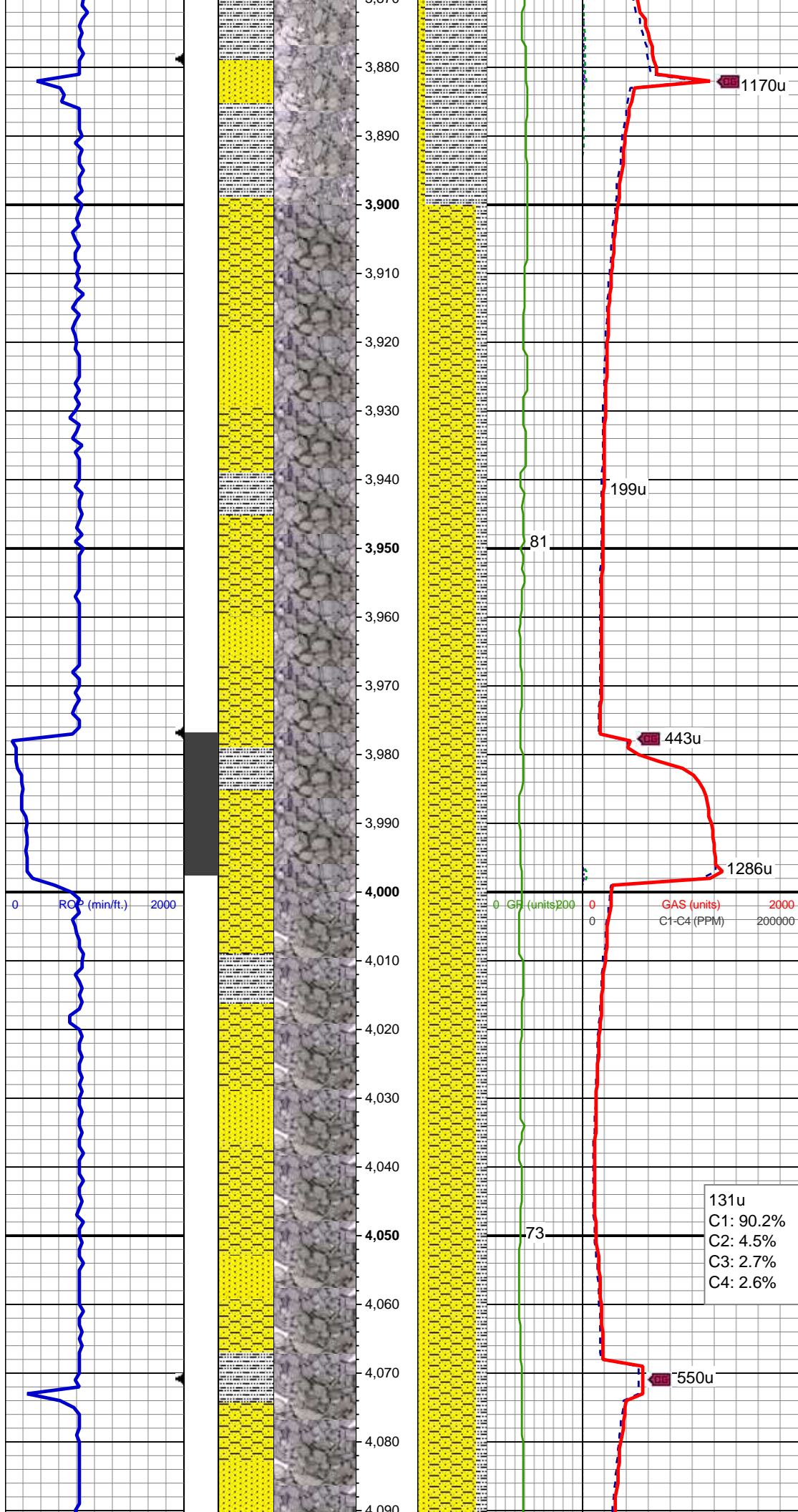
SLTY SH: lt-med gy, occ drkgy, sft -
mod frm, sb blkly, occ plty, arg-rthy
mtx, non calc
SS: wh - trnsl, s&p, f gr, sb ang-sb
rnd, p-mod srt, abnt glau, arg mtx
SHY SS: gy - lt gy, occ wh, s&p, f gr,
sb ang - sb rnd, p - mod srt, arg
cmt

