

COLUMBINE LOGGING

Scale: 5" / 100'
Measured Depth Log

Well Name Castor Federal LD15-74HN_Vert

Location NWNE SEC 15, T9N, R58W

State Colorado

County Weld

Country USA

Rig Number H&P 326

API Number 05-123-37486

AFE # 139532

Region DJ Basin

Field Sabine Pass

Spud Date 12/29/2013

Drilling Completed 1/4/2014

Surface Coordinates NWNE SEC15, T9N, R58W
556' FNL, 2210' FEL
40.75713 -103.84876

Bottom Hole Coordinates SWSE SEC15, T9N, R58W
1980' FEL, 660'FSL

Ground Elevation 4,707'

K.B. Elevation 4,737'

Logged Interval 1,300' **To** 9,978'

Total Depth 9,978'

Formation B Chalk

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

JACK WEINERTH
MICHEAL ROOKS

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

Fossils

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

Minerals

Accessories

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

Accessories

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

Accessories

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

Stringer

Other Symbols

Oil Show

DEAD
EVEN
QUESTIONABLE
SPOTTED STAINING

Porosity

E EARTHY
F FENESTRAL
F FRACTURE
X INTERCRYSTALLINE
O INTEROOLITIC

Oil Show

MOLDIC
O ORGANIC
P PINPOINT
V 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

