

COLUMBINE LOGGING

Scale: 5" / 100'
Measured Depth Log

Well Name NCLP PC AA04-67-1HN

Location SWNW SEC4 T6N R63W

State COLORADO

County WELD

Country USA

Rig Number PRECISION 828

API Number 05-123-37176

AFE # 138016

Region DJ BASIN

Field WATTENBERG

Spud Date 12/1/2013

Drilling Completed 12/15/2013

Surface Coordinates 2150' FNL, 250' FWL

Lat/Long: 40.5171/-104.45032

Bottom Hole Coordinates SEC3 T6N R63W

1650' FNL, 535' FEL

Ground Elevation 4710'

K.B. Elevation 4726'

Logged Interval 715' **To** 6120'

Total Depth 16206'

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

Type of Drilling Fluid 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, MOHAMMED ALMUBARAK

WELLSITE GEOLOGICAL SERVICES PROVIDED BY COLUMBINE LOGGING INC.

LOG CONTINUES ON FILE: NCLP PC AA04-67-1HNL Horiz.mplot

Rock Types

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

Accessories

Fossils

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

GASTROPOD
INOCERAMUS
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
MICACEOUS
MINERAL CRYSTALS
NODULES
PHOSPHATE PELLETS
PYRITE
SALT CAST
SANDY
SILICEOUS
SILTY
TUFFACEOUS

ANHYDRITE STRINGER
BENTONITE STRINGER
COAL STRINGER
DOLOMITE STRINGER
GYPSUM STRINGER
LIMESTONE STRINGER
MARLSTONE (CALC) STRG
MARLSTONE (DOL) STRG
SANDSTONE STRINGER
SHALE STRINGER
SILTSTONE STRINGER

Stringer

Other Symbols

Oil Show

DEAD
EVEN
QUESTIONABLE
SPOTTED STAINING

Porosity

E EARTHY
F FENESTRAL
F FRACTURE
X INTERCRYSTALLINE
O INTEROOLITIC
M MOLDIC

ORGANIC

PINPOINT

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 (RIGHT)
NORMAL FAULT
OVERTURNED STRATA
REVERSE FAULT
CASING
SIDEWALL CORE (LEFT)
SIDEWALL CORE (RIGHT)
SLIDE
SURVEY

DRILL STEM TEST
WIRELINE TESTED - LEFT
WIRELINE TESTED - RT

Rounding

ANGULAR
ROUNDED
SUBANG
SUBRND

Textures

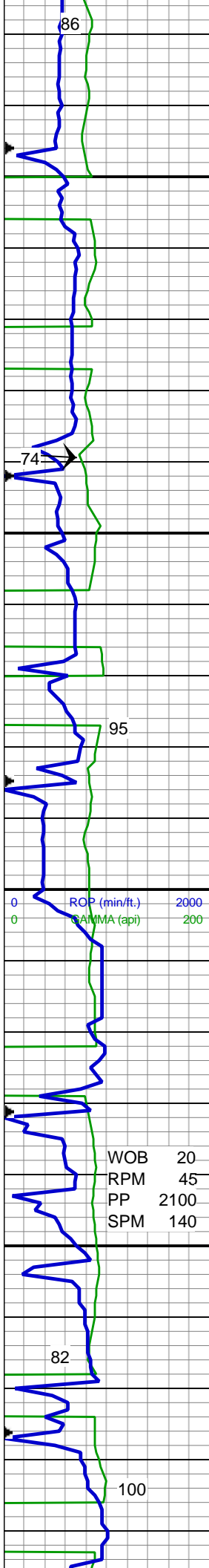
BOUNDSTONE
CHALKY
CRYPTOXLN

E EARTHY
FX FINELYXLN
GS GRAINSTONE
L LITHOGRAPHIC
MX MICROXLN
MS MUDSTONE
PS PACKSTONE
WS WACKESTONE

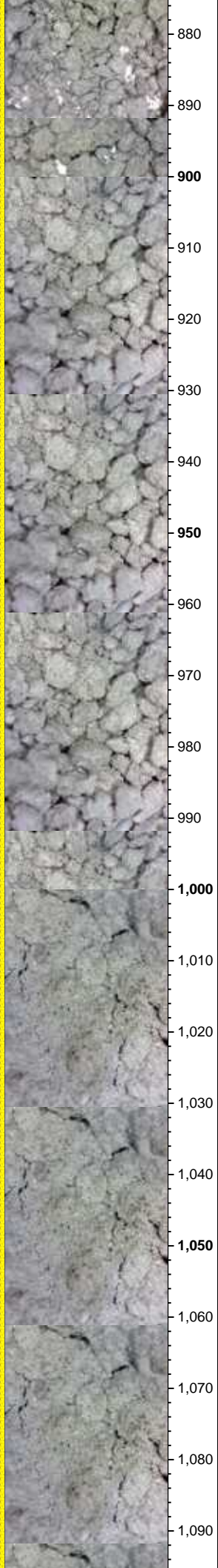
Sorting

M MODERATE
P POOR
W WELL

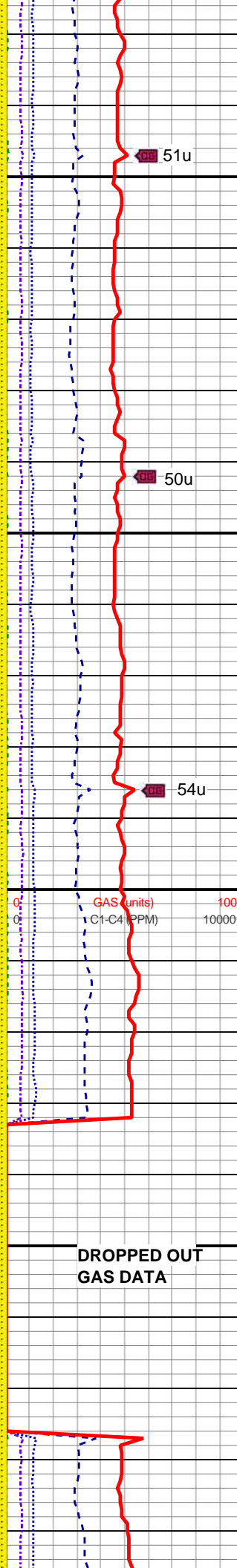
ROP ROF GAMMA		Slide/Rotate	Interp Lithology	Images	Depth Labels	% Lith	Total Gas & Chromatograph GAS C1 C2 C3 C4	Lithology Descriptions
0	ROP (min/ft.)	2000			680			<div>COLUMBINE LOGGING, INC. ON LOCATION 12/2/13 MANNED 2-PERSON LOGGING USING PASON GAS SYSTEM</div> <div>DRILLED OUT OF SHOE 0200 HRS, 12/3/13</div> <div> Depth: 715' WT 8.8 VIS 35 YP 7 pH 8.0 Cl- 700 Ca++ 160 </div>
					690			
	Bit #: 2 Type: SDi611 Size: 8.75 Depth In: 715' S/N: JH3962				700			
					710			
					720			
					730			
	NO DATA FROM PASON				740		NO DATA FROM PASON	
					750			
					760			
					770			
					780			SS: It to med gy, s&p, clr to trnsl, f to med gr, blkly to sb blkly, sb rndd to sb ang, mod srt, mod sft, p to mod cmt, arg to sil mtz, sl calc, sl mica
					790			
					800			
					810			
					820			
					830			
					840			
					850			MD: 839' TVD: 839' Inclination: 0.55 ° Azimuth: 186.13 °
					860			SS: It to med gy, s&p, clr to trnsl, f to med gr, blkly to sb blkly, sb rndd to sb ang, mod srt, mod sft, p to mod cmt, arg to sil mtz, sl calc, sl mica
					870			



WOB 20
RPM 45
PP 2100
SPM 140



880
890
900
910
920
930
940
950
960
970
980
990
1,000
1,010
1,020
1,030
1,040
1,050
1,060
1,070
1,080
1,090



**DROPPED OUT
GAS DATA**

Depth: 715'
WT 8.8
VIS 33
YP 7
pH 8.4
Cl- 600
Ca++ 200

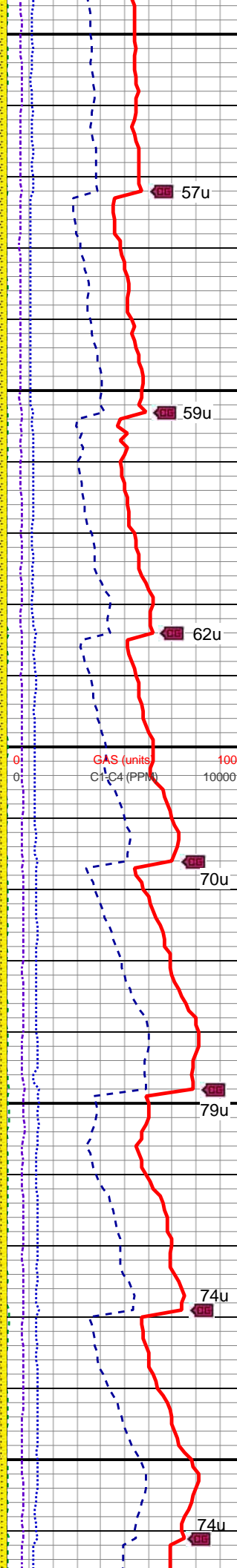
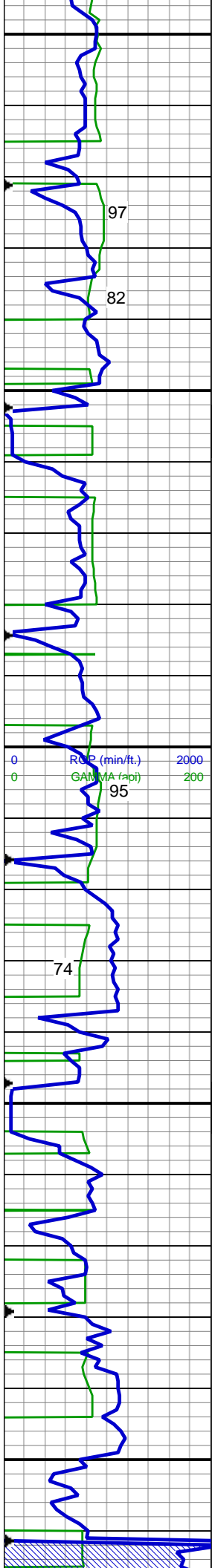
MD: 929'
TVD: 928.99'
Inclination: 0.43 °
Azimuth: 199.07 °

SS: lt to med gy, s&p, clr to trnsf, f to med gr, blkly to sb blkly, sb rndd to sb ang, mod srt, mod sft, p to mod cmt, arg to sil mtx, sl calc, sl mica

MD: 1,019'
TVD: 1,018.99'
Inclination: 0.31 °
Azimuth: 207.08 °

SS: lt to med gy, s&p, clr to trnsf, f to med gr, blkly to sb blkly, rnd to sb rnd to sb ang, lse gr, mod srt, mod sft, p cmt, arg mtx, abnt free gy cly, sl calc, mica

MD: 1,095'
TVD: 1,094.99'



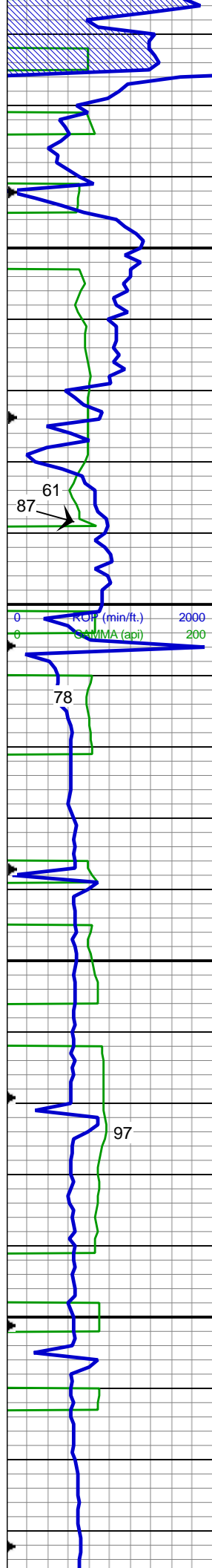
Inclination: 0.27 °
Azimuth: 169.31 °

SS: It to mgy, s&p, clr to trnsl, f to mgr, blkly to sb blkly, sb rnd to sb ang, mod srt, mod sft, p to mod cmt, arg to sil mtx, sl calc, sl mica
SHYSS: mgy, trnsl to op, v fgr, sb blkly, mod srt, sft to sl firm, mod cem, pred arg mtx, sl calc, slty, grdg to shy sltst

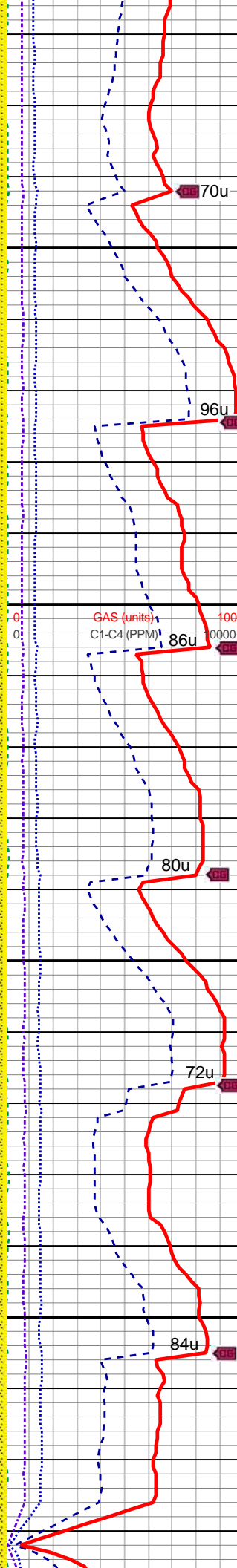
MD: 1,190'
TVD: 1,189.99'
Inclination: 0.87 °
Azimuth: 13.36 °

