

COLUMBINE LOGGING

Scale: 5" / 100'
Measured Depth Log

Well Name Five Rivers K18-69HN

Location SESE SEC8 T4N R66W

State COLORADO

County WELD

Country USA

Rig Number PRECISION 828

API Number 05-123-38069

AFE # 142005

Region DENVER-JULESBURG BASIN

Field WATTENBERG

Spud Date 1/21/2014

Drilling Completed 12/7/2014

Surface Coordinates 862' FSL, 689' FEL

Lat/Long: 40.32131/-104.79468

Bottom Hole Coordinates SEC7 T4N R66W

75' FSL, 535' FWL

Ground Elevation 4702'

K.B. Elevation 4718'

Logged Interval 616'

To 6720'

Total Depth 16145'

Formation FOX HILLS, PIERRE, PARKMAN, SUSSEX, SHANNON, TEEPEE BUTTES

Type of Drilling Fluid FRESH WATER, LSND

Operator

Company NOBLE ENERGY INC.

Address 1625 Broadway
Denver, CO 80202

Geologist

Name CASSIDY MILLER

Company NOBLE ENERGY, INC.

Address 1625 Broadway
Denver, CO 80202

Other

Wellsite Geologists:

GARY MYERS, ELIZABETH VAN DIEPEN

WELLSITE GEOLOGICAL SERVICES PROVIDED BY COLUMBINE LOGGING INC.

LOG CONTINUES ON FILE: Five Rivers K18-69HN Horiz.mplot

Rock Types



SANDSTONE



SHALY SANDSTONE



SHALY SILTSTONE



SILTY SHALE

Other Symbols

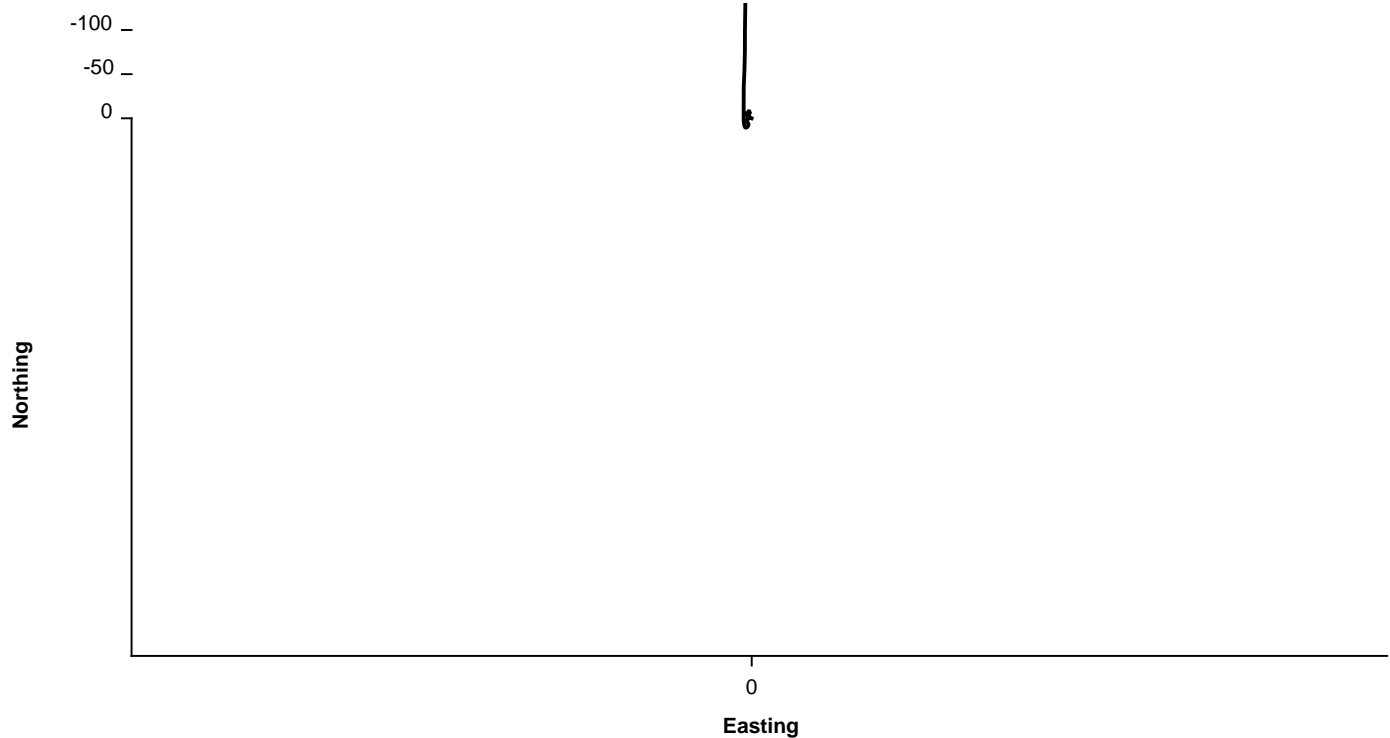
Engineering

CONNECTION (RIGHT)

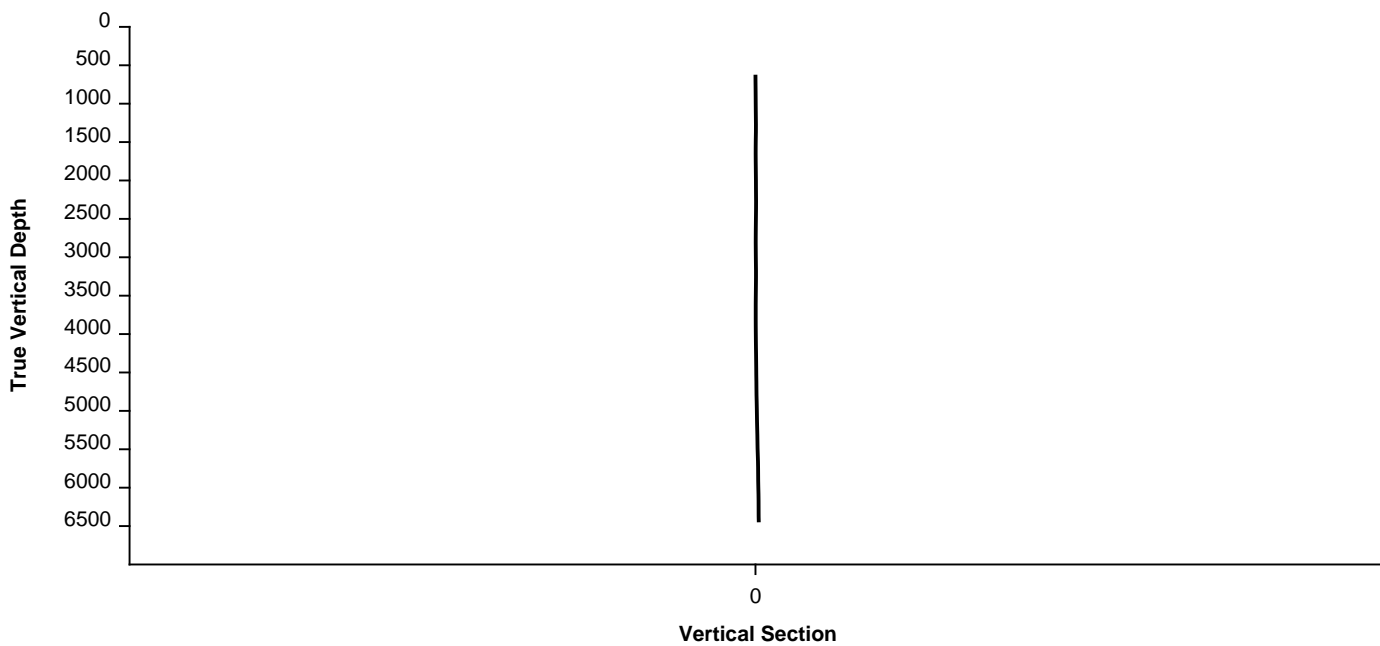
CONNECTION GAS

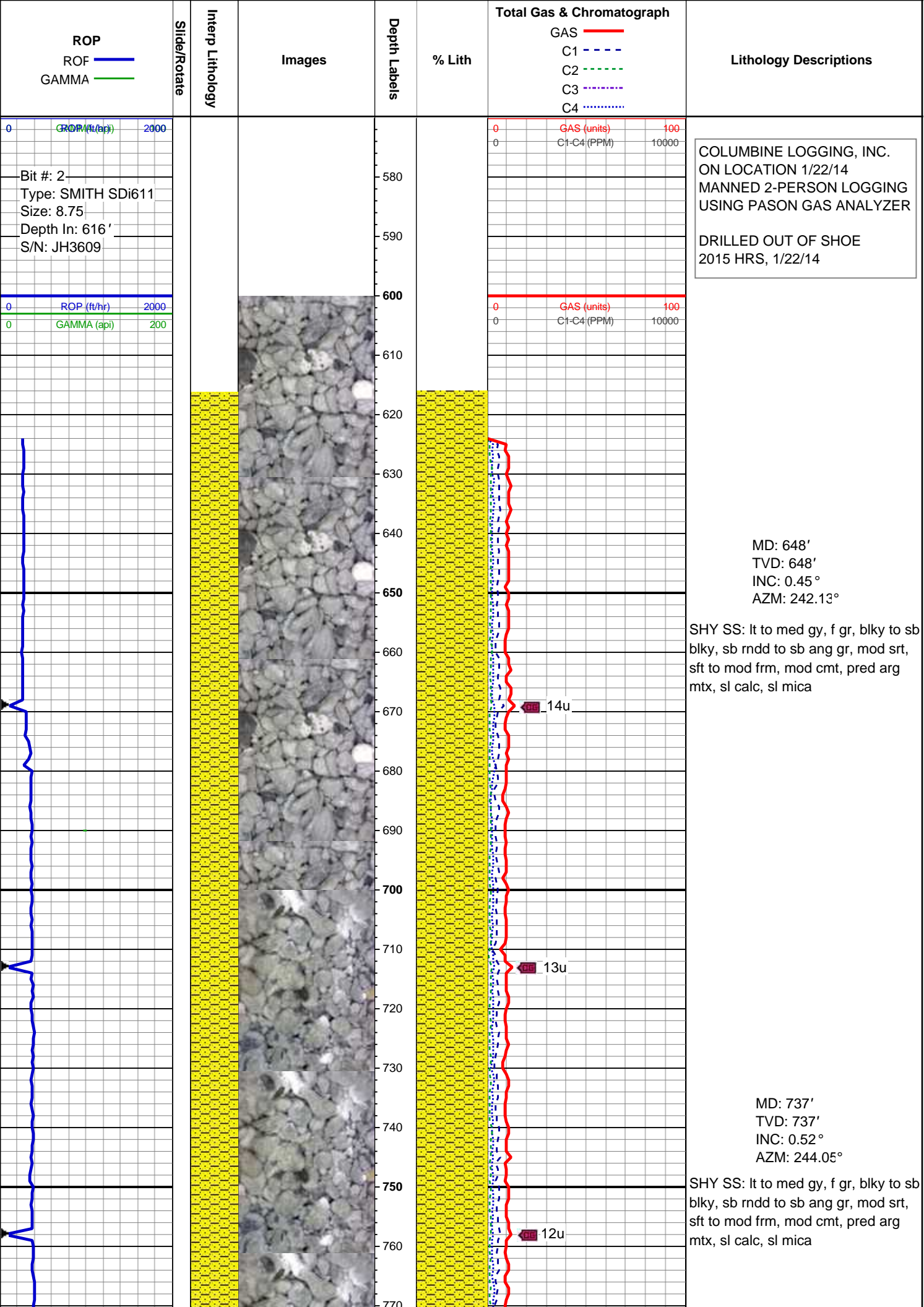
MINDEPTH MN DEPTH

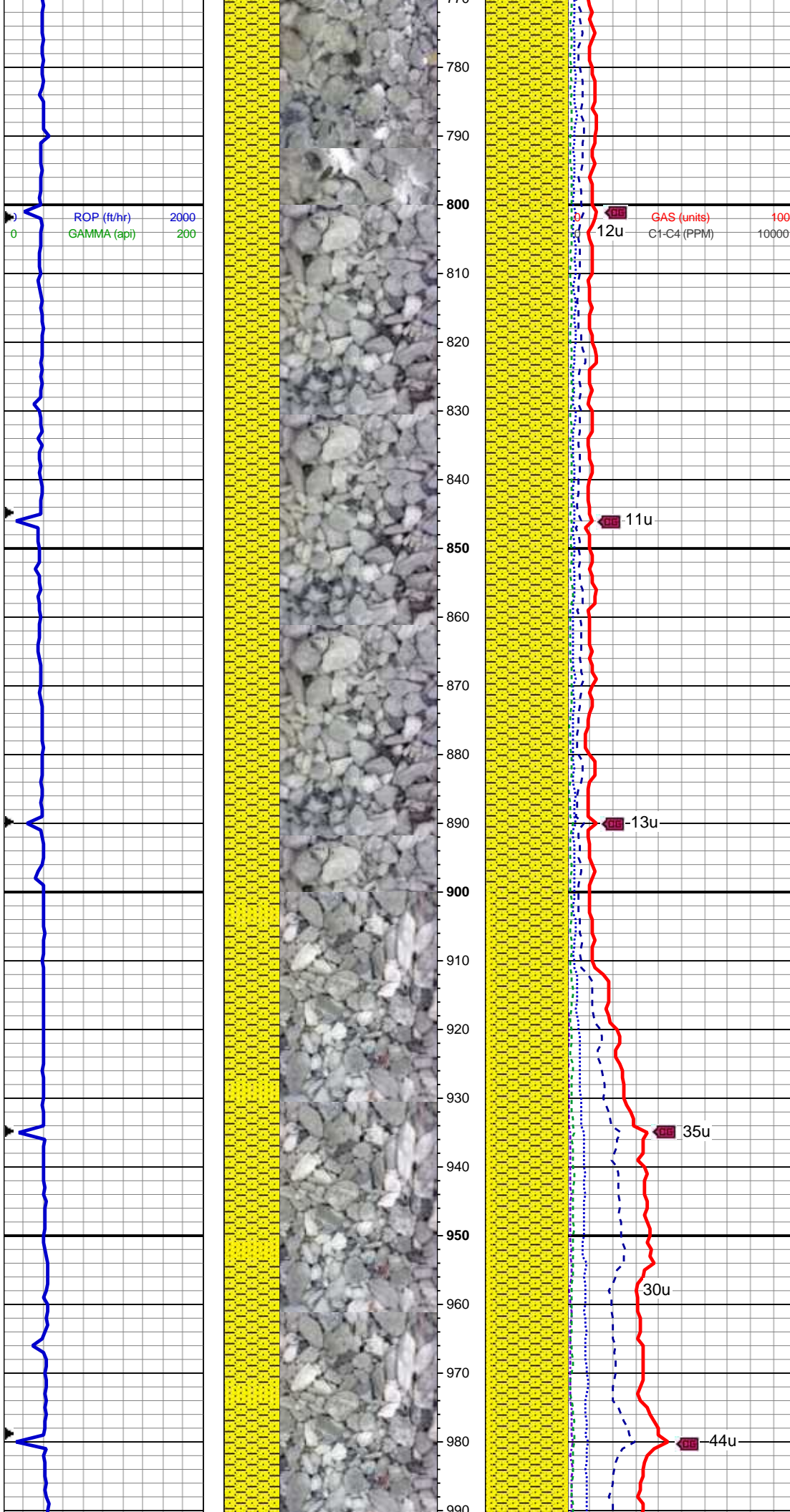
Survey Plan



Survey Elevation





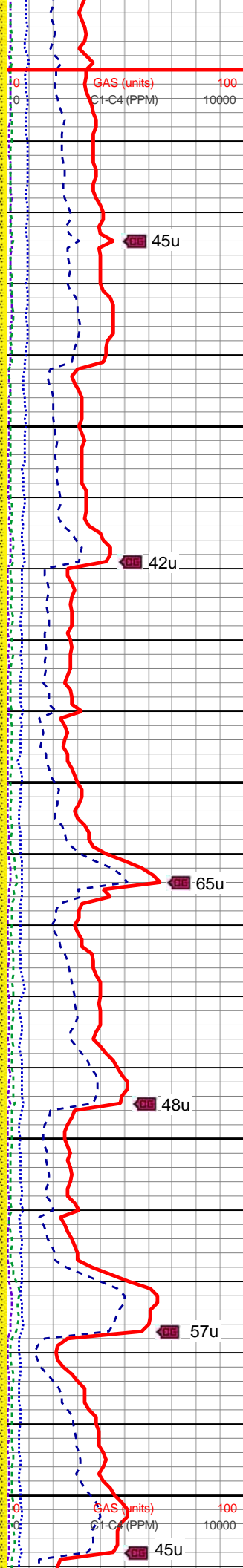
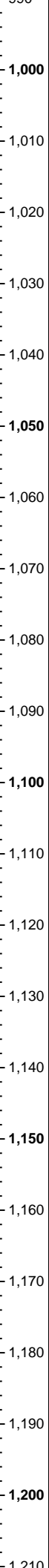
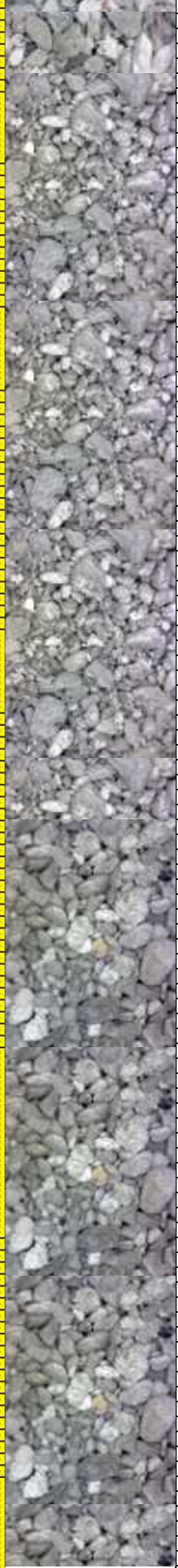
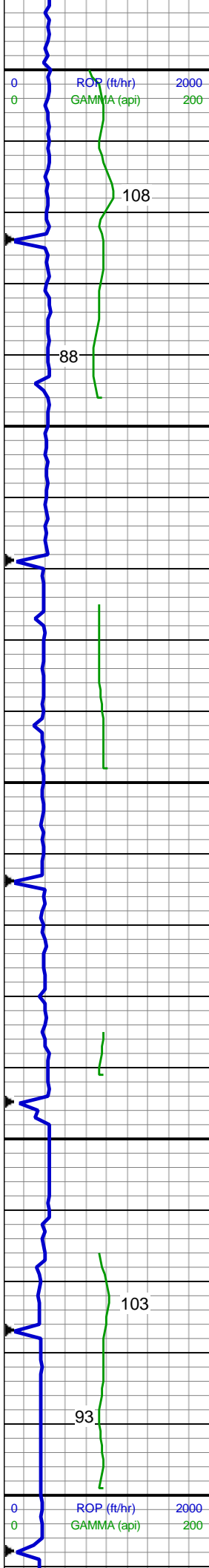