A ANGULAR
R ROUNDED
S SUBANG
SUBRND

Textures

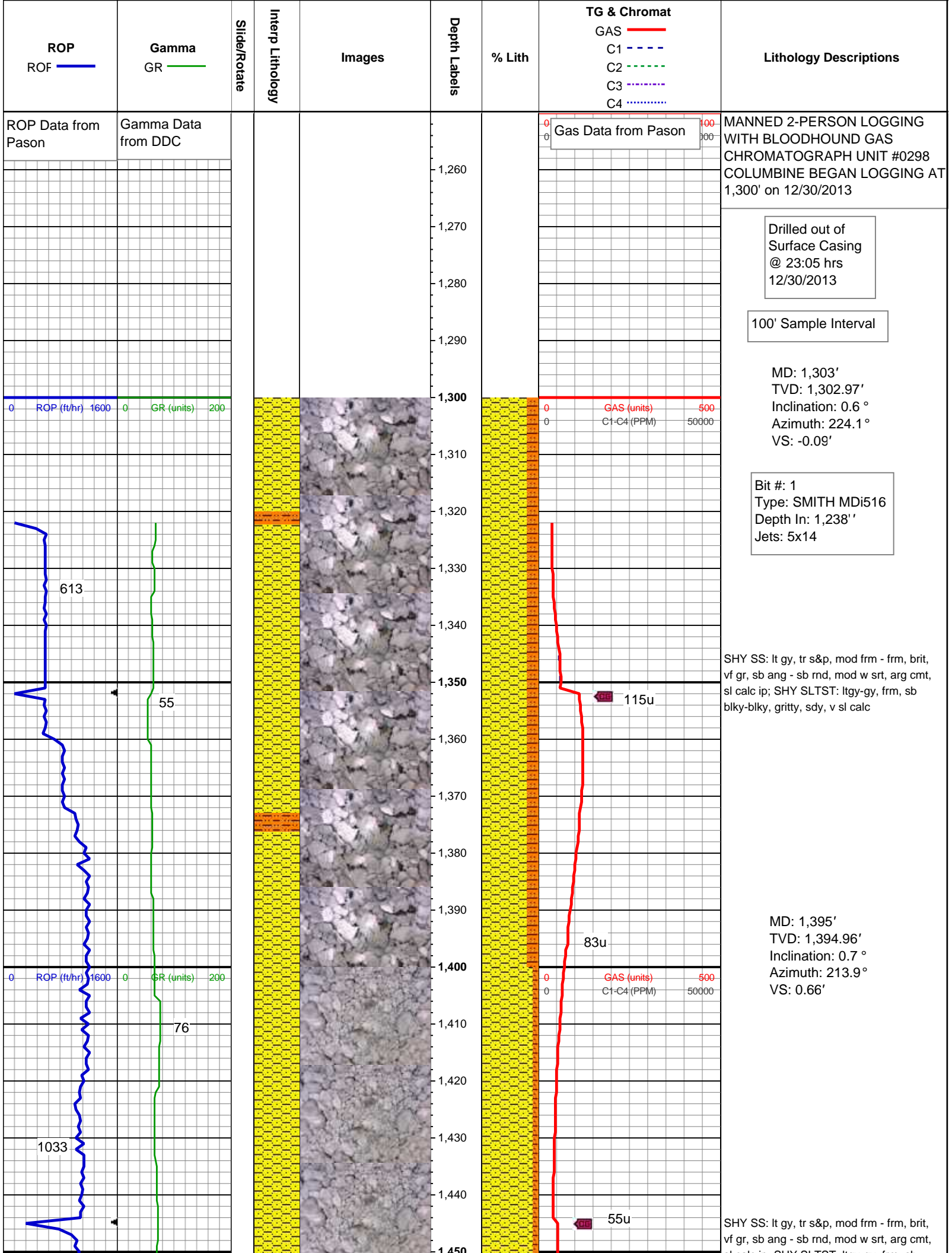
B BOUNDSTONE
C CHALKY
C CRYPTOXLN

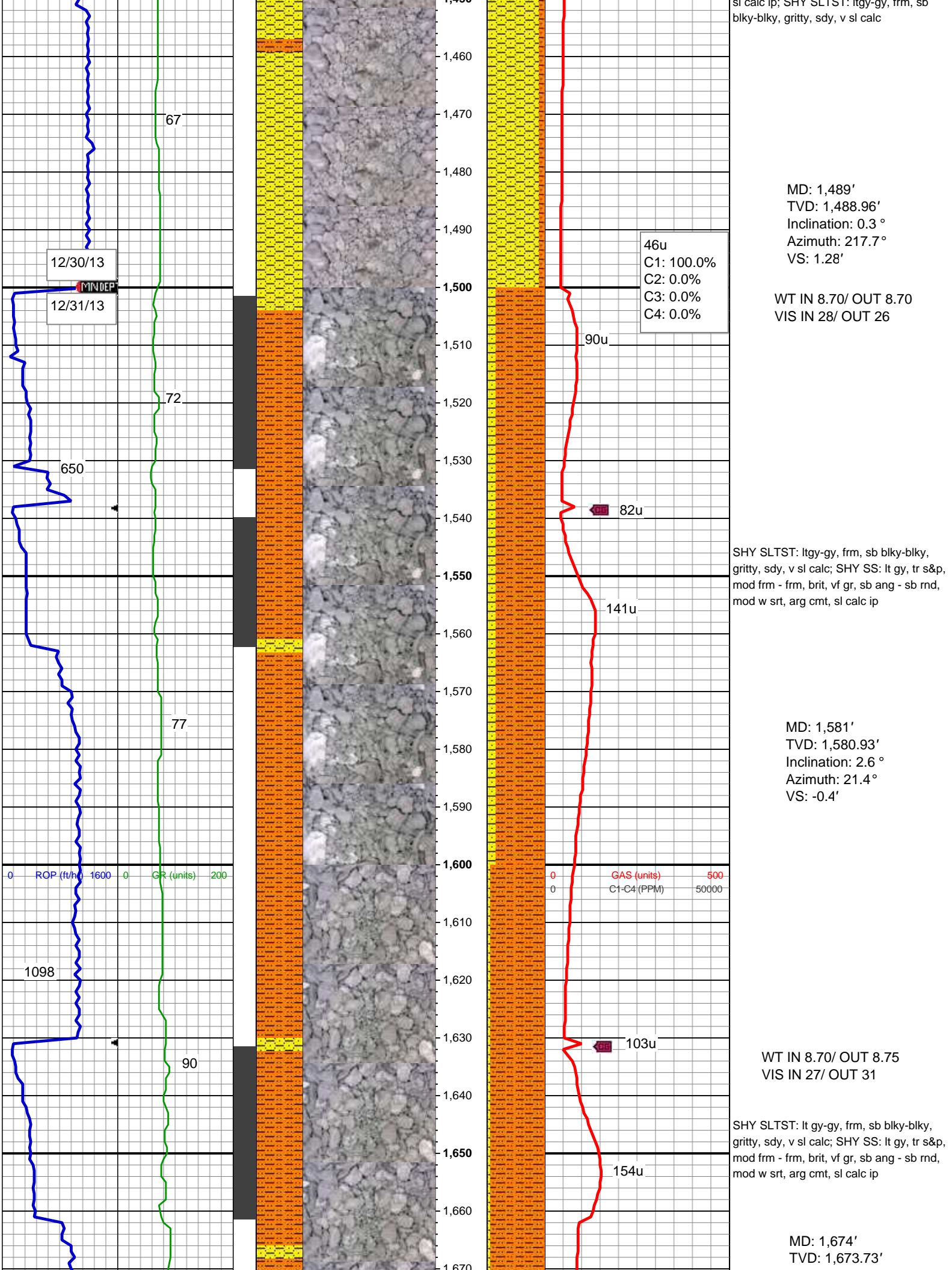
Other Symbols

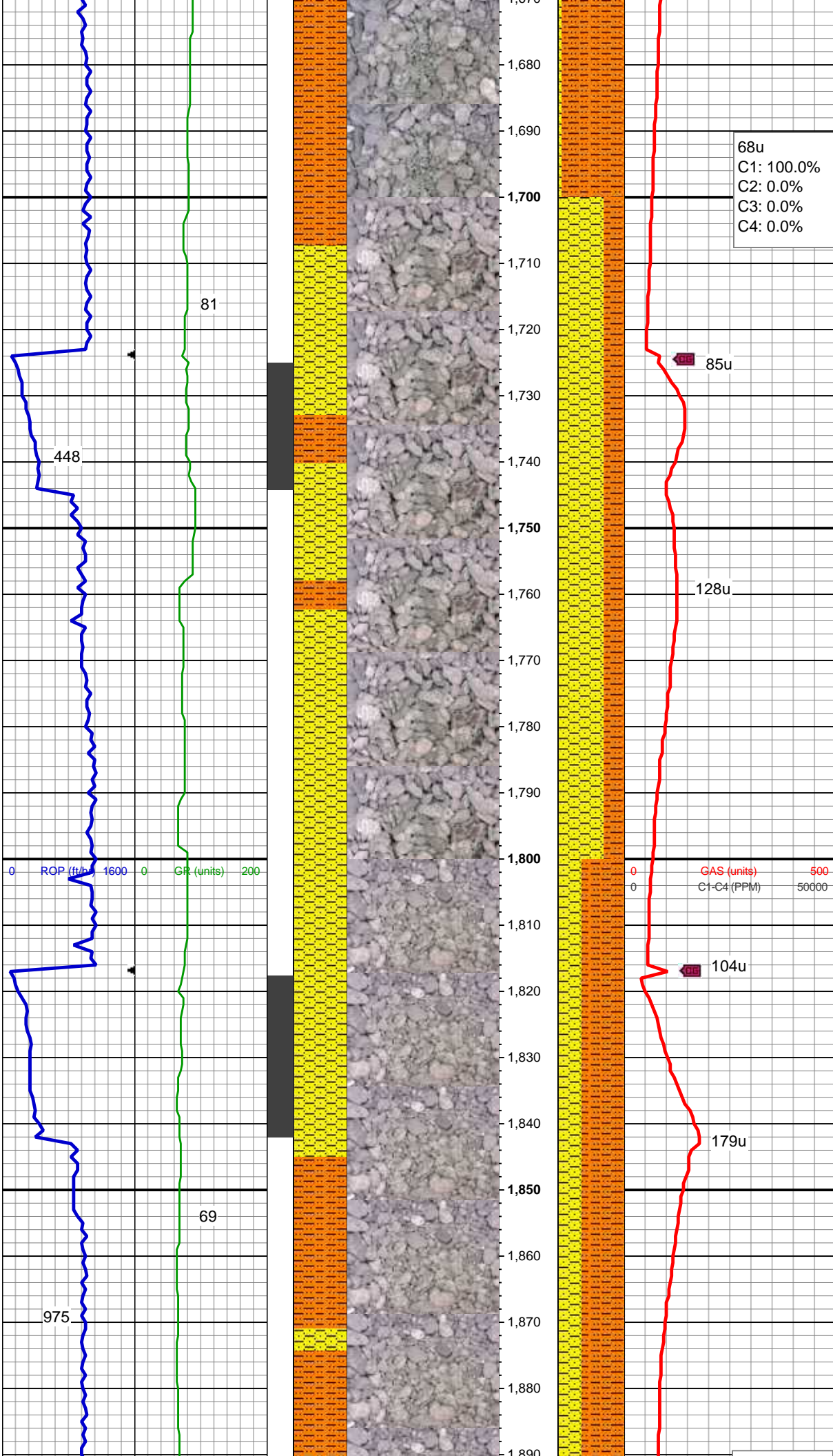
E EARTHY
F FINELYXLN
G GRAINSTONE
L LITHOGRAPHIC
M MICROXLN
MS MUDSTONE
PS PACKSTONE
WS WACKESTONE

Sorting

M MODERATE
P POOR
W WELL







Inclination: 4.8 °
Azimuth: 16.1 °
VS: -5.91'

68u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%

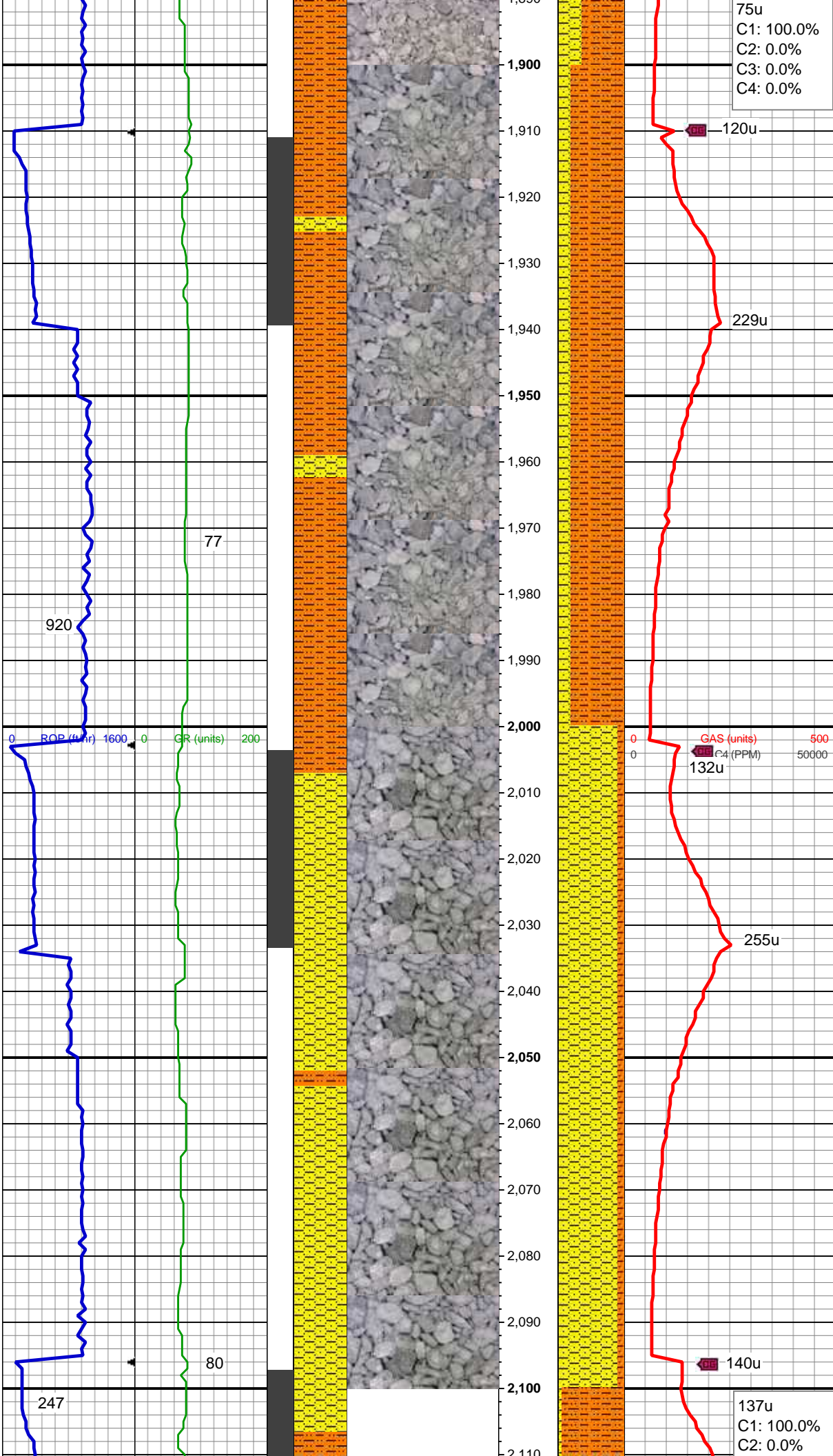
SHY SS: lt gy, tr s&p, mod frm - frm, brit,
vf gr, sb ang - sb rnd, mod w srt, arg cmt,
sl calc ip; SHY SLTST: lt gy-gy, frm, sb
blky-blky, gritty, sdy, v sl calc

MD: 1,767'
TVD: 1,766.3'
Inclination: 6.2 °
Azimuth: 13.3 °
VS: -14.29'

