

# COLUMBINE LOGGING

Scale: 5" / 100'  
Measured Depth Log

**Well Name** Oscar Y10-79-1HC

**Location** NWSW SEC 10, T2N, R64W

**State** COLORADO

**County** WELD

**Country** USA

**Rig Number** H&P 330

**API Number** 05-123-38192

**Region** DJ BASIN

**Field** WATTENBERG

**Spud Date** 3/14/2014

**Drilling Completed** 3/17/2014

**Surface Coordinates** 2380' FSL, 588' FWL

**Ground Elevation** 4,943'

**K.B. Elevation** 4,973'

**Logged Interval** 1200' **To** 6417'

**Total Depth** 6417'

**Formation** CODELL

**Type of Drilling Fl...** LSND

## Operator

**Company** NOBLE ENERGY INC.

**Address** 1625 Broadway Suite 2200  
Denver, CO 80202

## Geologist

**Name** RENEE CLACKLER

**Company** NOBLE ENERGY INC.

**Address** 1625 Broadway Suite 2200  
Denver, CO 80202

## Other

ANDREA ZUIDEMA

ADAM HARRIS

## 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
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
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

E EARTHY
FENESTRAL
FRACTURE
INTERCRYSTALLINE
INTEROOLITIC

MOLDIC
ORGANIC
PINPOINT
VUGGY

### Engineering

BIT
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

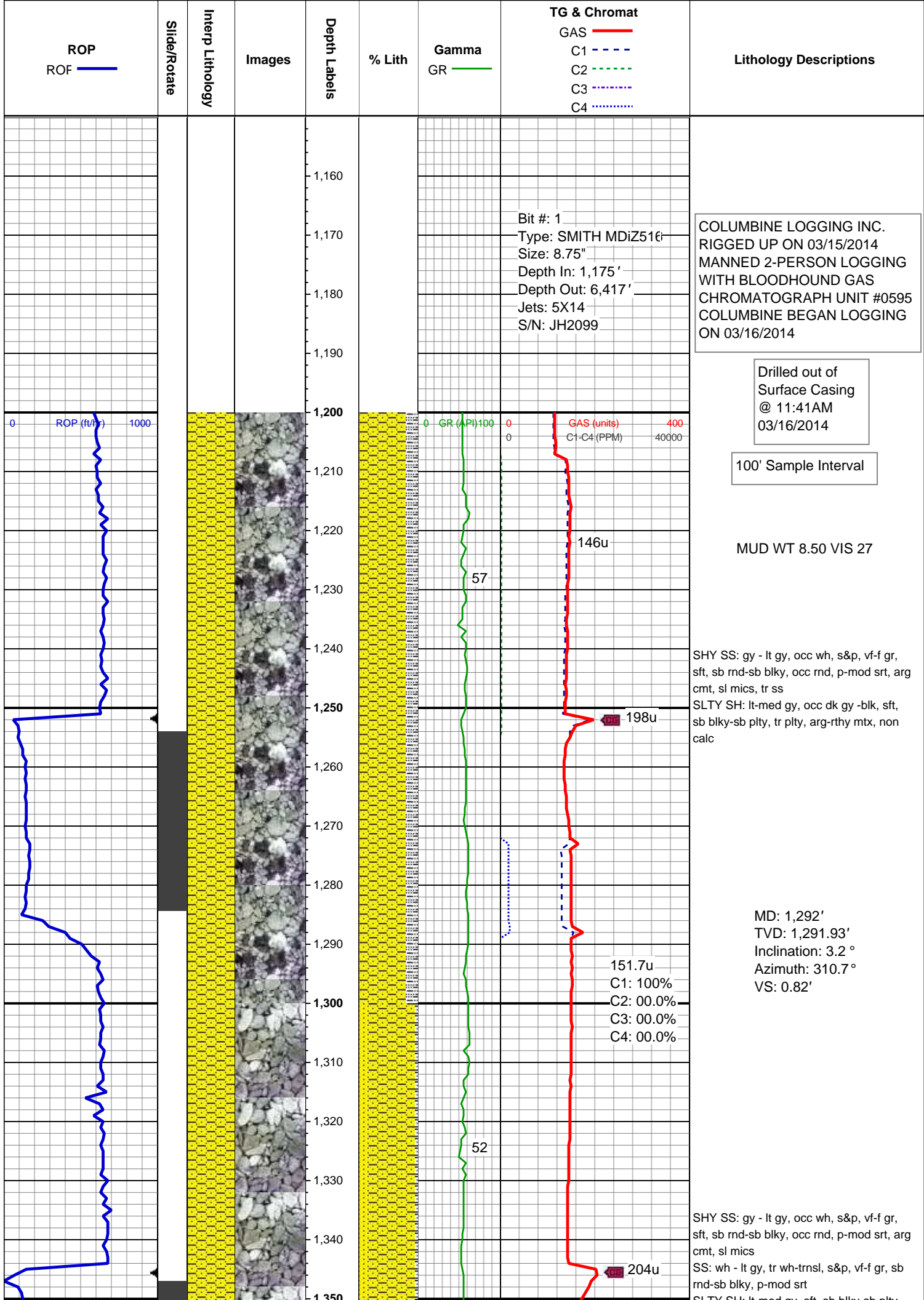
### Textures

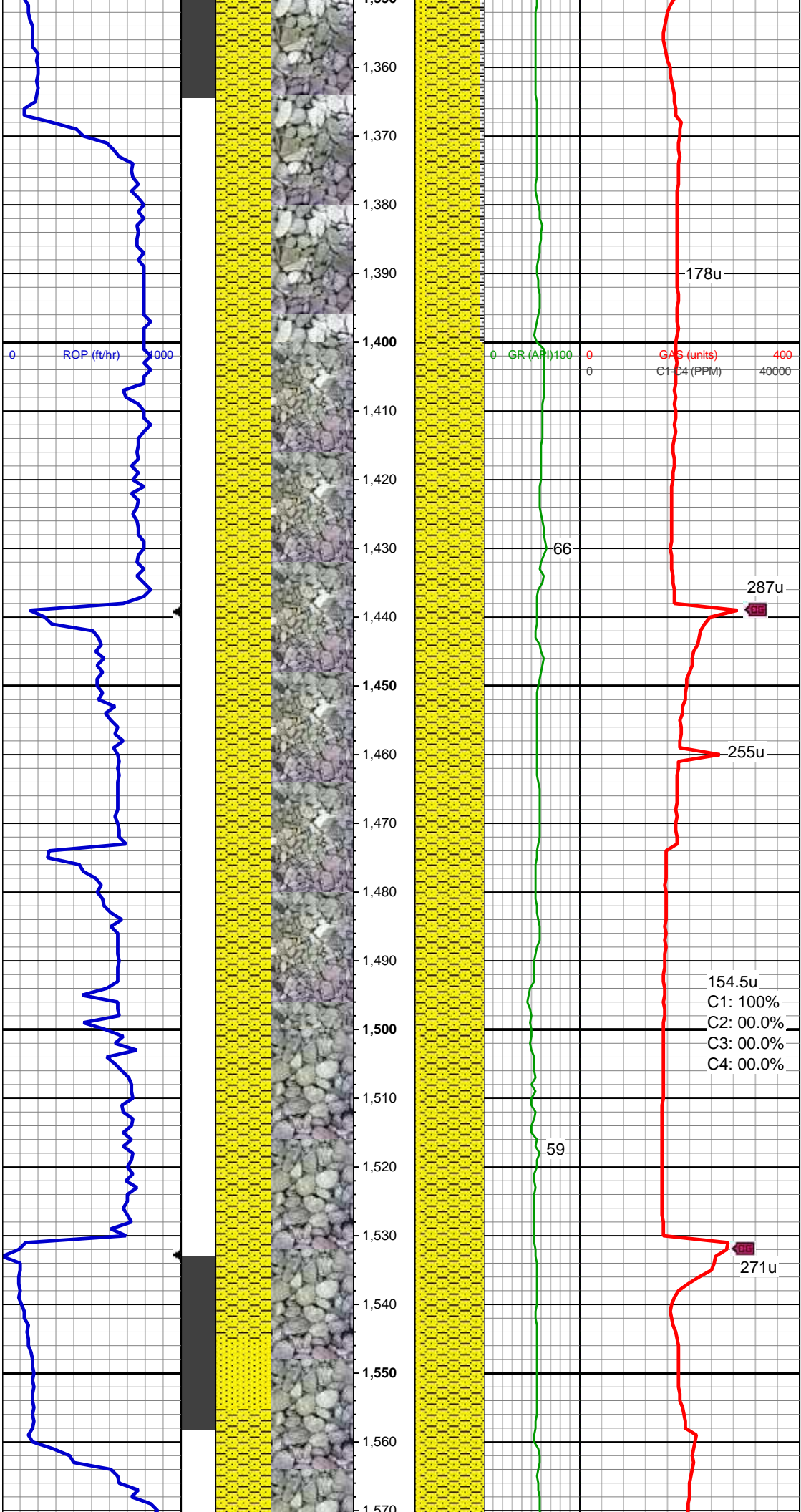
BOUNDSTONE
CHALKY
CRYPTOXLN

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

### Sorting

M MODERATE
P POOR
W WELL





SLTY SH: lt-med gy, slt, sb blkly-sb pily,  
arg-rthy mtx, non calc

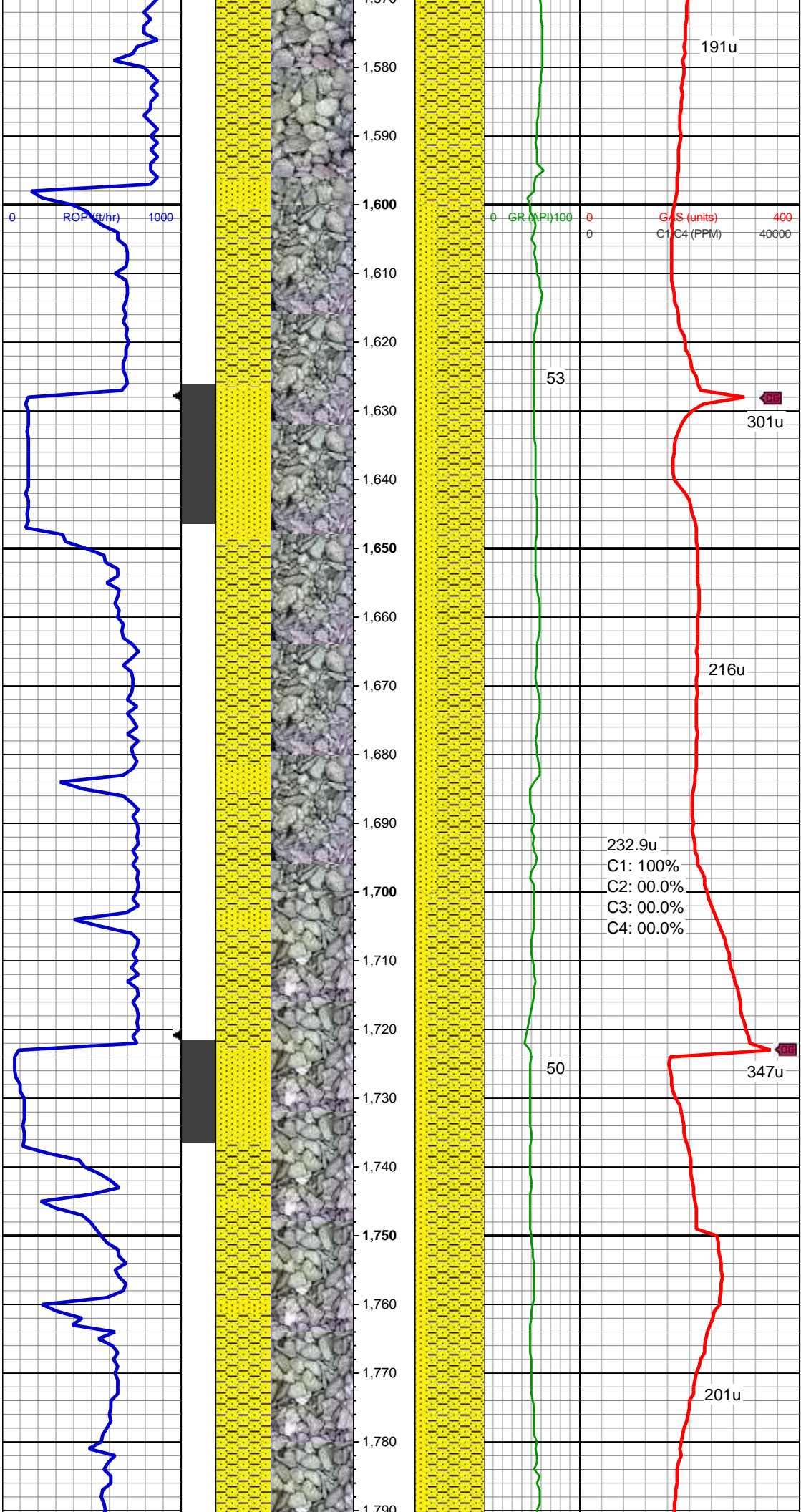
SHY SS: gy - lt gy, occ wh, s&p, vf-f gr,  
sft, sb rnd-sb blkly, occ rnd, p-mod srt, arg  
cmt, sl mics, tr slty sh

MUD WT 8.60 VIS 27

SHY SS: gy - lt gy, occ wh, s&p, vf-f gr,  
sft, sb rnd-sb blkly, occ rnd, p-mod srt, arg  
cmt, sl mics, tr slty sh  
SS: wh - lt gy, tr wh-trnsl, s&p, vf-f gr, sb  
rnd-sb blkly, p-mod srt, tr glau, tr dissn pyr

MD: 1,573'  
TVD: 1,571.7'





Inclination: 7.3 °  
Azimuth: 303.6 °  
VS: 15.91'