MD: 827'
TVD: 826.99'
INC: 0.6°
AZM: 239.01°

SHY SS: lt to med gy, occ op, f gr, blk to sb blk, sb rnd to sb ang gr, mod srt, sft to mod frm, mod cmt, pred arg mtx, sl calc, sl mica

MD: 917'
TVD: 916.99'
INC: 0.52°
AZM: 224.58°

SHY SS: lt to med gy, f gr, blk to sb blk, sb rnd to sb ang gr, mod srt, sft to mod frm, mod cmt, pred arg mtx, sl calc, occ grd to
SS: lt to med gy, s&p, clr to trns, f to med gr, blk to sb blk, sb rnd to sb ang gr, mod to w srt, brit, p to mod cmt, arg to sil mtx, sl calc, occ mica, glau incl



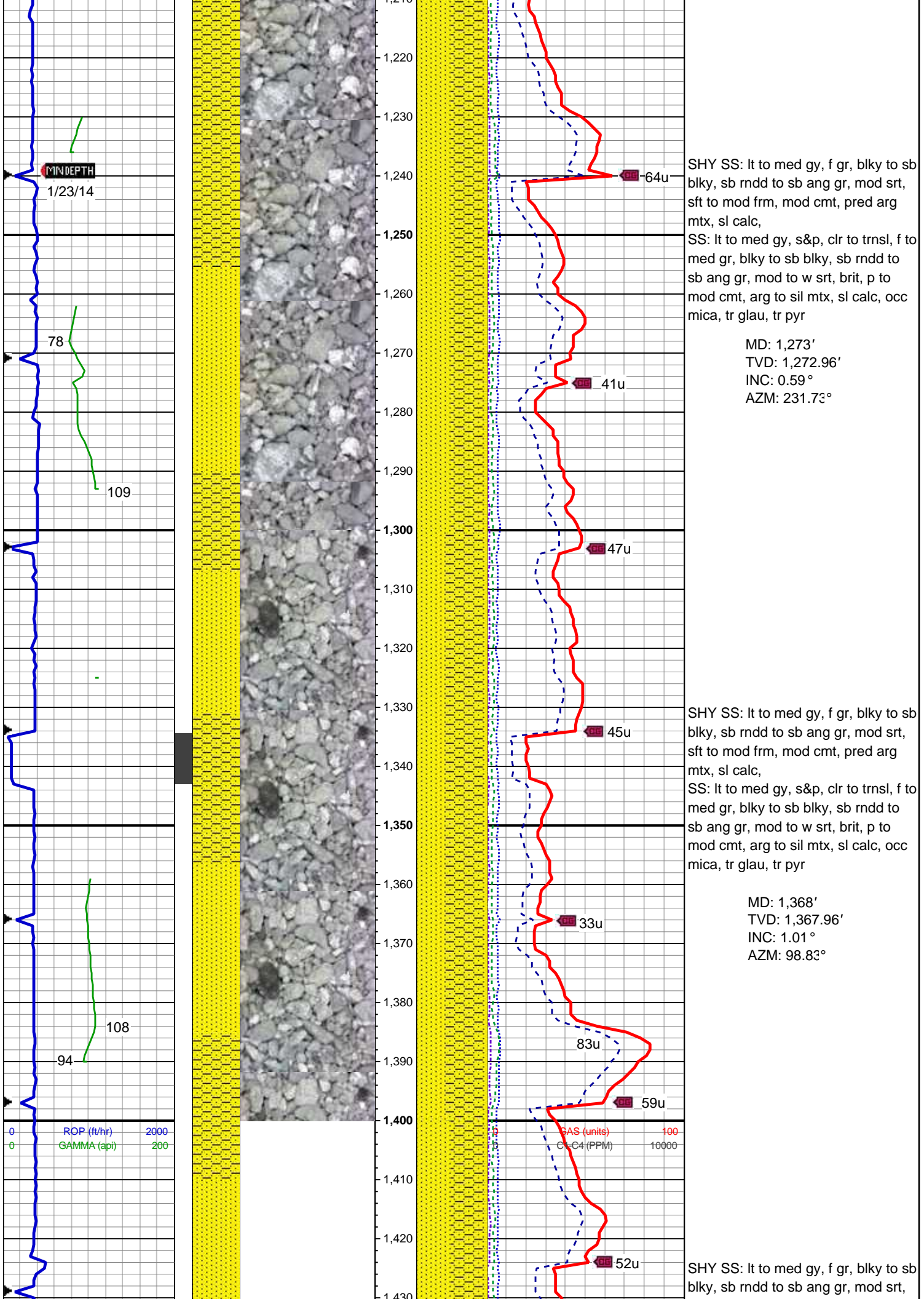
MD: 1,007'
TVD: 1,006.98'
INC: 0.65°
AZM: 231.14°

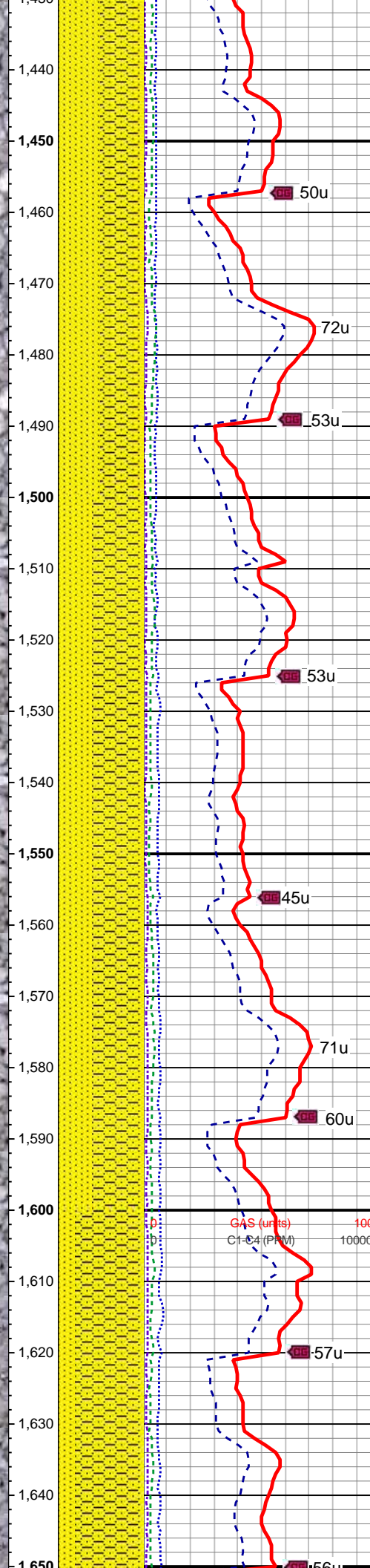
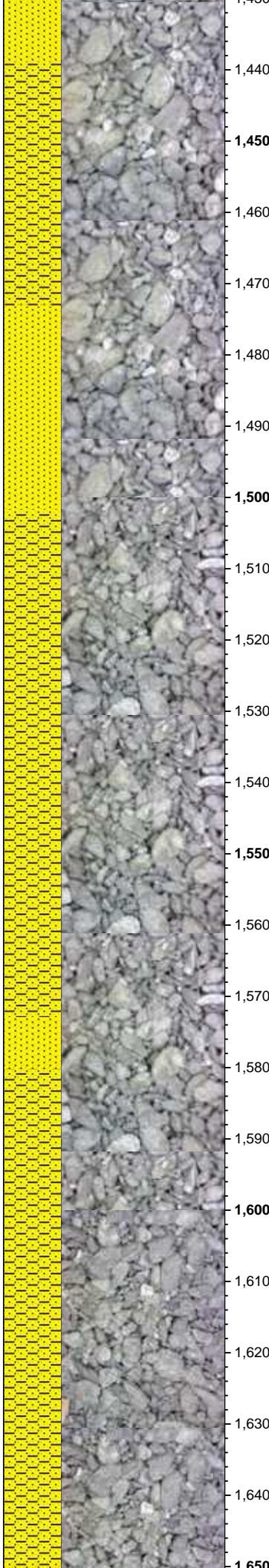
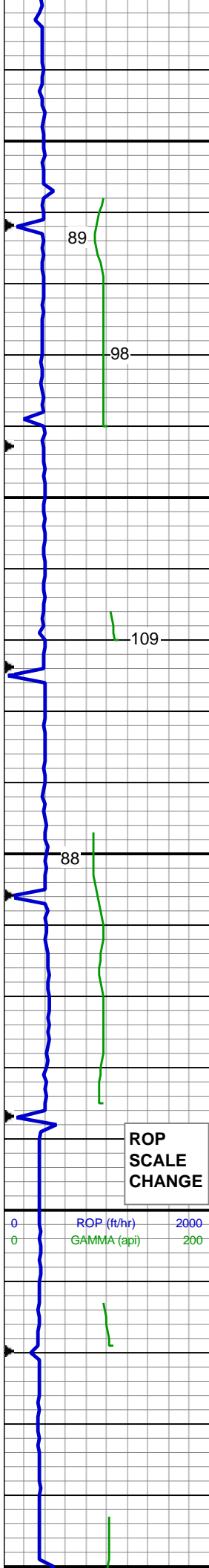
SHY SS: lt to med gy, f gr, blk to sb
blk, sb rndd to sb ang gr, mod srt,
sft to mod frm, mod cmt, pred arg
mtx, sl calc, occ grd to
SS: lt to med gy, s&p, clr to trns, f to
med gr, blk to sb blk, sb rndd to
sb ang gr, mod to w srt, brit, p to
mod cmt, arg to sil mtx, sl calc, occ
mica, glau incl

MD: 1,083'
TVD: 1,082.98'
INC: 0.77°
AZM: 235.13°

SHY SS: lt to med gy, f gr, blk to sb
blk, sb rndd to sb ang gr, mod srt,
sft to mod frm, mod cmt, pred arg
mtx, sl calc,
SS: lt to med gy, s&p, clr to trns, f to
med gr, blk to sb blk, sb rndd to
sb ang gr, mod to w srt, brit, p to
mod cmt, arg to sil mtx, sl calc, occ
mica, tr glau, tr pyr

MD: 1,178'
TVD: 1,177.97'
INC: 0.64°
AZM: 242.99°





sft to mod frm, mod cmt, pred arg
mtx, sl calc, grdg to
SS: lt to med gy, s&p, clr to trnsl, f to
med gr, blkly to sb blkly, sb rndd to
sb ang gr, mod to w srt, brit, p to
mod cmt, arg to sil mtx, sl calc, occ
mica, tr glauc, tr pyr

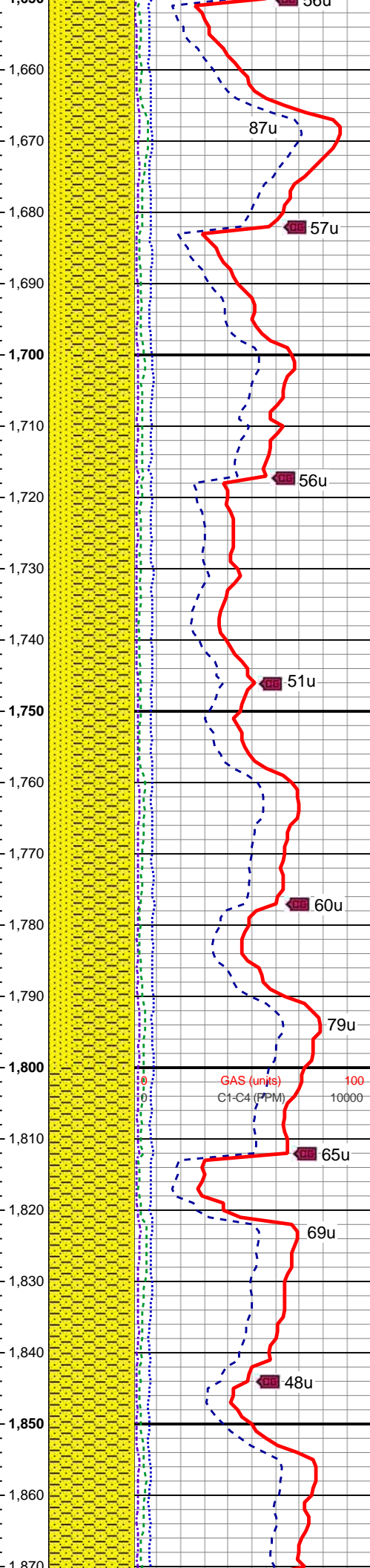
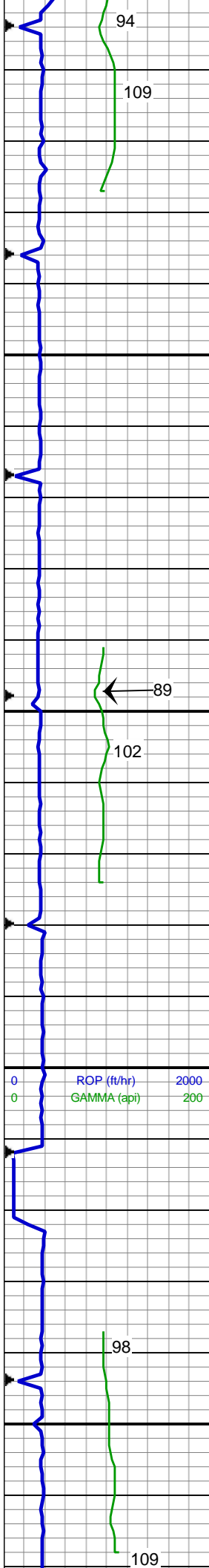
MD: 1,463'
TVD: 1,462.95'
INC: 0.87°
AZM: 118.04°

SHY SS: lt to med gy, f gr, blkly to sb
blkly, sb rndd to sb ang gr, mod srt,
sft to mod frm, mod cmt, pred arg
mtx, sl calc, grdg to
SS: lt to med gy, s&p, clr to trnsl, f to
med gr, blkly to sb blkly, sb rndd to
sb ang gr, mod to w srt, brit, p to
mod cmt, arg to sil mtx, sl calc, occ
mica, tr pyr

MD: 1,558'
TVD: 1,557.94'
INC: 0.71°
AZM: 125.78°

SHY SS: lt to med gy, f gr, blkly to sb
blkly, sb rndd to sb ang gr, mod srt,
sft to mod frm, mod cmt, pred arg
mtx, sl calc, grdg to
SS: lt to med gy, s&p, clr to trnsl, f to
med gr, blkly to sb blkly, sb rndd to
sb ang gr, mod to w srt, brit, p to
mod cmt, arg to sil mtx, sl calc, occ
mica

MD: 1,652'
TVD: 1,651.92'