GAS (units) 500
C1-C4 (PPM) 50000

SHY SLTST: lt gy-gy, frm, sb blky-blky,
gritty, sdy, v sl calc; SHY SS: lt gy, tr s&p,
mod frm - frm, brit, vf gr, sb ang - sb rnd,
mod w srt, arg cmt, sl calc ip

MD: 1,859'
TVD: 1,857.67'
Inclination: 7.2 °
Azimuth: 19.1 °
VS: -24.25'

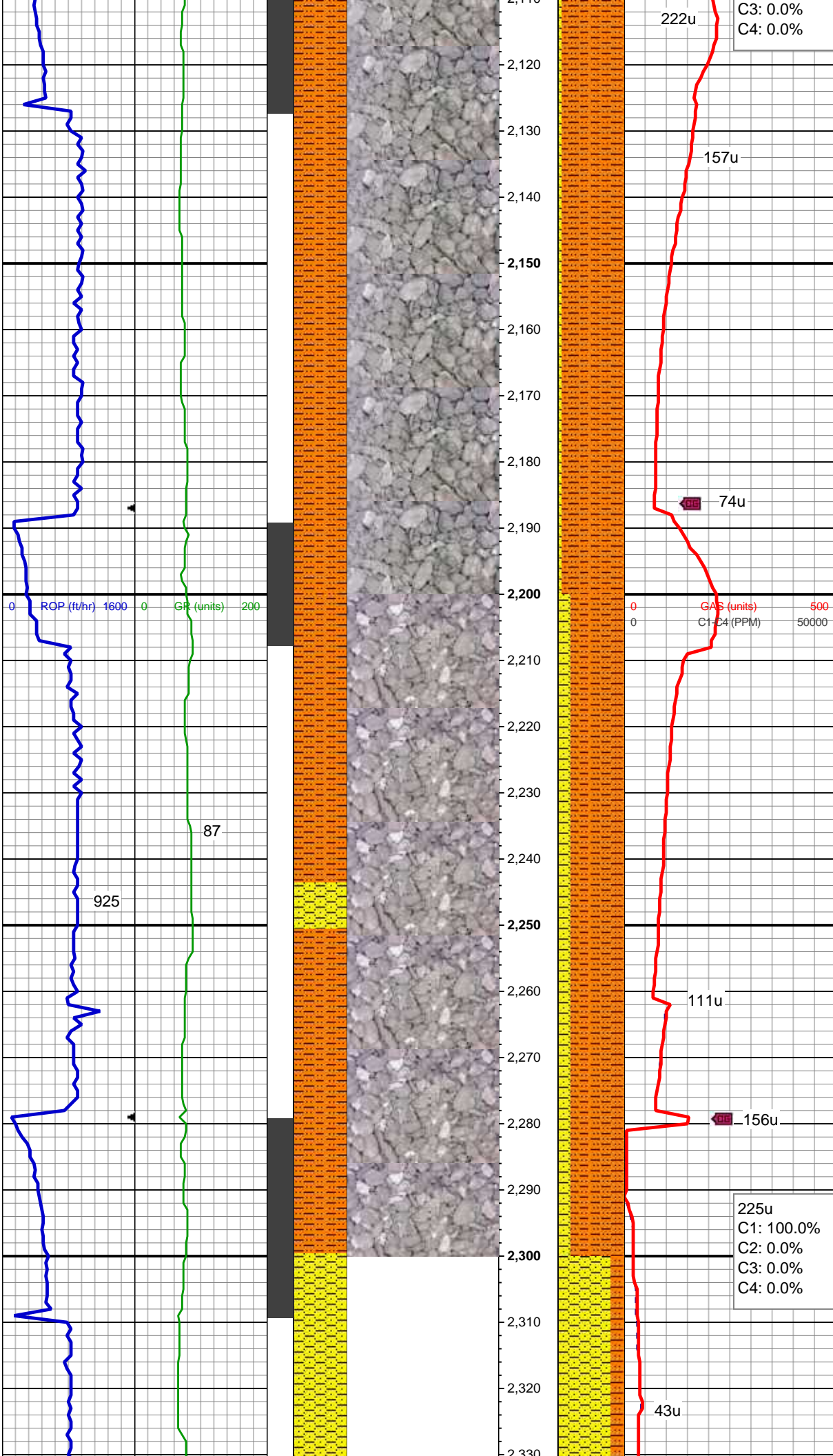


WT IN 8.6/ OUT 8.7
VIS IN 31/ OUT 31

SHY SLTST: lt gy-gy, frm, sb blkly-blky,
gritty, sdy, v sl calc; SHY SS: lt gy, tr s&p,
mod frm - frm, brit, vf gr, sb ang - sb rnd,
mod w srt, arg cmt, sl calc ip

MD: 1,952'
TVD: 1,949.74'
Inclination: 9 °
Azimuth: 17.9°
VS: -36.24'

SHY SS: lt gy, tr s&p, mod frm - frm, brit,
vf gr, sb ang - sb rnd, mod w srt, arg cmt,
sl calc ip; SHY SLTST: lt gy-gy, frm, sb
blkly-blky, grty, sdy, v sl calc



MD: 2,137'
TVD: 2,131.32'
Inclination: 12.4 °
Azimuth: 26.5 °
VS: -68'

SHY SLTST: lt gy-gy, frm, sb blkly-blky,
gritty, sdy, v sl calc; SHY SS: lt gy, tr s&p,
mod frm - frm, brit, vf gr, sb ang - sb rnd,
mod w srt, arg cmt, sl calc ip

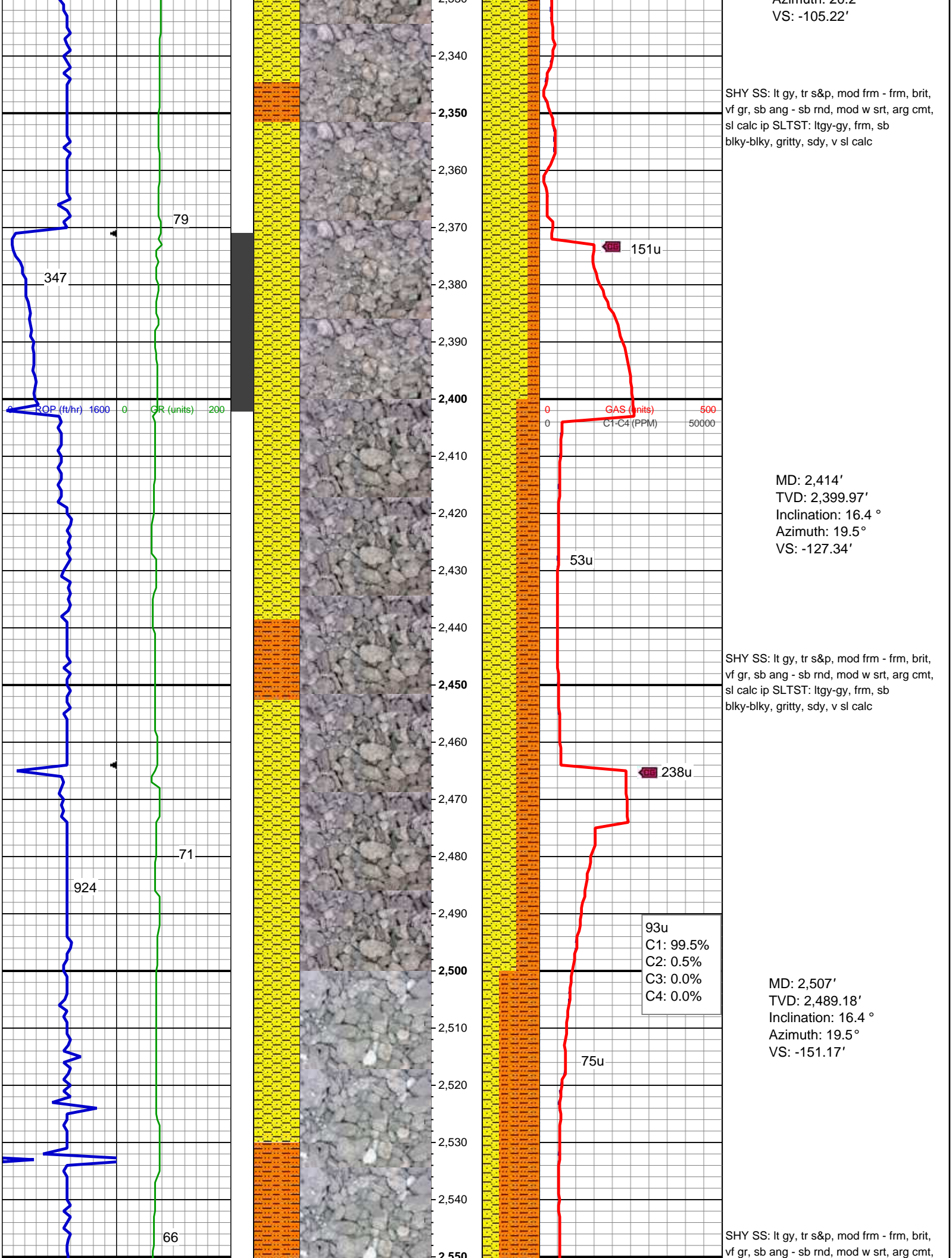
WT IN 8.5/ OUT 8.55
VIS IN 27/ OUT 26

MD: 2,229'
TVD: 2,220.99'
Inclination: 13.4 °
Azimuth: 25.6 °
VS: -85.54'