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

MD: 3,831 '
TVD: 3,774.94 '
Inclination: 9.1 °
Azimuth: 28.5 °
VS: -88.79 '

254u
C1: 93.7%
C2: 3.4%
C3: 1.8%
C4: 1.1%

SLTY SH: lt-med gy, occ drkgy, sft -
mod frm, sb blkly, occ plty, arg-rthy
mtx, non calc
SS: wh - trnsl, s&p, f gr, sb ang-sb
rnd, p-mod srt, abnt glau, arg mtx
SHY SS: gy - lt gy, occ wh, s&p, f gr,
sb ang - sb rnd, p - mod srt, arg
cmt



MD: 3,925 '
TVD: 3,867.96 '
Inclination: 7.4 °
Azimuth: 33.1 °
VS: -94.35 '

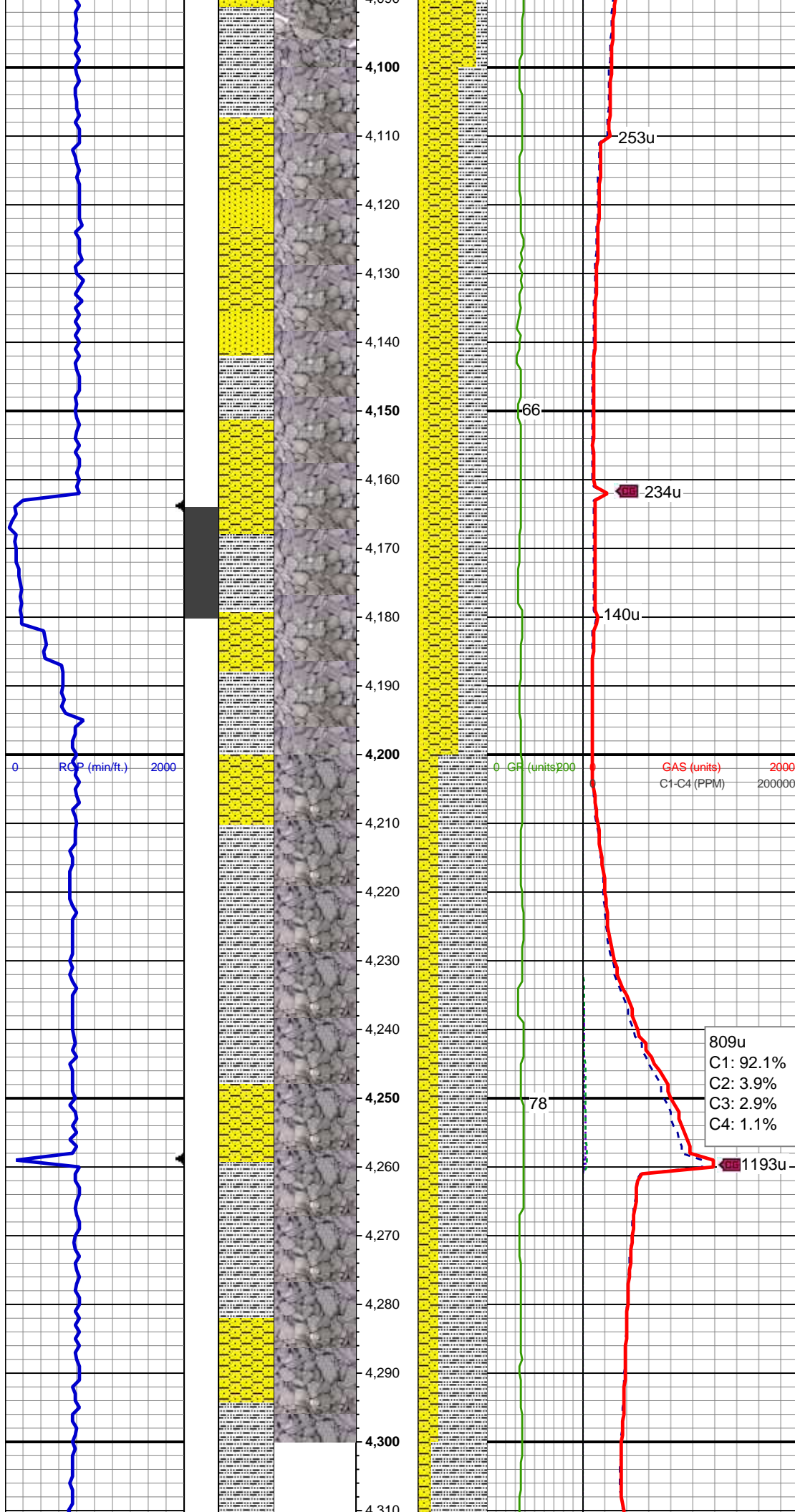
SHY SS: gy - lt gy, occ tan, s&p, f gr,
sb ang - sb rnd, p - mod srt, arg
cmt
SS: wh - trnsl, s&p, f gr, sb ang-sb
rnd, p-mod srt, occ glau, arg mtx
SLTY SH: lt-med gy, occ drkgy, sft -
mod frm, sb blkgy, occ plty, arg-rthy
mtx, non calc