TVD: 1,651.93'
INC: 0.81°
AZM: 180.35°

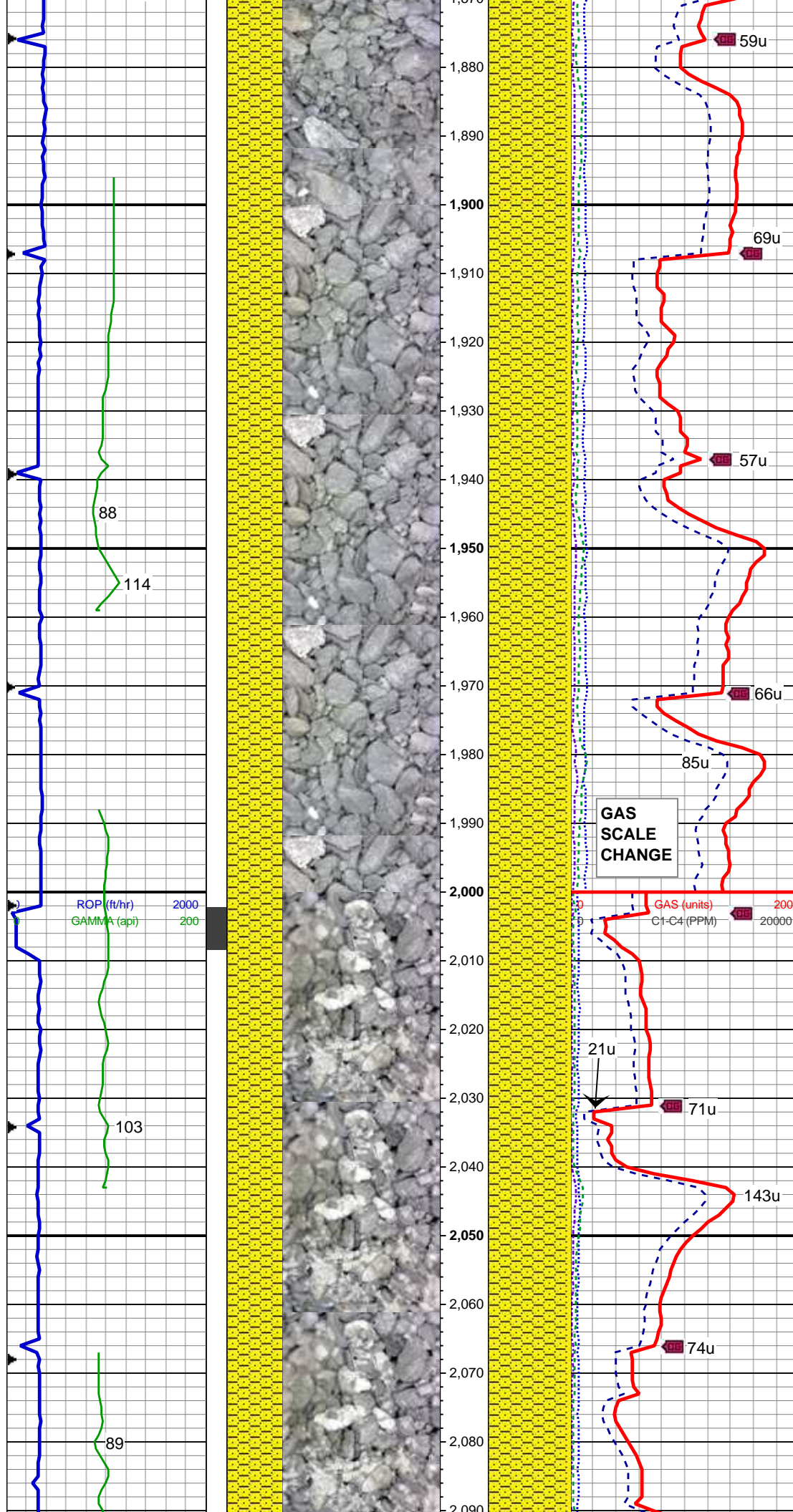
MD: 1,747'
TVD: 1,746.92'
INC: 1.17°
AZM: 218°

SHY SS: lt to med gy, f gr, blkly to sb blkly, sb rndd to sb ang gr, mod srt, sft to mod frm, mod cmt, pred arg mtx, sl calc, grdg to
SS: lt to med gy, s&p, clr to trnsl, f to med gr, blkly to sb blkly, sb rndd to sb ang gr, mod to w srt, brit, p to mod cmt, arg to sil mtx, sl calc, occ mica, tr glau

Depth: 1812'
WT 8.5
VIS 28
YP 3
pH 8.8
Cl- 1000
Ca++ 1080

MD: 1,842'
TVD: 1,841.91'
INC: 0.93°
AZM: 335.75°

SHY SS: pred med gy, s&p ip, trnsl to op, vf to f gr, blkly to sbblkly, sbnd to sbang gr, mod srt, sft to mod frm, mod cmt, pred arg mtx, sl calc, grdg to lt gy m gr ss



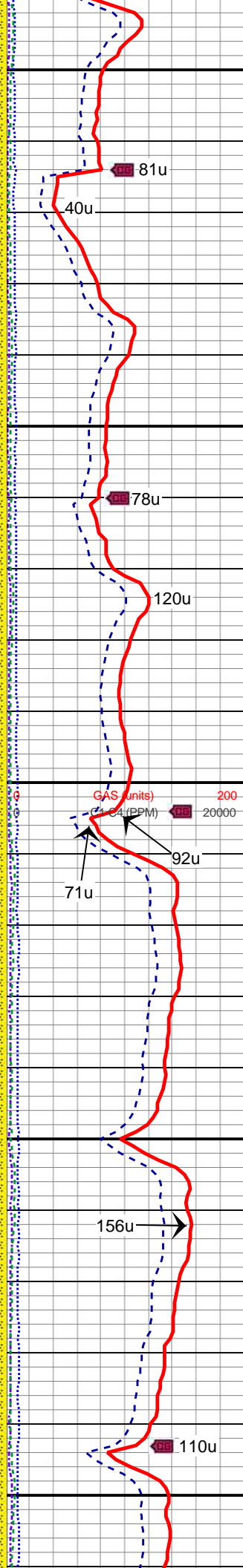
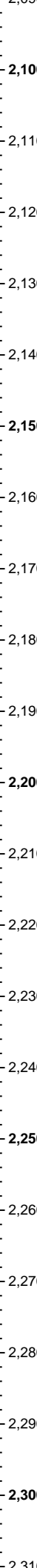
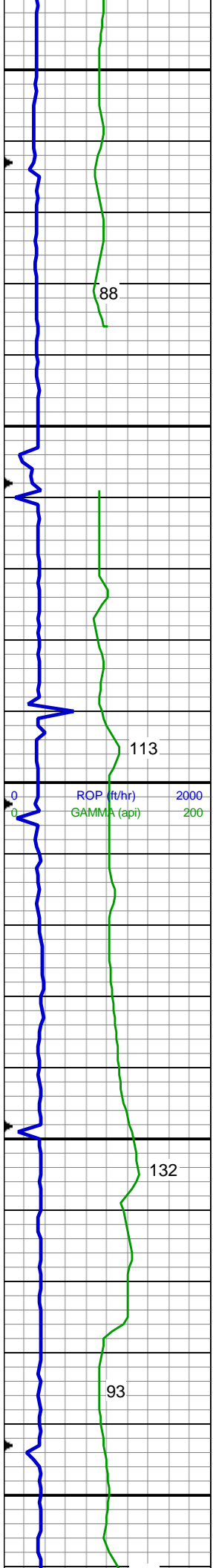
MD: 1,937'
TVD: 1,936.89'
INC: 1.17°
AZM: 313.52°

SHY SS: pred med gy, s&p ip, trnsl to op, vf to f gr, blkly to sbbkly, sbrnd to sbang gr, mod srt, sft to mod frm, mod cmt, pred arg mtx, sl calc, grdg to lt gy m gr ss

MD: 2,000'
TVD: 1,999.89'
INC: 0.58°
AZM: 306.25°

SHY SS: pred med gy, trnsl to op, vf to f gr, blkly to sbbkly, sbang gr, mod to w srt, sft to mod frm, mod cmt, pred arg mtx, sl calc, abnt wh cly, slty, tr pyr, grdg to slty sh

MD: 2,093'
TVD: 2,092.88'



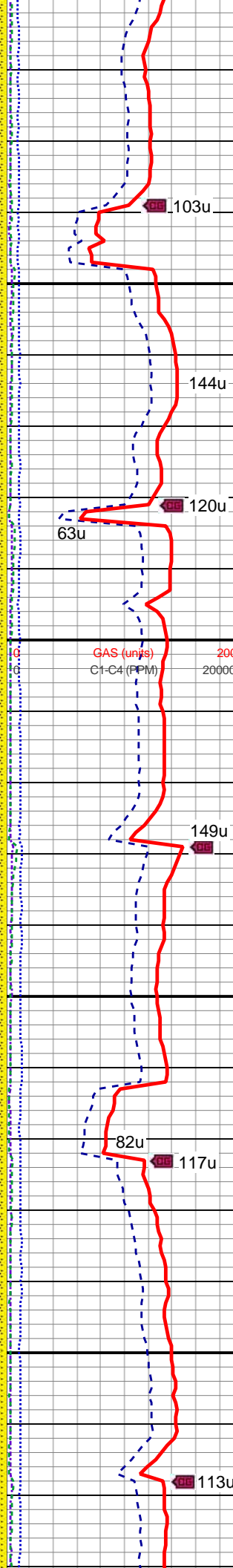
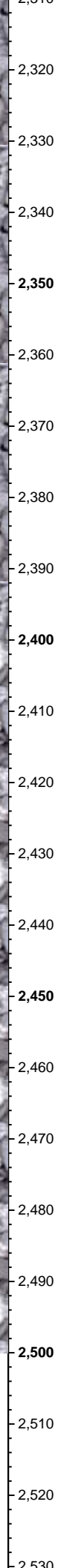
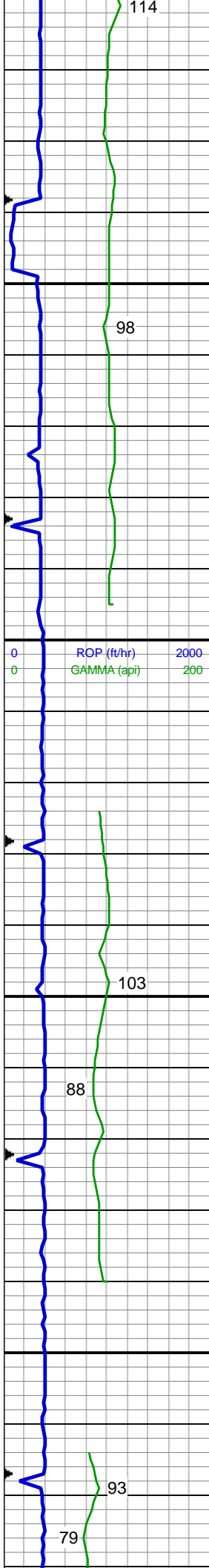
TVD: 2,092.88'
INC: 0.32°
AZM: 279.91°

SHY SS: pred med gy, trnsl to op, vf to f gr, blkly to sbblky, sbang gr, mod to w srt, sft to mod frm, mod cmt, pred arg mtx, sl calc, abnt wh cly, slty, tr pyr, grdg to slty sh

MD: 2,183'
TVD: 2,182.88'
INC: 0.55°
AZM: 295.3°

SHY SS: pred med gy, occ lt gy, trnsl to op, vf to f gr, blkly to sbblky, sbang gr, mod to w srt, sft to mod frm, mod cmt, pred arg mtx, sl calc, tr m gr ss, tr wh cly, slty, grdg to shy sltst

MD: 2,273'
TVD: 2,272.88'
INC: 0.69°
AZM: 325.45°



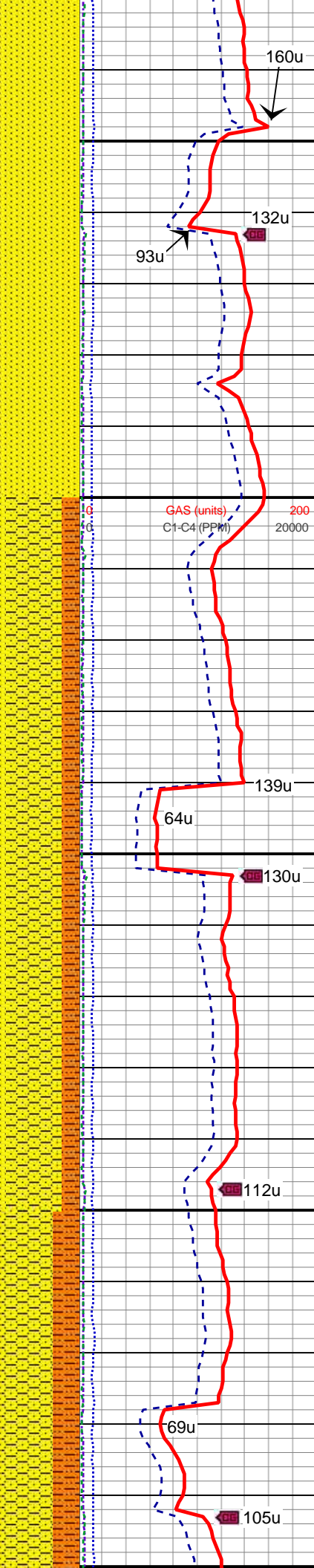
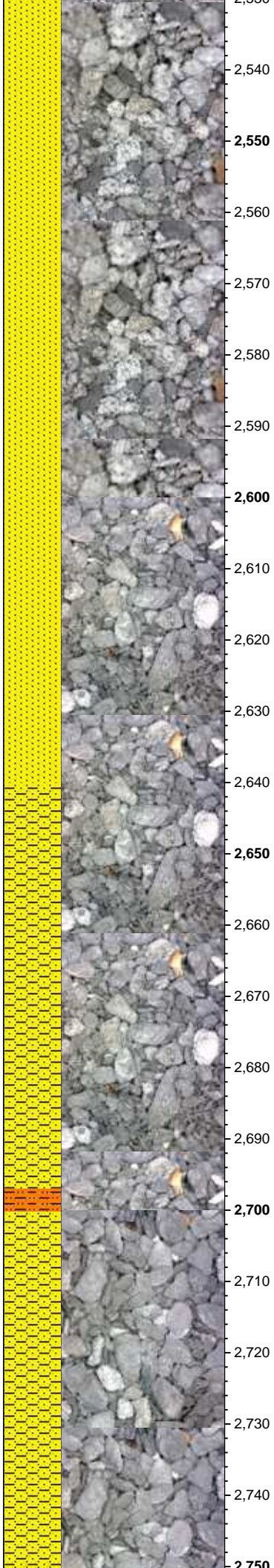
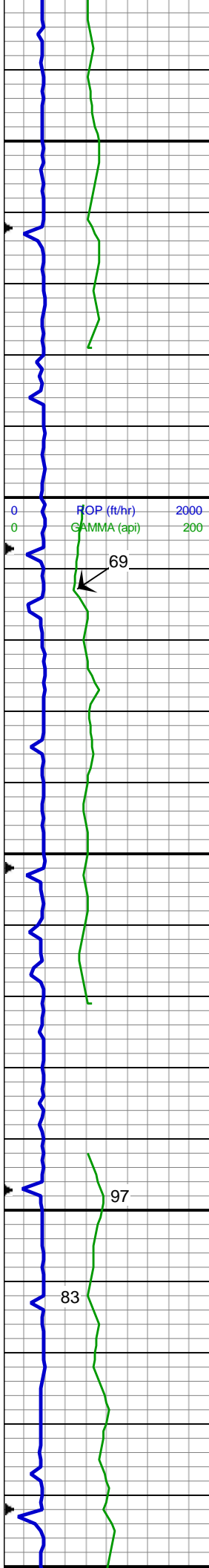
WT: 8.6 / VIS 26

SHY SS: pred med gy, occ lt gy, trnsl to op, vf to f gr, blkly to sbblky, sbang gr, mod to w srt, sft to mod frm, mod cmt, pred arg mtx, sl calc, tr m gr ss, tr wh cly, slty, grdg to shy sltst

MD: 2,363'
TVD: 2,362.87'
INC: 0.67°
AZM: 79.35°

SHY SS: pred med gy, occ lt gy, trnsl to op, vf to f gr, sbblky to sbplty, sbang gr, mod to w srt, sft to mod frm, mod cmt, pred arg mtx, sl calc, slty, grdg to shy sltst
SS: wh to med gy, s&p ip, clr to trnsl, pred med gr, blkly to sbblky, sbang to ang tr, w srt, p cmt, sil to arg mtx, tr glau, sl calc

MD: 2,452'
TVD: 2,451.87'
INC: 0.65°
AZM: 61.65°



MD: 2,542'
TVD: 2,541.86'
INC: 0.93°
AZM: 51.65°

SS: wh to med gy, s&p ip, clr to trnsl, occ op, f to med gr, blkly to sbbly, sbang to ang tr, w srt, p cmt, sil to arg mtx, tr glau, sl calc, slty/shy ip, grdg to shy ss