SHY SS: lt gy, sme s&p, mod frm - frm,
brit, vf gr, sb ang - sb rnd, mod w srt, arg
cmt, sl calc ip; SHY SLTST: lt gy-gy,
frm, sb blkly-blky, grty, sdy, v sl calc

225u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%

MD: 2,322'
TVD: 2,311.27'
Inclination: 14.4 °
Azimuth: 20.2 °



Azimuth: 20.2
VS: -105.22'

SHY SS: lt gy, tr s&p, mod frm - frm, brit,
vf gr, sb ang - sb rnd, mod w srt, arg cmt,
sl calc ip SLTST: ltgy-gy, frm, sb
blky-blky, gritty, sdy, v sl calc

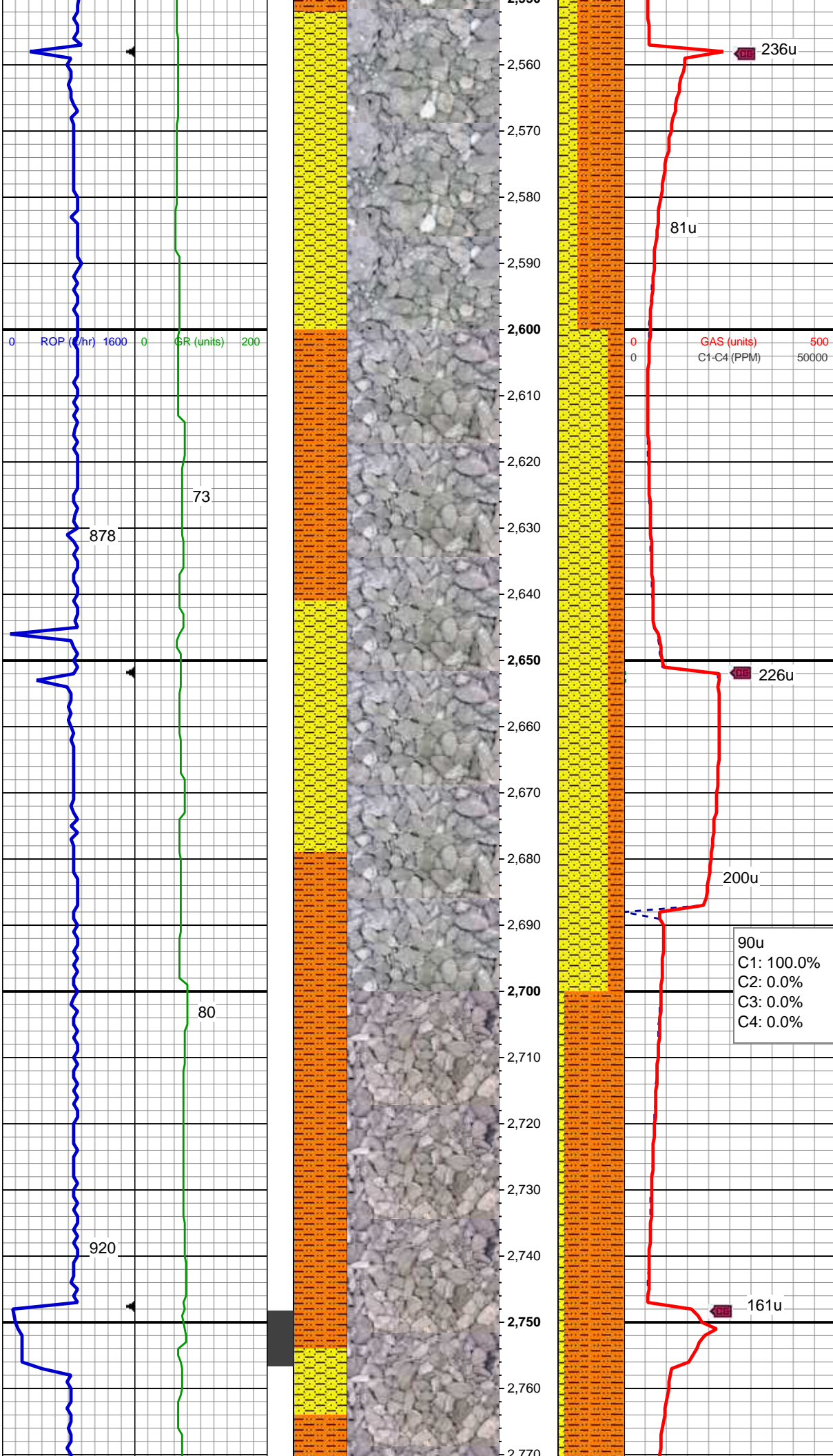
MD: 2,414'
TVD: 2,399.97'
Inclination: 16.4 °
Azimuth: 19.5°
VS: -127.34'

SHY SS: lt gy, tr s&p, mod frm - frm, brit,
vf gr, sb ang - sb rnd, mod w srt, arg cmt,
sl calc ip SLTST: ltgy-gy, frm, sb
blky-blky, gritty, sdy, v sl calc

93u
C1: 99.5%
C2: 0.5%
C3: 0.0%
C4: 0.0%

MD: 2,507'
TVD: 2,489.18'
Inclination: 16.4 °
Azimuth: 19.5°
VS: -151.17'

SHY SS: lt gy, tr s&p, mod frm - frm, brit,
vf gr, sb ang - sb rnd, mod w srt, arg cmt,



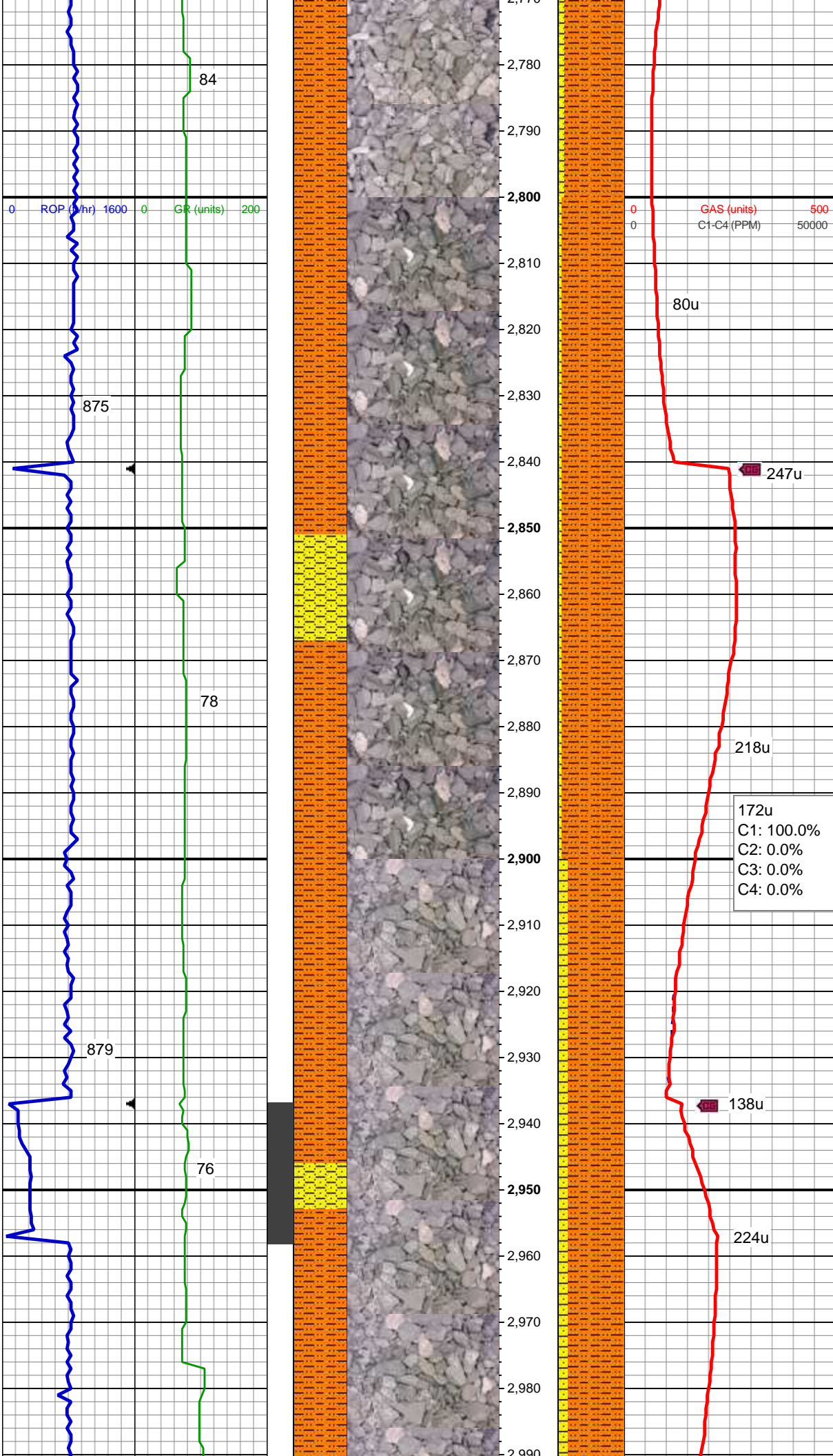
sl calc ip SLTST: ltgy-gy, frm, sb
blky-blky, gritty, sdy, v sl calc