MD: 4,020 '
TVD: 3,962.33 '
Inclination: 5.8 °
Azimuth: 29.7 °
VS: -99.03 '

WT IN 8.80/ OUT 8.80
VIS IN 29/ OUT 29

SHY SS: gy - lt gy, occ tan, s&p, f gr,
sb ang - sb rnd, p - mod srt, arg
cmt
SS: wh - trnsl, s&p, f gr, sb ang-sb
rnd, p-mod srt, occ glau, arg mtx
SLTY SH: lt-med gy, occ drkgy, sft -
mod frm, sb blkgy, occ plty, arg-rthy
mtx, non calc

131u
C1: 90.2%
C2: 4.5%
C3: 2.7%
C4: 2.6%



253u

66

234u

140u

0 GR (units) 200

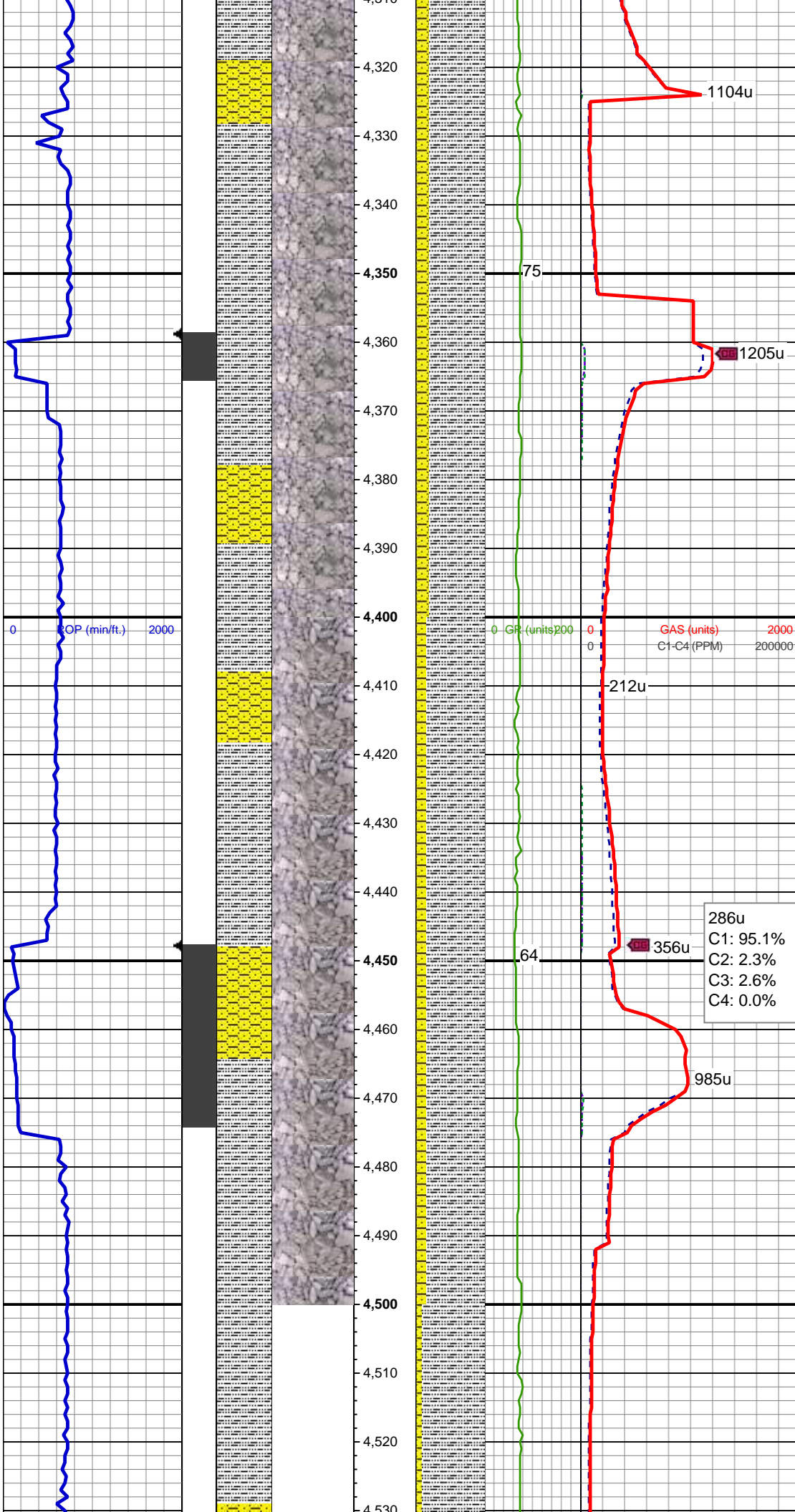
GAS (units) 2000
C1-C4 (PPM) 200000

809u
C1: 92.1%
C2: 3.9%
C3: 2.9%
C4: 1.1%

78

1193u

VS: -107.29'



WT IN 8.95/ OUT 9.20
VIS IN 29/ OUT 30

SLTY SH: lt-med gy, occ drkgy, sft -
mod frm, sb blkly, occ plty, arg-rthy
mtx, non calc

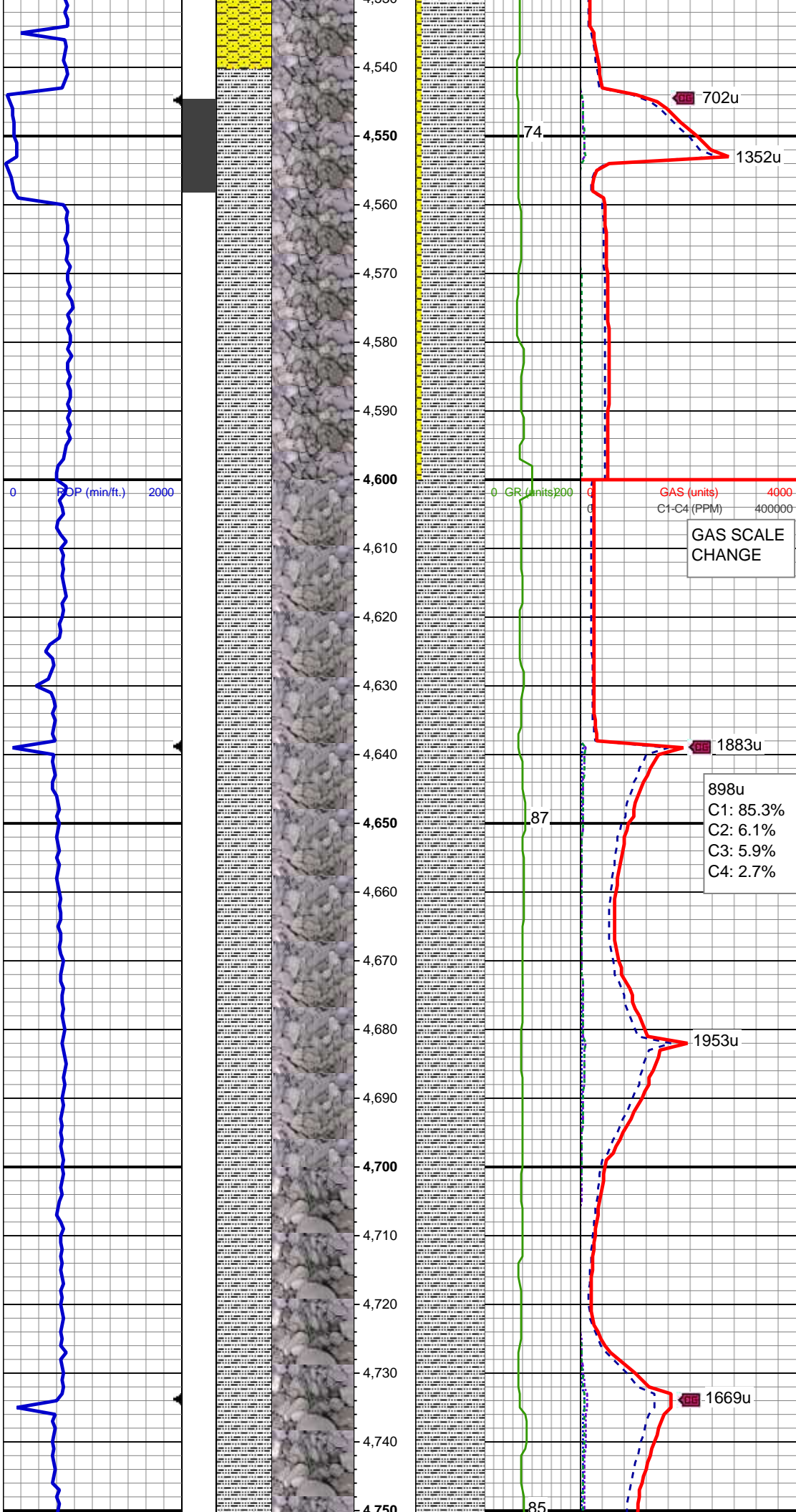
SHY SS: gy - lt gy, occ tan, s&p, f gr,
sb ang - sb rnd, p - mod srt, arg
cmt