WT: 8.6 / VIS 27

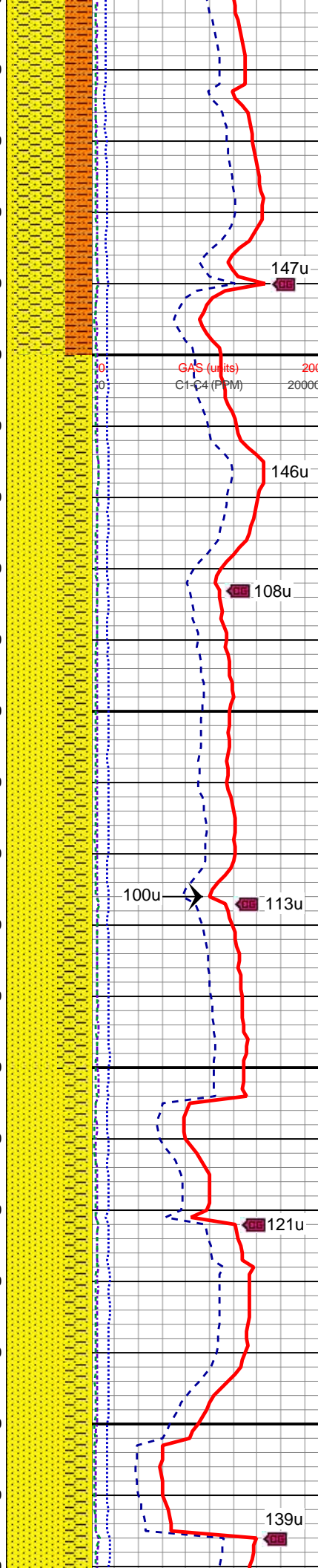
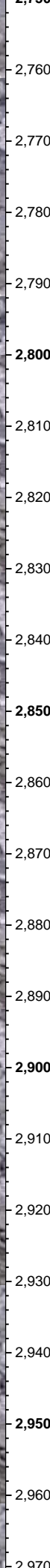
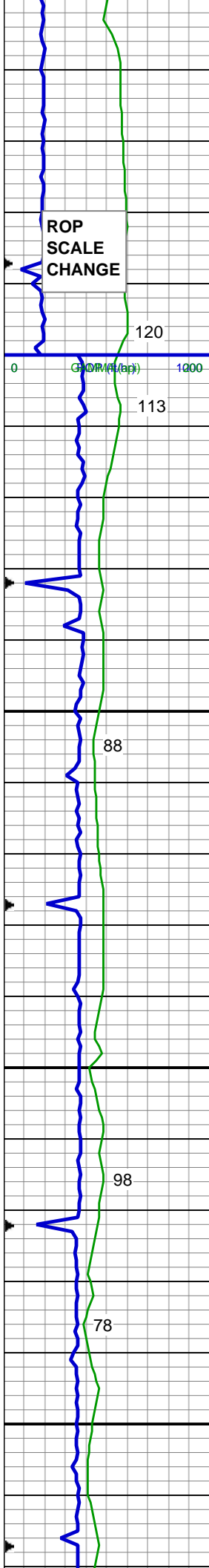
MD: 2,632'
TVD: 2,631.85'
INC: 0.75°
AZM: 47.8°

SHY SS: pred med gy, occ lt gy, trnsl to op, vf to f gr, sbbly to sbply, sbang gr, mod to w srt, sft to mod frm, mod cmt, pred arg mtx, sl calc, slty, grdg to shy sltst

SS: wh to med gy, s&p ip, clr to trnsl, pred med gr, blkly to sbbly, sbang to ang tr, w srt, p cmt, sil to arg mtx, sl calc

MD: 2,722'
TVD: 2,721.84'
INC: 0.83°
AZM: 39.37°

SHY SS: pred med gy, occ lt gy, trnsl to op, vf to f gr, sbbly to sbply, sbang gr, mod to w srt, sft to mod frm, mod cmt, pred arg mtx, sl calc



slty, grdg to shy sltst
SS: wh to med gy, s&p ip, clr to trnsl, pred med gr, blkly to sbbkly, sbang to ang tr, w srt, p cmt, sil to arg mtx, sl calc

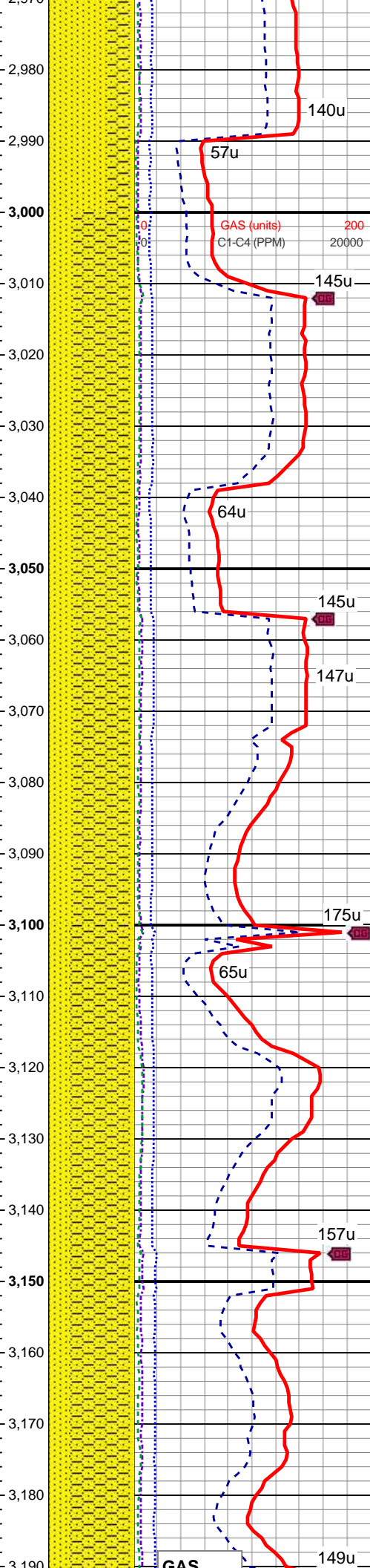
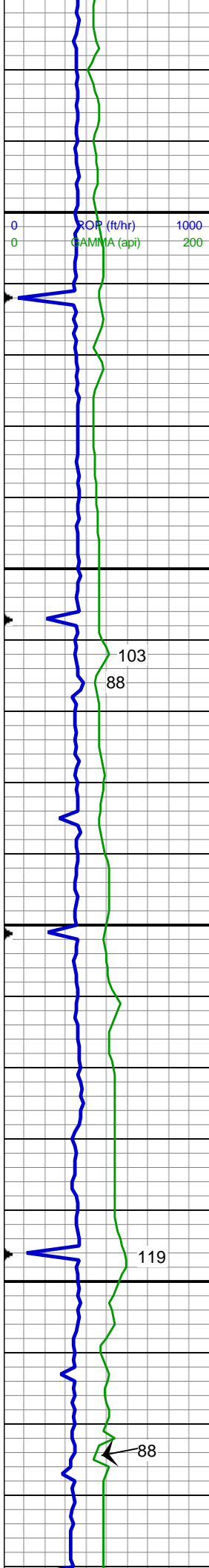
MD: 2,812'
TVD: 2,811.83'
INC: 0.66°
AZM: 336.82°

WT: 8.6 / VIS 27

SS: wh to med gy, s&p ip, clr to trnsl, pred med gr, blkly to sbbkly, sbang to ang tr, w srt, p cmt, sil to arg mtx, sl tr pyr, sl tr glau, sl calc
SHY SS: pred med gy, occ lt gy, trnsl to op, vf to f gr, sbbkly to sbplty, sbang gr, mod to w srt, sft to mod frm, mod cmt, pred arg mtx, sl calc, slty, grdg to shy sltst

MD: 2,902'
TVD: 2,901.83'
INC: 0.72°
AZM: 298.17°

SS: wh to med gy, s&p ip, clr to trnsl, pred med gr, blkly to sbbkly, sbang to ang tr, w srt, p cmt, sil to arg mtx, sl tr pyr, sl tr glau, sl calc
SHY SS: pred med gy, occ lt gy, trnsl to op, vf to f gr, sbbkly to sbplty, sbang gr, mod to w srt, sft to mod frm, mod cmt, pred arg mtx, sl calc, slty, grdg to shy sltst



MD: 2,992'
TVD: 2,991.82'
INC: 0.87°
AZM: 307.19°

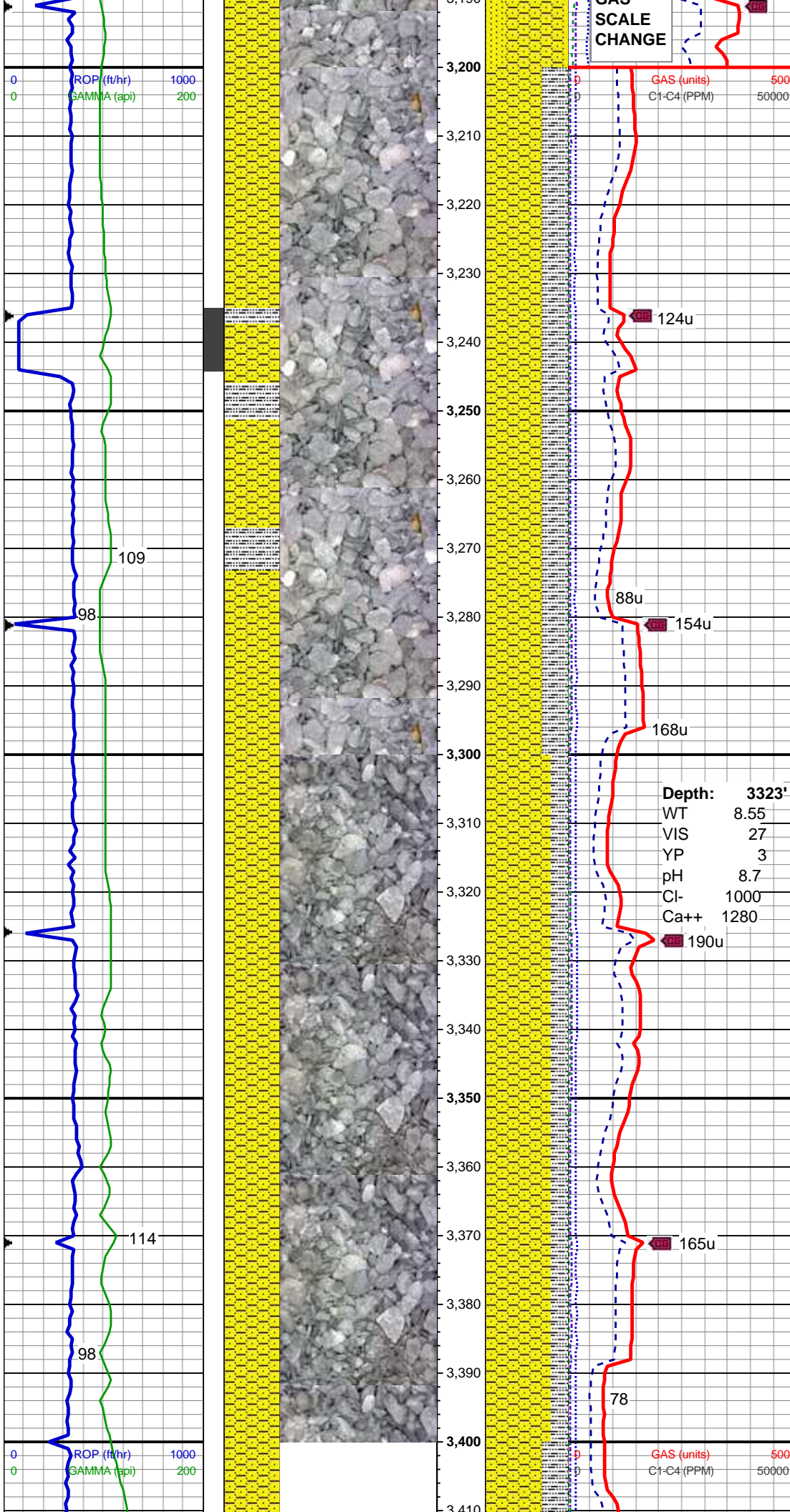
SHY SS: pred med gy, occ lt gy,
trnsl to op, vf to f gr, sbbkly to sbplty,
sbrnd to sbang gr, mod to w srt, sft
to mod frm, mod cmt, pred arg mtx,
sl calc, slty, grdg to shy sltst
SS: wh to med gy, s&p ip, clr to
trnsl, pred med gr, blkly to sbbkly,
sbang to ang tr, w srt, p cmt, sil to
arg mtx, sl calc

MD: 3,081'
TVD: 3,080.81'
INC: 0.77°
AZM: 298.14°

WT: 8.5 / VIS 27

SHY SS: pred med gy, occ lt gy,
trnsl to op, vf to f gr, sbbkly to sbplty,
sbrnd to sbang gr, mod to w srt, sft
to mod frm, mod cmt, pred arg mtx,
sl calc, slty, grdg to shy sltst
SS: wh to med gy, s&p ip, clr to
trnsl, pred med gr, blkly to sbbkly,
sbang to ang tr, w srt, p cmt, sil to
arg mtx, sl calc

MD: 3,171'
TVD: 3,170.8'
INC: 0.68°
AZM: 295.7°

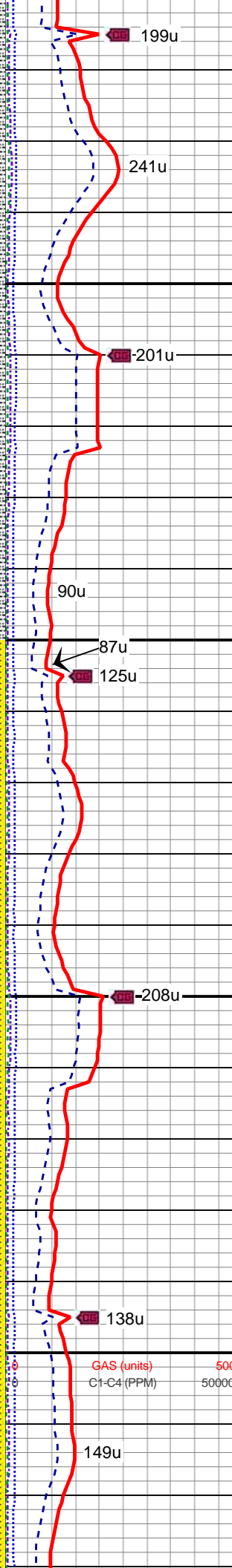
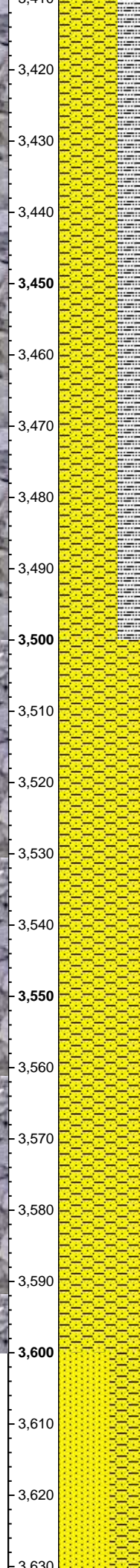
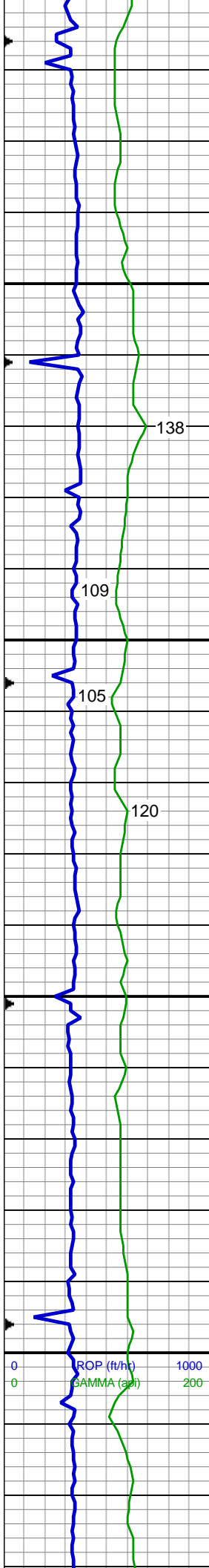


SHY SS: pred med gy, occ lt gy, trnsl to op, vf to f gr, sbbly to sbply, occ pty, sbrnd to sbang gr, mod to w srt, sft to mod frm, mod cmt, pred arg mtx, sl calc, occ calc frag, slty, grdg to slty sh

MD: 3,261'
TVD: 3,260.8'
INC: 0.52°
AZM: 66.03°

SHY SS: pred med gy, occ lt gy, trnsl to op, vf to f gr, sbbly to sbply, occ pty, sbrnd to sbang gr, mod to w srt, sft to mod frm, mod cmt, pred arg mtx, sl calc, tr pyr, slty, grdg to slty sh