MD: 2,601'
TVD: 2,579.31'
Inclination: 16.6 °
Azimuth: 20°
VS: -175.35'

SHY SS: lt gy, tr s&p, mod frm - frm, brit,
vf gr, sb ang - sb rnd, mod w srt, arg cmt,
sl calc ip SLTST: ltgy-gy, frm, sb
blky-blky, gritty, sdy, v sl calc

MD: 2,696'
TVD: 2,670.33'
Inclination: 16.7 °
Azimuth: 19.5°
VS: -200.01'

SHY SS: lt gy, tr s&p, mod frm - frm, brit,
vf gr, sb ang - sb rnd, mod w srt, arg cmt,
sl calc ip SLTST: ltgy-gy, frm, sb
blky-blky, gritty, sdy, v sl calc



MD: 2,790'
TVD: 2,760.75'
Inclination: 15 °
Azimuth: 19.5 °
VS: -223.31'
WT IN 8.90/ OUT 8.85
VIS IN 31/ OUT 32

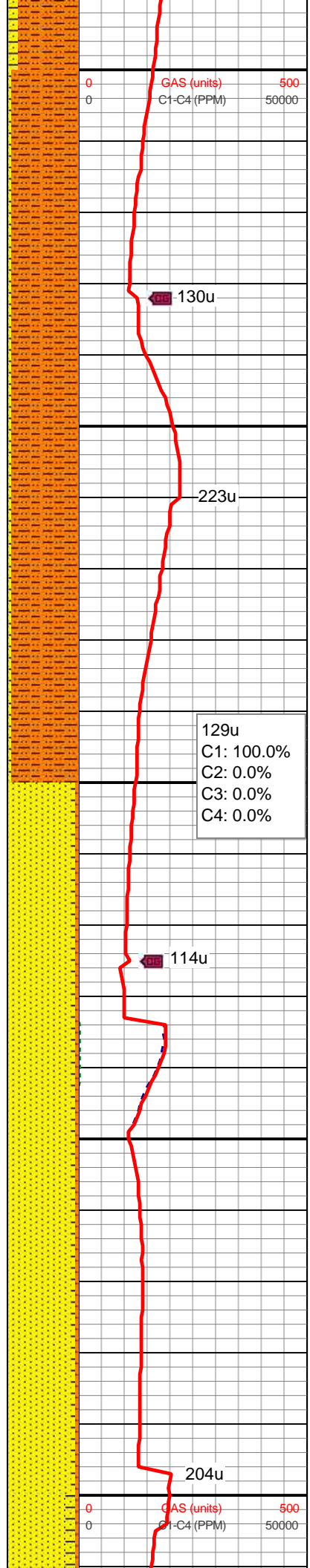
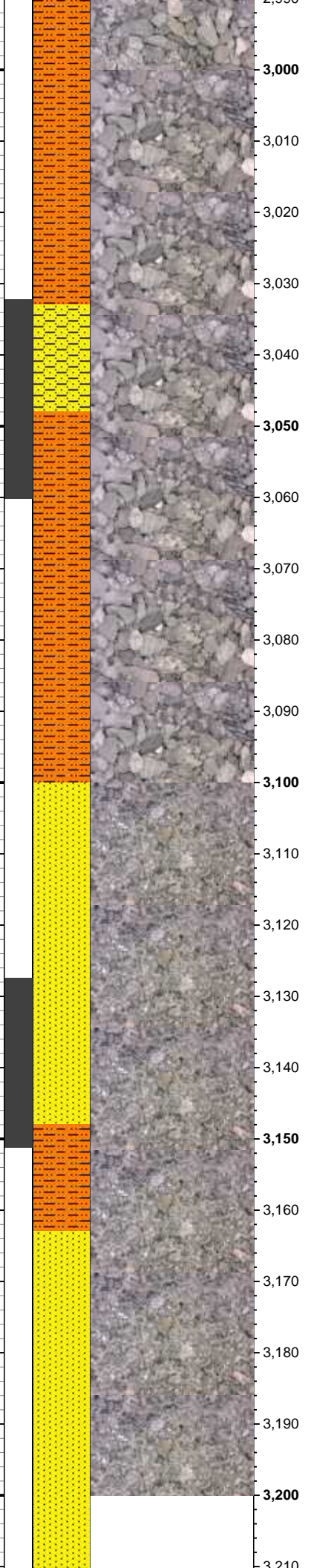
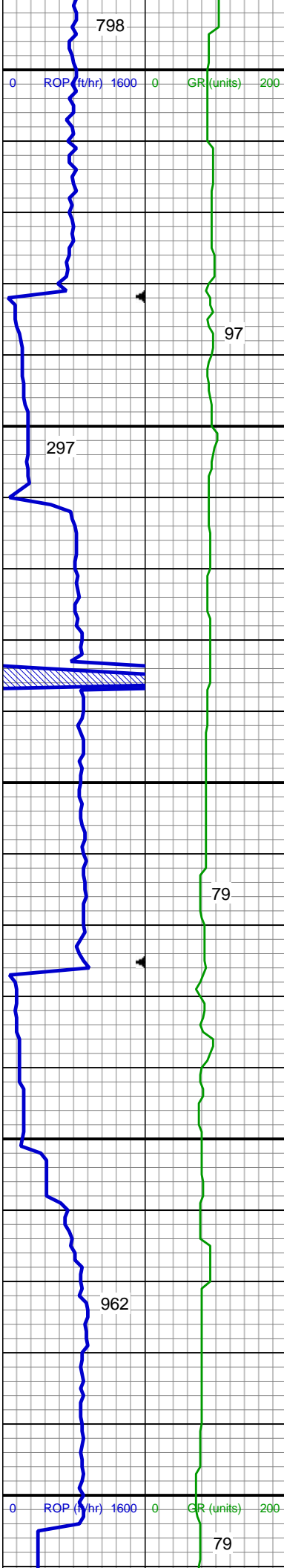
SHY SS: lt gy, tr s&p, mod frm - frm, brit,
vf gr, sb ang - sb rnd, mod w srt, arg cmt,
sl calc ip SLTST: ltgy-gy, frm, sb
blky-blky, gritty, sdy, v sl calc

MD: 2,885'
TVD: 2,852.79'
Inclination: 13.7 °
Azimuth: 17.4 °
VS: -244.84'

172u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%

SHY SS: lt gy, tr s&p, mod frm - frm, brit,
vf gr, sb ang - sb rnd, mod w srt, arg cmt,
sl calc ip SHY SLTST: ltgy-gy, frm, sb
blky-blky, gritty, sdy, v sl calc

MD: 2,979'
TVD: 2,944.15'
Inclination: 13.5 °
Azimuth: 20.2 °



VS: -265.01'