SS: It to mgy, s&p, clr to trnsl, f to mgr, blkly to sb blkly, sb rnd to sb ang, mod srt, mod sft, p to mod cmt, arg to sil mtx, sl calc, sl mica, occ glau
SHYSS: mgy, trnsl to op, v fgr, sb blkly, mod srt, sft to sl firm, mod cem, pred arg mtx, sl calc, slty, grdg to shy sltst

MD: 1,285'
TVD: 1,284.98'
Inclination: 0.12 °
Azimuth: 161.55 °



1,320
1,330
1,340
1,350
1,360
1,370
1,380
1,390
1,400
1,410
1,420
1,430
1,440
1,450
1,460
1,470
1,480
1,490
1,500
1,510
1,520
1,530



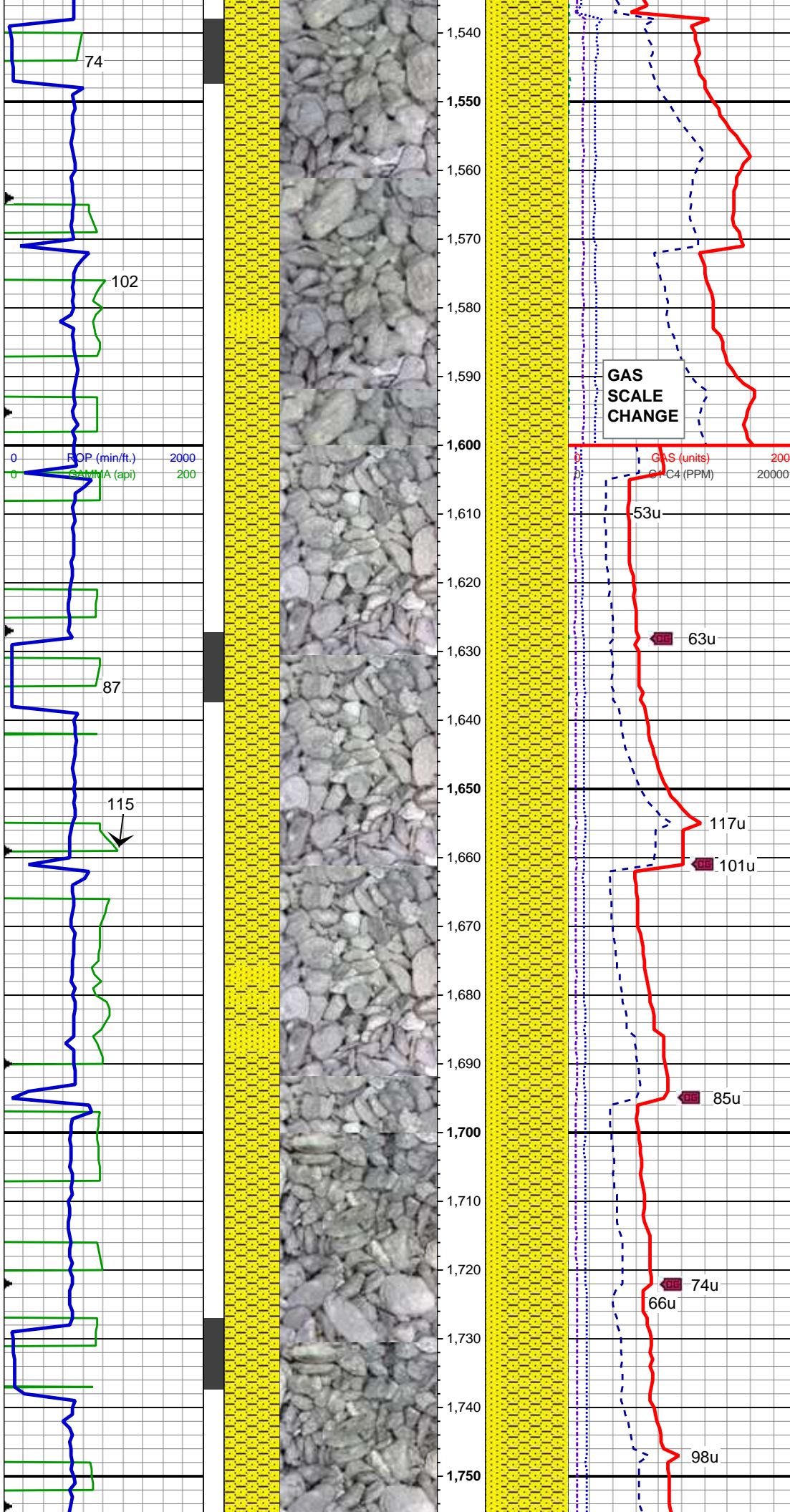
SS: lt to mgy, s&p, clr to trnsl, f to mgr, blk to sb blk, sb rnd to sb ang, mod srt, mod sft, p to mod cmt, arg to sil mtx, sl calc, sl mica, occ glau

MD: 1,380'
TVD: 1,379.98'
Inclination: 0.16 °
Azimuth: 104.84 °

SHYSS: mgy, trnsl to op, v fgr, sb blk, mod srt, sft to sl firm, mod cem, pred arg mtx, sl calc, slty, grd to shy sltst

SS: lt to mgy, s&p, clr to trnsl, f to mgr, blk to sb blk, sb rnd to sb ang, mod srt, mod sft, p to mod cmt, arg to sil mtx, sl calc, sl mica

MD: 1,475'
TVD: 1,474.98'
Inclination: 0.28 °
Azimuth: 119.79 °



SHYSS: mgy, trnsl to op, v fgr, sb
blky, mod srt, sft to sl firm, mod
cem, pred arg mtx, sl calc, slty, grdg
to shy sltst
SS: lt to mgy, s&p, clr to trnsl, f to
mgr, blky to sb blky, sb rnd to sb
ang, mod srt, mod sft, p to mod
cmt, arg to sil mtx, sl calc, sl mica

MD: 1,570'
TVD: 1,569.96'
Inclination: 2.25 °
Azimuth: 32.71 °

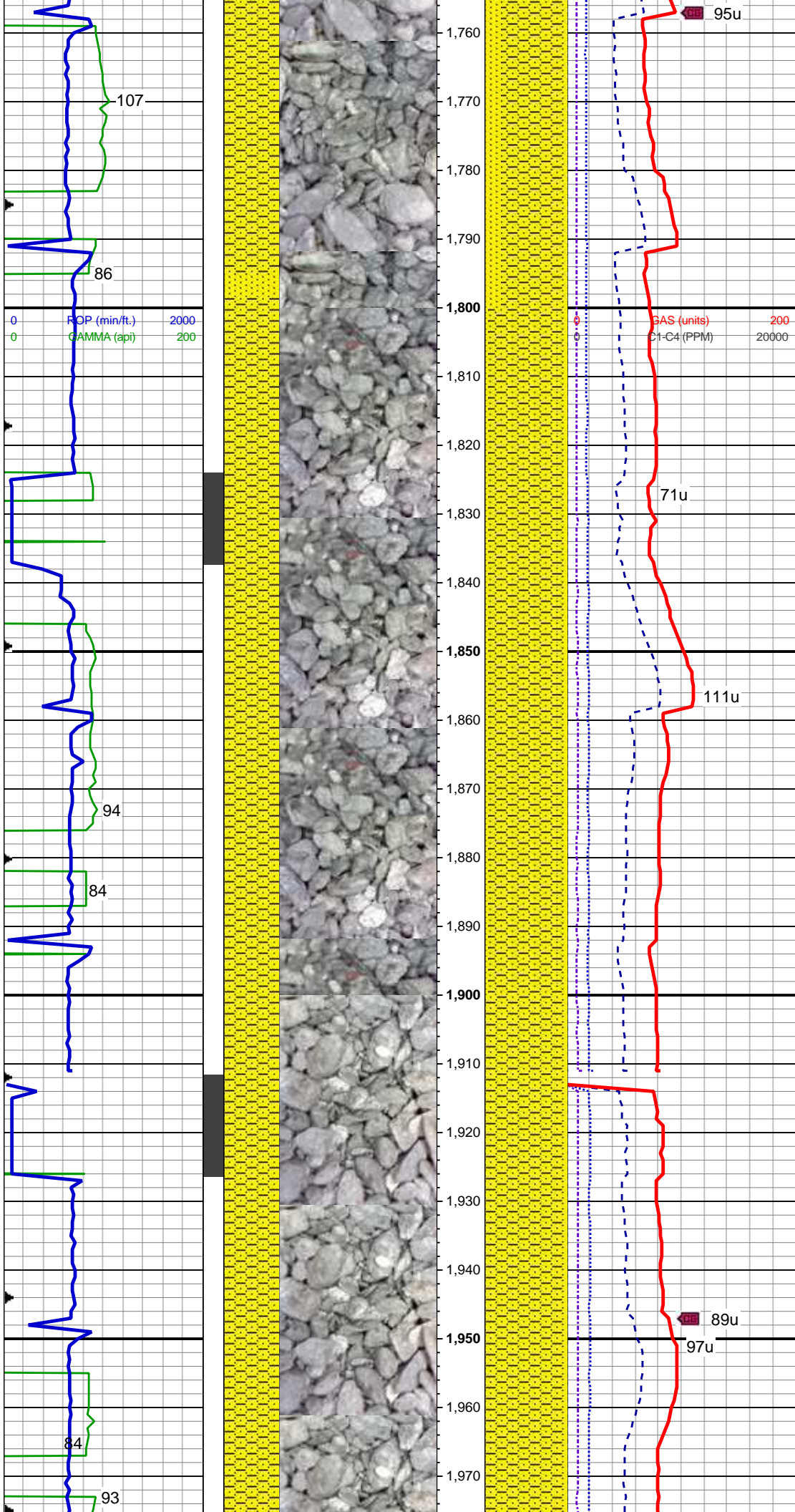
WT 8.7 / VIS 28

SHYSS: mgy, trnsl to op, v fgr, sb
blky, mod srt, sft to sl firm, mod
cem, pred arg mtx, sl calc, slty, grdg
to shy sltst
SS: lt to mgy, s&p, clr to trnsl, f to
mgr, blky to sb blky, sb rnd to sb
ang, mod srt, mod sft, p to mod
cmt, arg to sil mtx, sl calc, sl mica

MD: 1,665'
TVD: 1,664.87'
Inclination: 2.67 °
Azimuth: 10.02 °

SHYSS: mgy, trnsl to op, v fgr, sb
blky, mod srt, sft to sl firm, mod
cem, pred arg mtx, sl calc, slty, grdg
to shy sltst
SS: lt to mgy, s&p, clr to trnsl, f to
mgr, blky to sb blky, sb rnd to sb
ang, mod srt, mod sft, p to mod
cmt, arg to sil mtx, sl calc, sl mica

MD: 1,760'