MD: 3,351'
TVD: 3,350.79'
INC: 0.78°
AZM: 47.53°



MD: 3,441'
TVD: 3,440.79'
INC: 0.68°
AZM: 54.95°

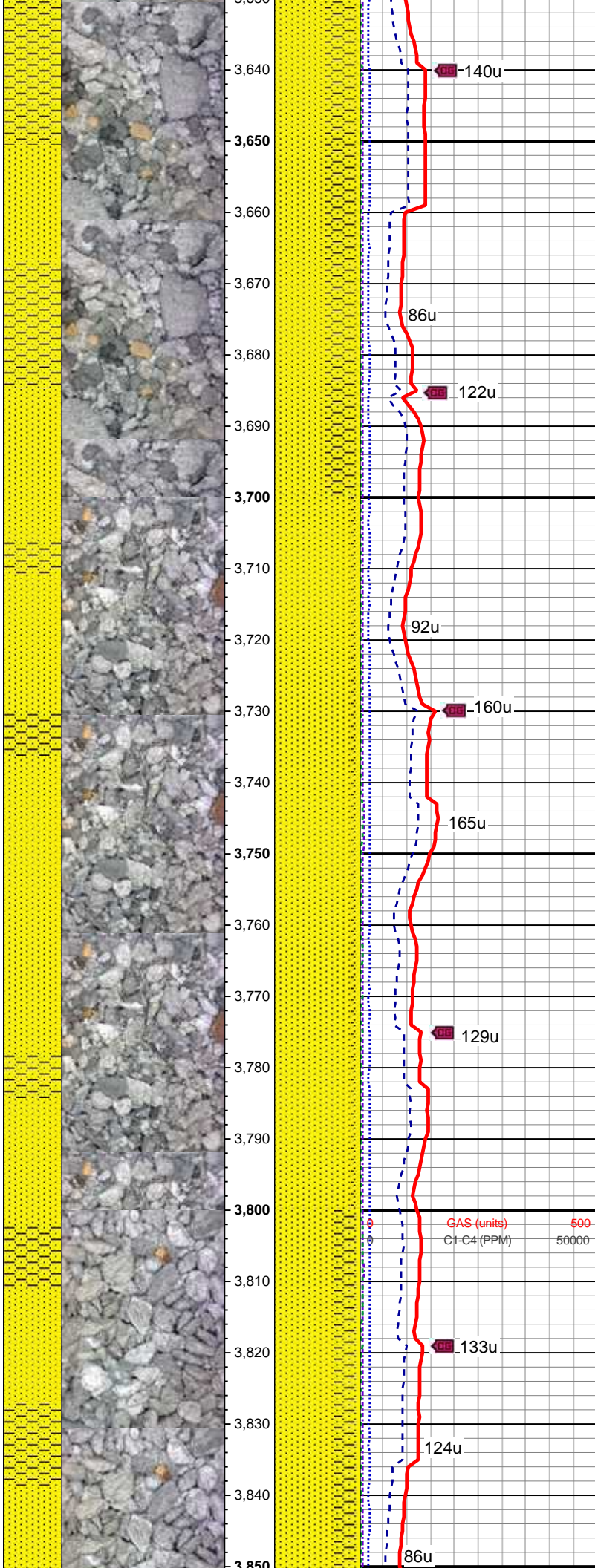
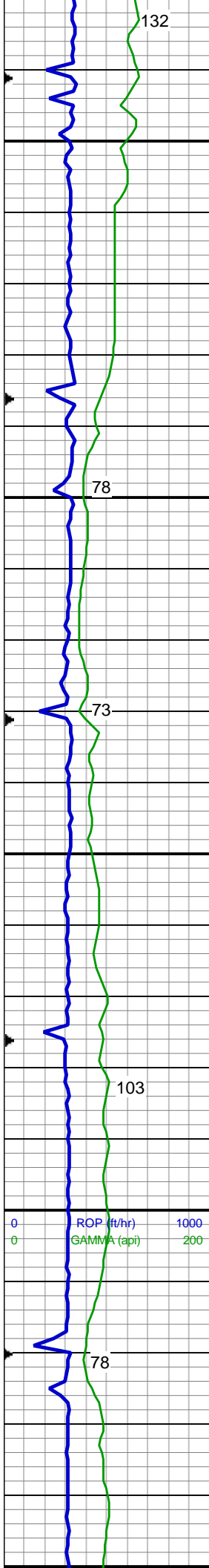
SHY SS: pred med gy, occ lt gy,
trnsl to op, vf to f gr, sbbly to sbply,
tr pty, pred sbang gr, mod to w srt,
sft to mod frm, mod to w cmt, pred
arg mtx, sl calc, slty ip, grdg to slty
sh

WT: 8.55 / VIS 27

MD: 3,531'
TVD: 3,530.78'
INC: 0.93°
AZM: 43.28°

SHY SS: pred med gy, occ lt gy,
trnsl to op, vf to f gr, sbbly to sbply,
tr pty, pred sbang gr, mod to w srt,
sft to mod frm, mod to w cmt, pred
arg mtx, sl calc, slty ip, grdg to slty
sh

MD: 3,621'
TVD: 3,620.77'
INC: 0.62°
AZM: 2.74°



SS: wh to med gy, s&p ip, clr to trnsl, pred med gr, blkly to sbbkly, sbang to ang gr, w srt, p to mod cmt, sil to arg mtx, sl calc, abnt fos frag
SHY SS: med to sl dk gy, trnsl to op, vf to f gr, sbbkly to sbply, sbrnd to sbang gr, mod to w srt, sft to mod frm, mod cmt, pred arg mtx, sl calc, slty, grdg to shy sltst

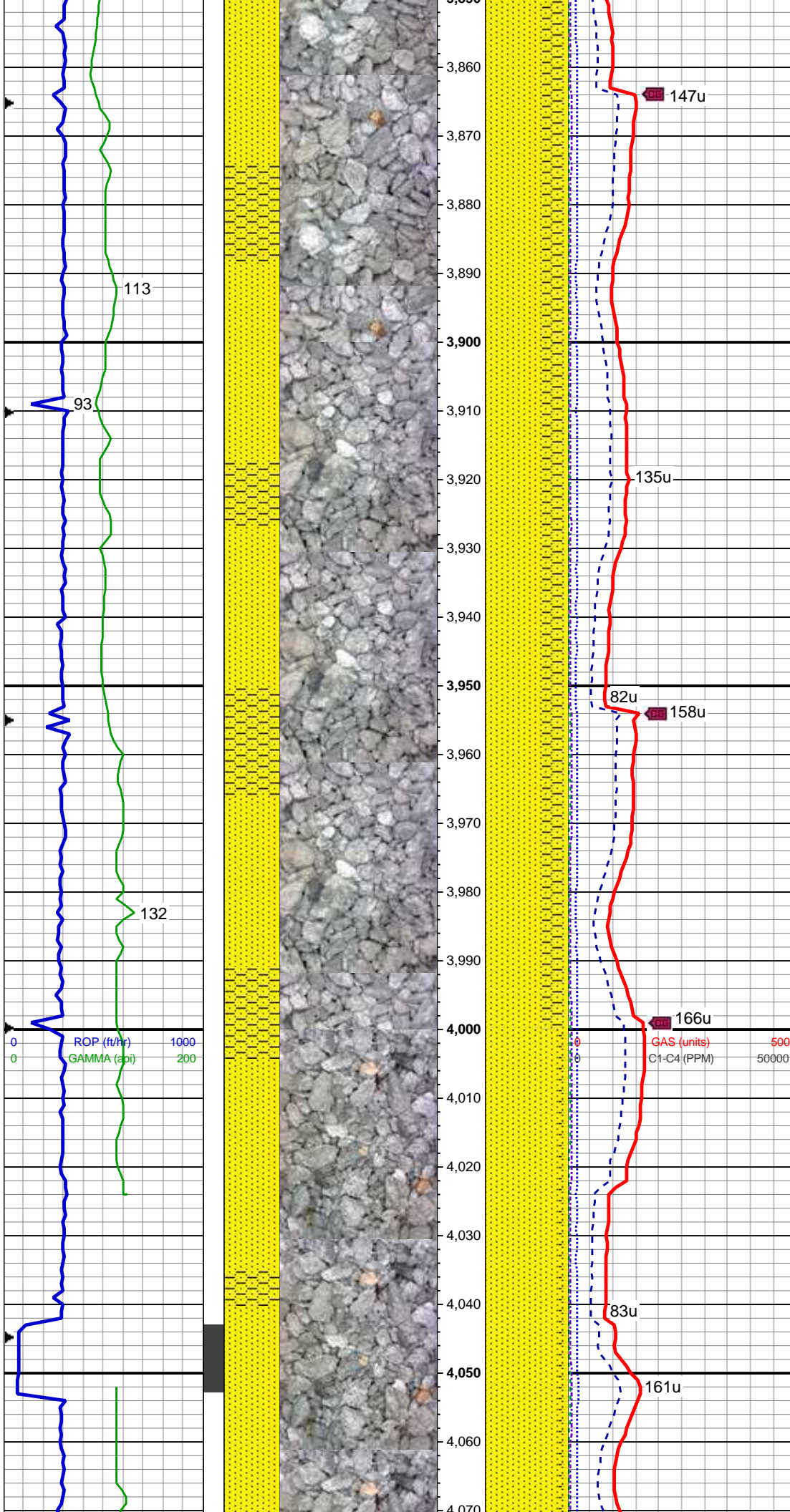
MD: 3,711'
TVD: 3,710.77'
INC: 0.58 °
AZM: 15.41°

SS: wh to med gy, s&p ip, clr to trnsl, pred med gr, blkly to sbbkly, sbang to ang gr, w srt, p to mod cmt, sil to arg mtx, sl calc, tr glauc, grdg to shy ss

MD: 3800 '
TVD: 3799.76 '
INC: 0.58 °
AZM: 333.44 °

WT: 8.7 / VIS 36

SS: wh to med gy, s&p ip, clr to trnsl, pred med gr, blkly to sbbkly, sbang to ang gr, w srt, p to mod cmt, sil to arg mtx, sl calc
SHY SS: med to sl dk gy, trnsl to



SHY SS: med to sl dk gy, thin to op, vf to f gr, sbblky to sbply, sbnd to sbang gr, mod to w srt, sft to mod frm, mod cmt, pred arg mtx, sl calc, slty

MD: 3890 '
TVD: 3889.76 '
INC: 0.68 °
AZM: 334.51 °

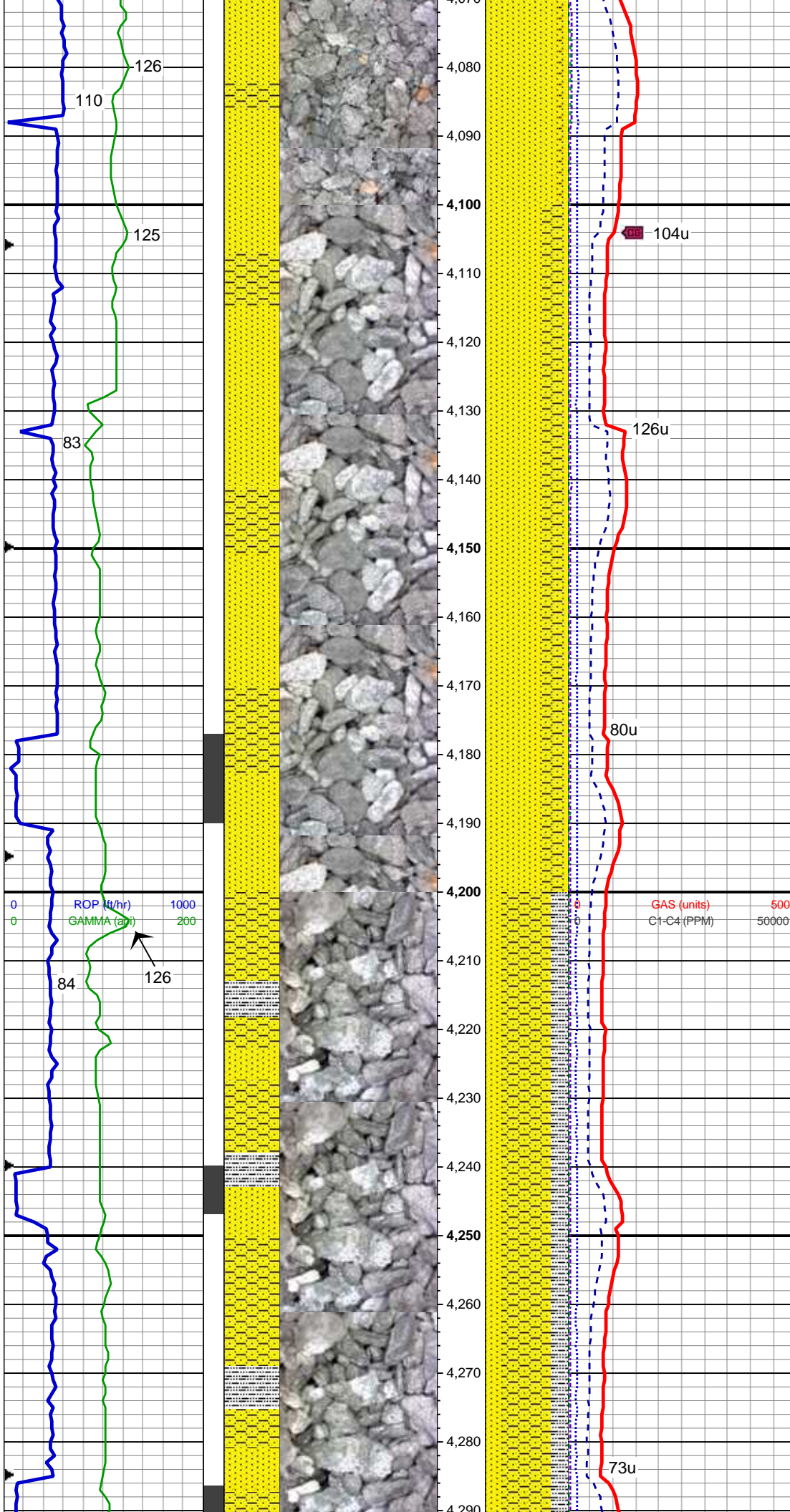
WT: 8.9 / VIS 37

SS: wh to med gy, s&p ip, clr to trnsl, pred med gr, blkly to sbblky, sbang to ang gr, w srt, p to mod cmt, sil to arg mtx, sl calc
SHY SS: med to sl dk gy, trnsl to op, vf to f gr, sbblky to sbply, sbnd to sbang gr, mod to w srt, sft to mod frm, mod cmt, pred arg mtx, sl calc, slty

MD: 3980 '
TVD: 3979.75 '
INC: 1.08 °
AZM: 317.85 °

WT: 9.2 / VIS 37

SS: wh to med gy, s&p ip, clr to trnsl, pred med gr, blkly to sbblky, sbang to ang gr, w srt, p to mod cmt, sil to arg mtx, sl calc, abnt glauc, grdg to shy ss



MD: 4086 '
TVD: 4085.73 '
INC: 0.67 °
AZM: 260.59 °

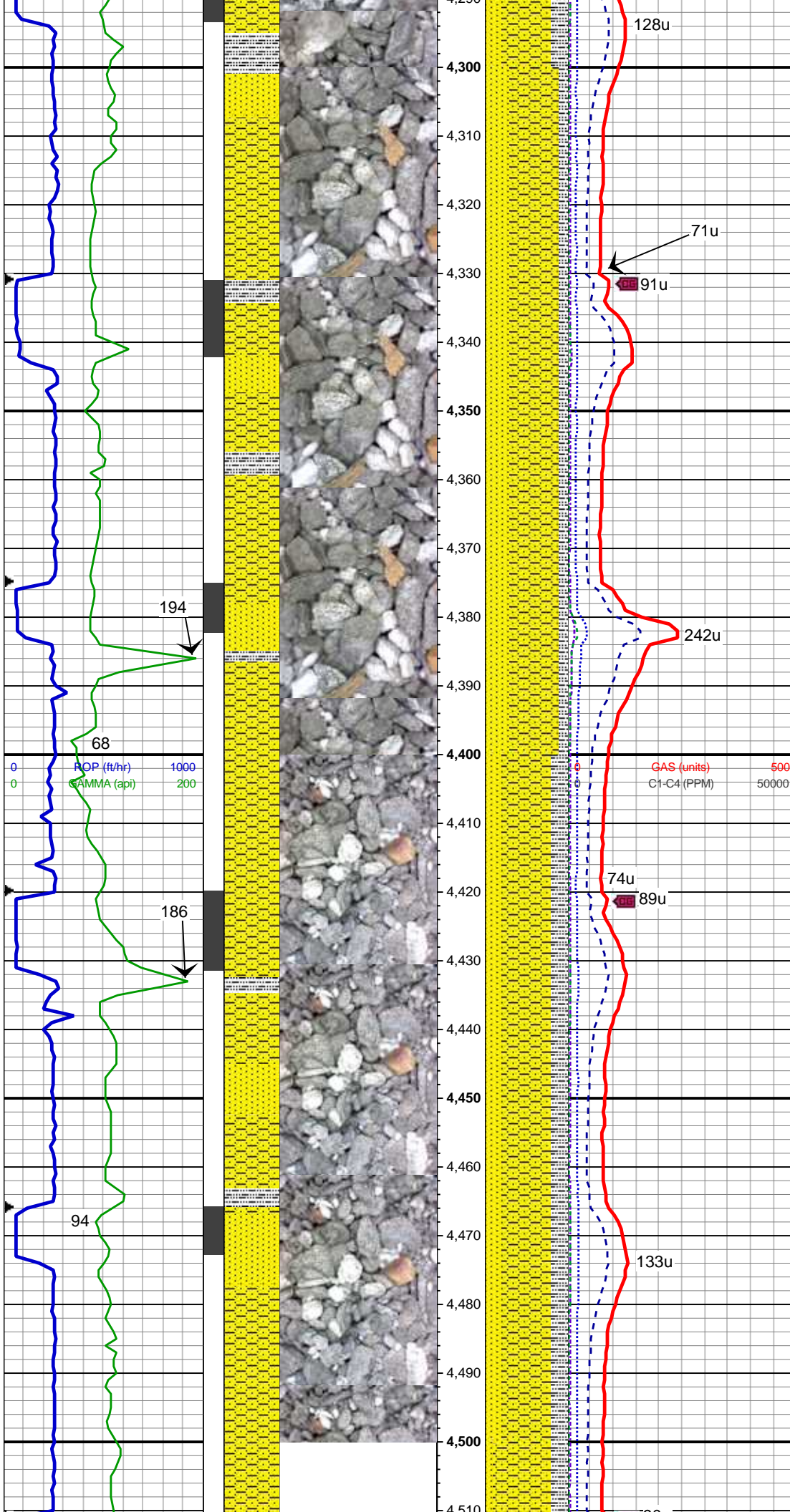
SS: wh to med gy, s&p ip, clr to trnsl, pred med gr, blkly to sbbkly, sbang to ang gr, w srt, p to mod cmt, sil to arg mtx, sl calc, abnt glauc, tr pyr
SHY SS: med to sl dk gy, trnsl to op, vf to f gr, sbbkly to sbply, sbrnd to sbang gr, mod to w srt, sft to mod frm, mod cmt, pred arg mtx, sl calc, slty, occ grdg to slty sh