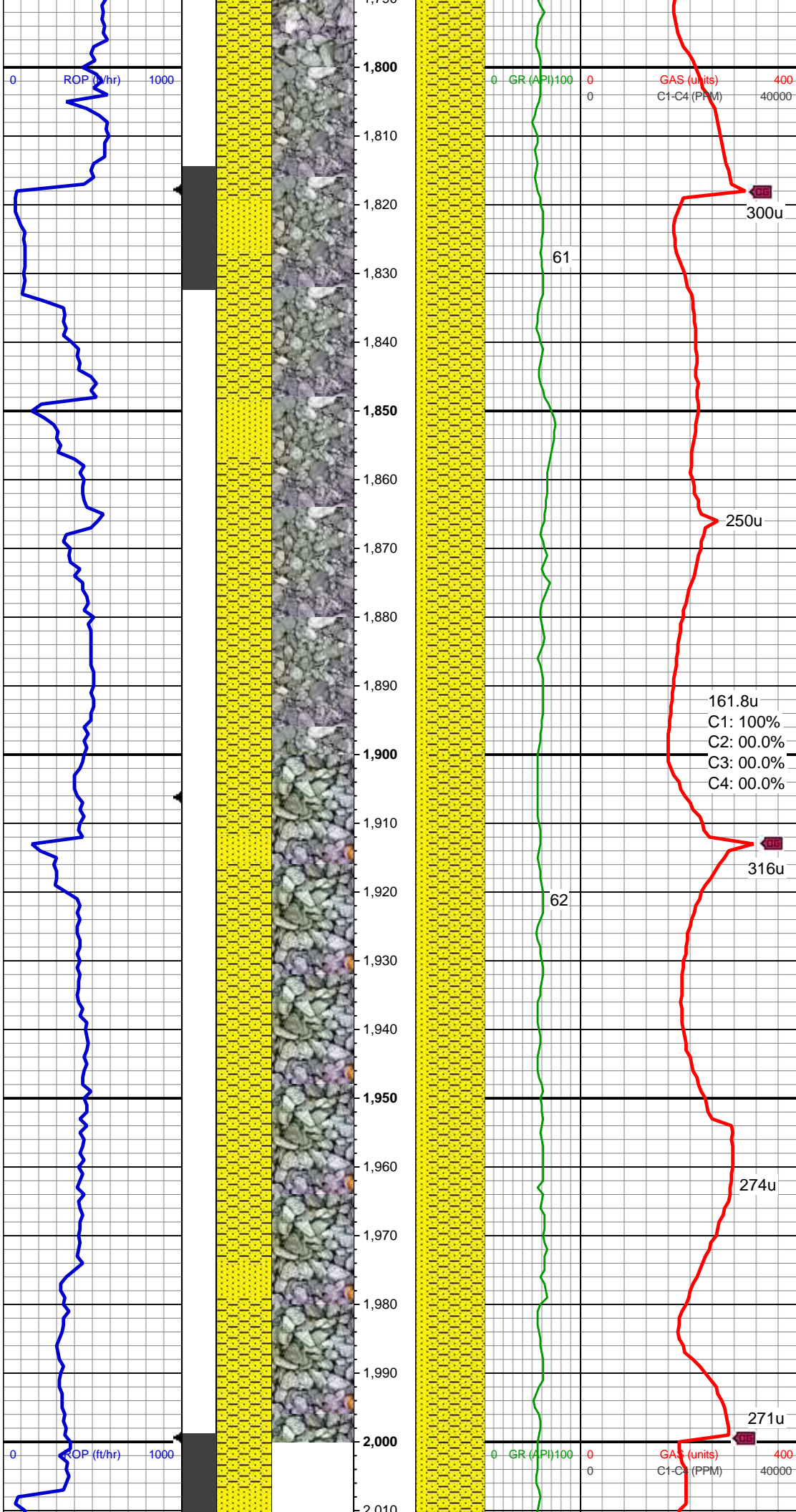
SHY SS: gy - lt gy, occ wh, s&p, vf-f gr, sft, sb rnd-sb blkly, occ rnd, p-mod srt, arg cmt, sl mics, tr slty sh  
SS: wh - lt gy, tr wh-trnsl, s&p, vf-f gr, sb rnd-sb blkly, p-mod srt, tr glau

MD: 1,666'  
TVD: 9.1'  
Inclination: 302.1 °  
Azimuth: 1,663.74 °  
VS: 23.14'

MUD WT 8.60 VIS 27

SHY SS: gy - lt gy, occ wh, s&p, vf-f gr, sft, sb rnd-sb blkly, occ rnd, p-mod srt, arg cmt, sl mics, tr slty sh  
SS: wh - lt gy, tr wh-trnsl, s&p, vf-f gr, sb rnd-sb blkly, p-mod srt, tr glau

MD: 1,759'  
TVD: 10.4'  
Inclination: 300.5 °  
Azimuth: 1,755.4 °  
VS: 31.37'



SHY SS: gy - lt gy, occ wh, s&p, vf-f gr, sft, sb rnd-sb blk, occ rnd, p-mod srt, arg cmt, sl mics, tr slty sh  
SS: wh - lt gy, tr wh-trnsl, s&p, vf-f gr, sb rnd-sb blk, p-mod srt, tr glau

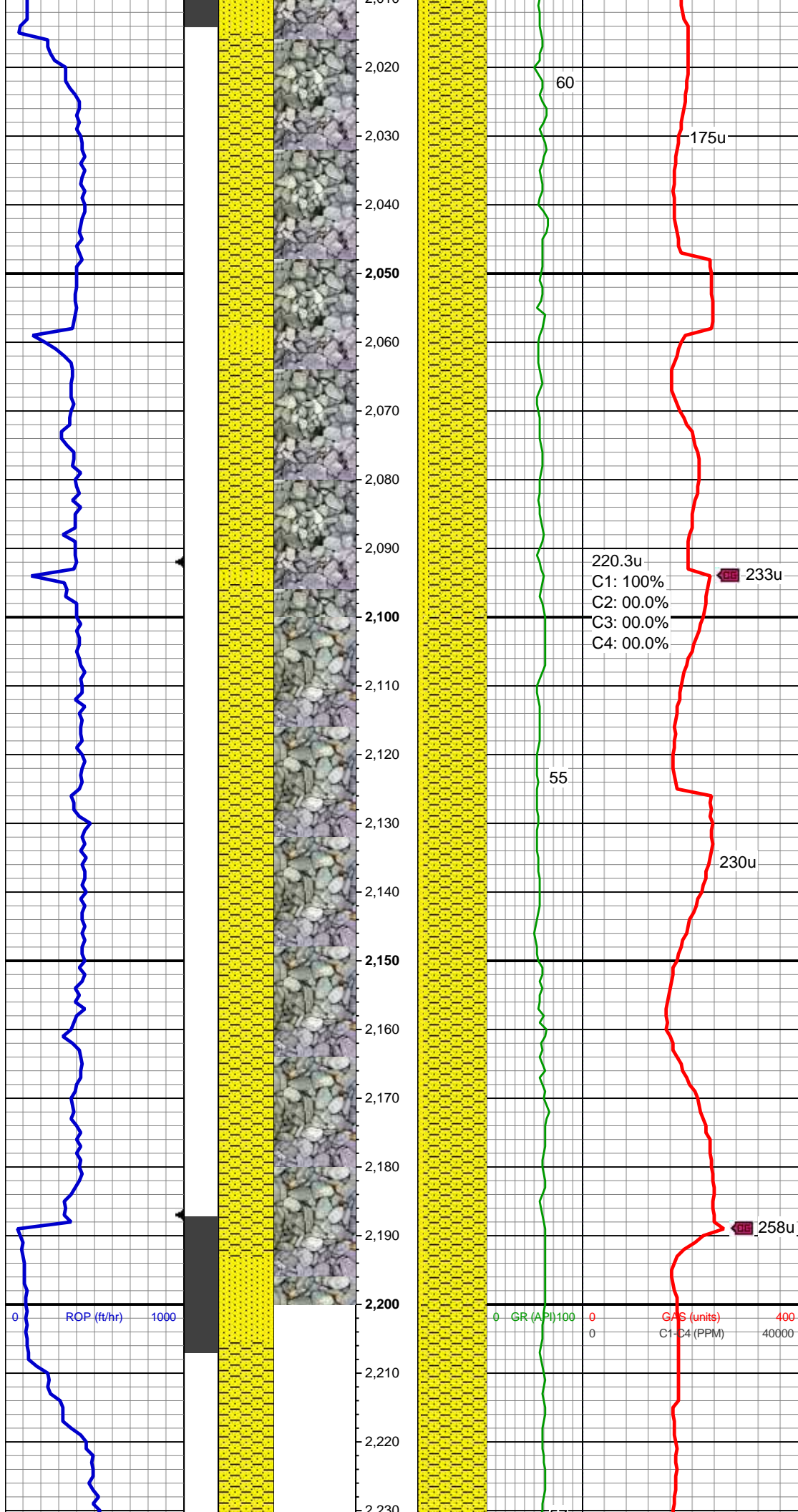
MD: 1,851'  
TVD: 11.6'  
Inclination: 296.2 °  
Azimuth: 1,845.71 °  
VS: 39.74'

MUD WT 8.60 VIS 28

MD: 1,944'  
TVD: 11.2'  
Inclination: 296.3 °  
Azimuth: 1,936.87 °  
VS: 47.94'

SHY SS: gy - lt gy, occ wh, s&p, vf-f gr, sft, sb rnd-sb blk, occ rnd, p-mod srt, arg cmt, sl mics, tr slty sh  
SS: wh - lt gy, dk gy ip, tr wh-trnsl, s&p, vf-f gr, sb rnd-sb blk, p-mod srt, frm-hd cmt, tr glau





MD: 2,037'  
TVD: 12'  
Inclination: 297.6 °  
Azimuth: 2,027.97 °  
VS: 56.5'

SHY SS: gy - lt gy, occ wh, s&p, vf-f gr, sft, sb rnd-sb blkly, occ rnd, p-mod srt, arg cmt, sl mics, tr slty sh  
SS: wh - lt gy, dk gy ip, tr wh-trnsl, s&p, vf-f gr, sb rnd-sb blkly, p-mod srt, frm-hd cmt

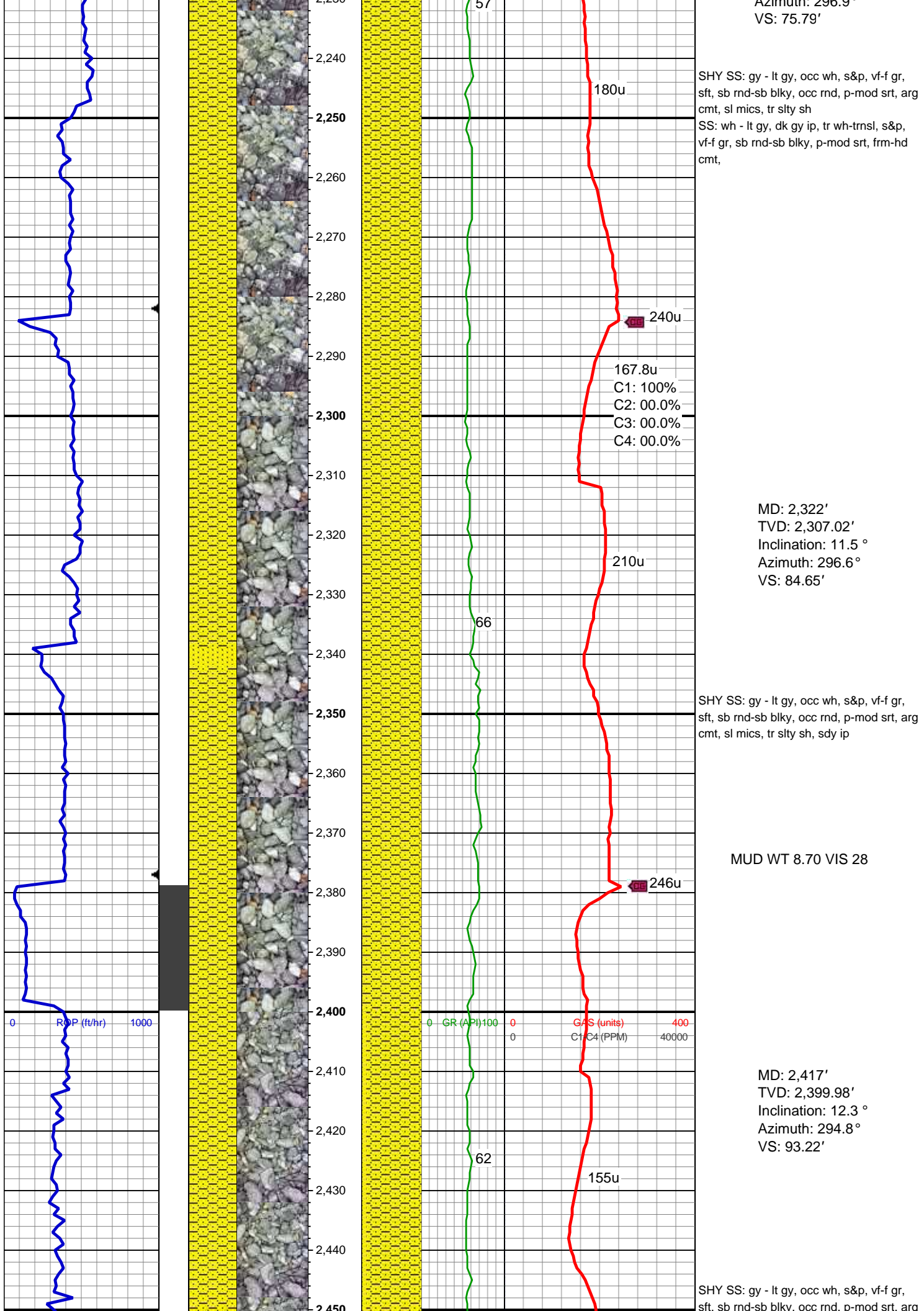
220.3u  
C1: 100%  
C2: 00.0%  
C3: 00.0%  
C4: 00.0%

MD: 2,132'  
TVD: 2,121.02'  
Inclination: 11.2 °  
Azimuth: 295 °  
VS: 67.27'