MD: 1,760'
TVD: 1,759.69'
Inclination: 4.33 °
Azimuth: 15.07 °

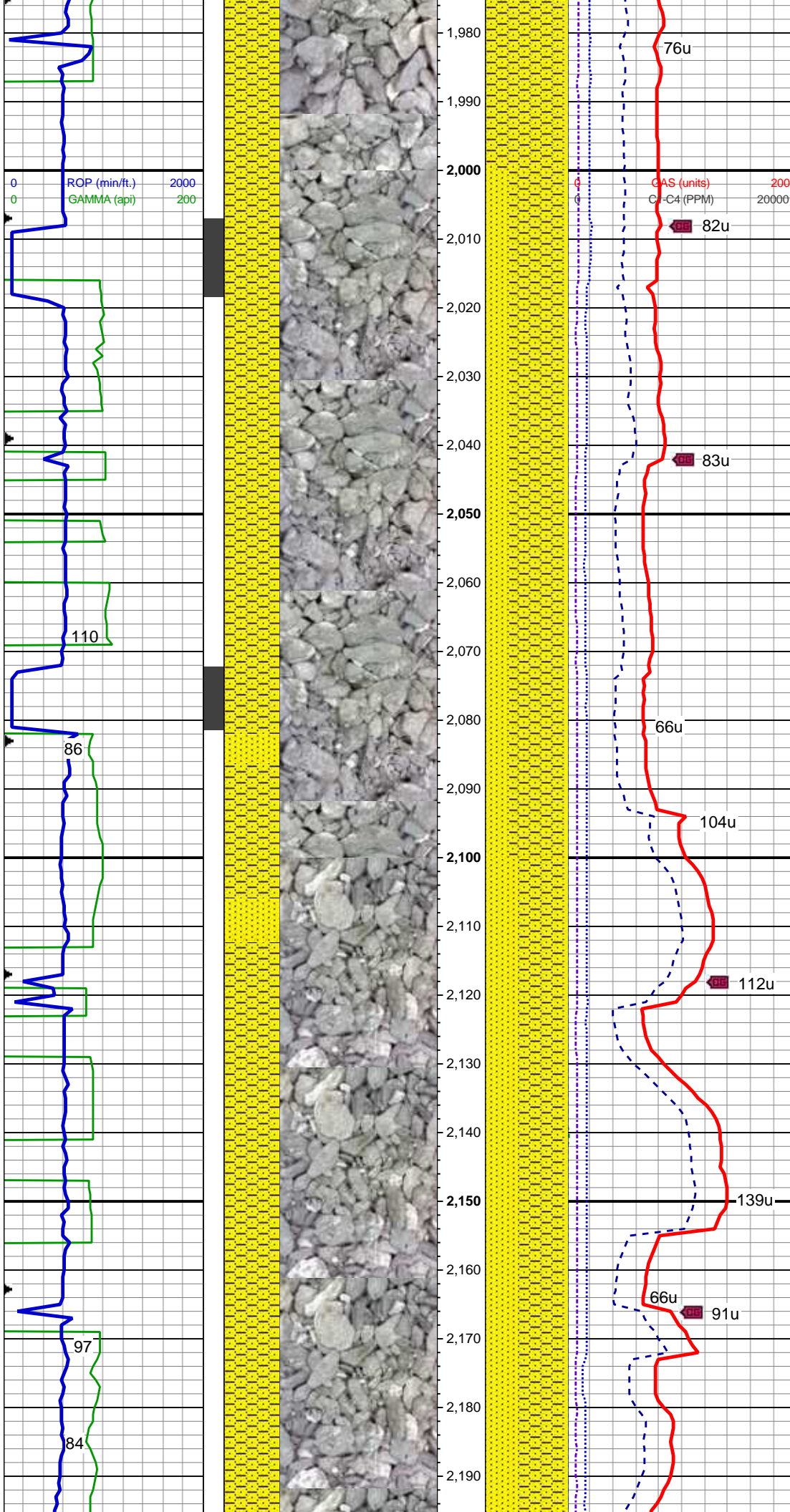
SHYSS: mgy, trnsl to op, v fgr, sb
blky, mod srt, sft to sl firm, mod
cem, pred arg mtx, sl calc, slty, grdg
to shy sltst
SS: lt to mgy, s&p, clr to trnsl, f to
mgr, blky to sb blky, sb rnd to sb
ang, mod srt, mod sft, p to mod
cmt, arg to sil mtx, sl calc, sl mica

MD: 1,855'
TVD: 1,854.32'
Inclination: 5.81 °
Azimuth: 357.79 °

DRILLERS DEPTH CORRECTION

MD: 1,950'
TVD: 1,948.73'
Inclination: 7.01 °
Azimuth: 357.25 °

SHYSS: mgy, trnsl to op, v fgr, sb
blky, mod srt, sft to sl firm, mod
cem, pred arg mtx, sl calc, slty, grdg
to shy sltst



MD: 2,016'
TVD: 2,014.19'
Inclination: 7.66 °
Azimuth: 354.56 °

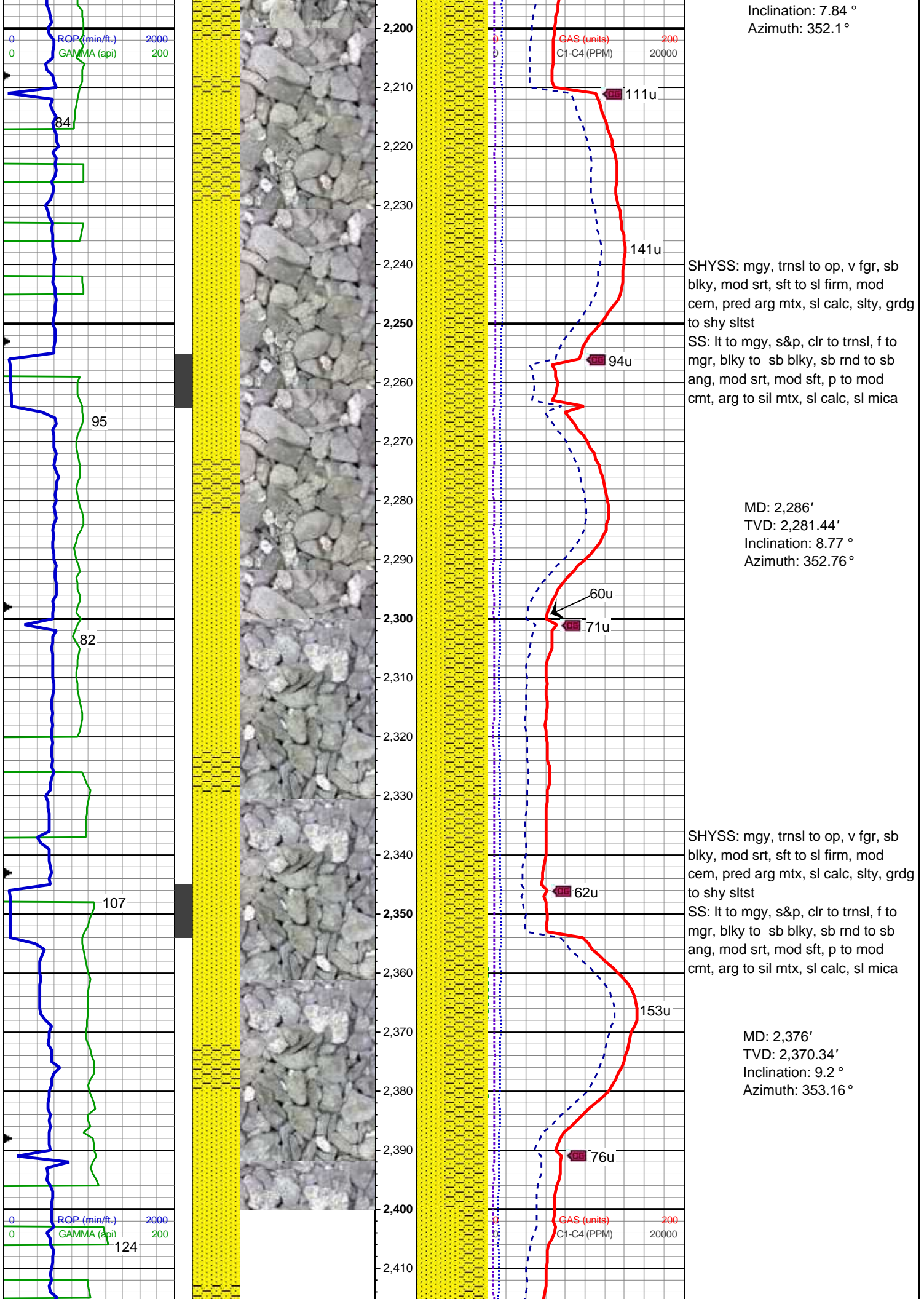
SHYSS: mgy, trnsI to op, v fgr, sb
blky, mod srt, sft to sl firm, mod
cem, pred arg mtx, sl calc, slty, grdg
to shy sltst
SS: lt to mgy, s&p, clr to trnsI, f to
mgr, blky to sb blky, sb rnd to sb
ang, mod srt, mod sft, p to mod
cmt, arg to sil mtx, sl calc, sl mica

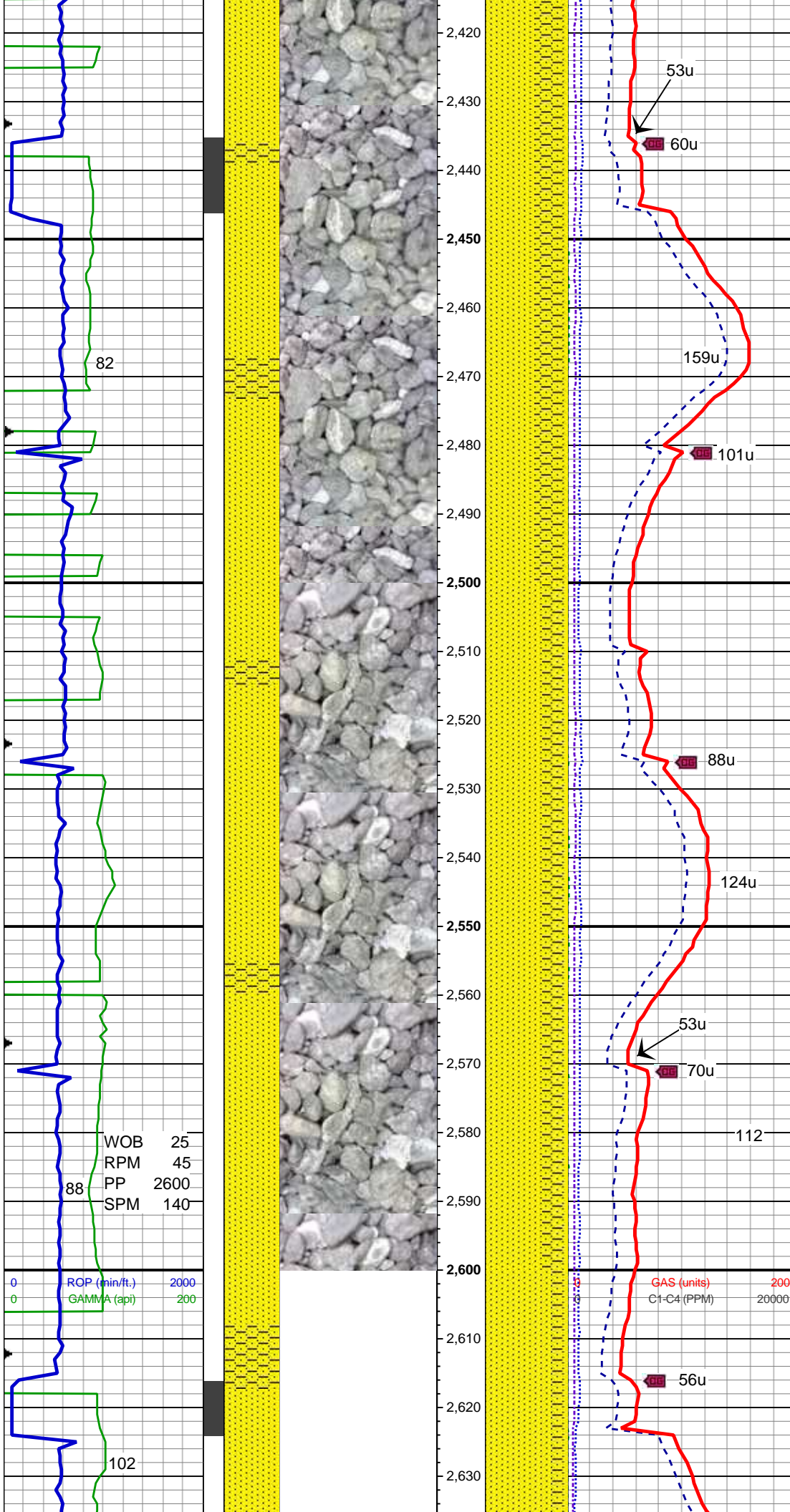
MD: 2,106'
TVD: 2,103.3'
Inclination: 8.45 °
Azimuth: 356.67 °

WT 8.7 / VIS 28

SHYSS: mgy, trnsI to op, v fgr, sb
blky, mod srt, sft to sl firm, mod
cem, pred arg mtx, sl calc, slty, grdg
to shy sltst
SS: lt to mgy, s&p, clr to trnsI, f to
mgr, blky to sb blky, sb rnd to sb
ang, mod srt, mod sft, p to mod
cmt, arg to sil mtx, sl calc, sl mica

MD: 2,196'
TVD: 2,192.39'



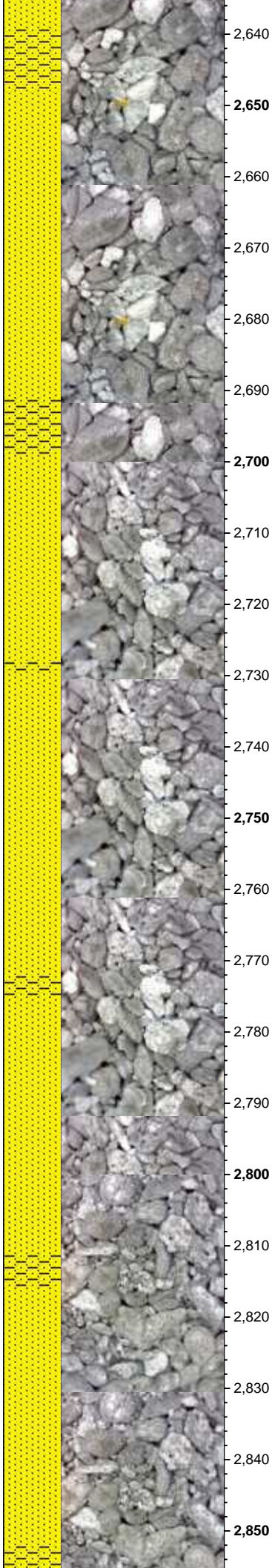
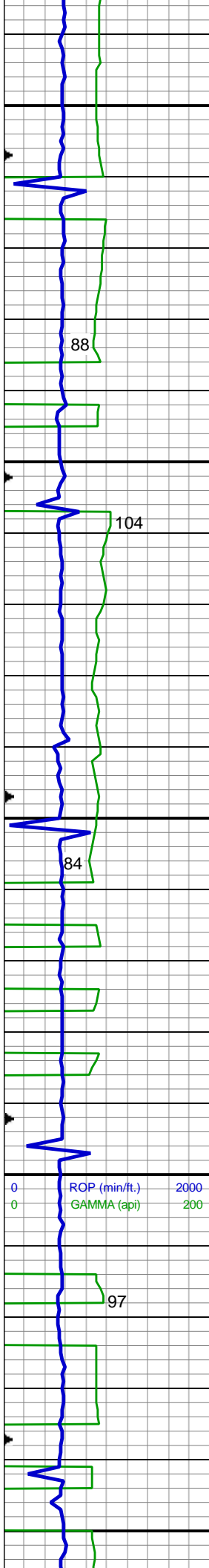