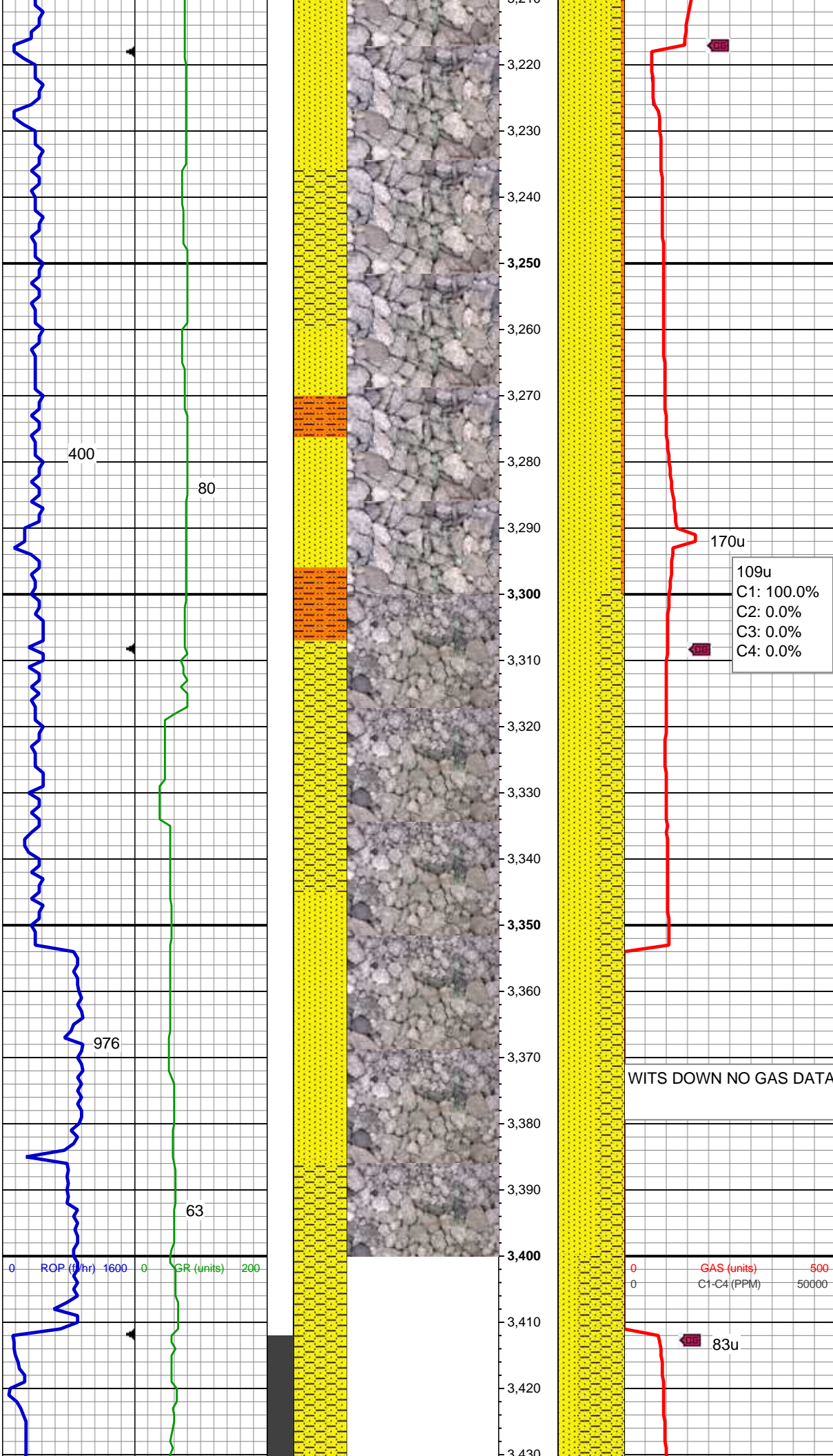
SHY SS: lt gy, tr s&p, mod frm - frm, brit, vf gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc ip SHY SLTST: ltgy-gy, frm, sb blkly-blky, gritty, sdy, v sl calc

MUD WT: 8.90 VIS: 33

MD: 3,074'
TVD: 3,036.41'
Inclination: 14.1 °
Azimuth: 22.1 °
VS: -285.29'

SS: off wh -gy, sft, brit, vf -med gr, sb ang - sb blkly, mod srt; SHY SS: lt - med gy, frm, brit, vf - f gr, sb ang - sb blkly, mod w srt, arg cmt, SHY SLTST: ltgy-gy, frm, sb blkly-blky, gritty, sdy, v sl calc

MD: 3,169'
TVD: 3,128.32'
Inclination: 15.2 °
Azimuth: 25.1 °
VS: -306.3'



SS: off wh -gy, sft, brit, vf -med gr, sb ang
- sb blk, mod srt; SHY SS: lt - med gy,
frm, brit, vf - f gr, sb ang - sb blk, mod w
srt, arg cmt, SHY SLTST: ltgy-gy, frm, sb
blk-blky, gritty, sdy, v sl calc

MD: 3,263'
TVD: 3,218.88'
Inclination: 15.9 °
Azimuth: 25.3 °
VS: -328.01'

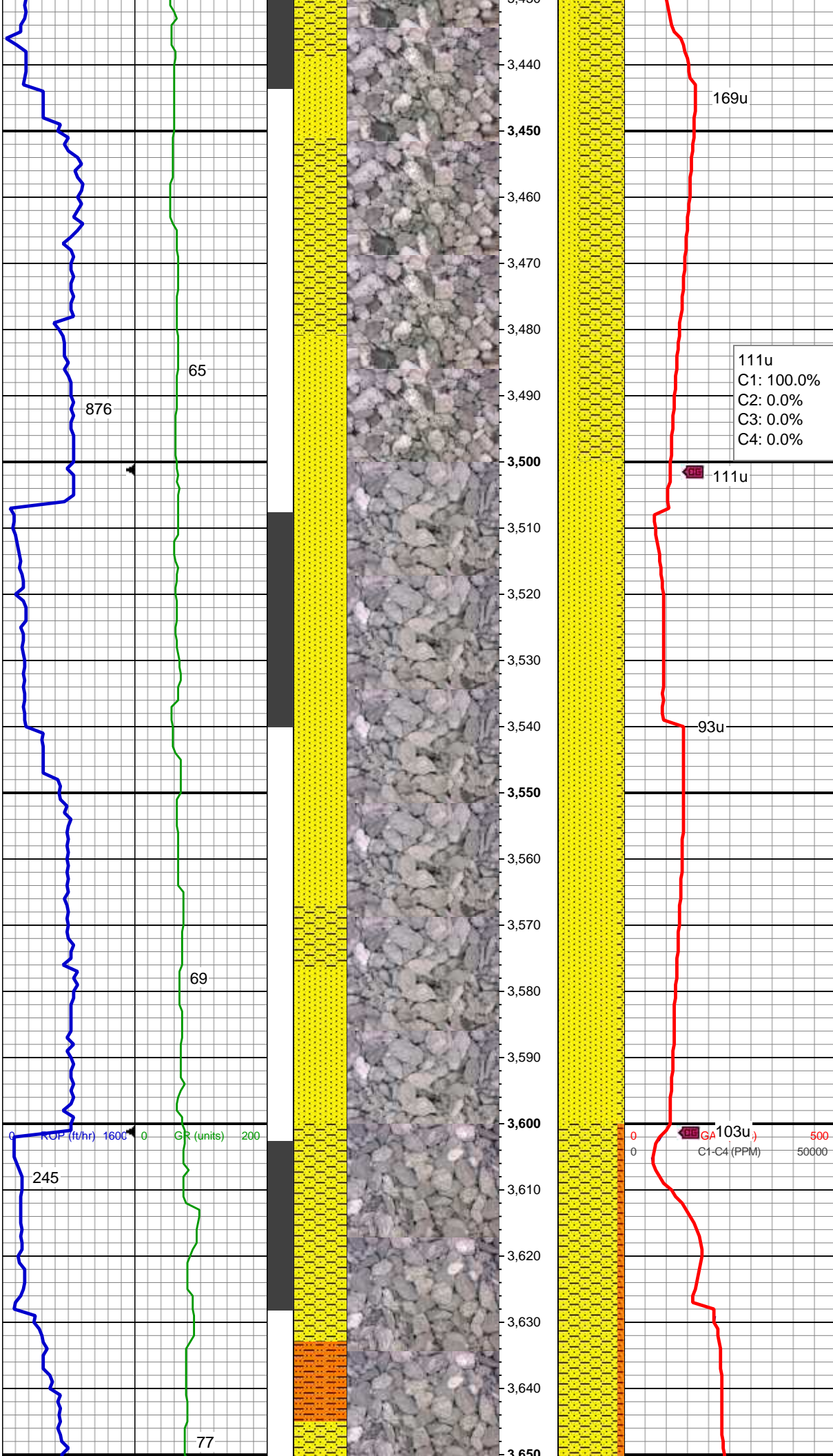
109u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%

SS: off wh -gy, sft, brit, vf -med gr, sb ang
- sb blk, mod srt; SHY SS: lt - med gy,
frm, brit, vf - f gr, sb ang - sb blk, mod w
srt, arg cmt

MD: 3,358'
TVD: 3,310.01'
Inclination: 16.9 °
Azimuth: 25.8 °
VS: -351.03'

WITS DOWN NO GAS DATA

MUD WT: 8.85 VIS: 32



SS: off wh -gy, s&p, sft, brit, vf -med gr, sb ang - sb blk, mod srt; SHY SS: lt - med gy, frm, brit, vf - f gr, sb ang - sb blk, mod w srt, arg cmt

MD: 3,452'
TVD: 3,400.28'
Inclination: 15.5 °
Azimuth: 26.7 °
VS: -373.38'