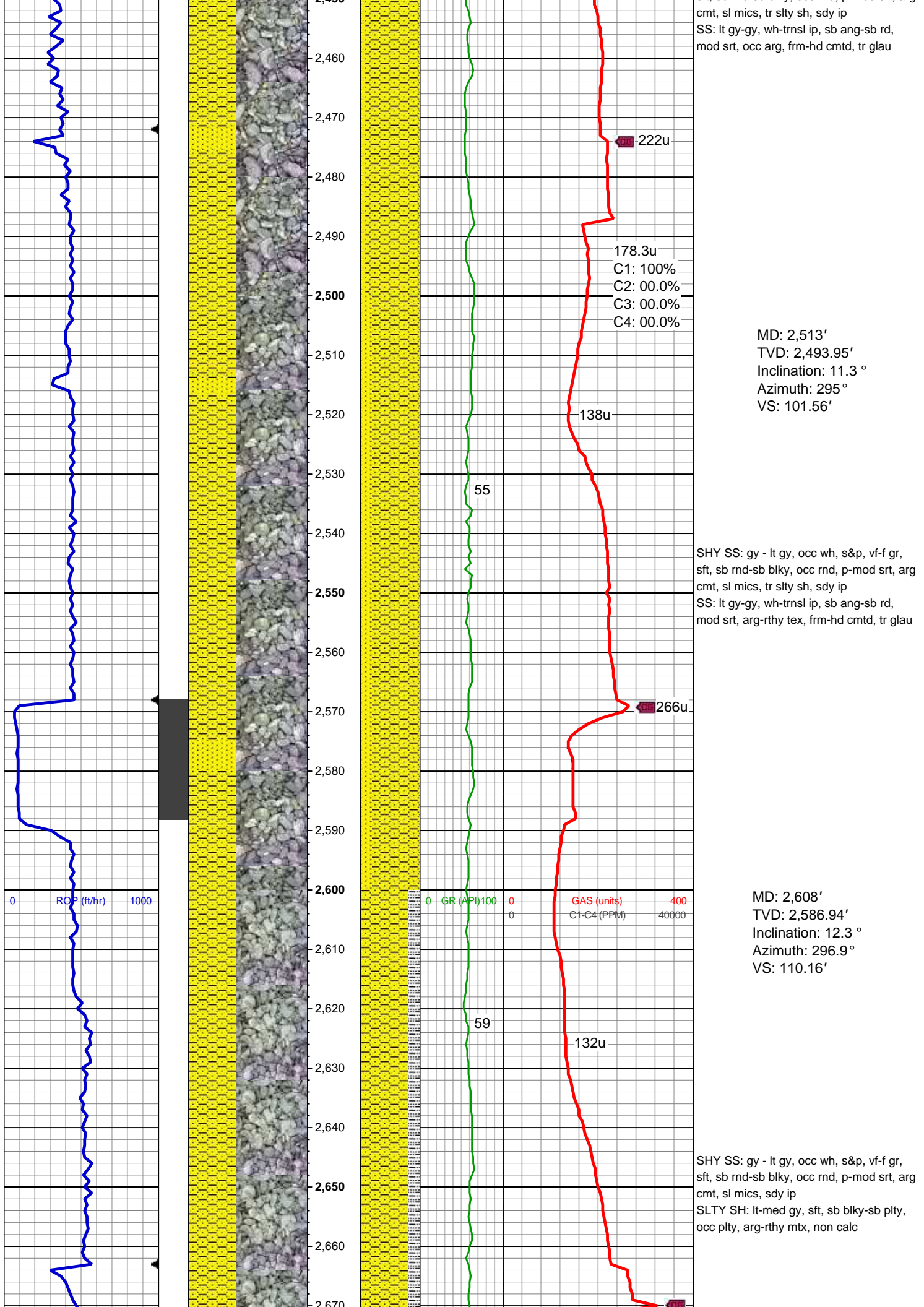
SHY SS: gy - lt gy, occ wh, s&p, vf-f gr, sft, sb rnd-sb blkly, occ rnd, p-mod srt, arg cmt, sl mics, tr slty sh  
SS: wh - lt gy, dk gy ip, tr wh-trnsl, s&p, vf-f gr, sb rnd-sb blkly, p-mod srt, frm-hd cmt,

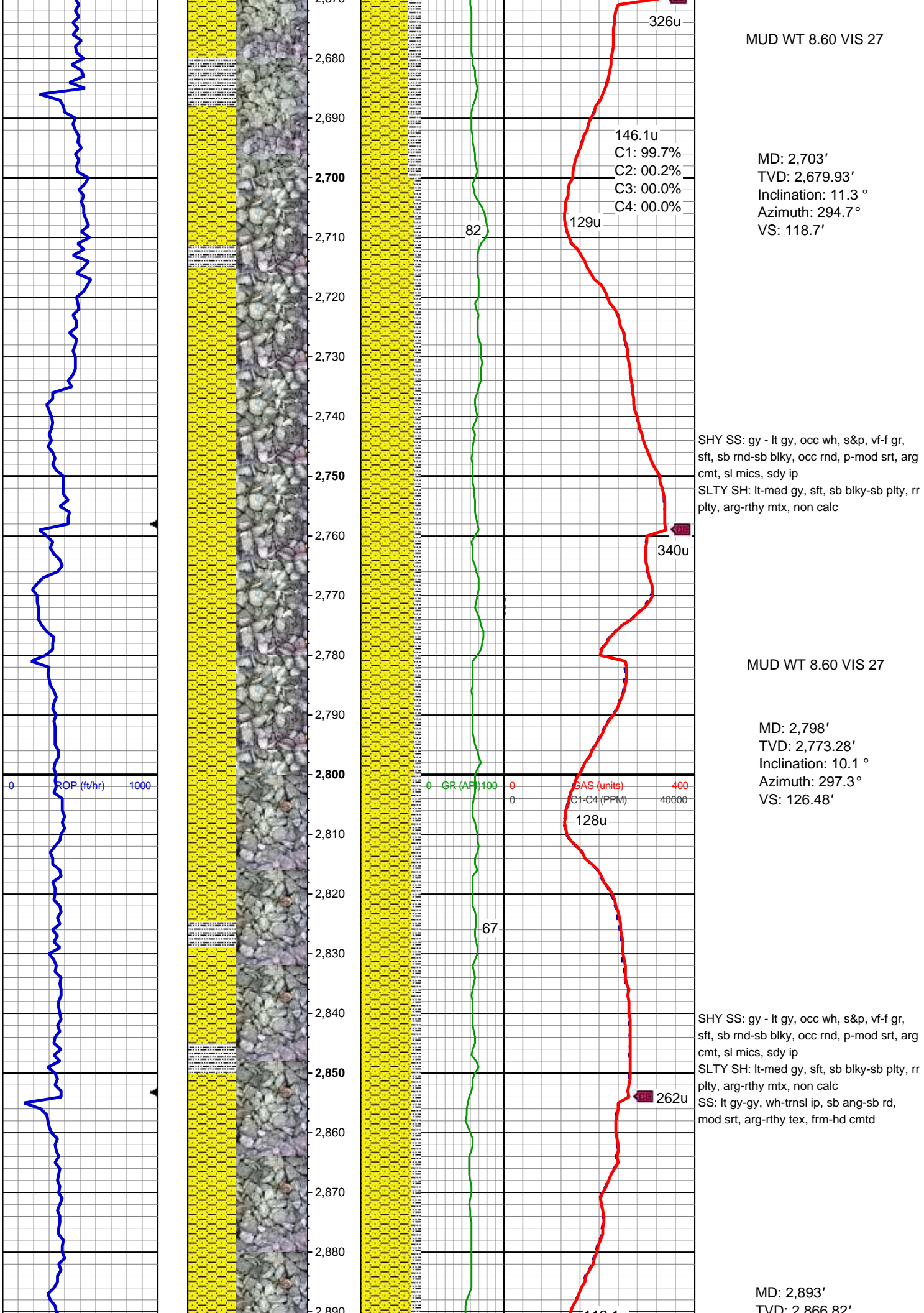
MUD WT 8.60 VIS 28

MD: 2,227'  
TVD: 2,214.05'  
Inclination: 12.2 °  
Azimuth: 296.98 °

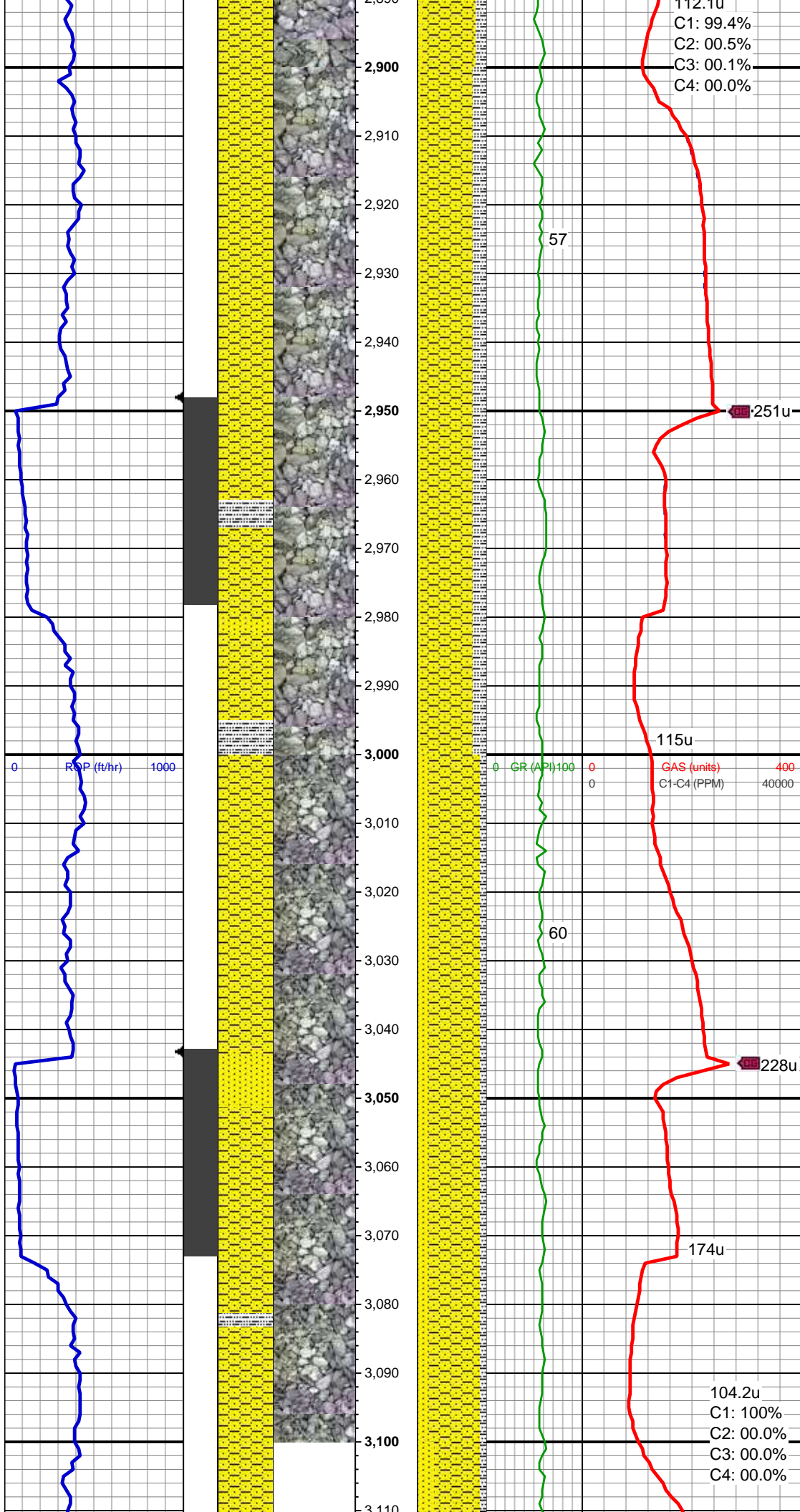












TVD: 2,988.02'  
Inclination: 10 °  
Azimuth: 297.8 °  
VS: 134.22'

SHY SS: gy - lt gy, occ wh, s&p, vf-f gr, sft, sb rnd-sb blkly, occ rnd, p-mod srt, arg cmt, sl mics, sdy ip  
SLTY SH: lt-med gy, sft, sb blkly-sb plty, rr plty, arg-rthy mtx, non calc  
SS: lt gy-gy, wh-trnsl ip, sb ang-sb rd, mod srt, arg-rthy tex, frm-hd cmt

MD: 2,988'  
TVD: 2,960.77'  
Inclination: 7 °  
Azimuth: 296.8 °  
VS: 140.73'