SS: It to mgy, s&p, clr to trnsl, f to mgr, blk to sb blk, sb rnd to sb ang, mod srt, mod sft, p to mod cmt, arg to sil mtx, sl calc, sl mica
SHYSS: mgy, trnsl to op, v fgr, sb blk, mod srt, sft to sl firm, mod cem, pred arg mtx, sl calc, slty, grdg to shy sltst

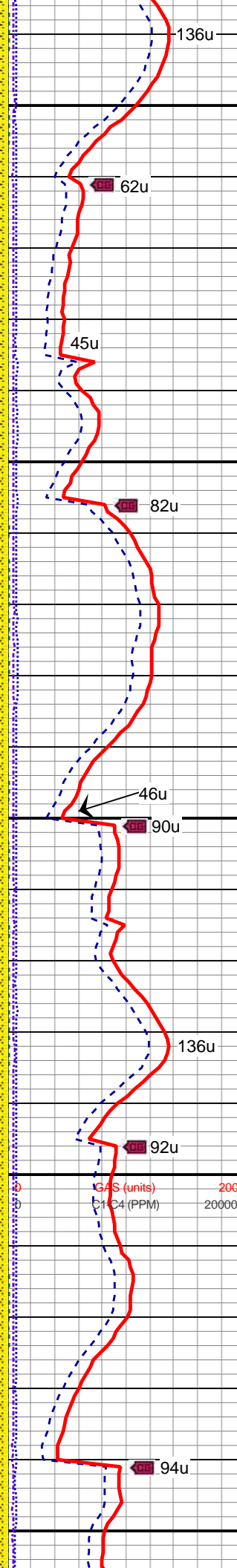
MD: 2,466'
TVD: 2,459.16'
Inclination: 9.38 °
Azimuth: 1.96 °

SS: It to mgy, s&p, clr to trnsl, f to mgr, blk to sb blk, sb rnd to sb ang, mod srt, mod sft, p to mod cmt, arg to sil mtx, sl calc, sl mica
SHYSS: mgy, trnsl to op, v fgr, sb blk, mod srt, sft to sl firm, mod cem, pred arg mtx, sl calc, slty, grdg to shy sltst

MD: 2,555'
TVD: 2,547.07'
Inclination: 8.66 °
Azimuth: 356.92 °



2,640
2,650
2,660
2,670
2,680
2,690
2,700
2,710
2,720
2,730
2,740
2,750
2,760
2,770
2,780
2,790
2,800
2,810
2,820
2,830
2,840
2,850



MD: 2,645'
TVD: 2,635.96'
Inclination: 9.36 °
Azimuth: 6.23 °

SS: lt to mgy, s&p, clr to trnsf, f to mgr, blkly to sb blkly, sb rnd to sb ang, mod srt, mod sft, p to mod cmt, arg to sil mtx, sl calc, sl mica
SHYSS: mgy, trnsf to op, v fgr, sb blkly, mod srt, sft to sl firm, mod cem, pred arg mtx, sl calc, slty, grdg to shy sltst

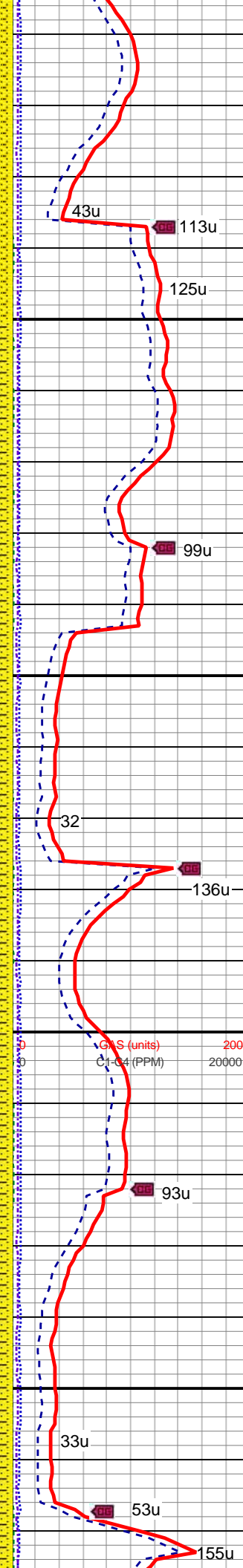
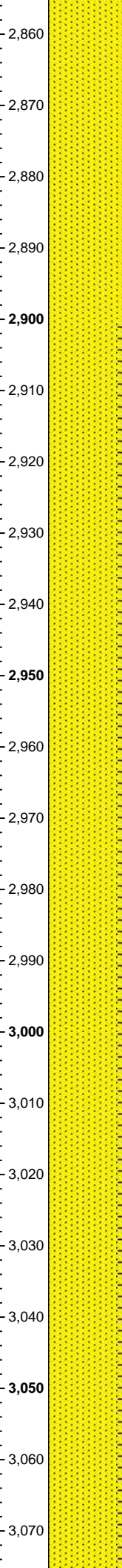
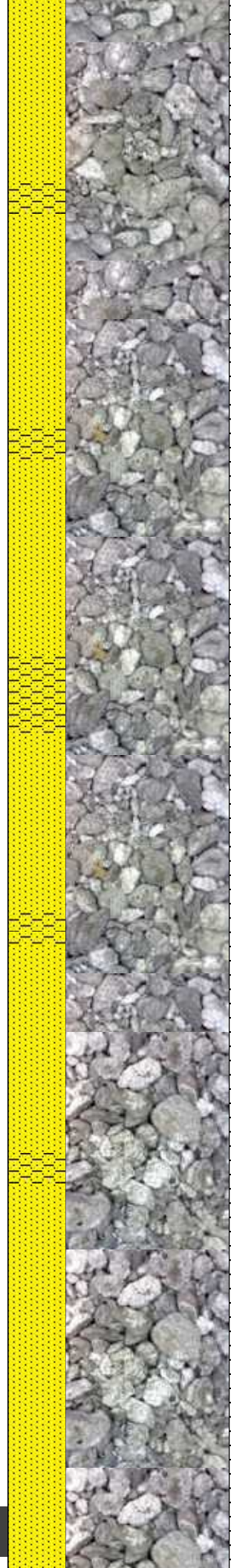
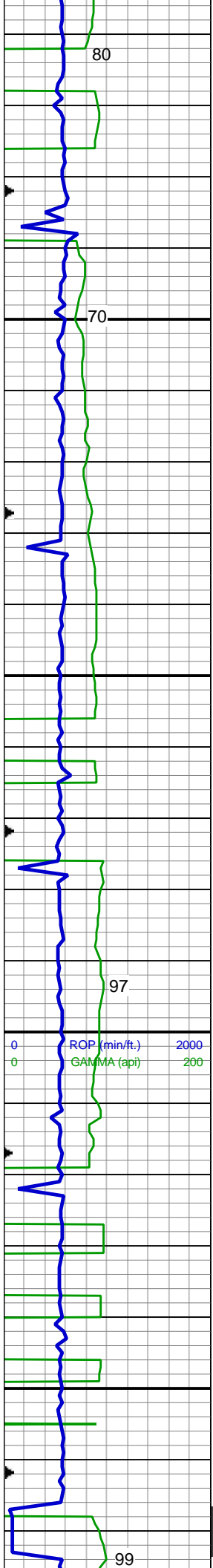
MD: 2,735'
TVD: 2,724.85'
Inclination: 8.69 °
Azimuth: 4.25 °

SS: lt to mgy, s&p, clr to trnsf, f to mgr, blkly to sb blkly, sb rnd to sb ang, mod srt, mod sft, p to mod cmt, arg to sil mtx, sl calc, sl mica
SHYSS: mgy, trnsf to op, v fgr, sb blkly, mod srt, sft to sl firm, mod cem, pred arg mtx, sl calc, slty, grdg to shy sltst

WT 8.8 / VIS 28

MD: 2,825'
TVD: 2,813.86'
Inclination: 8.31 °
Azimuth: 0.27 °

SS: lt to mgy, s&p, clr to trnsf, f to mgr, blkly to sb blkly, sb rnd to sb ang, mod srt, mod sft, p to mod cmt, abnt lse gr, arg to sil mtx, sl calc, sl mica
SHYSS: mav, trnsf to op, v far, sb



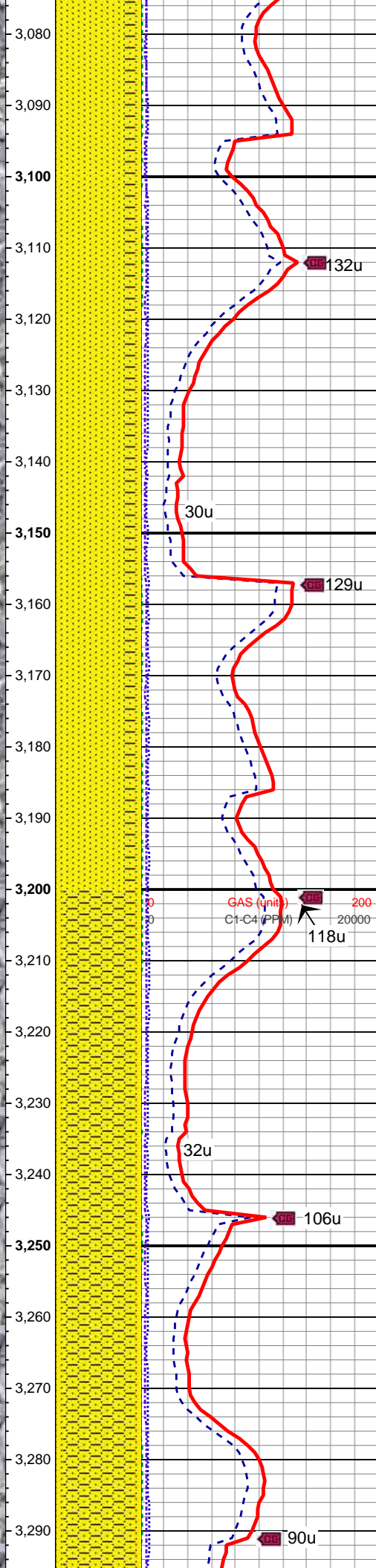
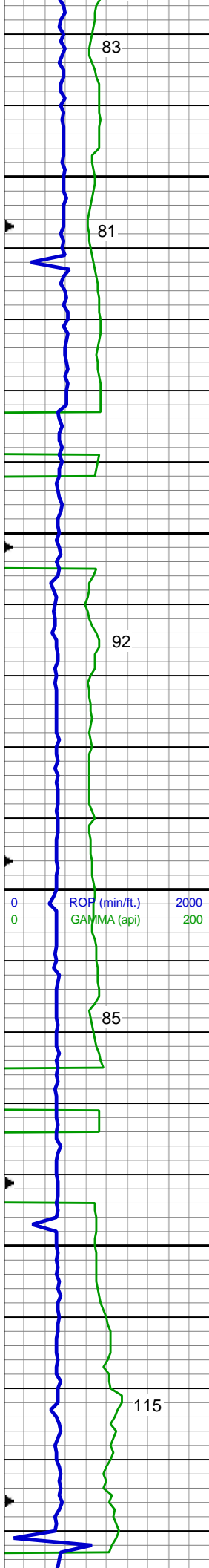
blkly, mod srt, sft to sl firm, mod
cem, pred arg mtx, sl calc, slty, grdg
to shy sltst

MD: 2,915'
TVD: 2,902.89'
Inclination: 8.55 °
Azimuth: 357.22 °

SS: lt to m gy, s&p, clr to trnsl, f to m
gr, blkly to sb blkly, sb rnd to sb ang,
mod srt, mod sft, p to mod cmt, arg
to sil mtx, sl calc, sl mica
SHY SS: m gy, trnsl to op, v f gr, sb
blkly, mod srt, sft to sl firm, mod
cem, pred arg mtx, sl calc, slty, grdg
to shy sltst

MD: 3,005'
TVD: 2,991.95'
Inclination: 8.01 °
Azimuth: 358.24 °

SS: lt to m gy, s&p, clr to trnsl, f to m
gr, blkly to sb blkly, sb rnd to sb ang,
mod srt, mod sft, p to mod cmt, arg
to sil mtx, sl calc, sl mica
SHY SS: m gy, trnsl to op, v f gr, sb
blkly, mod srt, sft to sl firm, mod
cem, pred arg mtx, sl calc, slty, grdg
to slty sh



MD: 3,095'
TVD: 3,080.96'
Inclination: 8.99 °
Azimuth: 3.02 °

SS: lt to m gy, s&p, clr to trnsl, f to m
gr, blkly to sb blkly, sb rnd to sb ang,
mod srt, mod sft, p to mod cmt, arg
to sil mtx, sl calc, sl mica
SHY SS: m gy, trnsl to op, v f gr, sb
blkly, mod srt, sft to sl firm, mod
cem, pred arg mtx, sl calc, slty, grdg
to slty sh