MD: 4176 '
TVD: 4175.73 '
INC: 0.66 °
AZM: 250.51 °

WT: 9.2 / VIS 35

SS: wh to med gy, s&p ip, clr to trnsl, pred med gr, blkly to sbbkly, sbang to ang gr, w srt, p to mod cmt, sil to arg mtx, sl calc, tr pyr, grdg to
SHY SS: med to sl dk gy, trnsl to op, vf to f gr, sbbkly to sbply, sbrnd to sbang gr, mod to w srt, sft to mod frm, mod cmt, pred arg mtx, sl calc, slty, grdg to slty sh

MD: 4266 '
TVD: 4265.7 '
INC: 2.46 °
AZM: 195.89 °



WT: 9.2 / VIS 35

SS: wh to med gy, s&p ip, clr to trnsl, pred med gr, blkly to sbblky, sbang to ang gr, w srt, p to mod cmt, sil to arg mtx, sl calc, tr glauc, grdg to
SHY SS: med to sl dk gy, trnsl to op, vf to f gr, sbblky to sbply, sbrnd to sbang gr, mod to w srt, sft to mod frm, mod cmt, pred arg mtx, sl calc, slty, grdg to slty sh

MD: 4355 '

TVD: 4,354.51'

INC: 4.91 °

AZM: 182.42 °

WT: 9.3 / VIS 38

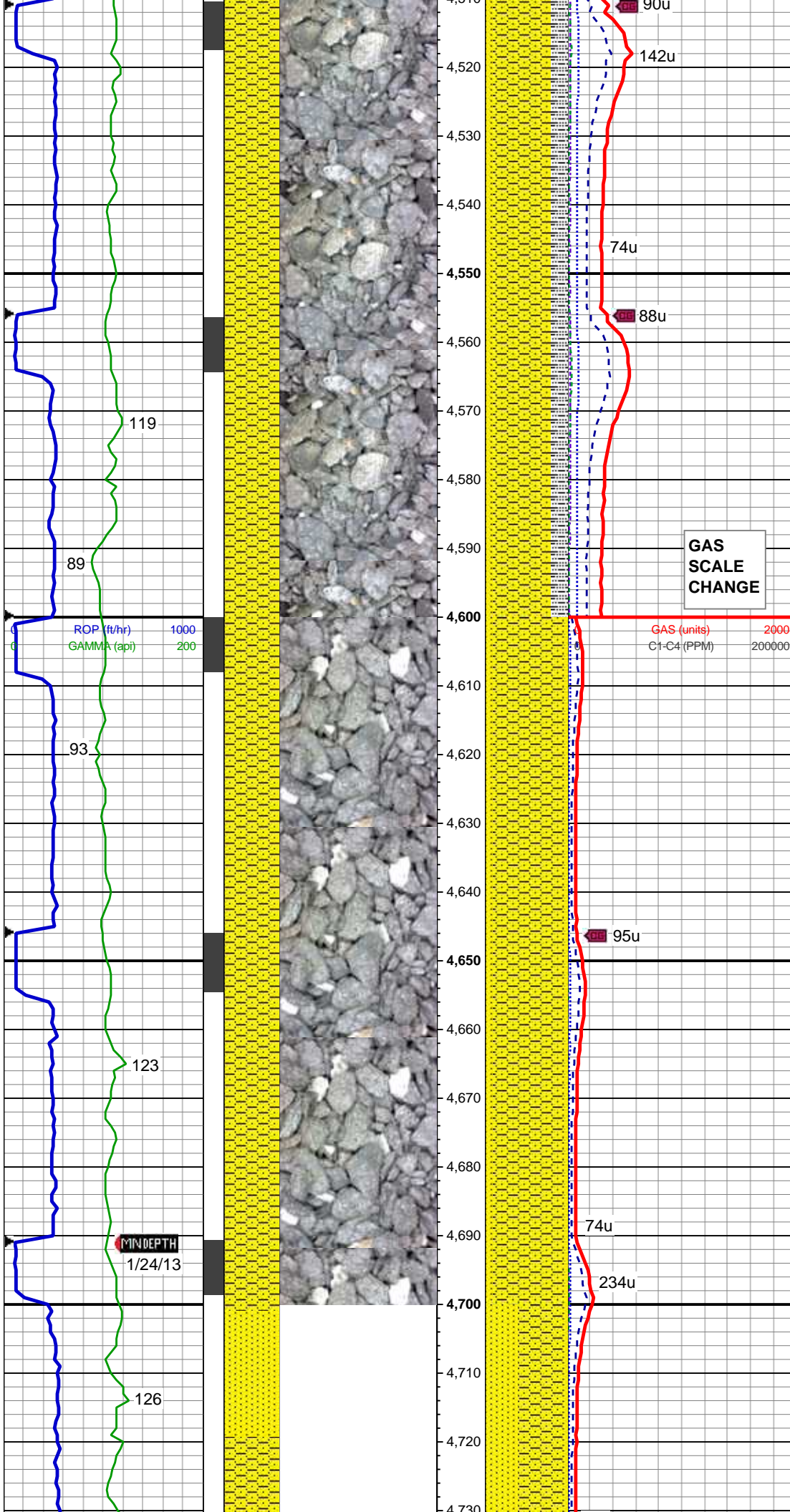
MD: 4445 '

TVD: 4443.97'

INC: 7.48 °

AZM: 178.91 °

SHY SS: med to sl dk gy, trnsl to op, vf to f gr, sbblky to sbply, sbrnd to sbang gr, mod to w srt, sft to mod frm, mod cmt, pred arg mtx, sl calc, slty, grdg to slty sh & ss, tr glauc



MD: 4535 '
TVD: 4533.03 '
INC: 9.08 °
AZM: 180.51 °

SHY SS: med to sl dk gy, trnsl to op, vf to f gr, sbbkly to sbply, sbrnd to sbang gr, mod to w srt, sft to mod frm, mod cmt, pred arg mtx, sl calc, slty, grdg to slty sh & ss, tr glauc

GAS
SCALE
CHANGE

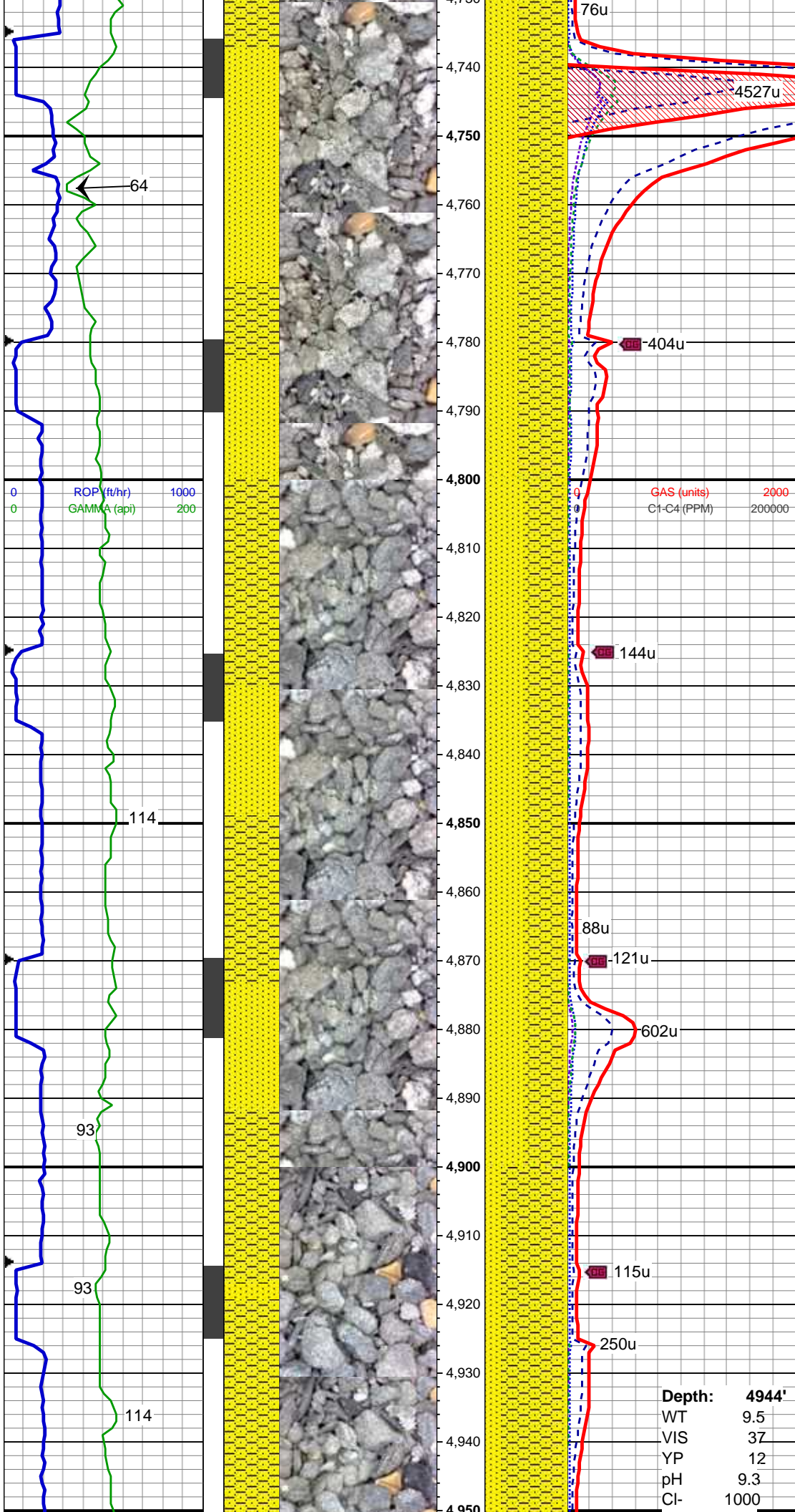
GAS (units) 2000
C1-C4 (PPM) 200000

MD: 4625 '
TVD: 4621.72 '
INC: 10.52 °
AZM: 179.09 °

SHY SS: med to sl dk gy, trnsl to op, vf to f gr, sbbkly to sbply, sbrnd to sbang gr, ply to mod srt, sft to mod frm, mod cmt, pred arg mtx, sl calc, slty, grdg to ss, occ grdg to slty sh, tr glauc, tr pyr

WT: 9.35 / VIS 38

MD: 4715 '
TVD: 4709.92 '
INC: 12.39 °
AZM: 176.27 °



SHY SS: med to sl dk gy, trnsl to op, vf to f gr, sbblky to sbply, sbrnd to sbang gr, mod srt, sft to mod frm, mod cmt, pred arg mtx, sl calc, slty, grdg to
SS: wh to med gy, s&p ip, clr to trnsl, blky to sbblky, sbang to ang gr, w srt, p to mod cmt, sil to arg mtx, sl calc, occ glauc, tr slty sh

WT: 9.4 / VIS 38

MD: 4,805'
TVD: 4,797.5'
INC: 14.24°
AZM: 180.65°

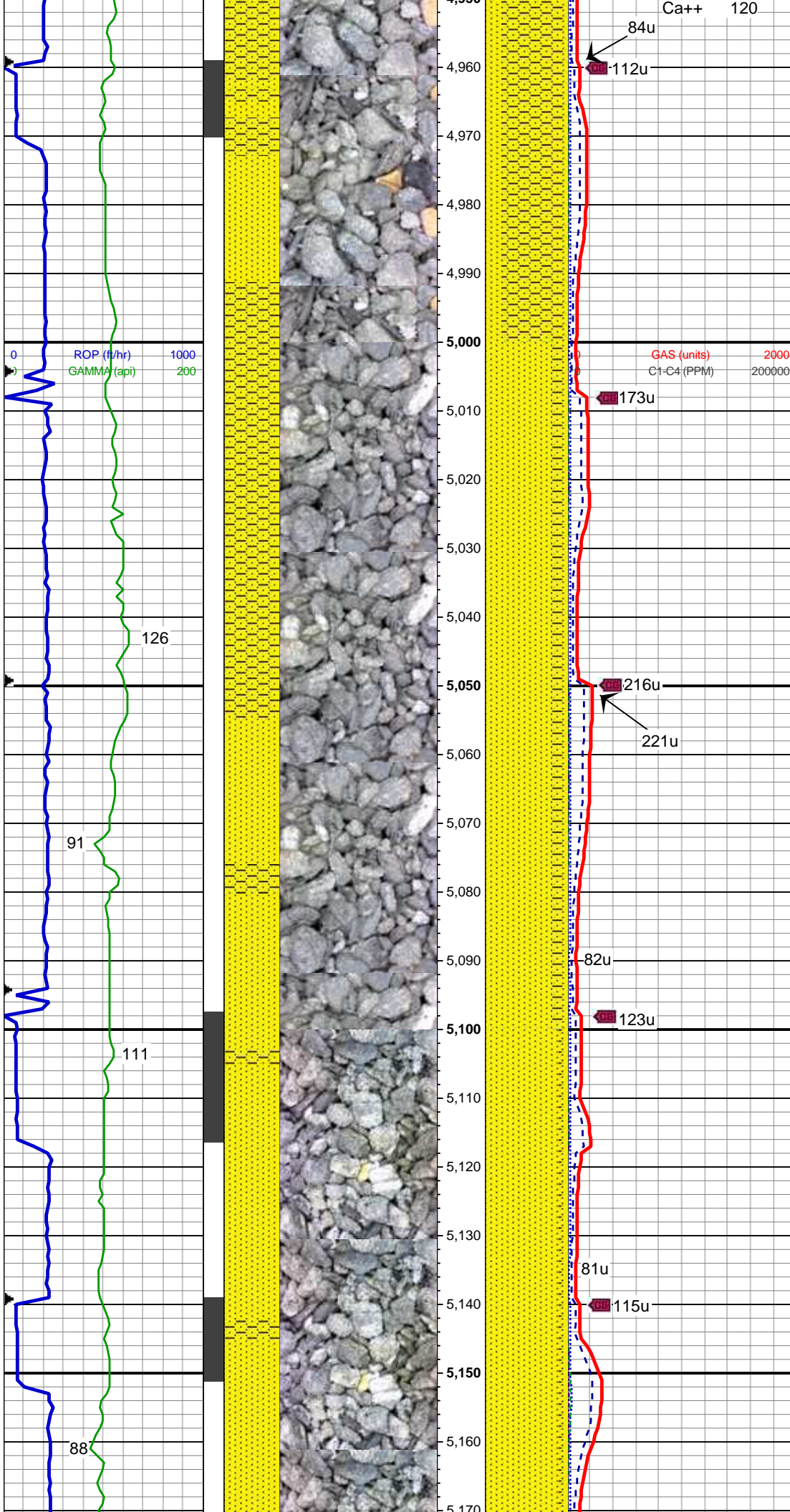
SHY SS: med to sl dk gy, trnsl to op, vf to f gr, sbblky to sbply, sbrnd to sbang gr, mod srt, sft to mod frm, mod cmt, pred arg mtx, sl calc, slty, grdg to
SS: wh to med gy, s&p, clr to trnsl, blky to sbblky, sbang to ang gr, w srt, p to mod cmt, sil to arg mtx, sl calc, occ glauc, tr pyr, tr slty sh

WT: 9.55 / VIS 39

MD: 4,894'
TVD: 4,883.36'
INC: 16.26°
AZM: 179.06°

Depth:	4944'
WT	9.5
VIS	37
YP	12
pH	9.3
Cl-	1000

SS: wh to med gy, s&p ip, clr to trnsl, blky to sbblky, sbang to ang gr, mod w srt, p to mod cmt, sil to arg mtx, sl calc, SHY SS: med to sl dk gy, trnsl to op, vf to f gr, sbblky to sbply, sbrnd to sbang gr, mod srt, sft to mod frm, mod cmt, pred arg mtx, sl calc, slty, grdg to



SHY SS: med to sl dk gy, trnsi to op, vf to f gr, sbbly to sbply, sbrnd to sbang gr, mod srt, sft to mod frm, mod cmt, pred arg mtx, sl calc, slty, grdg to slty sh