MD: 4,399 '
TVD: 4,340.33 '
Inclination: 1.9 °
Azimuth: 39.4 °
VS: -109.18 '

SLTY SH: lt-med gy, occ drkgy, sft -
mod frm, sb blkly, occ plty, arg-rthy
mtx, non calc

SHY SS: gy - lt gy, occ tan, s&p, f gr,
sb ang - sb rnd, p - mod srt, arg
cmt

MD: 4,494 '
TVD: 4,435.28 '
Inclination: 2 °
Azimuth: 21.3 °
VS: -110.47 '



WT IN 9.05/ OUT 9.00
VIS IN 35/ OUT 32

SLTY SH: lt-med gy, occ drkgy, sft -
mod frm, sb blk, occ pty, arg-rthy
mtx, non calc
SHY SS: gy - lt gy, occ tan, s&p, f gr,
sb ang - sb rnd, p - mod srt, arg
cmt

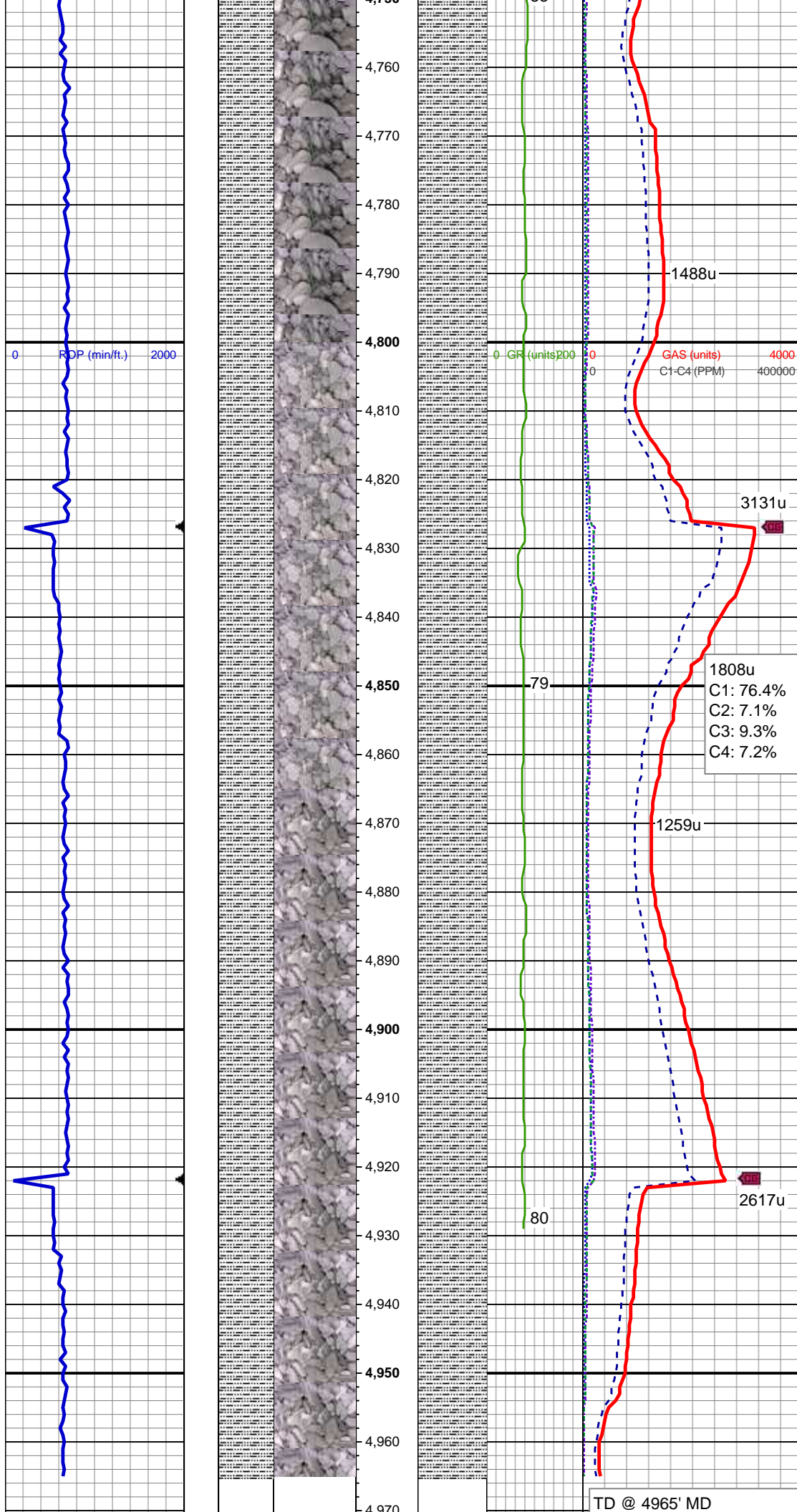
MD: 4,589 '
TVD: 4,530.21 '
Inclination: 2.4 °
Azimuth: 9.7 °
VS: -111.02 '