MUD WT 8.65 VIS 27

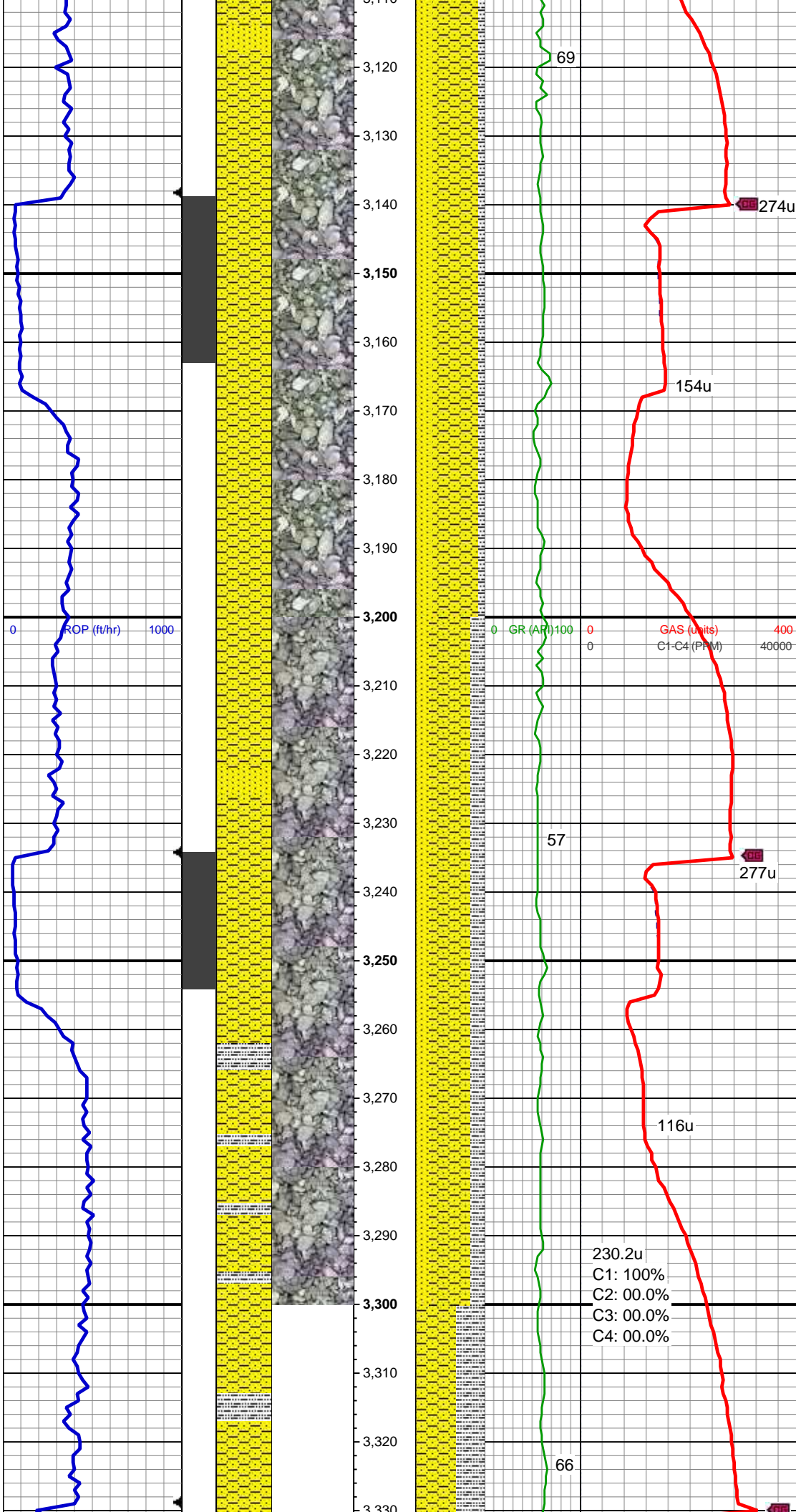
SHY SS: gy - lt gy, occ wh, s&p, vf-f gr, sft, sb rnd-sb blkly, occ rnd, p-mod srt, arg cmt, sl mics, sdy ip  
SS: wh-lt gy, trnsl ip, sb ang-sb rd, mod srt, occ arg-rthy tex, frm-hd cmt  
SLTY SH: lt-med gy, sft, sb blkly-sb plty, rr plty, arg-rthy mtx, non calc

MD: 3,083'  
TVD: 3,055.3'  
Inclination: 4.3 °  
Azimuth: 293.3 °  
VS: 144.79'

112.1u  
C1: 99.4%  
C2: 00.5%  
C3: 00.1%  
C4: 00.0%

104.2u  
C1: 100%  
C2: 00.0%  
C3: 00.0%  
C4: 00.0%





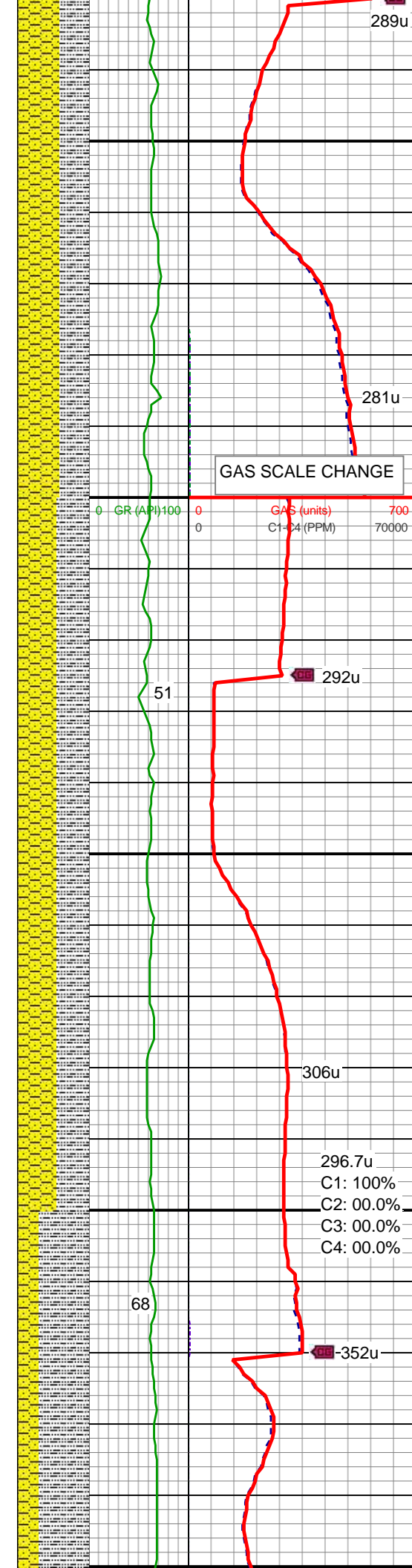
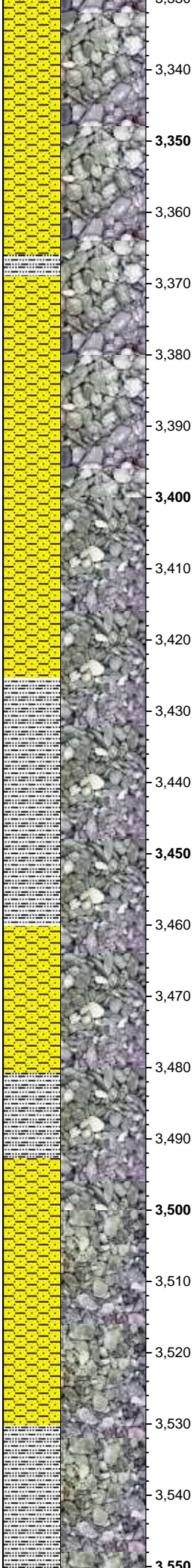
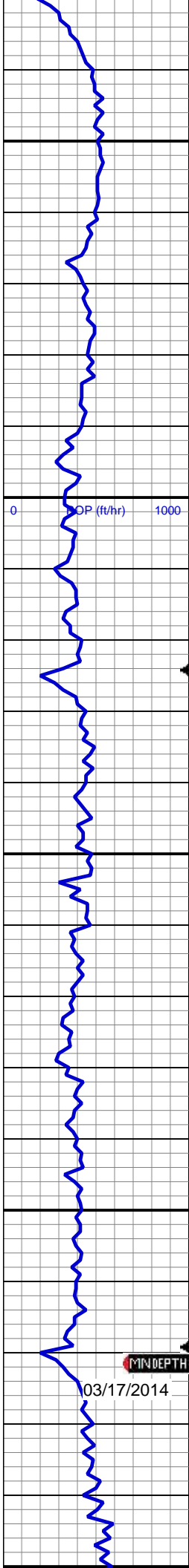
SHY SS: gy - lt gy, occ wh, s&p, vf-f gr, sft, sb rnd-sb blkly, occ rnd, p-mod srt, arg cmt, sl mics, sdy ip  
SS: wh-lt gy, trnsl ip, sb ang-sb rd, mod srt, occ arg-rthy tex, frm-hd cmt  
SLTY SH: lt-med gy, sft, sb blkly-sb plty, rr plty, arg-rthy mtx, non calc

MD: 3,179'  
TVD: 3,151.13'  
Inclination: 2.5 °  
Azimuth: 299.1 °  
VS: 147.26'

MUD WT 8.7 VIS 27

SHY SS: gy - lt gy, occ wh, s&p, vf-f gr, sft, sb rnd-sb blkly, occ rnd, p-mod srt, arg cmt, sl mics, sdy ip  
SLTY SH: lt-med gy, sft, sb blkly-sb plty, rr plty, arg-rthy mtx, non calc  
SS: wh-lt gy, trnsl ip, sb ang-sb rd, mod srt, occ arg-rthy tex, frm-hd cmt

MD: 3,274'  
TVD: 3,246.07'  
Inclination: 1.3 °  
Azimuth: 293.3 °  
VS: 148.7'



SHY SS: gy - lt gy, occ wh, s&p, vf-f gr, sft, sb rnd-sb blkly, occ rnd, p-mod srt, arg cmt, sl mics, sdy ip

SLTY SH: lt-med gy, occ dk gy, sft, sb blkly-sb plty, rr plty, arg-rthy mtx, pred non calc, rr sl calc

MD: 3,369'

TVD: 3,341.05'

Inclination: 1.1 °

Azimuth: 297 °

VS: 149.55'

GAS SCALE CHANGE

MUD WT 8.75 VIS 27

SHY SS: gy - lt gy, occ wh, s&p, vf-f gr, sft, sb rnd-sb blkly, occ rnd, p-mod srt, arg cmt, sl mics, sdy ip

SLTY SH: lt-med gy, occ dk gy, sft, sb blkly-sb plty, rr plty, arg-rthy mtx, pred non calc, rr sl calc

MD: 3,464'

TVD: 3,436.03'

Inclination: 1.3 °

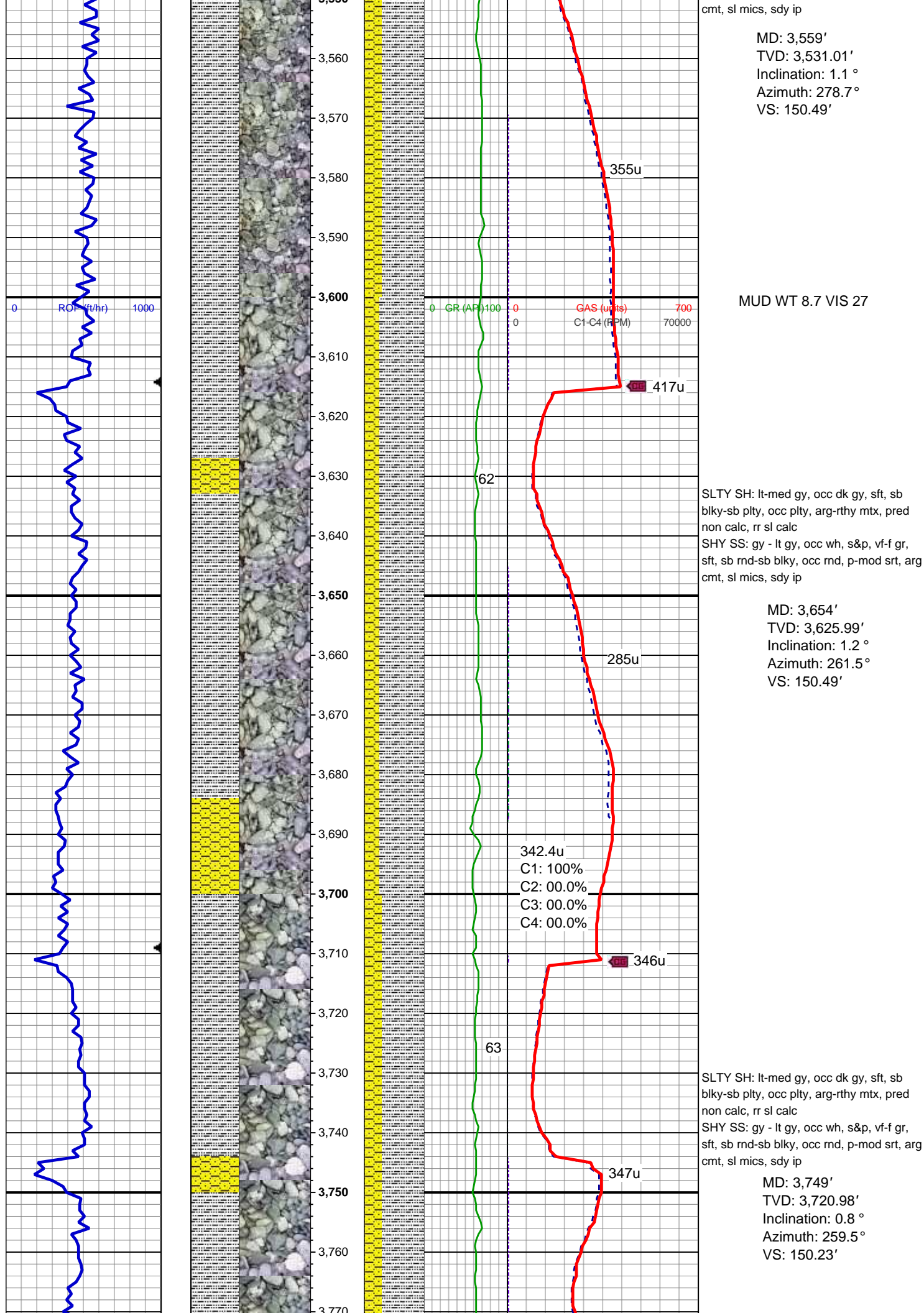
Azimuth: 280 °

VS: 150.16'