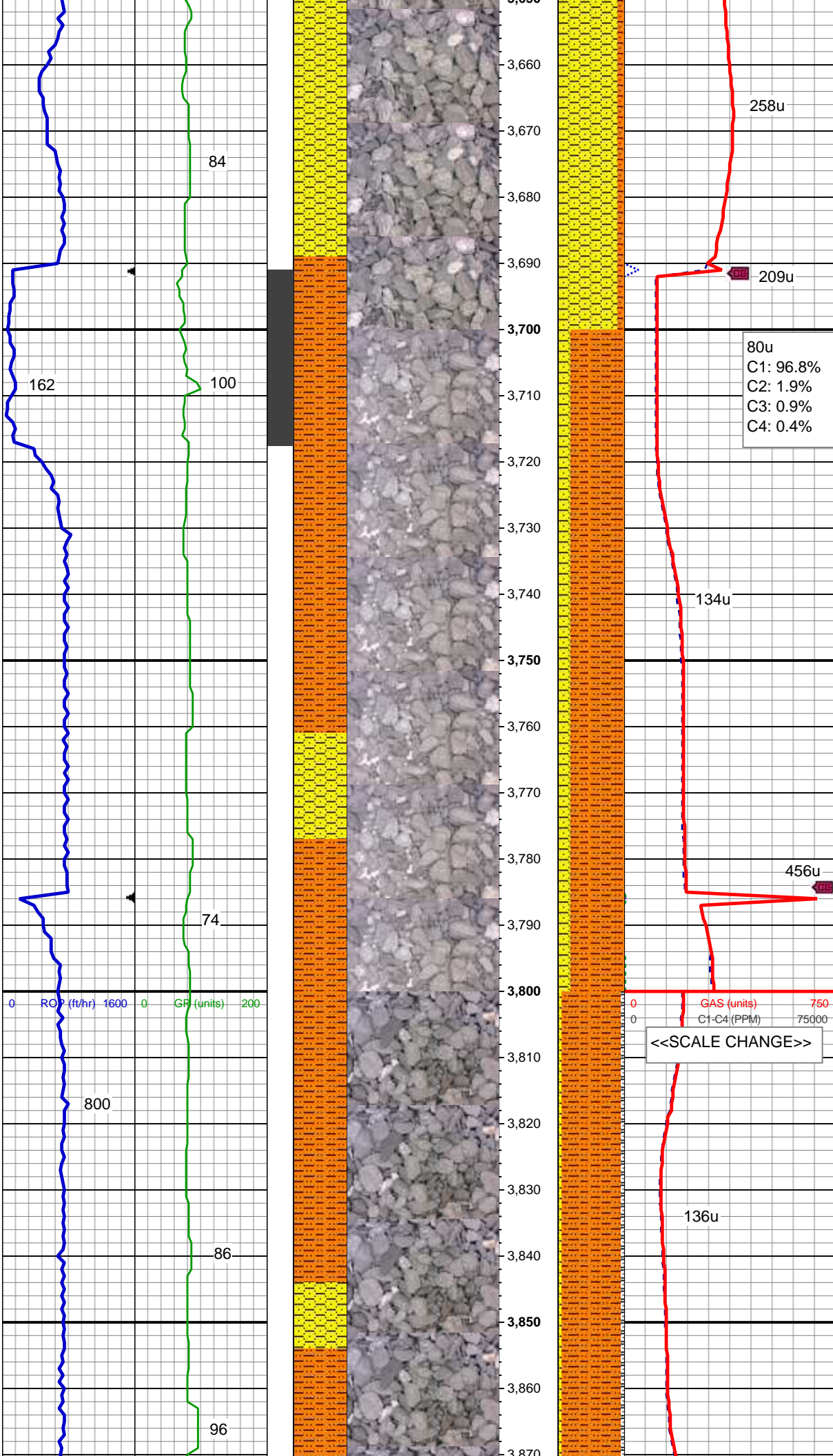
111u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%

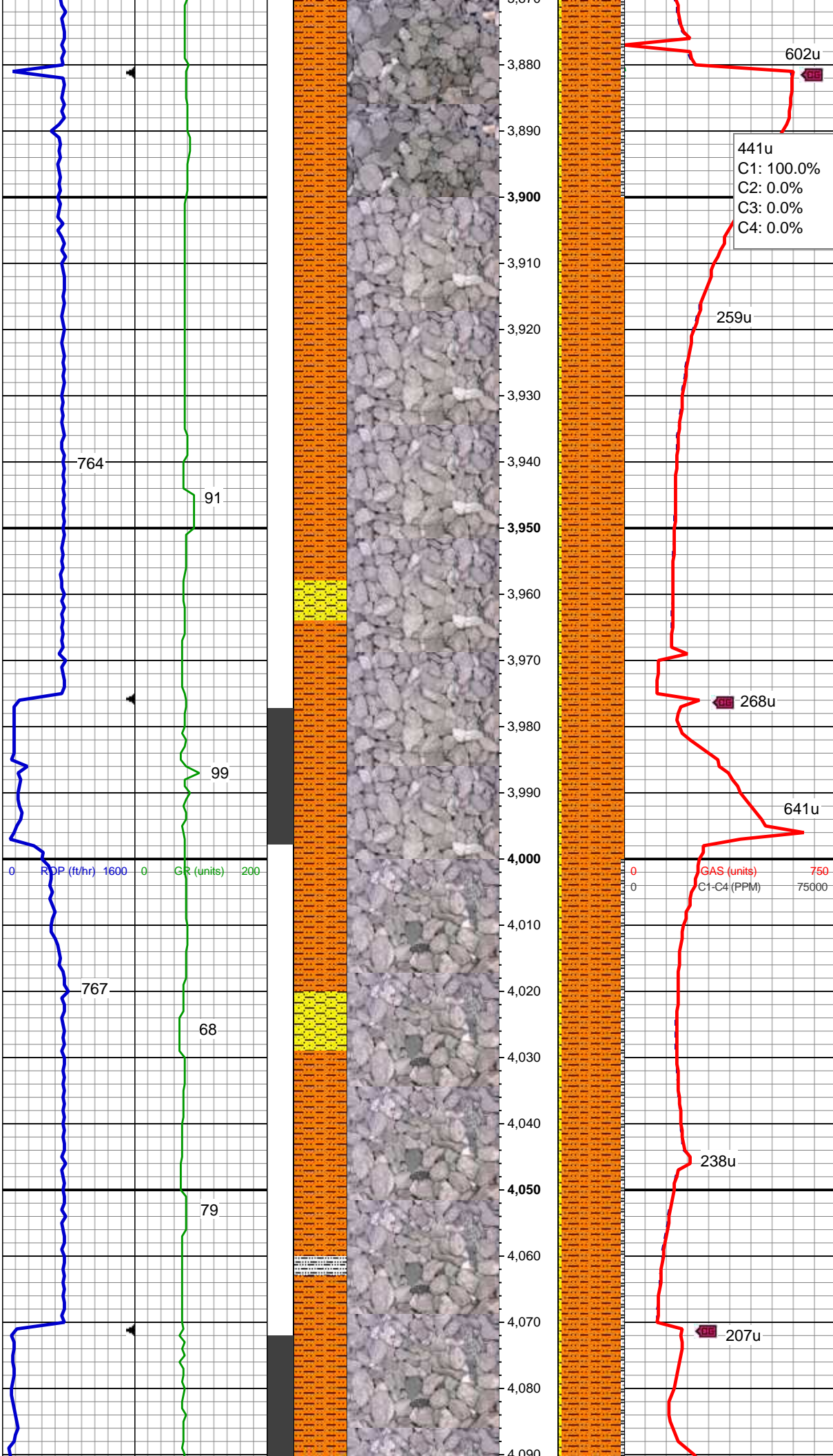
MD: 3,547'
TVD: 3,492.04'
Inclination: 14.5 °
Azimuth: 21.9 °
VS: -394.72'

SS: off wh -gy, s&p, sft, brit, vf -med gr, sb ang - sb blk, mod srt; SHY SS: lt - med gy, frm, brit, vf - f gr, sb ang - sb blk, mod w srt, arg cmt

MD: 3,642'
TVD: 3,584.42'
Inclination: 12.5 °
Azimuth: 24.2 °
VS: -414.24'

SHY SS: lt - med gy, frm, brit, vf - f gr, sb ang - sb blk, mod w srt, SHY SLTST: lt - med gy, frm, brit, vf - f gr, sb ang - sb blk, mod w srt, arg cmt