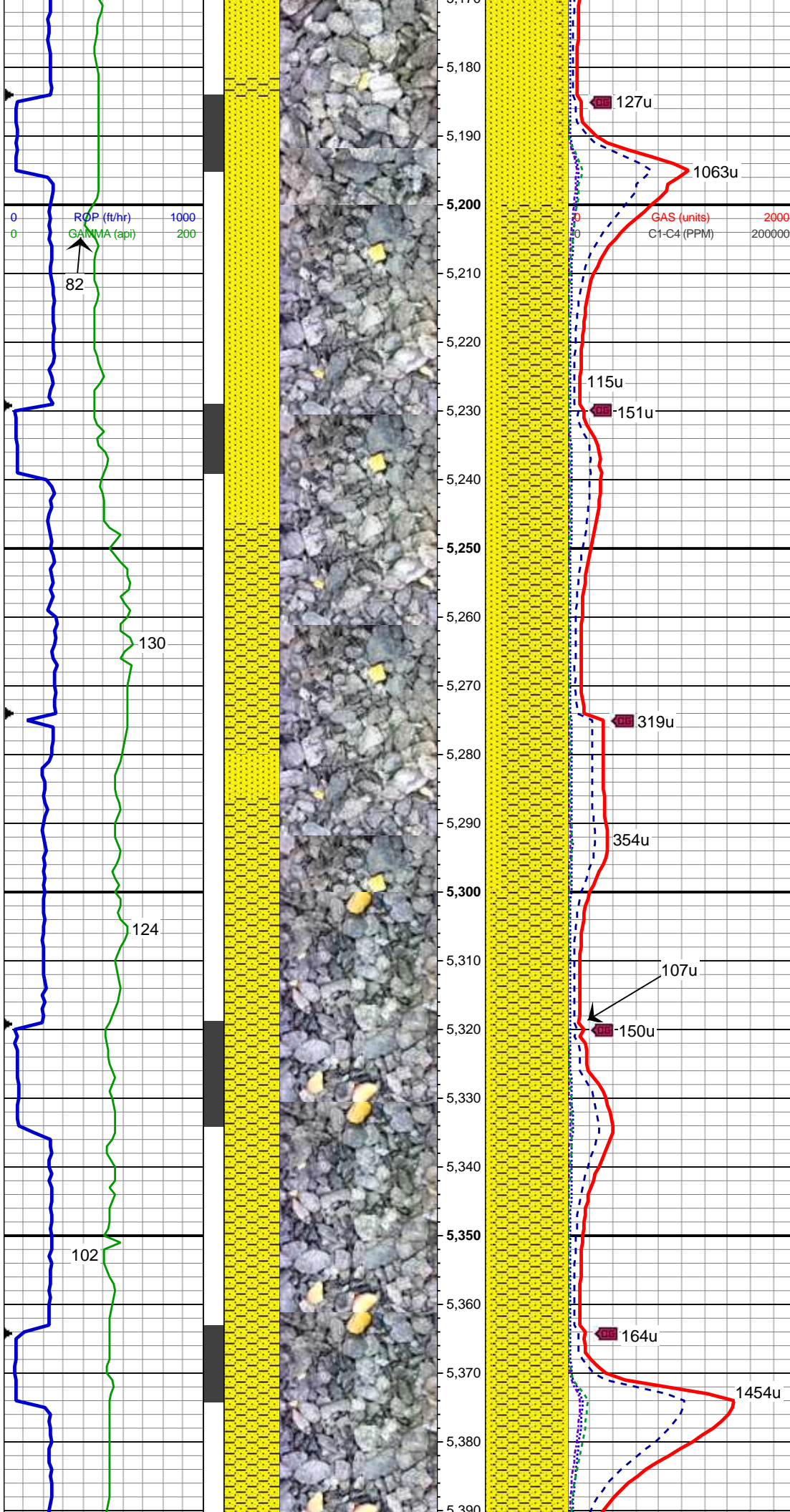
MD: 4,984'
TVD: 4,969.44'
INC: 17.68°
AZM: 179.25°

SS: lt to m gy, sme wh, clr to trns, blk to sbbly, sbang to ang gr, mod w srt, p to mod cmt, sil to arg mtx, sl calc, shy ip, grdg to m to f gr shy ss

MD: 5,074'
TVD: 5,055.84'
INC: 14.8°
AZM: 178.26°

SS: lt to m gy, sme wh, clr to trns, blk to sbbly, sbang to ang gr, mod w srt, p to mod cmt, sil to arg mtx, sl calc, shy ip, grdg to m to f gr shy ss

MD: 5,164'
TVD: 5,142.43'
INC: 16.83°
AZM: 178.59°



WT: 9.6 / VIS 37

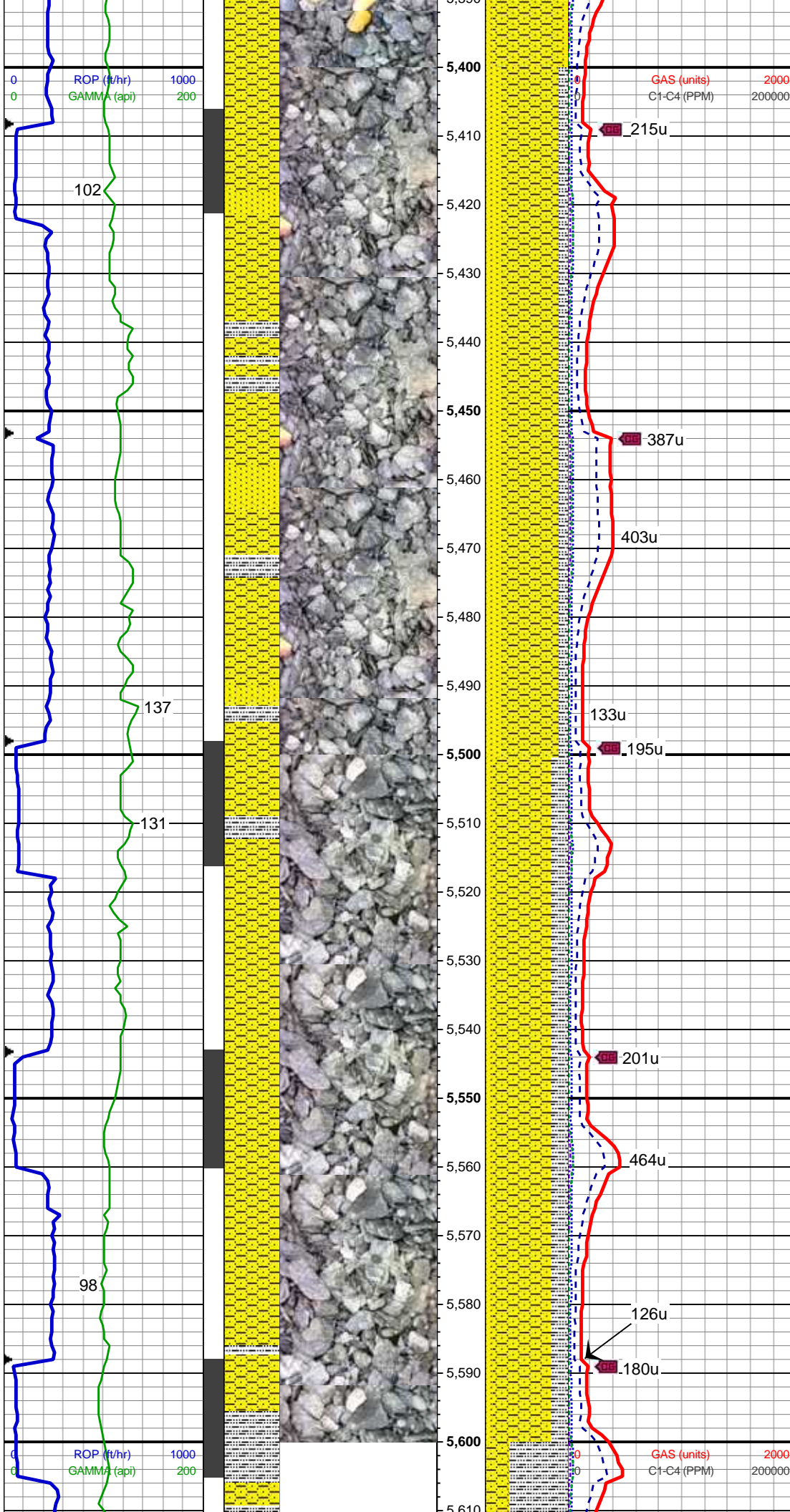
SHY SS: med to sl dk gy, sme tan, trnsl to op, vf to f gr, sbbkly to sbplty, sme plty, sbrnd to sbang gr, mod srt, sft to mod frm, mod to w cmt, pred arg mtx, sl calc, occ calc frag slty, grdgr to slty sh
SS: pred med gy, clr to trnsl, blkly to sbbkly, sbang to ang gr, mod srt, p cmt, sil to arg mtx, sl calc

MD: 5,254'
TVD: 5,228.27'
INC: 18.15°
AZM: 179.88°

WT 9.6 / VIS 37

MD: 5,343'
TVD: 5,313.11'
INC: 16.99°
AZM: 180.51°

SHY SS: med to sl dk gy, sme tan, trnsl to op, vf to f gr, sbbkly to sbplty, sme plty, sbrnd to sbang gr, mod srt, sft to mod frm, mod to w cmt, pred arg mtx, sl calc, occ calc frag slty, grdgr to slty sh
SS: pred med gy, clr to trnsl, blkly to sbbkly, sbang to ang gr, mod srt, p cmt, sil to arg mtx, sl calc



WT 9.6 / VIS 36

MD: 5,433'
TVD: 5,399.12'
INC: 17.27°
AZM: 176.27°

SHY SS: med to sl dk gy, sme tan, trnsl to op, vf to f gr, sbblky to sbply, sme ply, sbrnd to sbang gr, mod srt, sft to mod frm, mod to w cmt, pred arg mtx, sl calc, occ calc frag slty, grdg to slty sh
SS: pred med gy, clr to trnsl, blkly to sbblky, sbang to ang gr, mod srt, p cmt, sil to arg mtx, sl calc

MD: 5,523'
TVD: 5,485.49'
INC: 15.36°
AZM: 180.85°

SHY SS: med to sl dk gy, sme tan, trnsl to op, vf to f gr, sbblky to sbply, sme ply, sbrnd to sbang gr, mod srt, sft to mod frm, mod to w cmt, pred arg mtx, sl calc, occ calc frag slty, grdg to slty sh
SS: pred med gy, clr to trnsl, blkly to sbblky, sbang to ang gr, mod srt, p cmt, sil to arg mtx, sl calc

WT 9.6 / VIS 36

MD: 5,613'
TVD: 5,571.22'
INC: 15.36°
AZM: 180.85°

TVD: 5,571.99'
INC: 16.71°
AZM: 181.8°

SLTY SH: med to dk gy, occ lt gy, gy
brn, sb blk to sb plty, occ plty, sft to
sl frm, arg, sl calc, sdy, occ calc
frag, occ fos frag, grdg to shy ss

WT 9.65 / VIS 38

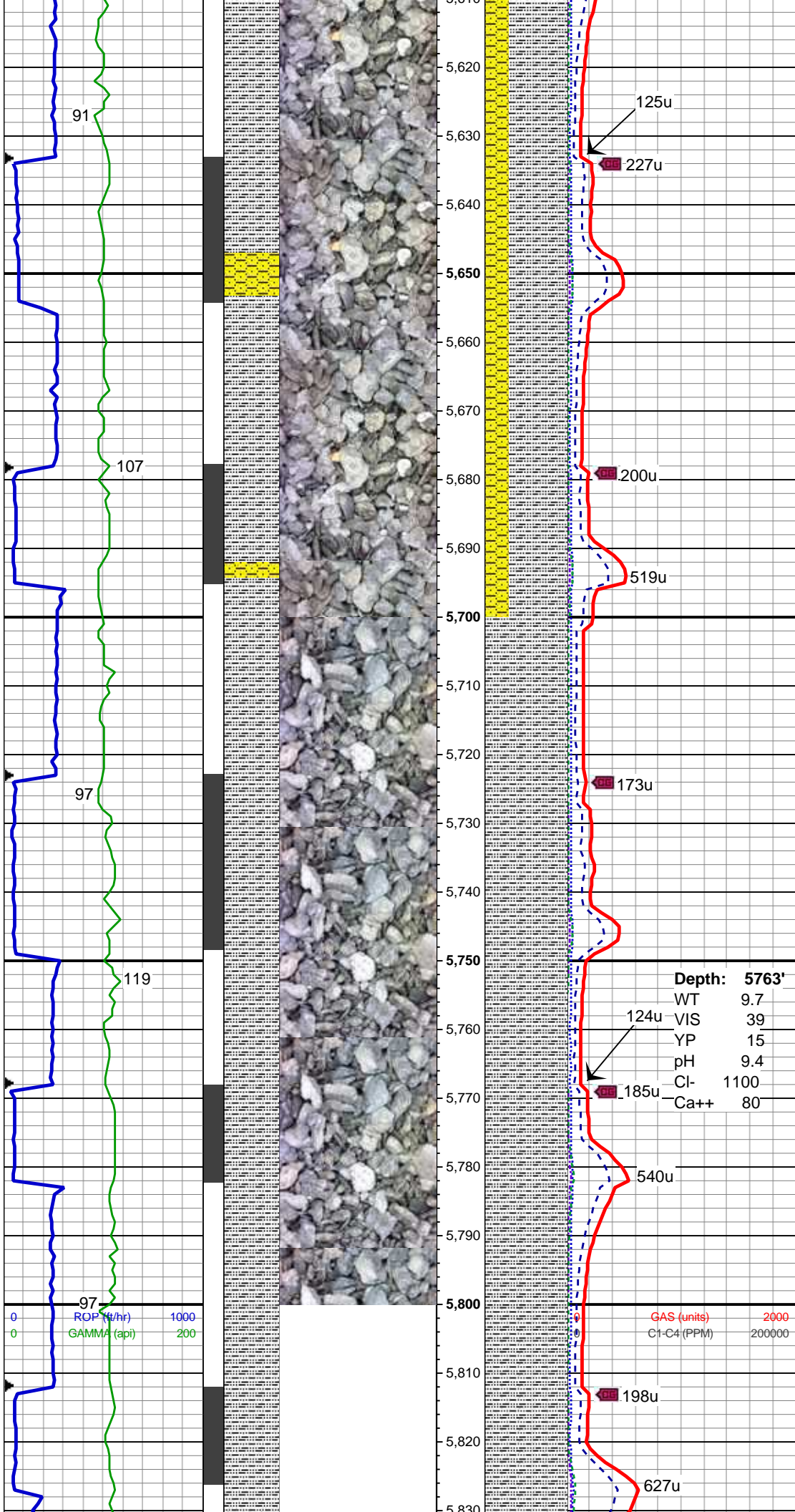
MD: 5,703'
TVD: 5,657.86'
INC: 18.14°
AZM: 180.57°

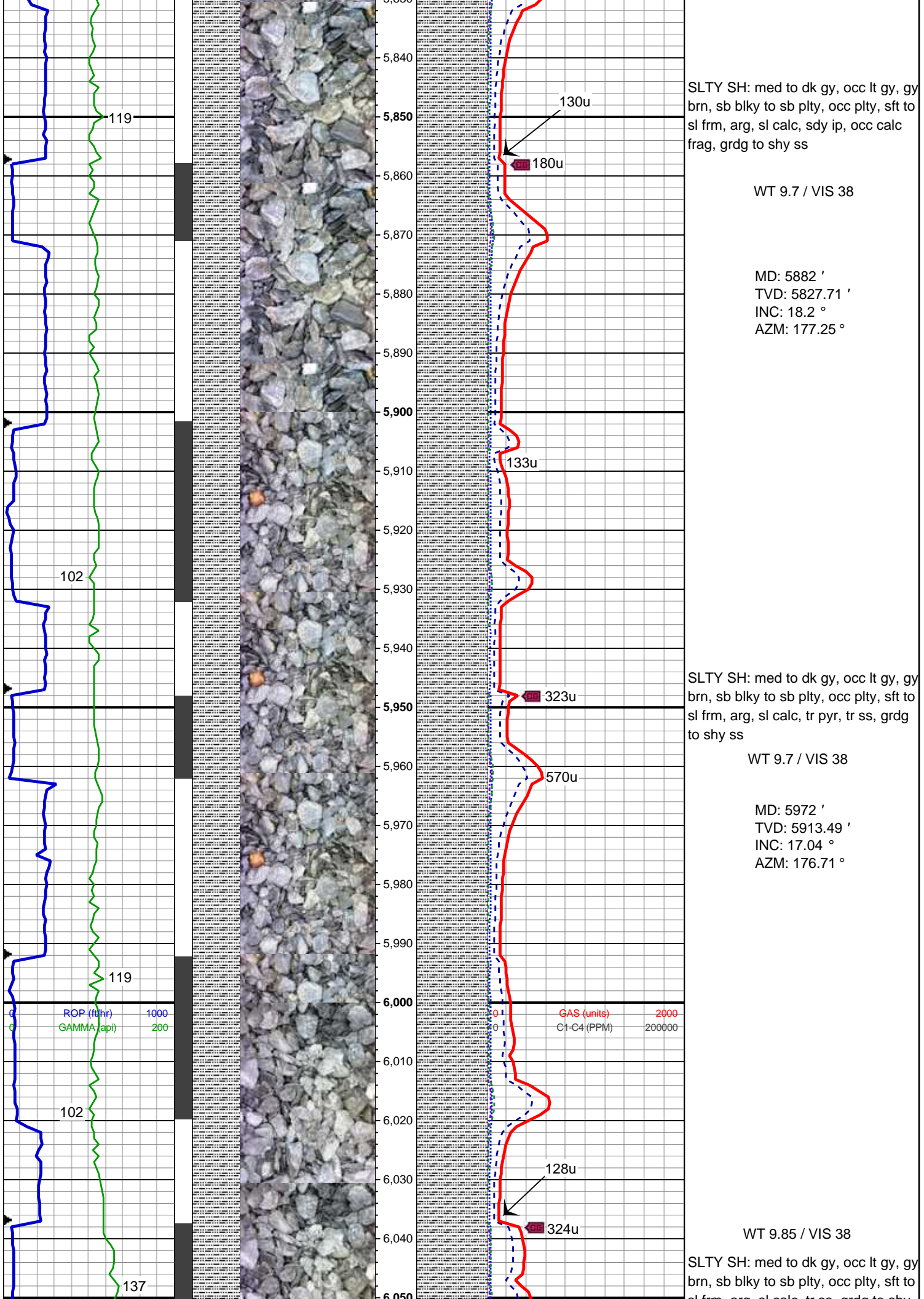
SLTY SH: med to dk gy, occ lt gy, gy
brn, sb blk to sb plty, occ plty, sft to
sl frm, arg, sl calc, sdy ip, occ calc
frag, grdg to shy ss