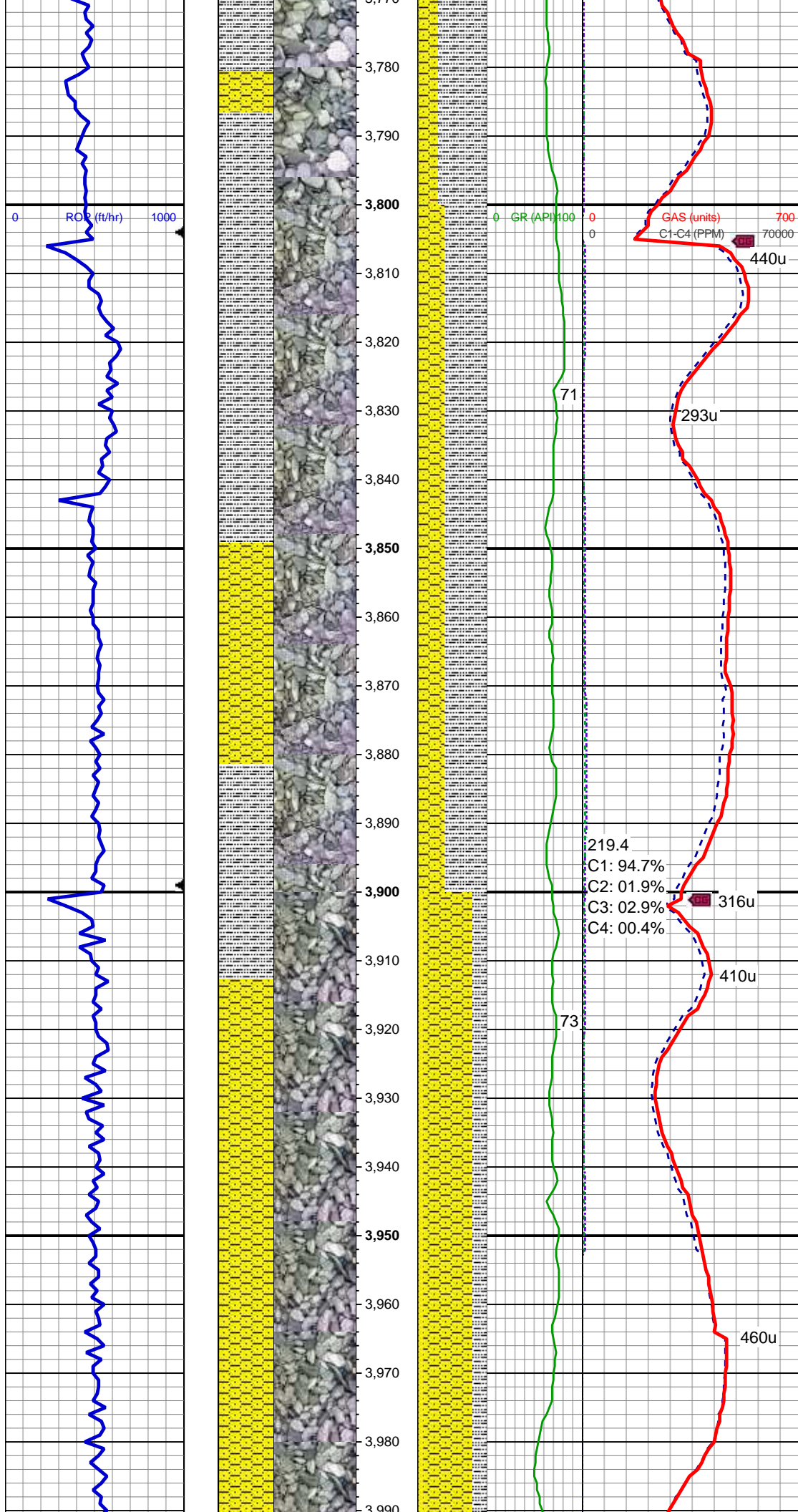
SLTY SH: lt-med gy, occ dk gy, sft, sb blkly-sb plty, occ plty, arg-rthy mtx, pred non calc, rr sl calc

SHY SS: gy - lt gy, occ wh, s&p, vf-f gr, sft, sb rnd-sb blkly, occ rnd, p-mod srt, arg









MD: 3,844'  
TVD: 3,815.97'  
Inclination: 0.3 °  
Azimuth: 158.7 °  
VS: 149.88'

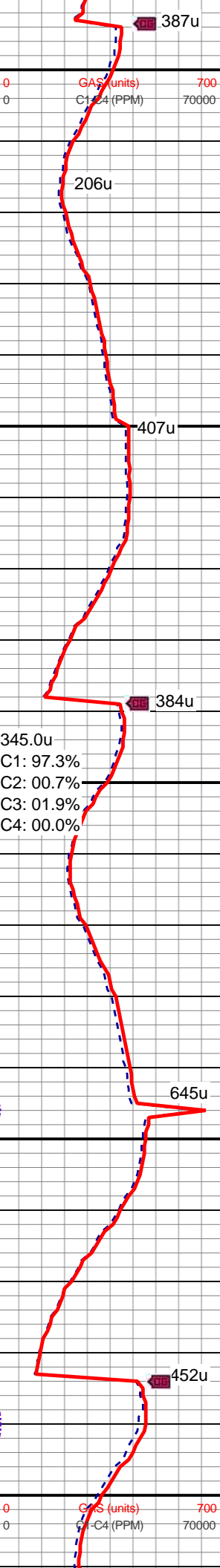
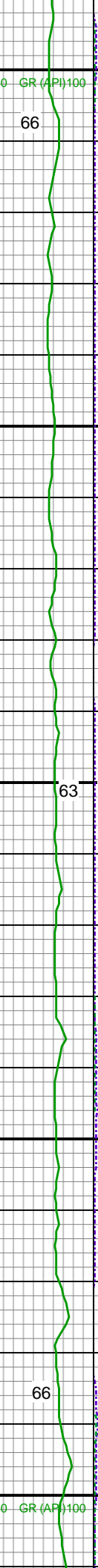
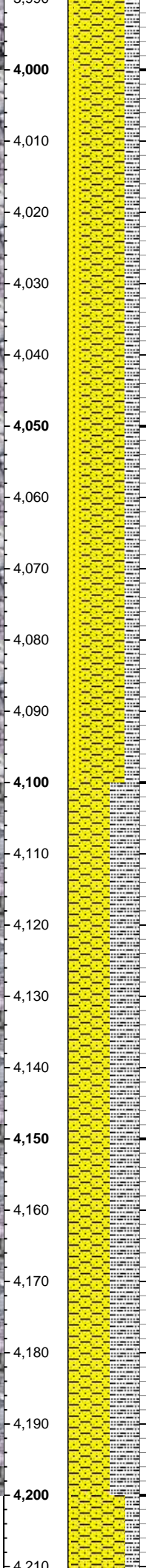
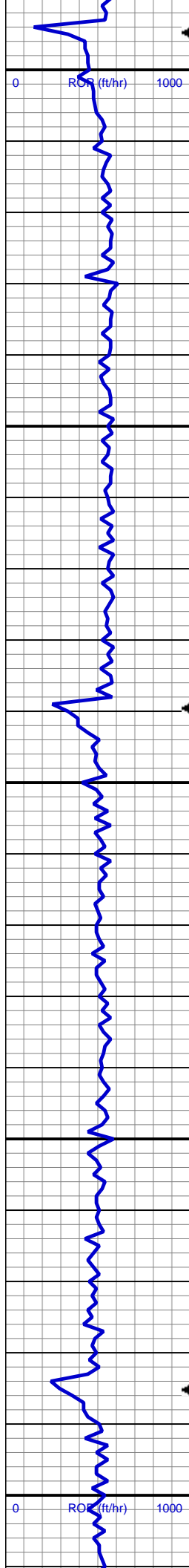
SLTY SH: lt-med gy, occ dk gy, sft, sb  
blky-sb plty, occ plty, arg-rthy mtx, pred  
non calc, rr sl calc  
SHY SS: gy - lt gy, occ wh, s&p, vf-f gr,  
sft, sb rnd-sb blky, occ rnd, p-mod srt, silc  
cmt, sl mics, sdy ip

219.4  
C1: 94.7%  
C2: 01.9%  
C3: 02.9%  
C4: 00.4%

MD: 3,939'  
TVD: 3,910.97'  
Inclination: 0.5 °  
Azimuth: 74.7 °  
VS: 149.76'

SHY SS: gy - lt gy, occ wh, s&p, vf-f gr,  
sft, sb rnd-sb blky, occ rnd, p-mod srt, arg  
cmt  
SLTY SH: lt-med gy, occ dk gy, sft, sb  
blky-sb plty, occ plty, rthy mtx, pred non  
calc, rr sl calc  
SS: wh - lt gy, s&p, vf-f gr, sb rnd-sb blky,  
mod srt, frm-hrd cmt

MUD WT 8.8 VIS 28



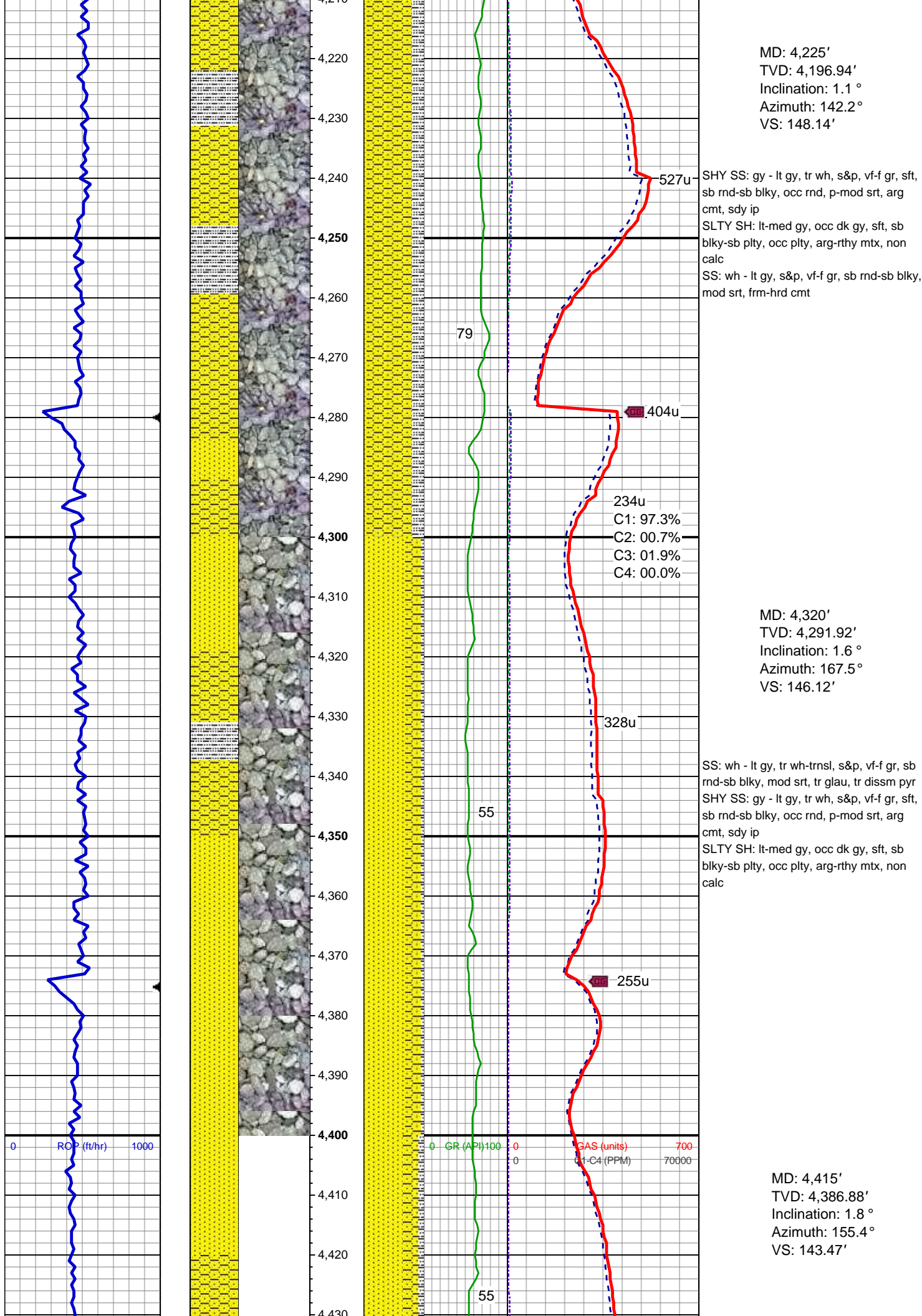
MD: 4,034'  
TVD: 4,005.97'  
Inclination: 0.4 °  
Azimuth: 67.9 °  
VS: 149.99'

SHY SS: gy - lt gy, occ wh, s&p, vf-f gr, sft, sb rnd-sb blkly, occ rnd, p-mod srt, arg cmt  
SLTY SH: lt-med gy, occ dk gy, sft, sb blkly-sb plty, occ plty, rthy mtx, pred non calc, rr sl calc  
SS: wh - lt gy, s&p, vf-f gr, sb rnd-sb blkly, mod srt, frm-hrd cmt

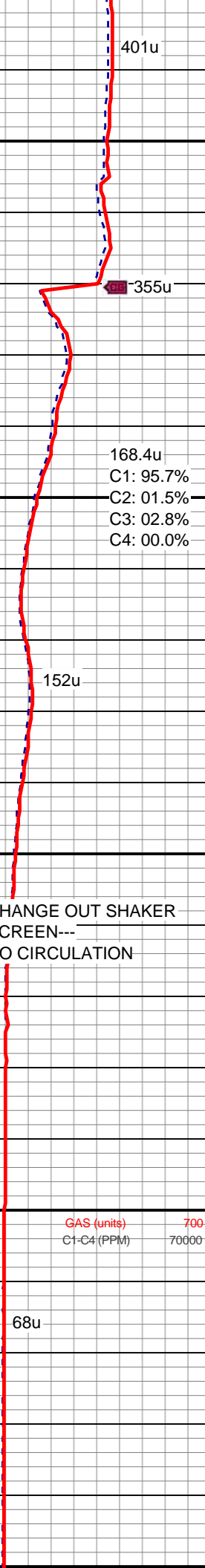
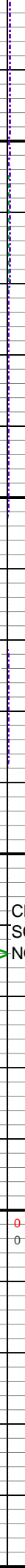
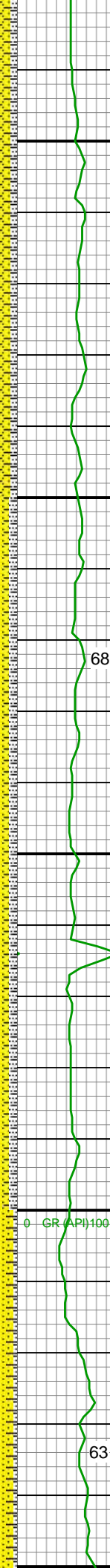
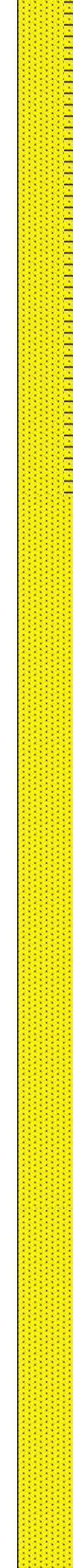
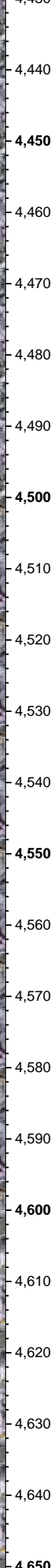
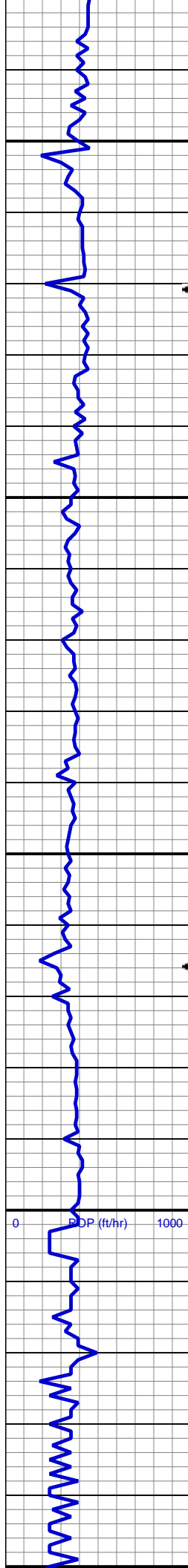
MD: 4,130'  
TVD: 4,101.96'  
Inclination: 1.1 °  
Azimuth: 132.8 °  
VS: 149.49'