MD: 3,184'
TVD: 3,168.94'
Inclination: 8.38 °
Azimuth: 3.73 °

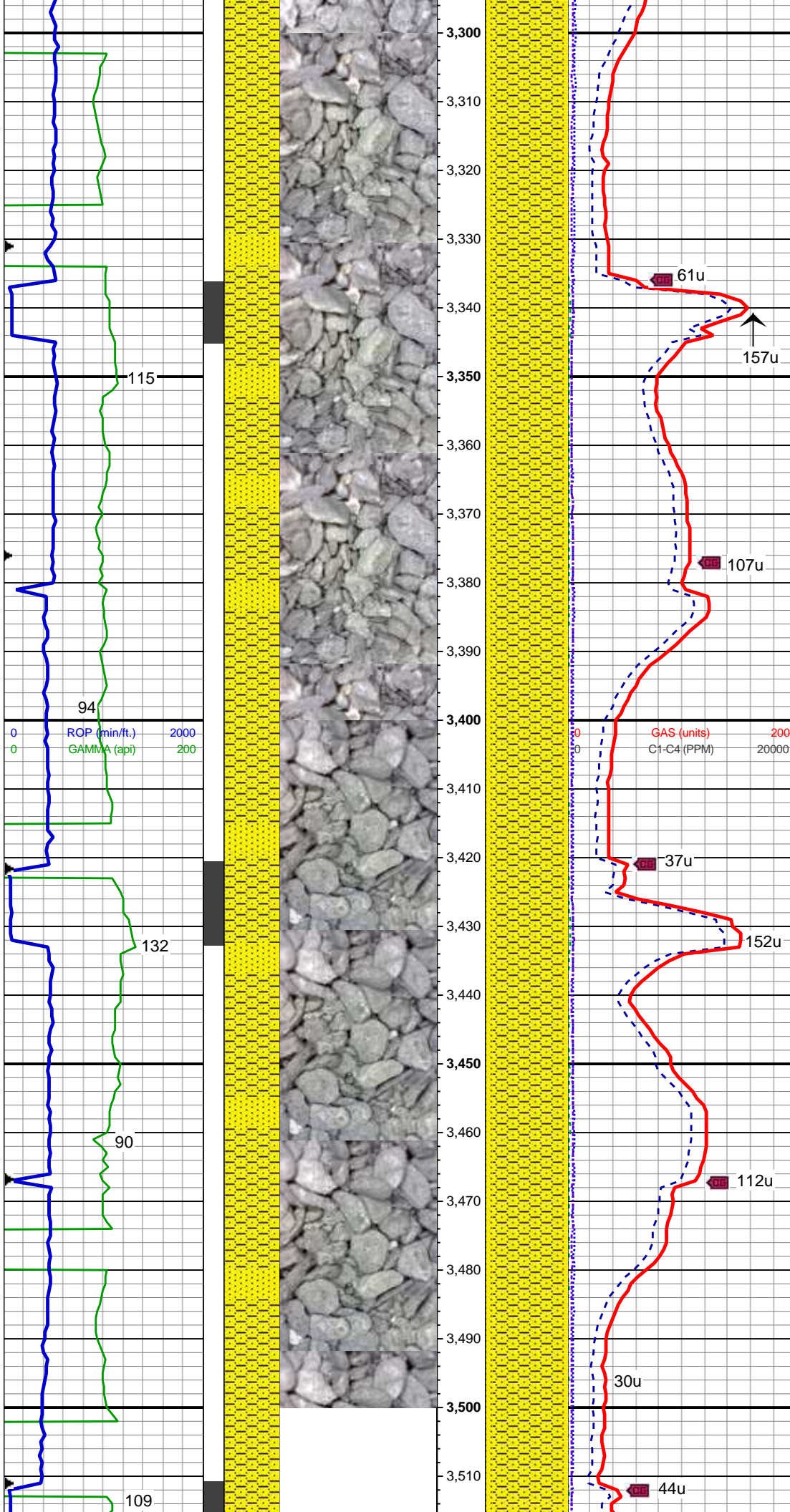
Depth: 3175'

WT 8.75
VIS 28
YP 3
pH 7.3
Cl- 700
Ca++ 2000

SHY SS: m gy, trnsl to op, v f gr, sb
blkly, mod srt, sft to sl firm, mod
cem, pred arg mtx, sl calc, slty, grdg
to slty sh

SS: lt to m gy, s&p, clr to trnsl, f to m
gr, blkly to sb blkly, sb rnd to sb ang,
mod srt, mod sft, p to mod cmt, arg
to sil mtx, sl calc, sl mica

MD: 3,274'
TVD: 3,258.18'
Inclination: 6.49 °
Azimuth: 8.25 °

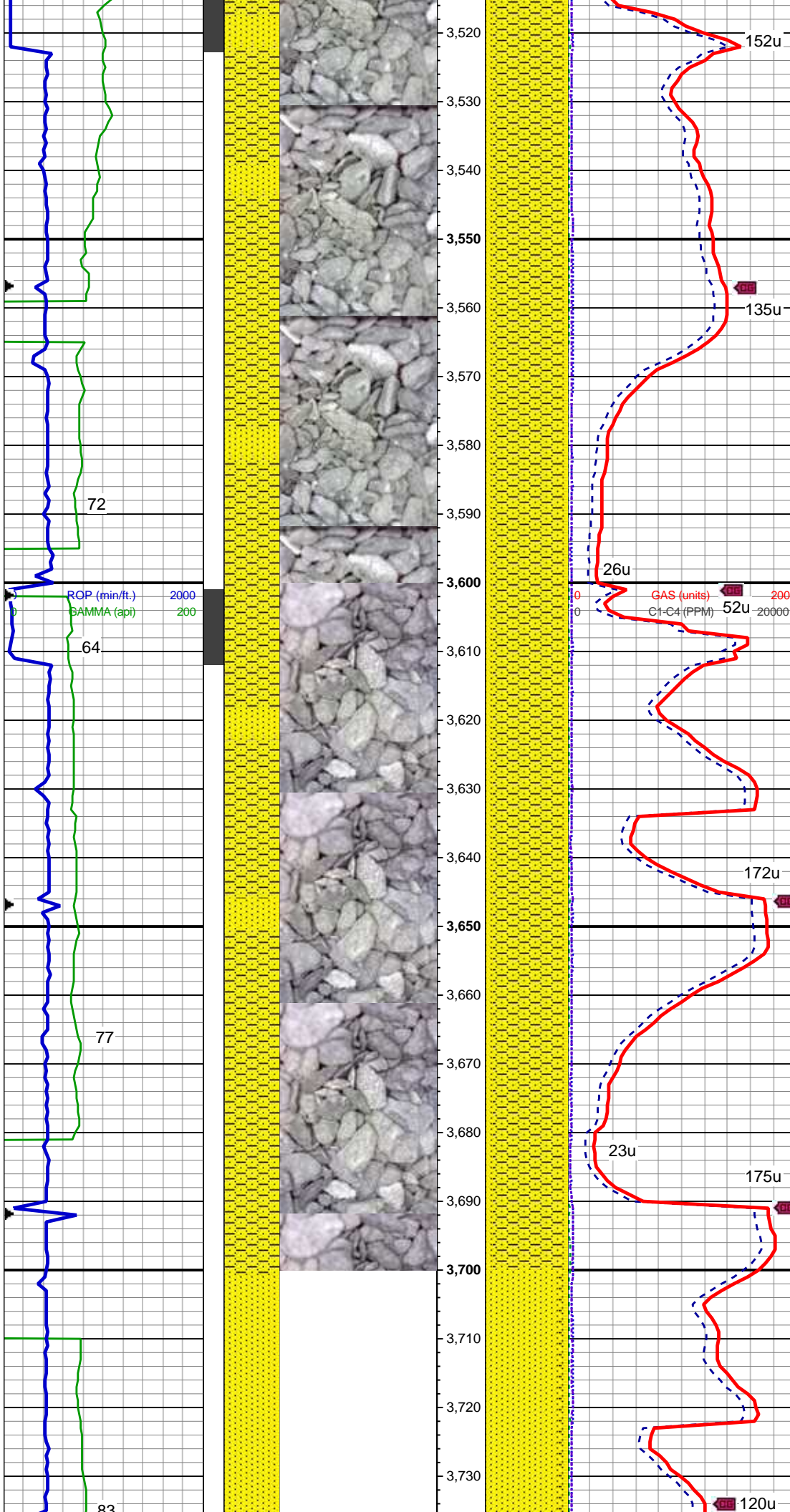


SHY SS: m gy, trnsl to op, v f gr, sb
blky, mod srt, sft to sl firm, mod
cem, pred arg mtx, sl calc, slty, grdg
to slty sh
SS: lt to m gy, s&p, clr to trnsl, f to m
gr, blky to sb blky, sb rnd to sb ang,
mod srt, mod sft, p to mod cmt, arg
to sil mtx, sl calc, sl mica

MD: 3,364'
TVD: 3,347.62'
Inclination: 6.33 °
Azimuth: 3.14 °

SHY SS: m gy, trnsl to op, v f gr, sb
blky, mod srt, sft to sl firm, mod
cem, pred arg mtx, sl calc, slty, grdg
to slty sh
SS: lt to m gy, s&p, clr to trnsl, f to m
gr, blky to sb blky, sb rnd to sb ang,
mod srt, mod sft, p to mod cmt, arg
to sil mtx, sl calc, sl mica

MD: 3,454'
TVD: 3,436.98'
Inclination: 7.3 °
Azimuth: 0.55 °



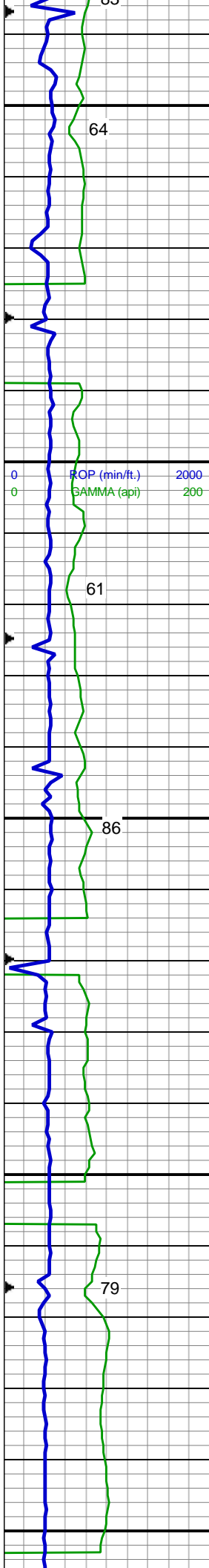
MD: 3,544'
TVD: 3,526.12'
Inclination: 8.58 °
Azimuth: 4.27 °

SHY SS: m gy, trnsl to op, v f gr, sb
blky, mod srt, sft to sl firm, mod
cem, pred arg mtx, sl calc, slty, grdg
to slty sh
SS: lt to m gy, s&p, clr to trnsl, f to m
gr, blky to sb blky, sb rnd to sb ang,
mod srt, mod sft, p to mod cmt, arg
to sil mtx, sl calc, sl mica

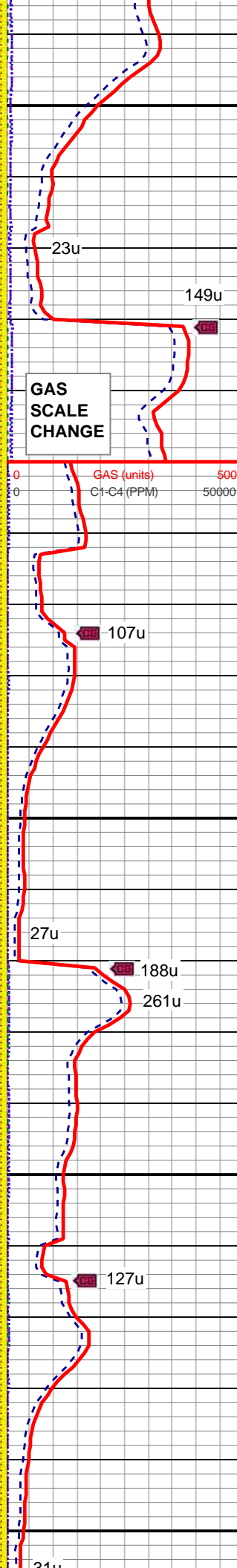
MD: 3,634'
TVD: 3,614.9'
Inclination: 10.31 °
Azimuth: 357.61 °

SHY SS: m gy, trnsl to op, v f gr, sb
blky, mod srt, sft to sl firm, mod
cem, pred arg mtx, sl calc, slty, grdg
to slty sh
SS: lt to m gy, s&p, clr to trnsl, f to m
gr, blky to sb blky, sb rnd to sb ang,
mod srt, mod sft, p to mod cmt, arg
to sil mtx, sl calc, sl mica

MD: 3,723'
TVD: 3,702.41'
Inclination: 10.68 °
Azimuth: 357.08 °



3,740
3,750
3,760
3,770
3,780
3,790
3,800
3,810
3,820
3,830
3,840
3,850
3,860
3,870
3,880
3,890
3,900
3,910
3,920
3,930
3,940
3,950