MD: 5,792'
TVD: 5,742.32'
INC: 18.63°
AZM: 175.78°

Depth: 5763'
WT 9.7
VIS 39
YP 15
pH 9.4
Cl- 1100
Ca++ 80

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





SLTY SH: med to dk gy, occ lt gy, gy
brn, sb blkly to sb plty, occ plty, sft to
sl frm, arg, sl calc, sdy ip, occ calc
frag, grdg to shy ss

WT 9.7 / VIS 38

MD: 5882 '
TVD: 5827.71 '
INC: 18.2 °
AZM: 177.25 °

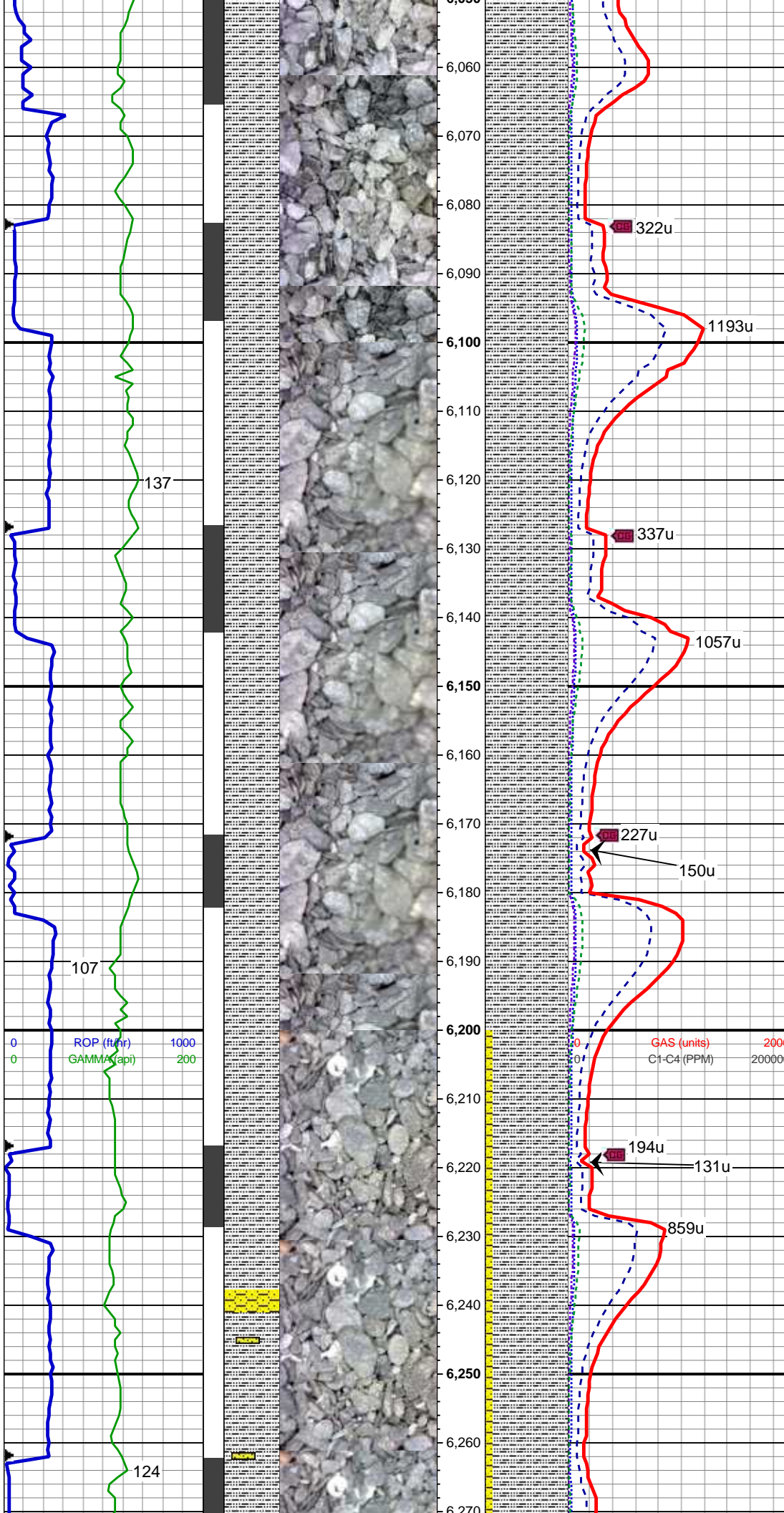
SLTY SH: med to dk gy, occ lt gy, gy
brn, sb blkly to sb plty, occ plty, sft to
sl frm, arg, sl calc, tr pyr, tr ss, grdg
to shy ss

WT 9.7 / VIS 38

MD: 5972 '
TVD: 5913.49 '
INC: 17.04 °
AZM: 176.71 °

SLTY SH: med to dk gy, occ lt gy, gy
brn, sb blkly to sb plty, occ plty, sft to
sl frm, arg, sl calc, tr pyr, tr ss, grdg
to shy ss

WT 9.85 / VIS 38



sl frm, arg, sl calc, tr ss, grdg to shy ss

MD: 6062 '
TVD: 5999.31 '
INC: 18.05 °
AZM: 180.29 °

WT 9.85 / VIS 39

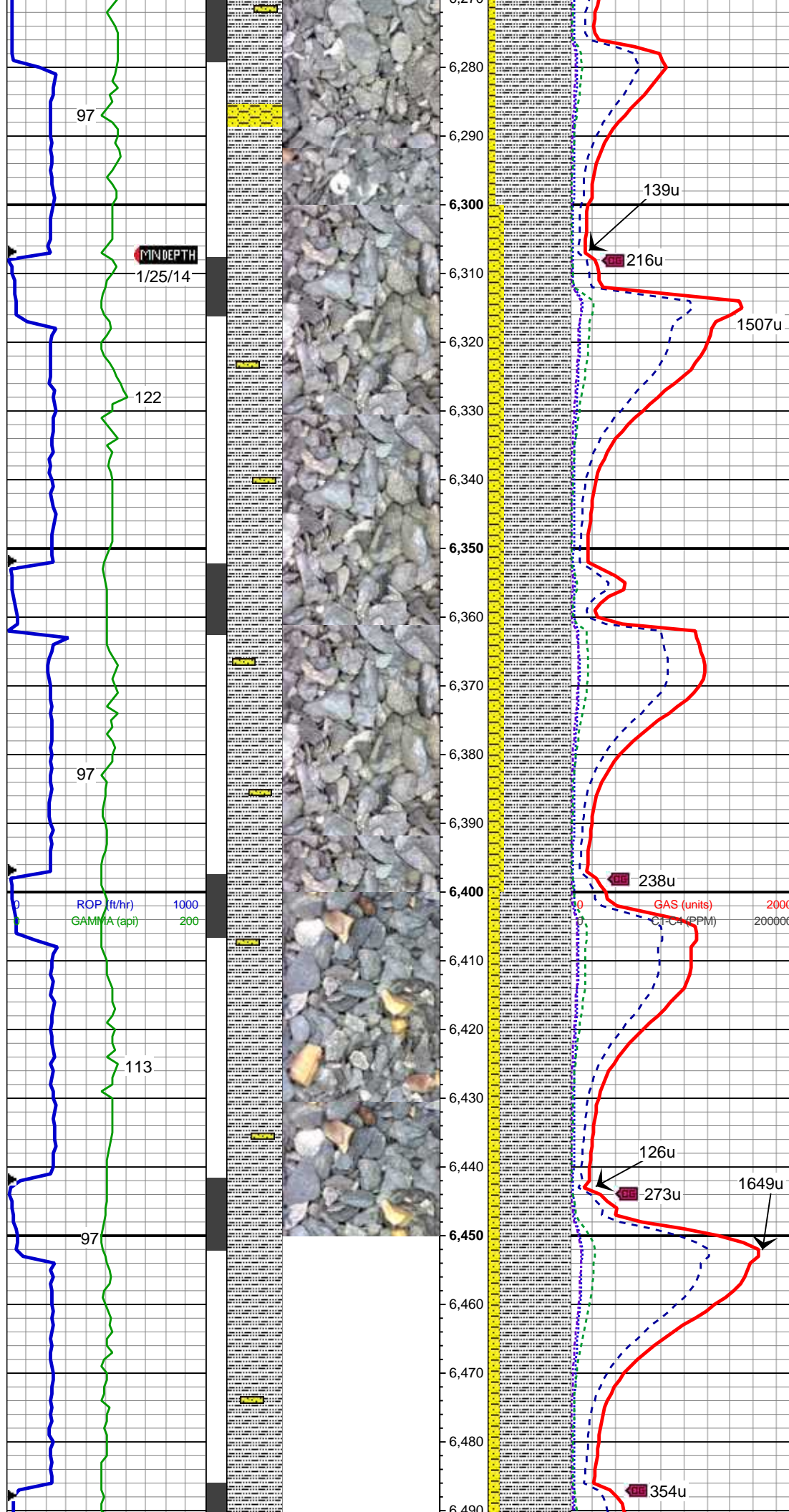
SLTY SH: med to dk gy, occ lt gy, gy brn, sb blkly to sb plty, occ plty, sft to sl frm, arg, sl calc, tr ss, grdg to shy ss

MD: 6152 '
TVD: 6084.74 '
INC: 18.62 °
AZM: 179.69 °

WT 9.85 / VIS 40

MD: 6242 '
TVD: 6170.19 '
INC: 17.97 °
AZM: 174.95 °

SLTY SH: med to dk gy, occ lt gy, gy brn, sb blkly to sb plty, occ plty, sft to sl frm, arg, sl calc, tr glauc, tr ss, grdg to shy ss



MD: 6332 '
TVD: 6255.67 '
INC: 18.51 °
AZM: 176.73 °

SLTY SH: med to dk gy, gy brn, sb
blky to sb plty, occ plty, sft to sl frm,
arg, sl calc, tr glauc, tr ss, grdg to
shy ss

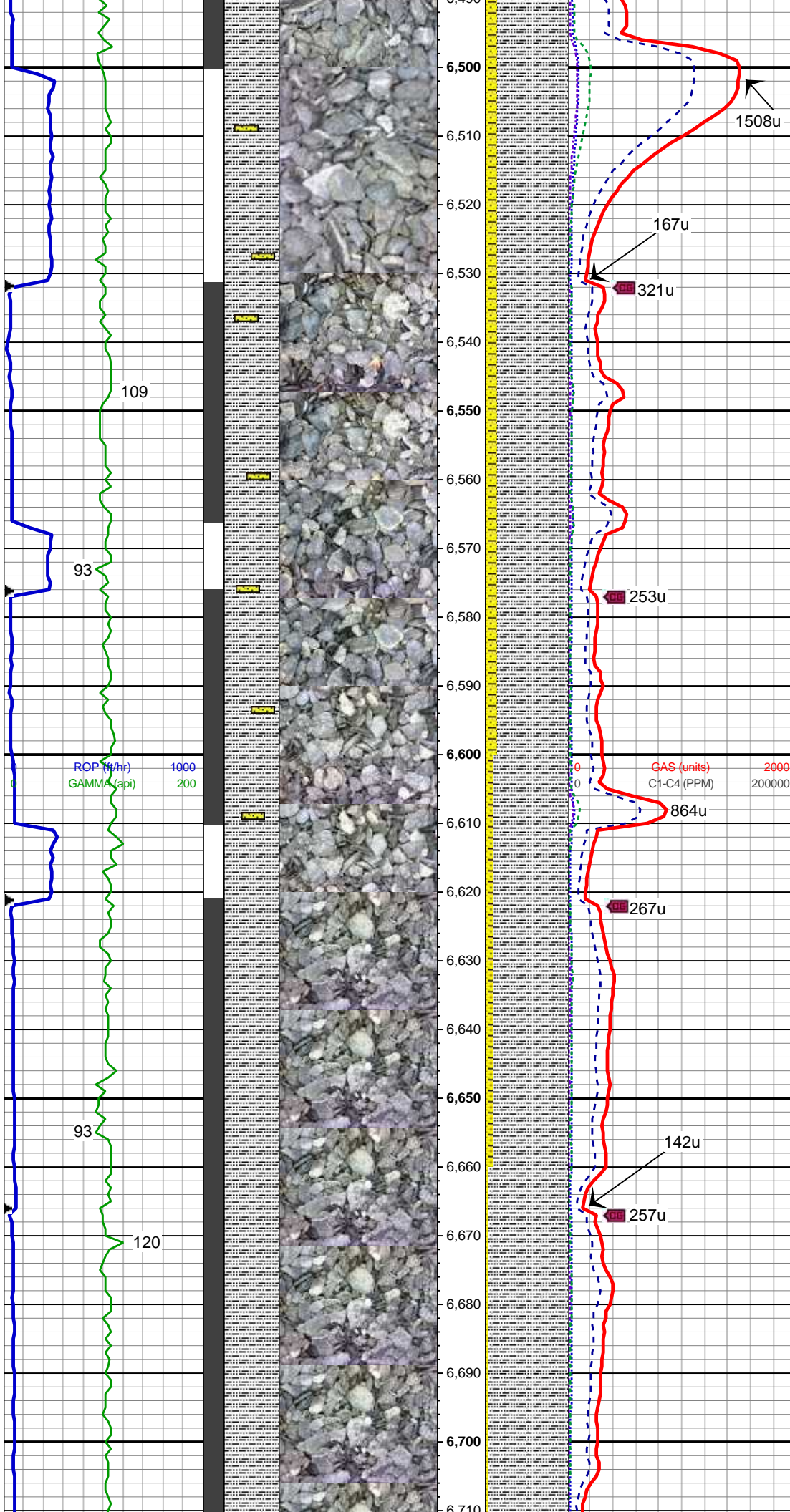
WT 10.0 / VIS 40

MD: 6422 '
TVD: 6341.01 '
INC: 18.52 °
AZM: 175.1 °

SLTY SH: m to dk gy, sbblky to
sbplty, sl frm, mod fri, vsl calc, sl
sdy ip, gt, grdg to shy ss, occ clr to
trnsl med gr ss

MD: 6,466'
TVD: 6,382.75'
INC: 18.34 °
AZM: 177.07°

Depth: 6497'
WT 10.0
VIS 40
YP 13



pH 9.5
Cl- 1100
Ca++ 80

MD: 6,511'
TVD: 6,425.58'
INC: 17.46°
AZM: 182.01°

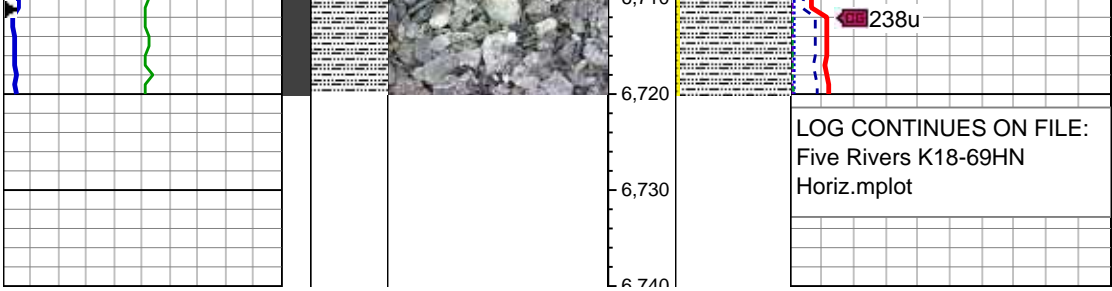
SLTY SH: m to dk gy, sme sl gybrn, sbbkly to sbply, sme pty, sl frm, mod fri, fis, vsl calc, sl sdy ip, gt, grdg to shy ss, occ clr to trnsl med gr ss

**BEGIN 30' SAMPLES
60' DESCRIPTIONS**

WT 9.85 / VIS 38

SLTY SH: m to dk gy, sbbkly to sbply, sme pty, sl frm, mod fri, fis, vsl calc, sl sdy ip, gt, grdg to shy ss, occ clr to trnsl med gr ss, sl tr glau

SLTY SH: m to dk gy, sbbkly to sbply, sme pty, sl frm to firm, mod fri, fis, vsl calc, sl sdy ip, gt, tr pyr lam, grdg to shy ss, occ clr to trnsl med gr ss



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Horiz.mplot

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