SHY SS: gy - lt gy, occ wh, s&p, vf-f gr, sft, sb rnd-sb blkly, occ rnd, p-mod srt, arg cmt, sdy ip  
SLTY SH: lt-med gy, occ dk gy, sft, sb blkly-sb plty, occ plty, rthy mtx, pred non calc, rr sl calc









SS: wh - lt gy, tr wh-trnsl, s&p, vf-f gr, sb  
rnd-sb blk, mod - w srt, occ glau  
SHY SS: gy - lt gy, tr wh, s&p, vf-f gr, sft,  
sb rnd-sb blk, occ rnd, p-mod srt, arg  
cmt, sdy ip  
SLTY SH: lt-med gy, occ dk gy, sft, sb  
blk-sb plty, occ plty, arg-rthy mtx, non  
calc

MUD WT 8.8 VIS 28

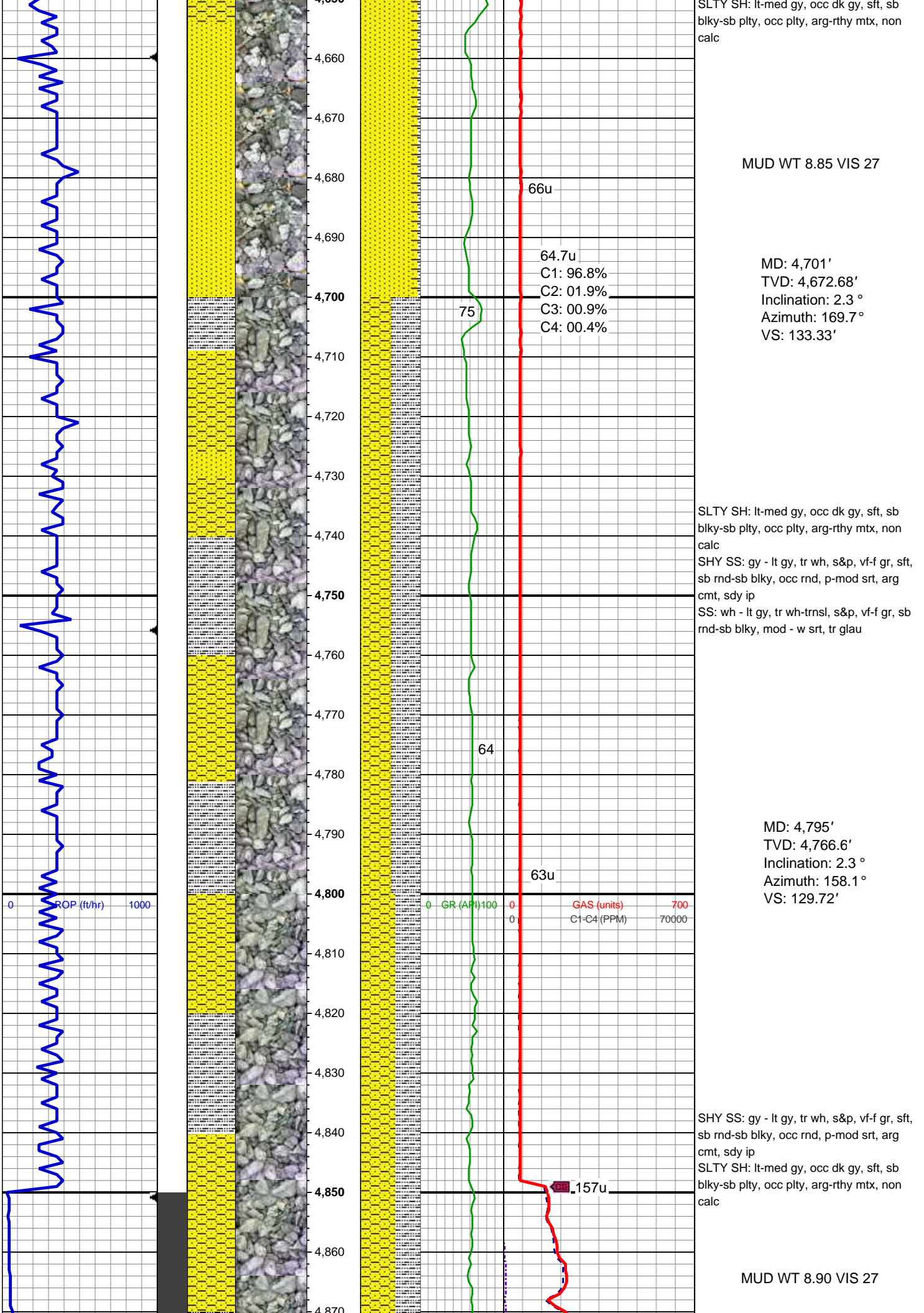
MD: 4,510'  
TVD: 4,481.83'  
Inclination: 1.9 °  
Azimuth: 165 °  
VS: 140.58'

SS: wh - lt gy, tr wh-trnsl, s&p, vf-f gr, sb  
rnd-sb blk, mod - w srt, occ glau  
SHY SS: gy - lt gy, tr wh, s&p, vf-f gr, sft,  
sb rnd-sb blk, occ rnd, p-mod srt, arg  
cmt, sdy ip  
SLTY SH: lt-med gy, occ dk gy, sft, sb  
blk-sb plty, occ plty, arg-rthy mtx, non  
calc

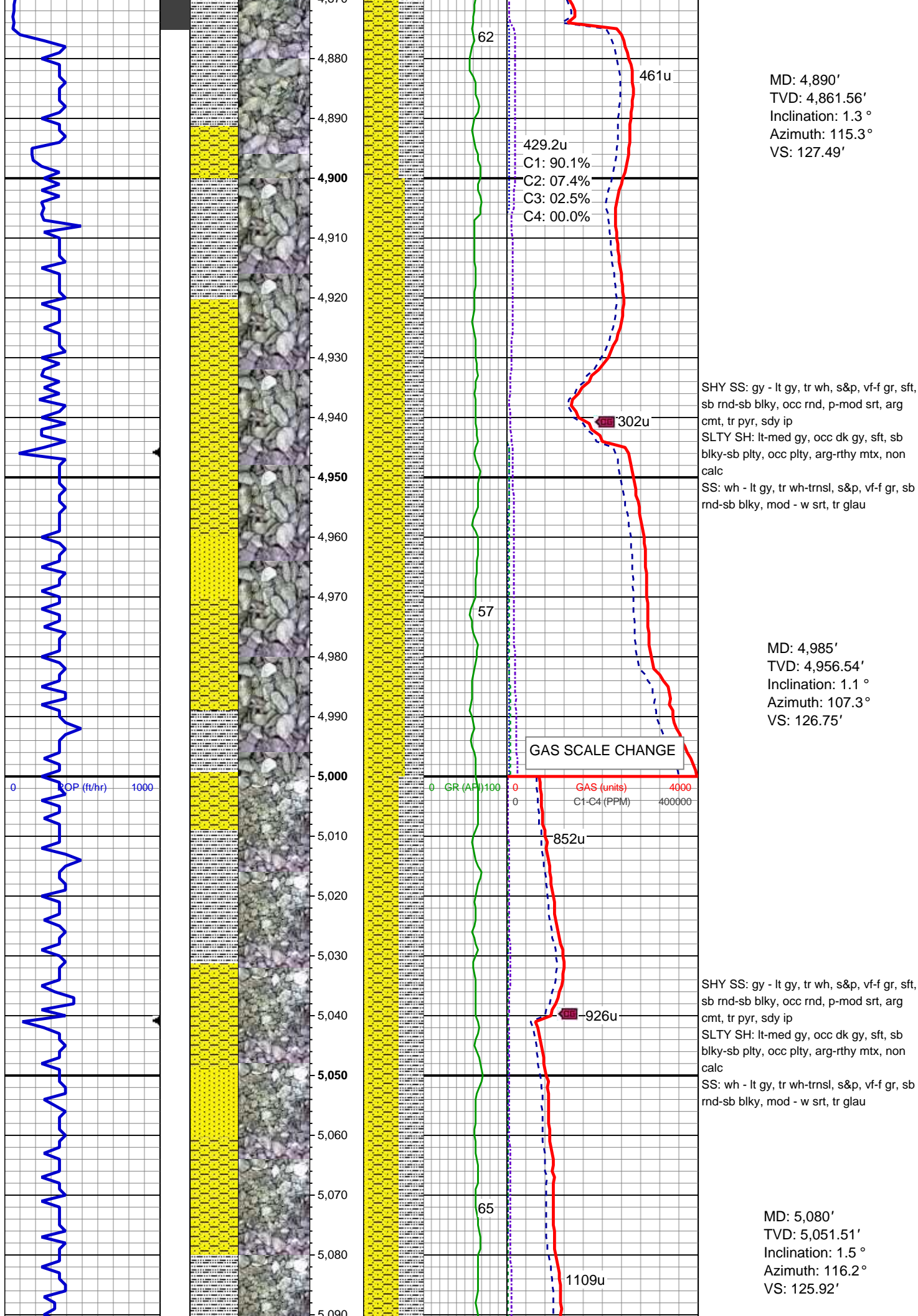
CHANGE OUT SHAKER  
SCREEN---  
NO CIRCULATION

MD: 4,605'  
TVD: 4,576.76'  
Inclination: 2.4 °  
Azimuth: 163 °  
VS: 137.15'

SS: wh - lt gy, tr wh-trnsl, s&p, vf-f gr, sb  
rnd-sb blk, mod - w srt, occ glau, tr pyr  
SHY SS: gy - lt gy, tr wh, s&p, vf-f gr, sft,  
sb rnd-sb blk, occ rnd, p-mod srt, arg  
cmt, sdy ip







MD: 4,890'  
TVD: 4,861.56'  
Inclination: 1.3 °  
Azimuth: 115.3 °  
VS: 127.49'

SHY SS: gy - lt gy, tr wh, s&p, vf-f gr, sft, sb rnd-sb blk, occ rnd, p-mod srt, arg cmt, tr pyr, sdy ip  
SLTY SH: lt-med gy, occ dk gy, sft, sb blk-sb plty, occ plty, arg-rthy mtx, non calc  
SS: wh - lt gy, tr wh-trns, s&p, vf-f gr, sb rnd-sb blk, mod - w srt, tr glau

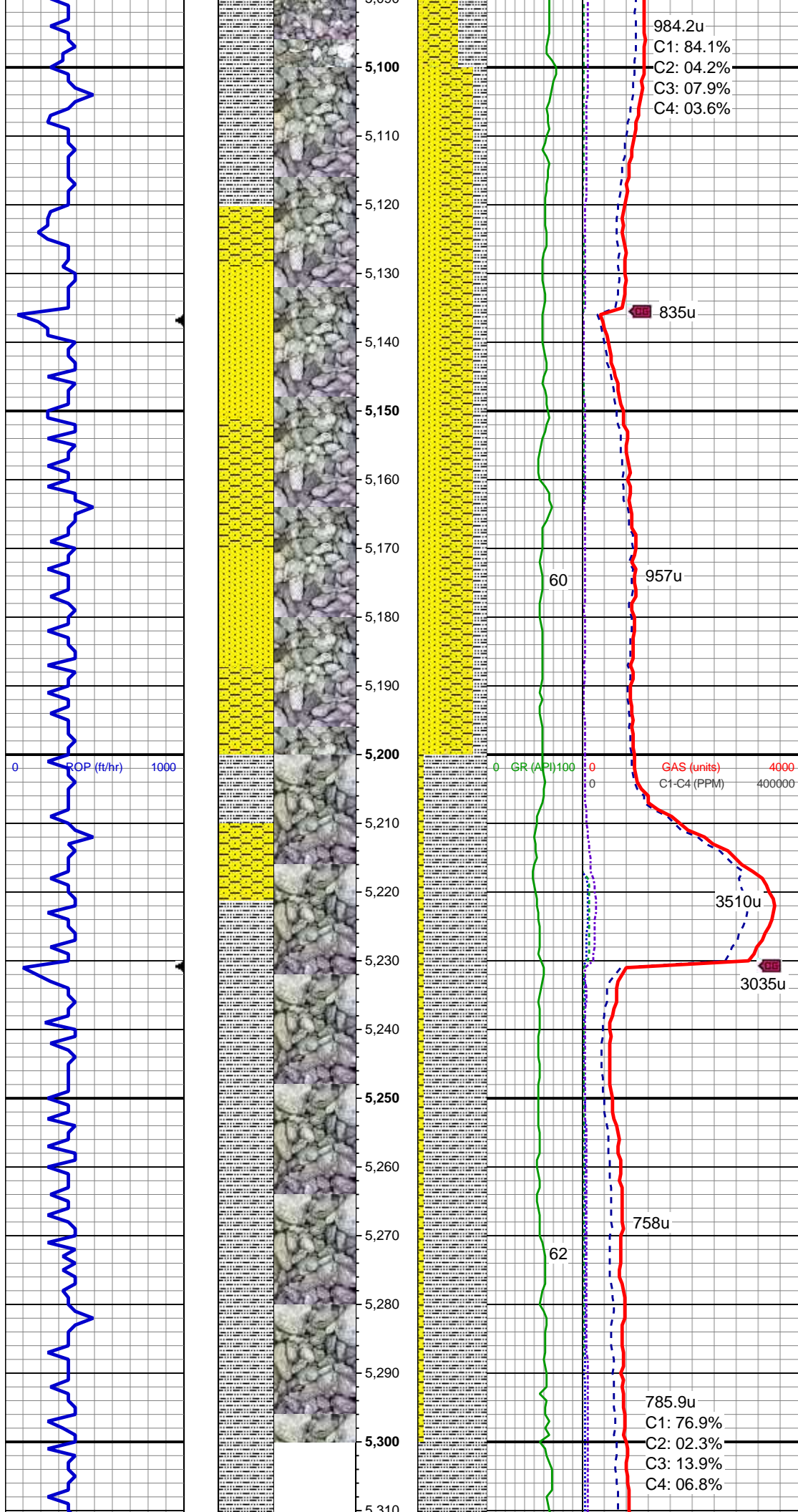
MD: 4,985'  
TVD: 4,956.54'  
Inclination: 1.1 °  
Azimuth: 107.3 °  
VS: 126.75'