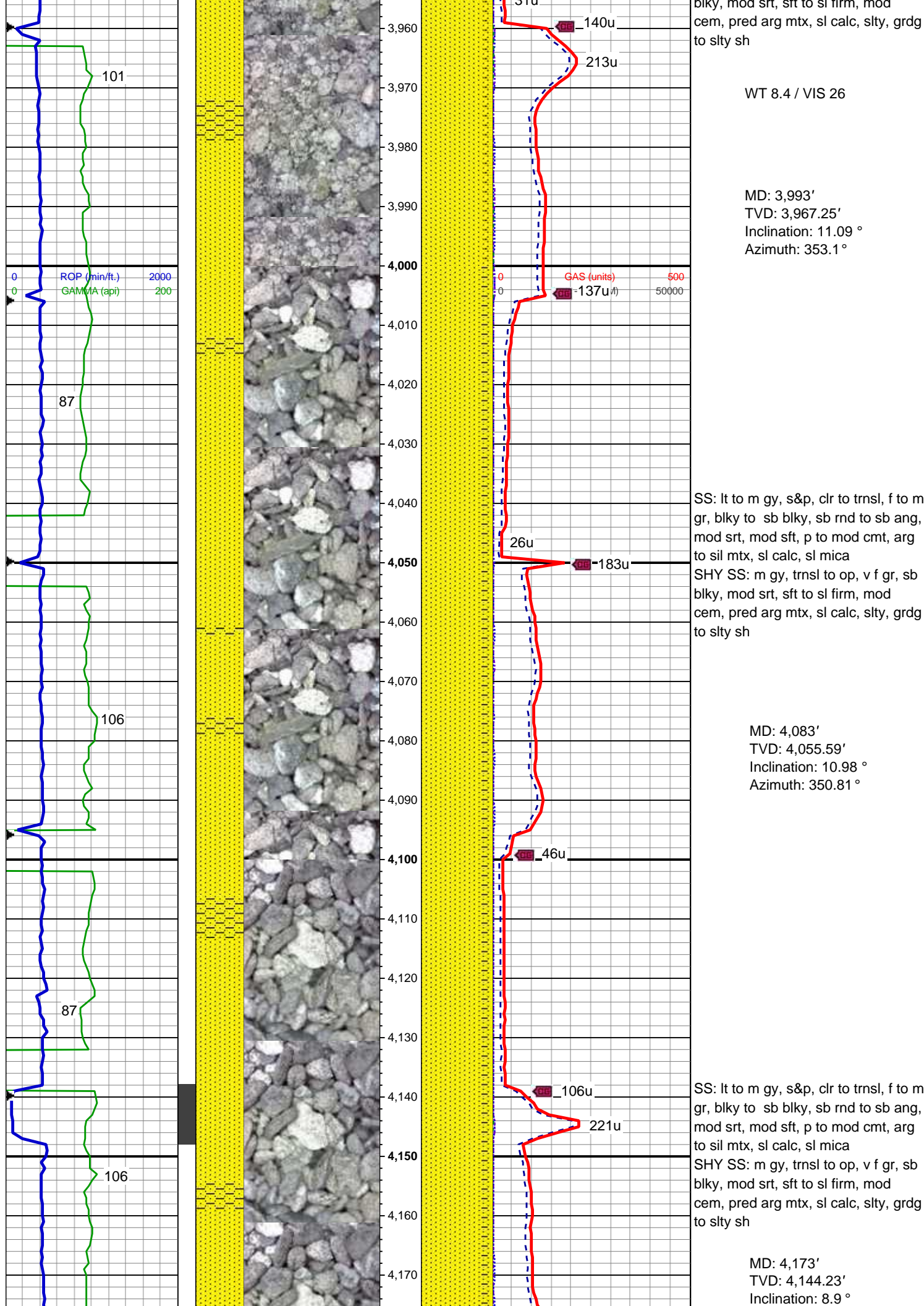
SS: lt to m gy, s&p, clr to trnsl, f to m gr, blkly to sb blkly, sb rnd to sb ang, mod srt, mod sft, p to mod cmt, arg to sil mtx, sl calc, sl mica
SHY SS: m gy, trnsl to op, v f gr, sb blkly, mod srt, sft to sl firm, mod cem, pred arg mtx, sl calc, slty, grgd to slty sh

MD: 3,813'
TVD: 3,790.77'
Inclination: 11.21 °
Azimuth: 358.36 °

SS: lt to m gy, s&p, clr to trnsl, f to m gr, blkly to sb blkly, sb rnd to sb ang, mod srt, mod sft, p to mod cmt, arg to sil mtx, sl calc, sl mica
SHY SS: m gy, trnsl to op, v f gr, sb blkly, mod srt, sft to sl firm, mod cem, pred arg mtx, sl calc, slty, grgd to slty sh

MD: 3,903'
TVD: 3,879'
Inclination: 11.55 °
Azimuth: 354.98 °

SS: lt to m gy, s&p, clr to trnsl, f to m gr, blkly to sb blkly, sb rnd to sb ang, mod srt, mod sft, p to mod cmt, arg to sil mtx, sl calc, sl mica
SHY SS: m gy, trnsl to op, v f gr, sb blkly, mod srt, sft to sl firm, mod cem, pred arg mtx, sl calc, slty, grgd to slty sh



Azimuth: 351.13°

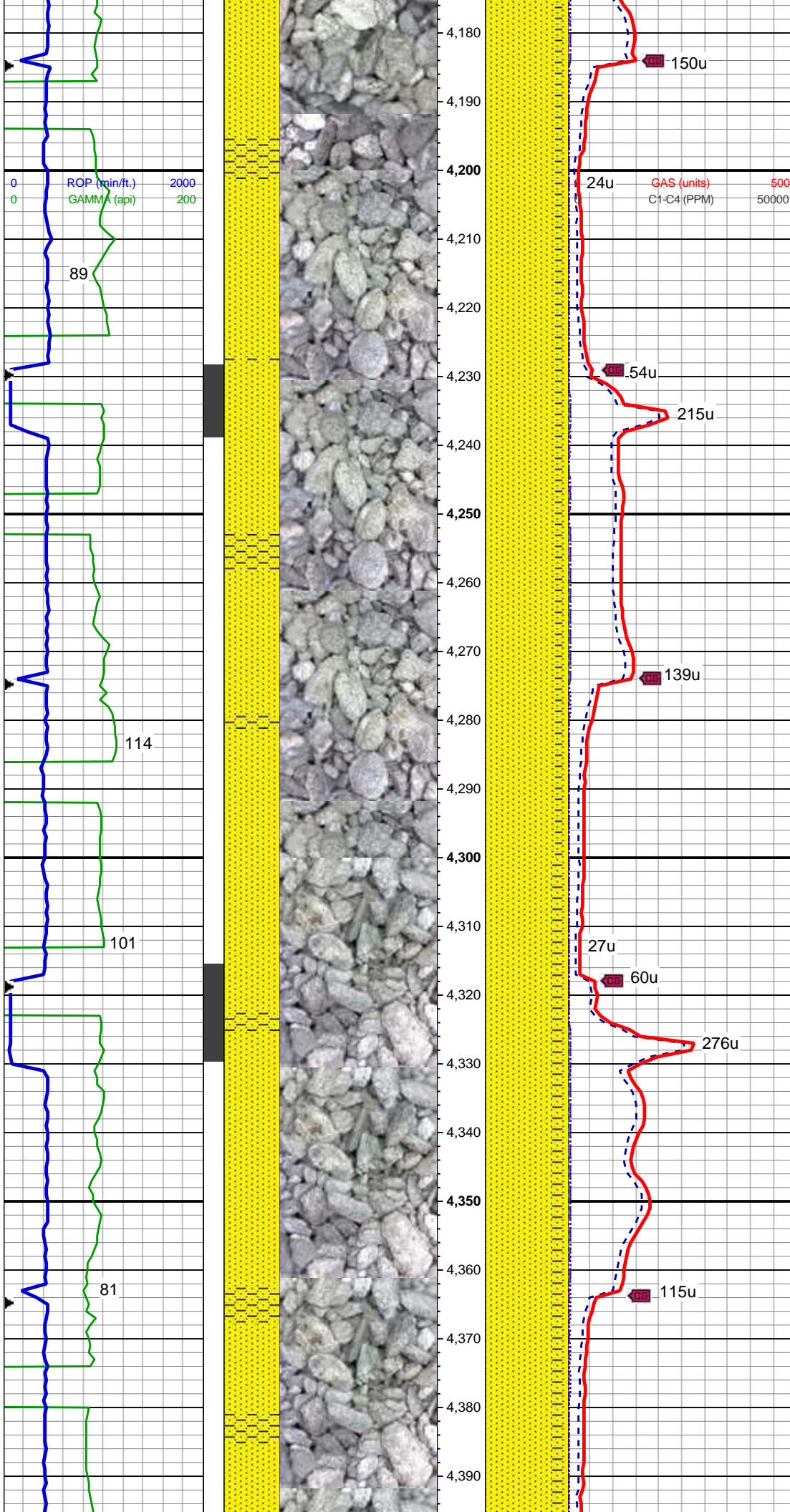
WT 8.4 / VIS 26

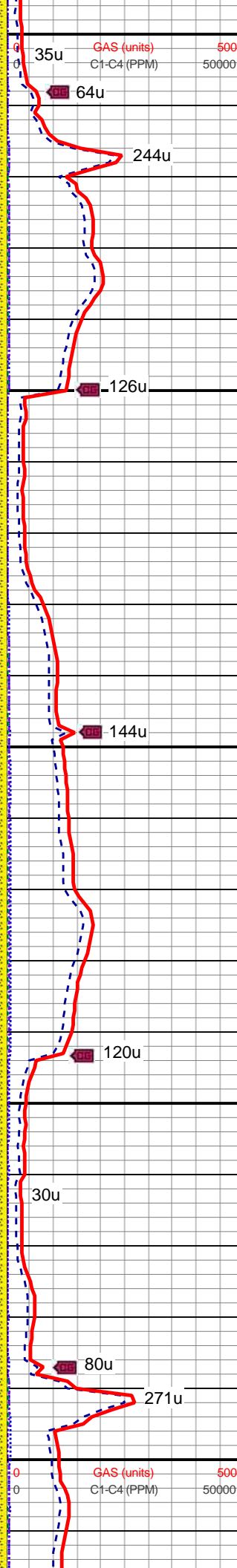
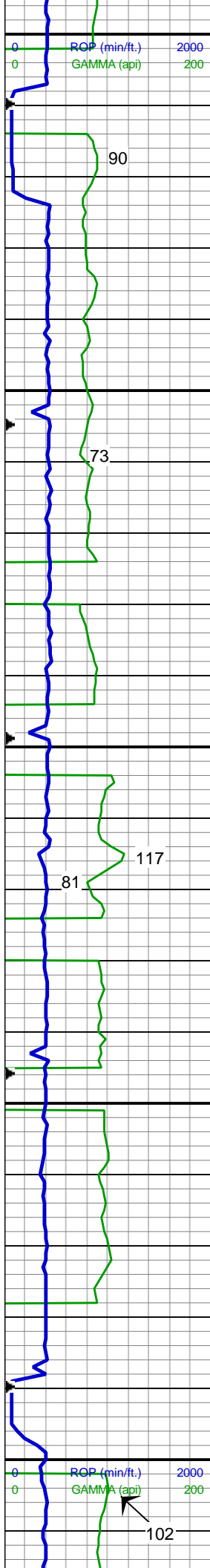
SS: lt to m gy, s&p, clr to trnsl, f to m gr, blk to sb blk, sb rnd to sb ang, mod srt, mod sft, p to mod cmt, arg to sil mtx, sl calc, sl mica
SHY SS: m gy, trnsl to op, v f gr, sb blk, mod srt, sft to sl firm, mod cem, pred arg mtx, sl calc, slty, grdg to slty sh

MD: 4,262'
TVD: 4,232.23'
Inclination: 8.34 °
Azimuth: 355.86°

SS: lt to m gy, s&p, clr to trnsl, f to m gr, blk to sb blk, sb rnd to sb ang, mod srt, mod sft, p to mod cmt, arg to sil mtx, sl calc, sl mica
SHY SS: m gy, trnsl to op, v f gr, sb blk, mod srt, sft to sl firm, mod cem, pred arg mtx, sl calc, slty, grdg to slty sh