WT IN 8.85/ OUT 8.80
VIS IN 38/ OUT 37

SLTY SH: lt-med gy, occ drkgy, sft -
mod frm, sb blk, occ pty, arg-rthy
mtx, non calc, tr shy ss

MD: 4,684 '
TVD: 4,625.12 '
Inclination: 2.5 °
Azimuth: 359.1 °
VS: -110.89 '

SLTY SH: lt-med gy, occ drkgy, sft -
mod frm, sb blk, occ pty, arg-rthy



mtx, non calc, tr shy ss

MD: 4,778 '
TVD: 4,719.04 '
Inclination: 2.3 °
Azimuth: 336.1 °
VS: -109.69 '

SLTY SH: lt-med gy, occ drkgy, sft -
mod frm, sb blkgy, occ plty, arg-rthy
mtx, non calc, tr shy ss

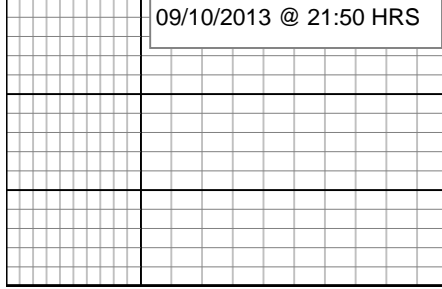
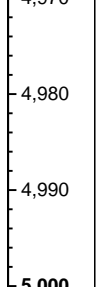
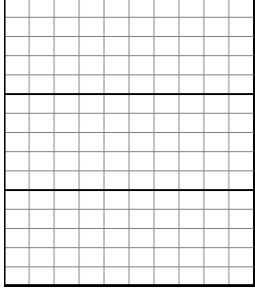
MD: 4,873 '
TVD: 4,813.97 '
Inclination: 2.2 °
Azimuth: 324 °
VS: -107.51 '

SLTY SH: lt-med gy, occ drkgy, sft -
mod frm, sb blkgy, occ plty, arg-rthy
mtx, non calc, tr shy ss

WT IN 9.10/ OUT 8.95
VIS IN 37/ OUT 37

TD @ 4965' MD

TOOH FOR MWD TOOLS



09/10/2013 @ 21:50 HRS

LOG CONTINUES ON MPLOT
"ROHN STATE
LD09-69-1HN(HORZ)"

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