GAS SCALE CHANGE

SHY SS: gy - lt gy, tr wh, s&p, vf-f gr, sft, sb rnd-sb blk, occ rnd, p-mod srt, arg cmt, tr pyr, sdy ip  
SLTY SH: lt-med gy, occ dk gy, sft, sb blk-sb plty, occ plty, arg-rthy mtx, non calc  
SS: wh - lt gy, tr wh-trns, s&p, vf-f gr, sb rnd-sb blk, mod - w srt, tr glau

MD: 5,080'  
TVD: 5,051.51'  
Inclination: 1.5 °  
Azimuth: 116.2 °  
VS: 125.92'





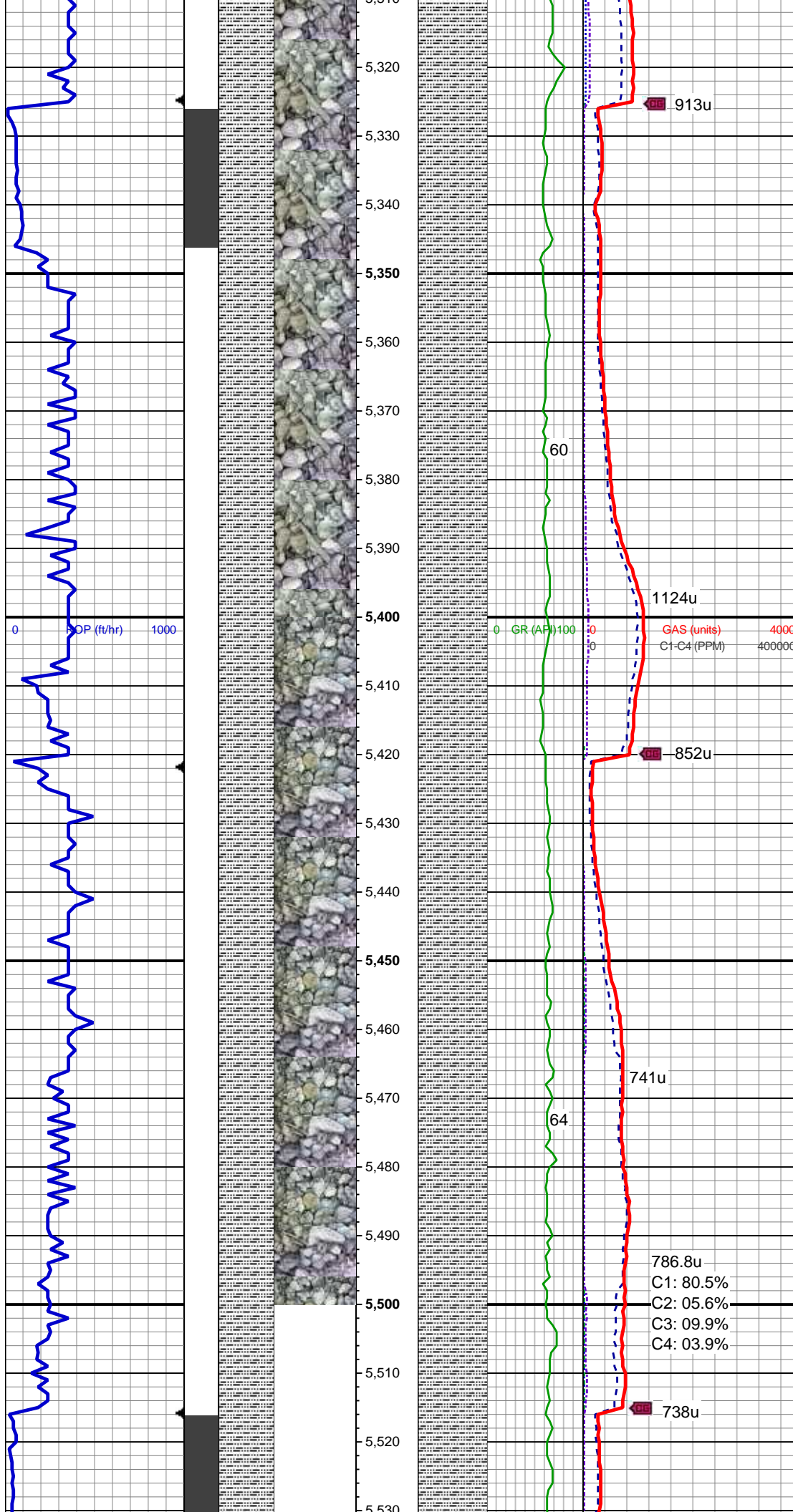
SHY SS: gy - lt gy, tr wh, s&p, vf-f gr, sft, sb rnd-sb blkty, occ rnd, p-mod srt, arg cmt, tr pyr, sdy ip  
SS: wh - lt gy, tr wh-trnsl, s&p, vf-f gr, sb rnd-sb blkty, mod - w srt, tr glau  
SLTY SH: lt-med gy, occ dk gy, sft, sb blkty-sb plty, occ plty, arg-rthy mtx, non calc

MD: 5,175'  
TVD: 5,146.49'  
Inclination: 1.1 °  
Azimuth: 116.7°  
VS: 124.95'

MUD WT 9.00 VIS 28

SLTY SH: lt-med gy, occ dk gy, sft, sb blkty-sb plty, occ plty, arg-rthy mtx, non calc  
SHY SS: gy - lt gy, tr wh, s&p, vf-f gr, sft, sb rnd-sb blkty, occ rnd, p-mod srt, arg cmt, tr ss

MD: 5,271'  
TVD: 5,242.47'  
Inclination: 1.3 °  
Azimuth: 122.9°  
VS: 123.94'



SLTY SH: lt-med gy, occ dk gy, sft, sb  
blky-sb plty, occ plty, arg-rthy mtx, non  
calc, tr shy ss

MD: 5,366'  
TVD: 5,337.46'  
Inclination: 0.4 °  
Azimuth: 251.2 °  
VS: 123.24'

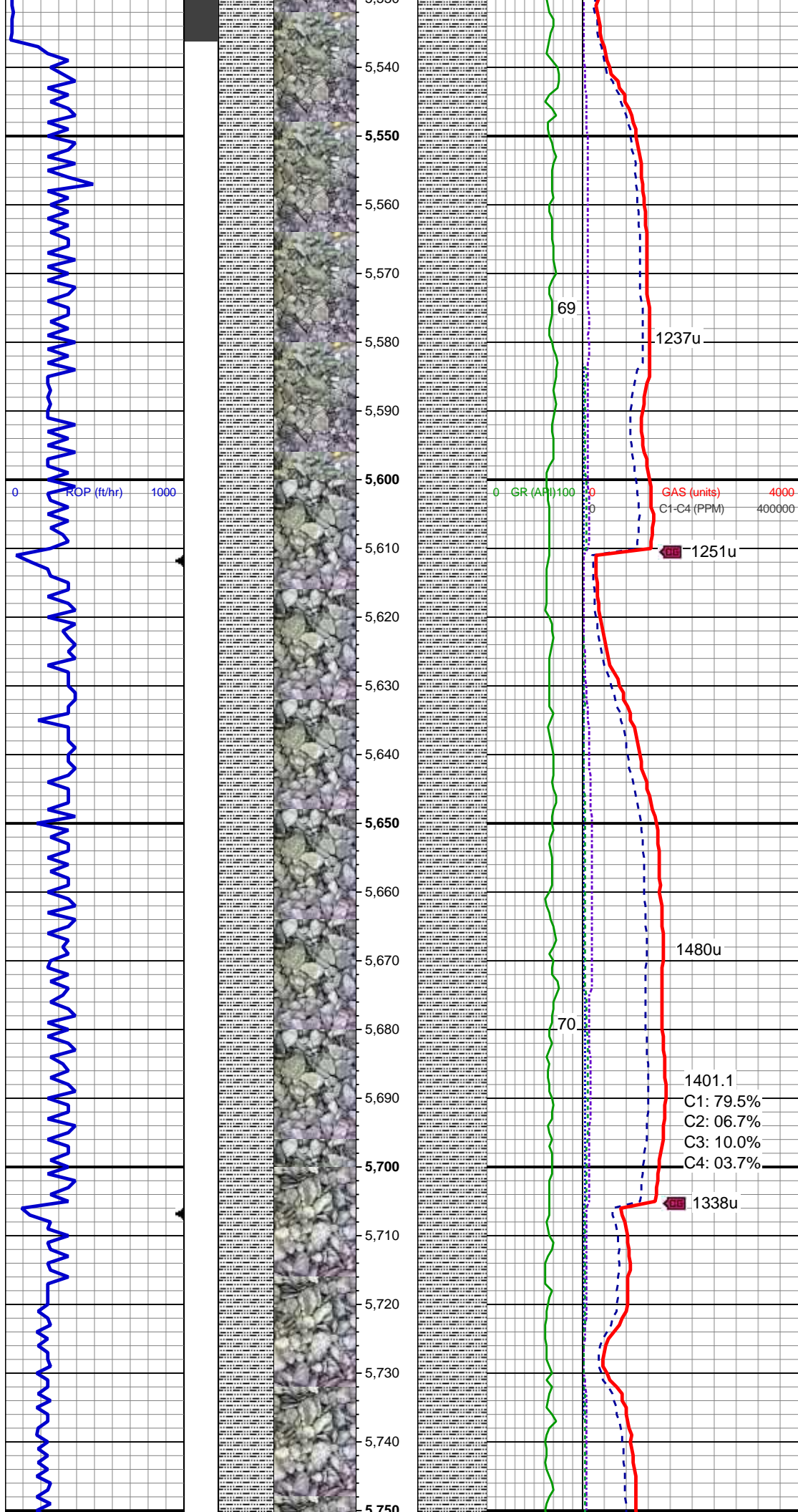
SLTY SH: lt-med gy, tr med brn, occ dk  
gy, sft, sb blky-sb plty, occ plty, arg-rthy  
mtx, non calc, tr shy ss

MD: 5,461'  
TVD: 5,432.46'  
Inclination: 0.4 °  
Azimuth: 143.8 °  
VS: 122.87'

MUD WT 9.00 VIS 32

786.8u  
C1: 80.5%  
C2: 05.6%  
C3: 09.9%  
C4: 03.9%





SLTY SH: lt-med gy, tr med brn, occ dk gy, sft, sb blkly-sb plty, occ plty, arg-rthy mtx, non calc, tr shy ss

MD: 5,556'  
TVD: 5,527.45'  
Inclination: 1.3 °  
Azimuth: 337.9 °  
VS: 123.6'

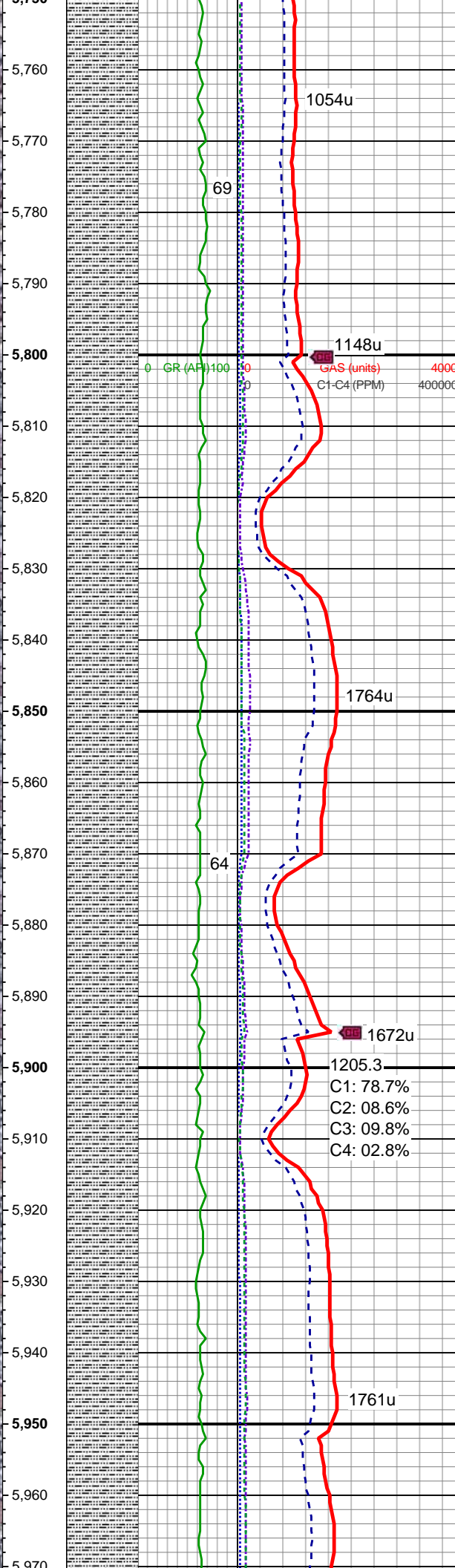
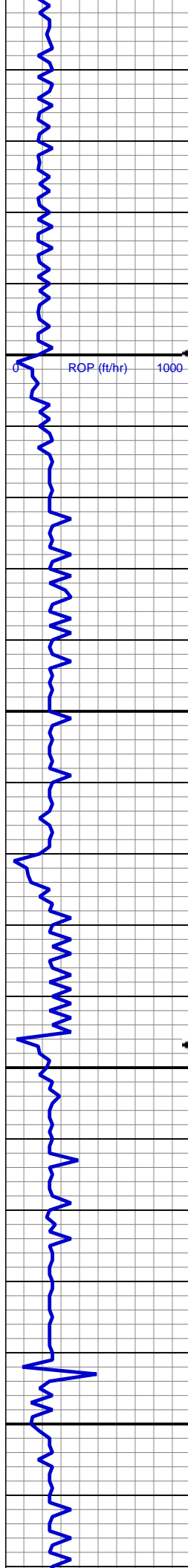
MUD WT 9.20 VIS 31