MD: 4,352'
TVD: 4,321.29'
Inclination: 8.24 °
Azimuth: 355.09°



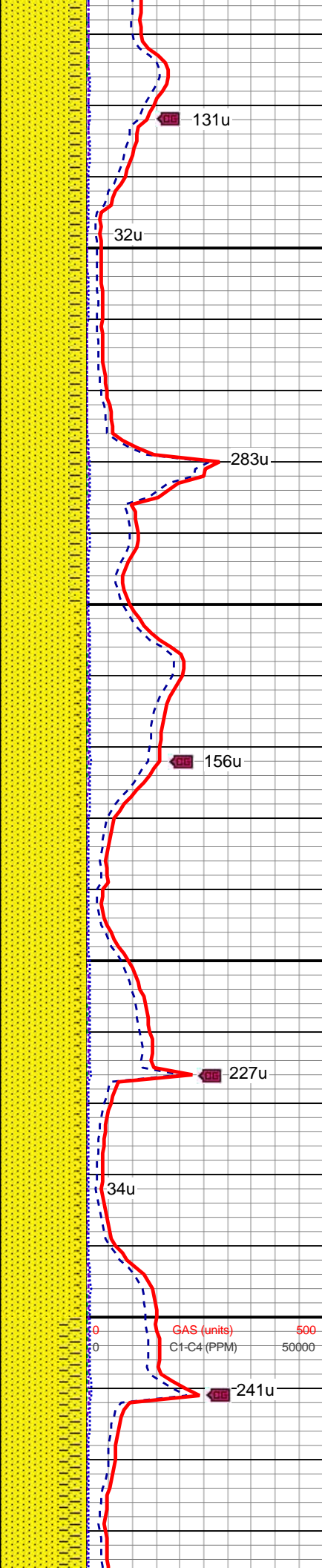
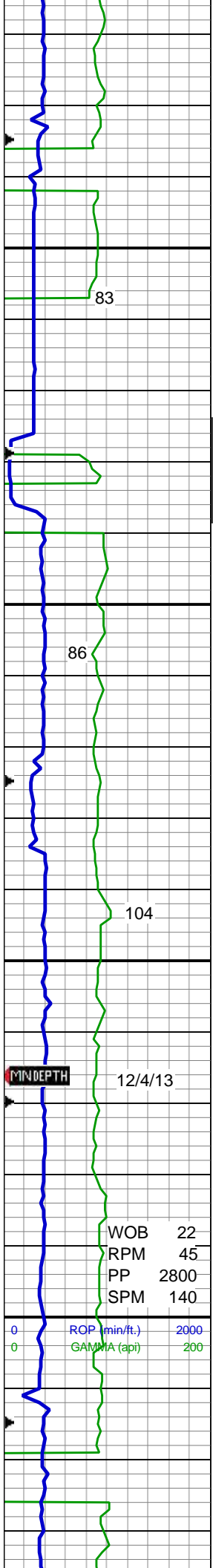


MD: 4,442'
TVD: 4,410.26'
Inclination: 9.11 °
Azimuth: 0.94 °

SS: lt to m gy, s&p, clr to trns, f to m
gr, blk to sb blk, sb rnd to sb ang,
mod srt, mod sft, p to mod cmt, arg
to sil mtx, sl calc, sl mica
SHY SS: m gy, trns to op, v f gr, sb
blk, mod srt, sft to sl firm, mod
cem, pred arg mtx, sl calc, slty, grdg
to slty sh

MD: 4,532'
TVD: 4,499.19'
Inclination: 8.63 °
Azimuth: 358.44 °

SS: lt to m gy, s&p, clr to trns, f to m
gr, blk to sb blk, sb rnd to sb ang,
mod srt, mod sft, p to mod cmt, arg
to sil mtx, sl calc, sl mica
SHY SS: m gy, trns to op, v f gr, sb
blk, mod srt, sft to sl firm, mod
cem, pred arg mtx, sl calc, slty, grdg
to slty sh

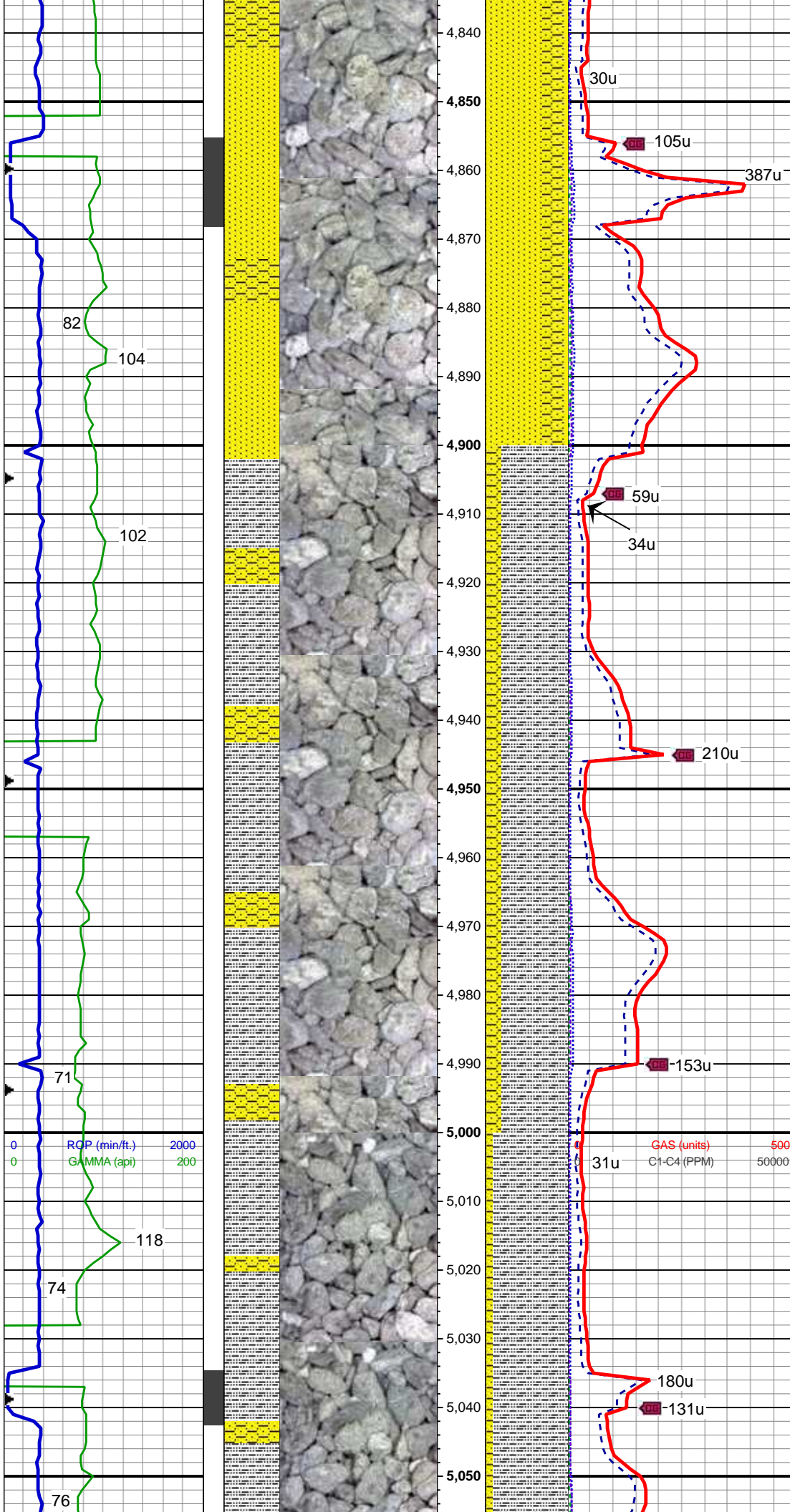


MD: 4,622'
TVD: 4,588.3'
Inclination: 7.41 °
Azimuth: 2.28 °

MD: 4,712'
TVD: 4,677.48'
Inclination: 8.06 °
Azimuth: 2.3 °

MD: 4,802'
TVD: 4,766.81'
Inclination: 5.88 °
Azimuth: 358.38 °

WT 8.5 / VIS 27



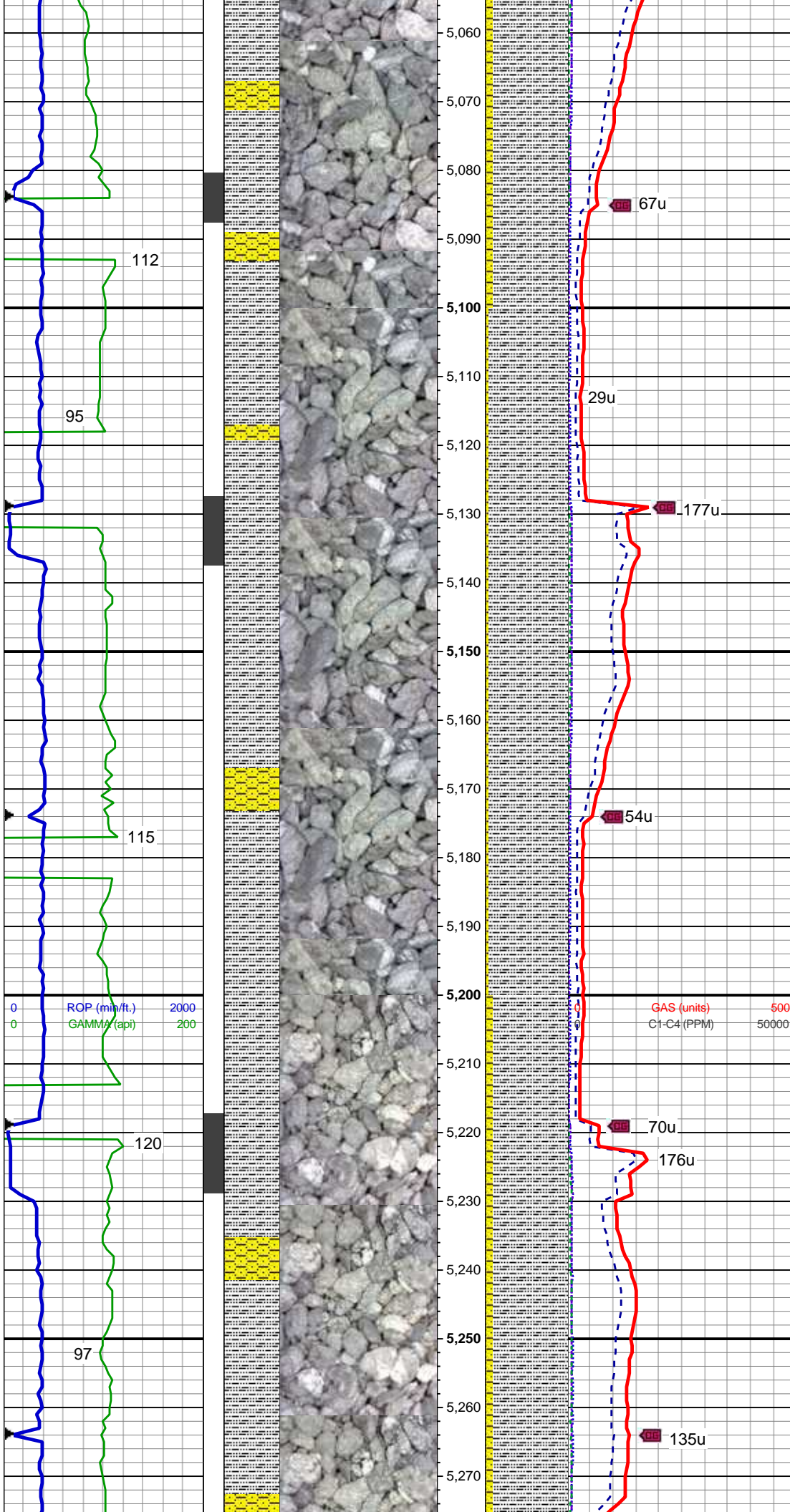
SS: lt to m gy, s&p, clr to trnsl, f to m
gr, blkly to sb blkly, sb rnd to sb ang,
mod srt, mod sft, p to mod cmt, arg
to sil mtx, sl calc, sl mica
SHY SS: m gy, trnsl to op, v f gr, sb
blkly, mod srt, sft to sl firm, mod
cem, pred arg mtx, sl calc, slty, grdg
to slty sh

MD: 4,891'
TVD: 4,855.32'
Inclination: 6.17 °
Azimuth: 7.93°

SLTY SH: med to dk gy, occ lt gy, gy
brn, sb blkly to sb plty, sft to sl firm,
arg, sl calc, sl sdy ip, grdg to shy ss
SHY SS: m gy, trnsl to op, v f gr, sb
blkly, mod srt, sft to sl firm, mod
cem, pred arg mtx, sl calc, slty

MD: 4,980'
TVD: 4,943.84'
Inclination: 5.83 °
Azimuth: 5.2°

SLTY SH: med to dk gy, occ lt gy, gy
brn, sb blkly to sb plty, sft to sl firm,
arg, sl calc, sl sdy ip, grdg to shy ss
SHY SS: m gy, trnsl to op, v f gr, sb
blkly, mod srt, sft to sl firm, mod



blky, mod srt, sft to sl firm, mod
cem, pred arg mtx, sl calc, slty

MD: 5,070'
TVD: 5,033.47'
Inclination: 4.45 °
Azimuth: 0.81 °

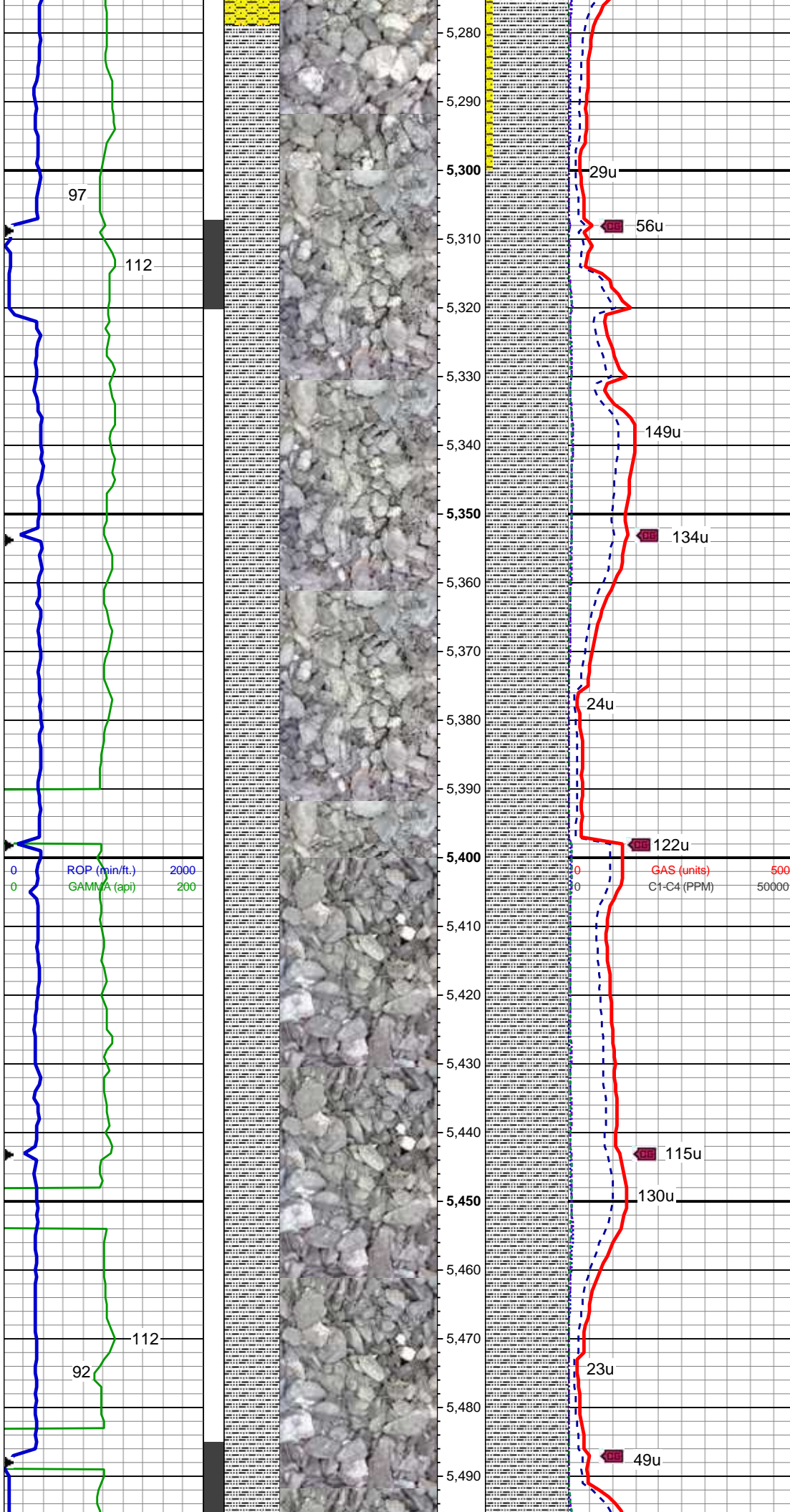
Depth: 5075'
WT 8.45
VIS 29
YP 4
pH 9.8
Cl- 800
Ca++ 60

SLTY SH: med to dk gy, occ lt gy, gy
brn, sb blkly to sb plty, sft to sl firm,
arg, sl calc, sl sdy ip, grdg to shy ss
SHY SS: m gy, trnsI to op, v f gr, sb
blkly, mod srt, sft to sl firm, mod
cem, pred arg mtx, sl calc, slty

MD: 5,161'
TVD: 5,124.28'
Inclination: 3.02 °
Azimuth: 347.79 °

SLTY SH: med to dk gy, occ lt gy, gy
brn, sb blkly to sb plty, sft to sl firm,
arg, sl calc, sl sdy ip, grdg to shy ss
SHY SS: m gy, trnsI to op, v f gr, sb
blkly, mod srt, sft to sl firm, mod
cem, pred arg mtx, sl calc, slty

MD: 5,251'
TVD: 5,214.21'
Inclination: 1.26 °
Azimuth: 16.29 °



97

112

29u

56u

149u

134u

24u

122u

115u

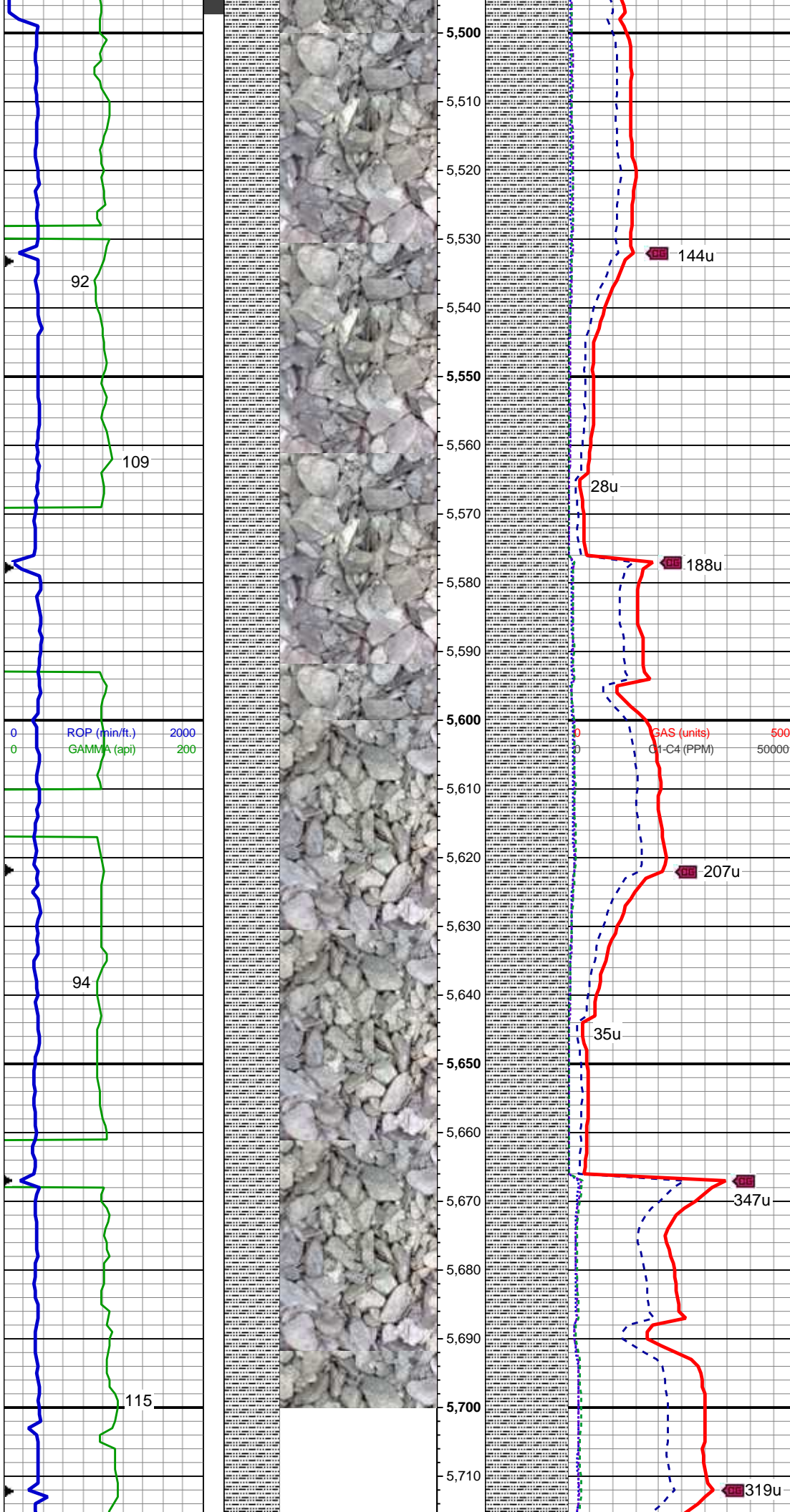
130u

23u

49u

92

112



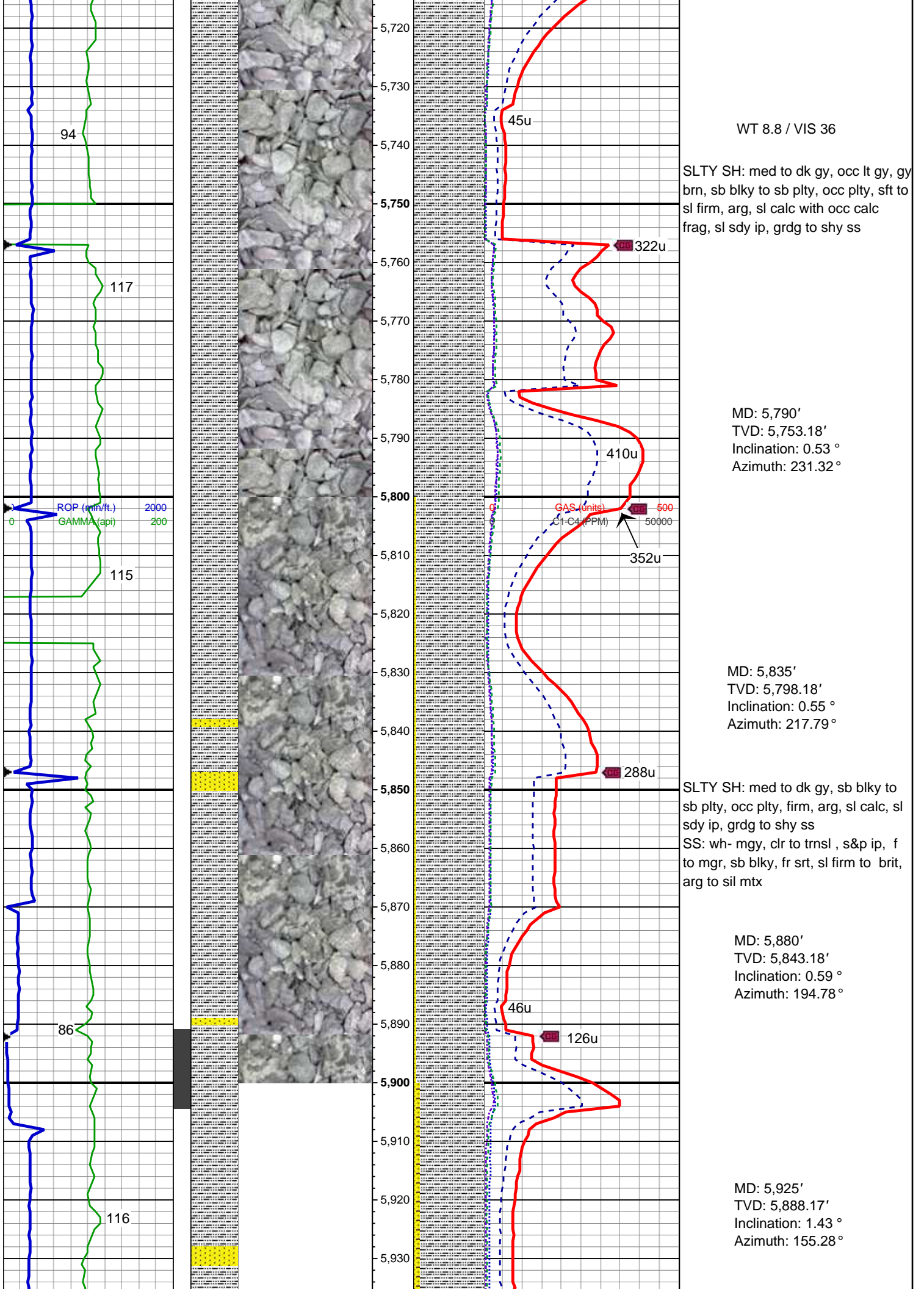
MD: 5,520'
TVD: 5,483.19'
Inclination: 0.52 °
Azimuth: 297.32 °

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

MD: 5,610'
TVD: 5,573.19'
Inclination: 0.51 °
Azimuth: 231.39 °

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

MD: 5,700'
TVD: 5,663.18'
Inclination: 0.51 °
Azimuth: 237.29 °



WT 9.1 / VIS 36

SLTY SH: med to dk gy, sb blkly to sb plty, occ plty, firm, arg, sl calc, sl sdy ip, grdg to shy ss
SS: wh- mgy, clr to trnsl, s&p ip, f to mgr, sb blkly, fr srt, sl firm to brit, arg to sil mtx

MD: 5,970'
TVD: 5,933.12'
Inclination: 3.9 °
Azimuth: 116.82 °

MD: 6,015'
TVD: 5,977.88'
Inclination: 7.66 °
Azimuth: 105.36 °

SLTY SH: med to dk gy, sb blkly to sb plty, occ plty, firm, arg, sl calc, sl sdy ip, grdg to shy ss
SS: wh- mgy, clr to trnsl, s&p ip, f to mgr, sb blkly, fr srt, sl firm to brit, arg to sil mtx

MD: 6,060'
TVD: 6,022.34'
Inclination: 10.13 °
Azimuth: 101.98 °

WT 9.5 / VIS 36

SLTY SH: med to dk gy, sb blkly to sb plty, occ plty, firm, arg, sl calc, sl sdy ip, grdg to shy ss
SS: wh- mgy, clr to trnsl, s&p ip, f to mgr, sb blkly, fr srt, sl firm to brit, arg to sil mtx

MD: 6,105'
TVD: 6,066.51'
Inclination: 11.94 °
Azimuth: 104.82 °

LOG CONTINUES ON FILE:
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Horiz.mplot

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