MD: 5,651'  
TVD: 5,622.42'  
Inclination: 1.6 °  
Azimuth: 335.2 °  
VS: 125.81'

SLTY SH: lt-med gy, tr med brn, occ dk gy, sft, sb blkly-sb plty, occ plty, rthy mtx, non calc, tr shy ss

MD: 5,746'  
TVD: 5,717.39'  
Inclination: 1.5 °  
Azimuth: 1.2 °  
VS: 128.25'

SLTY SH: lt-med gy, tr med brn, occ dk



gy, sft, sb blkly-sb plty, occ plty, rthy mtx,  
non calc, tr shy ss

MUD WT 9.30 VIS 34

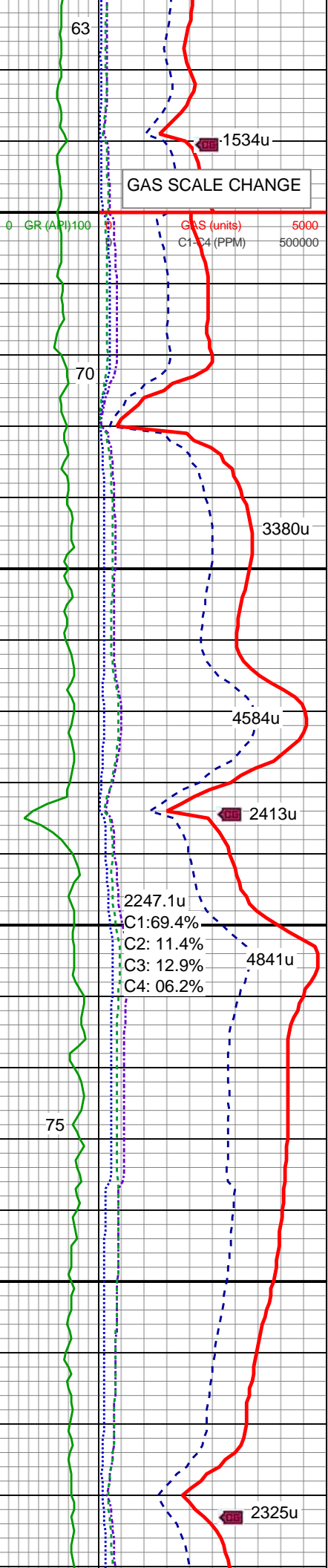
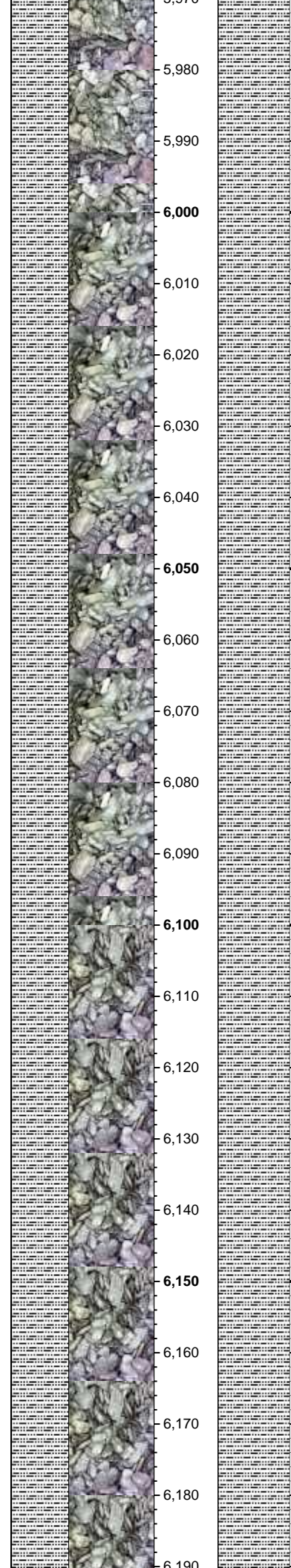
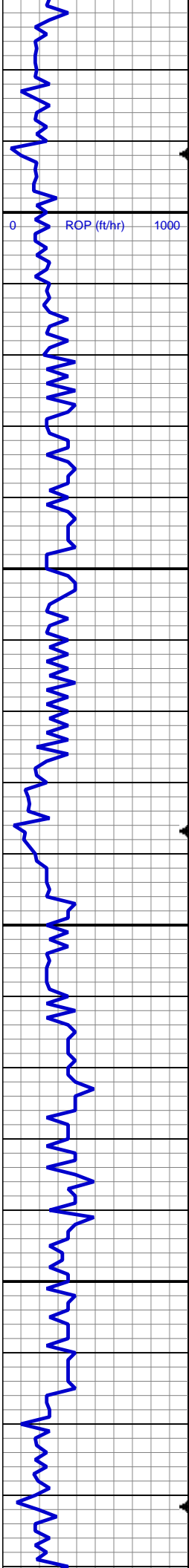
MD: 5,841'  
TVD: 5,812.34'  
Inclination: 2 °  
Azimuth: 4.5 °  
VS: 131.15'

SLTY SH: lt-med gy, tr med brn, occ dk  
gy, sft, sb blkly-sb plty, occ plty, rthy mtx,  
non calc, tr shy ss

MD: 5,936'  
TVD: 5,907.3'  
Inclination: 1.6 °  
Azimuth: 349.1 °  
VS: 134.11'

SLTY SH: lt-med gy, tr med brn, occ dk  
gy, sft, sb blkly-sb plty, occ plty, rthy mtx,  
non calc, tr shy ss





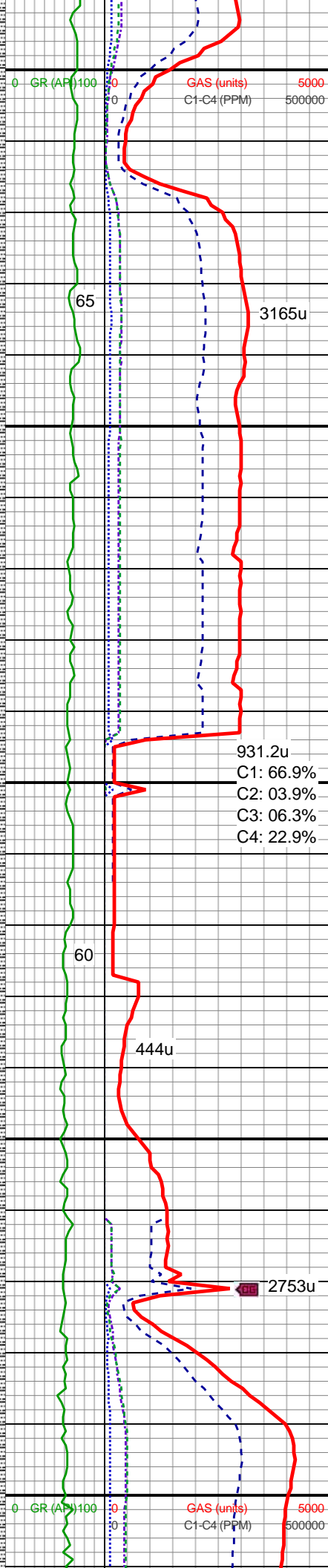
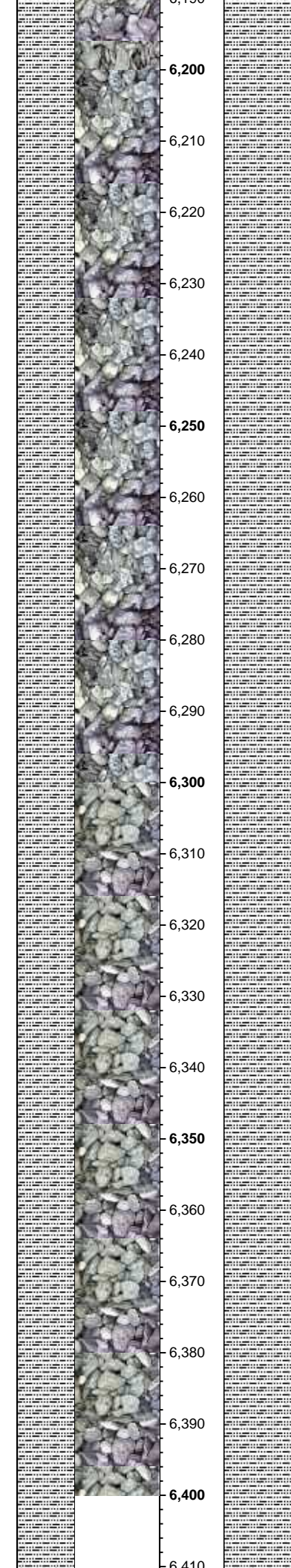
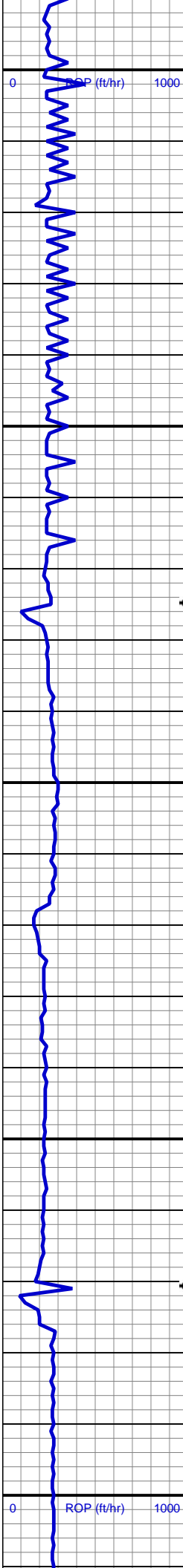
MUD WT 9.30 VIS 36

MD: 6,031'  
TVD: 6,002.27'  
Inclination: 1.4 °  
Azimuth: 358.4 °  
VS: 136.57'

SLTY SH: lt-med gy, tr med brn, occ dk gy, sft, sb blkly-sb plty, occ plty, rthy mtx, non calc

MD: 6,126'  
TVD: 6,097.24'  
Inclination: 1.1 °  
Azimuth: 14.8 °  
VS: 138.61'

SLTY SH: lt-med gy, tr med brn, occ dk gy, sft, sb blkly-sb plty, occ plty, rthy mtx, non calc



MD: 6,221'  
TVD: 6,192.22'  
Inclination: 1.6 °  
Azimuth: 19.6 °  
VS: 140.74'

SLTY SH: lt-med gy, tr med brn, occ dk gy, sft, sb blk-y-sb plty, occ plty, rthy mtx, non calc

MUD WT 9.40 VIS 37

931.2u  
C1: 66.9%  
C2: 03.9%  
C3: 06.3%  
C4: 22.9%

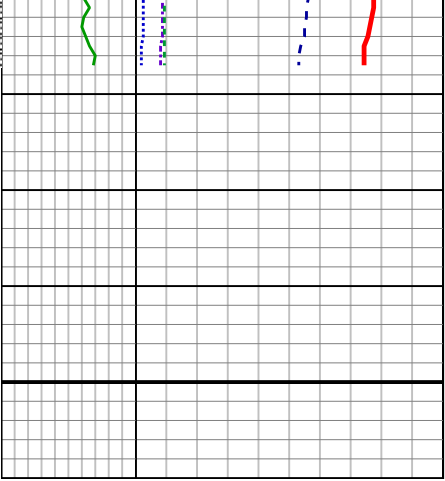
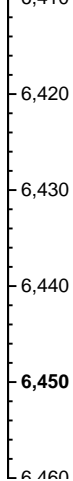
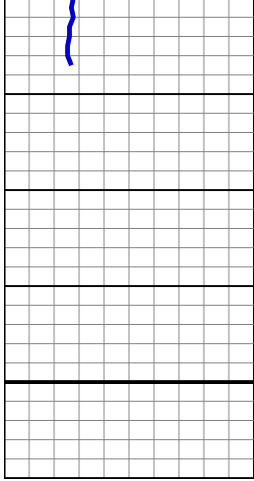
MD: 6,317'  
TVD: 6,288.17'  
Inclination: 1.8 °  
Azimuth: 25.4 °  
VS: 143.36'

SLTY SH: lt-med gy, tr med brn, occ dk gy, sft, sb blk-y-sb plty, occ plty, rthy mtx, non calc

MD: 6,362'  
TVD: 6,333.14'  
Inclination: 1.8 °  
Azimuth: 13 °  
VS: 153.72'

MUD WT 9.40 VIS 38





TD @ 6417' MD  
03/17/2014 @ 05:25 PM

TOOH FOR MWD TOOLS  
LOG CONTINUES ON MPlot  
"OSCAR Y10-79-1HC(HORZ)"

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Columbine Logging Inc.