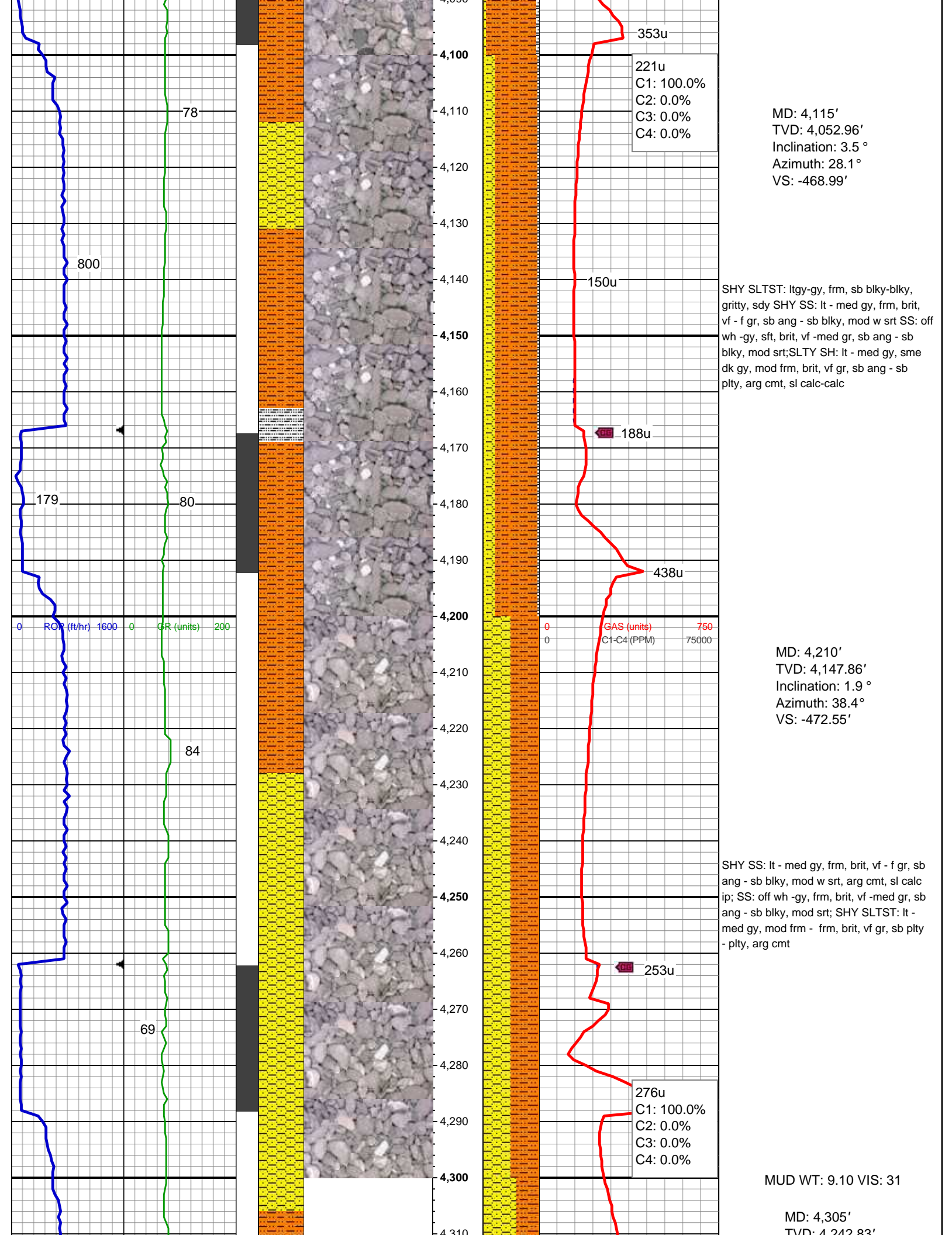
MUD WT: 8.90 VIS: 33

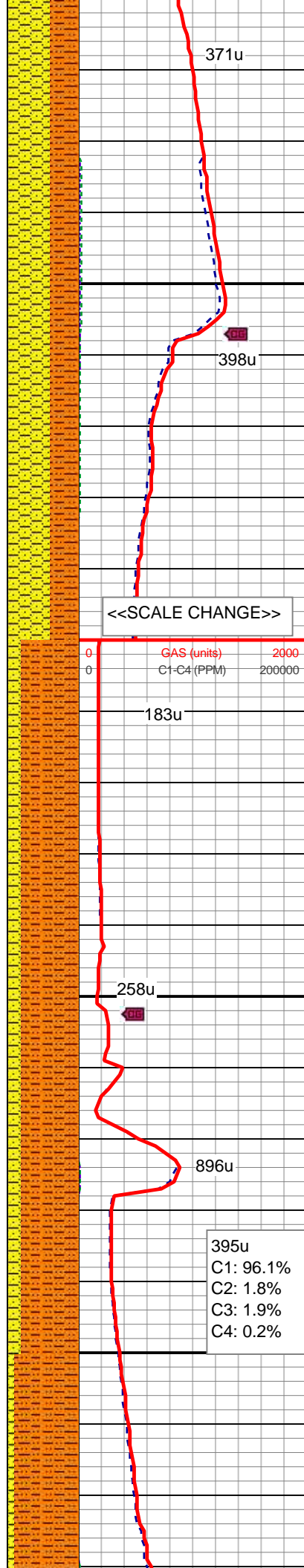
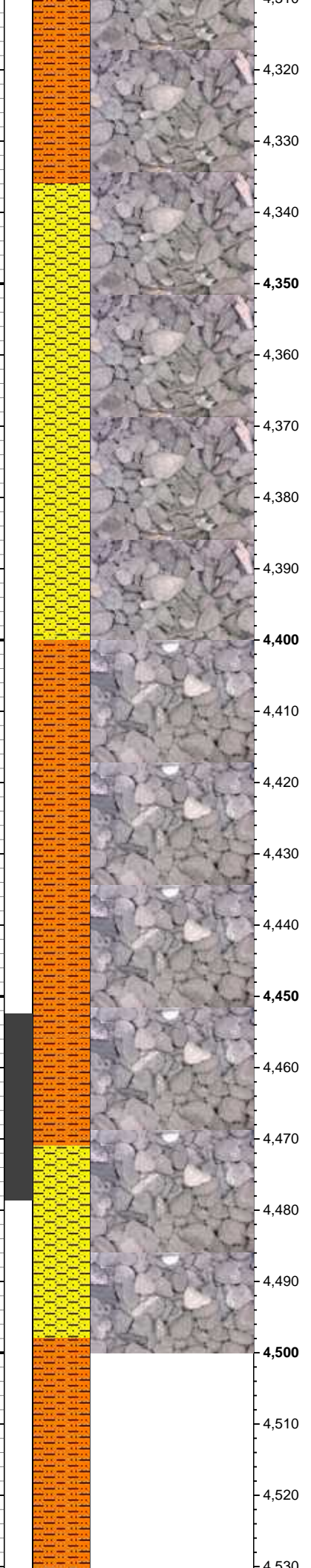
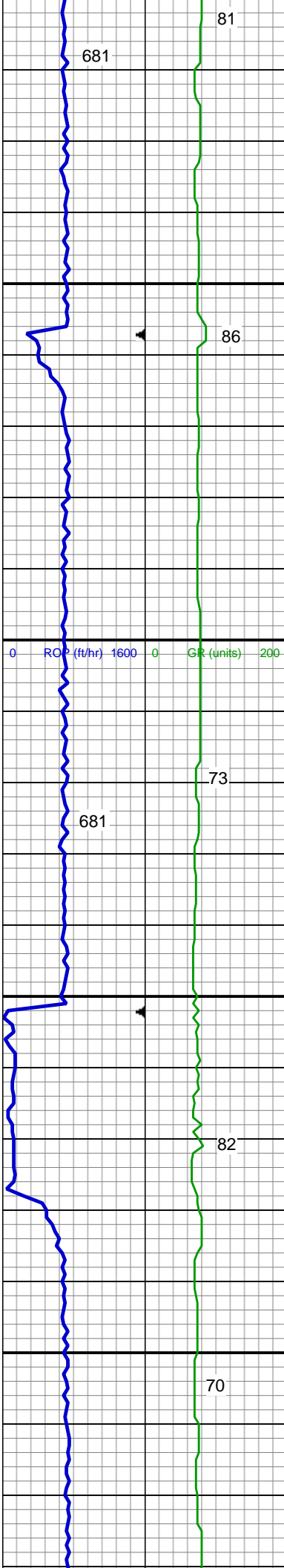
MD: 3,926'
TVD: 3,864.79'
Inclination: 6.8 °
Azimuth: 22.8 °
VS: -453.64'

SHY SLTST: lt - med gy, s&p, mod frm - frm, brit, vf gr, sb plty - plty, SHY SS: lt - med gy, frm, brit, vf - f gr, sb ang - sb blkly, mod w srt, arg cmt

MD: 4,020'
TVD: 3,958.25'
Inclination: 5.4 °
Azimuth: 20.2 °
VS: -462.54'

SHY SLTST: lt - med gy, mod frm - frm, brit, vf gr, sb plty - plty, SHY SS: lt - med gy, frm, brit, vf - f gr, sb ang - sb blkly, mod w srt SLTY SH: lt - med gy, sme dk gy, mod frm, brit, vf gr, sb ang - sb plty, arg cmt; tr shy ss, sl calc ip





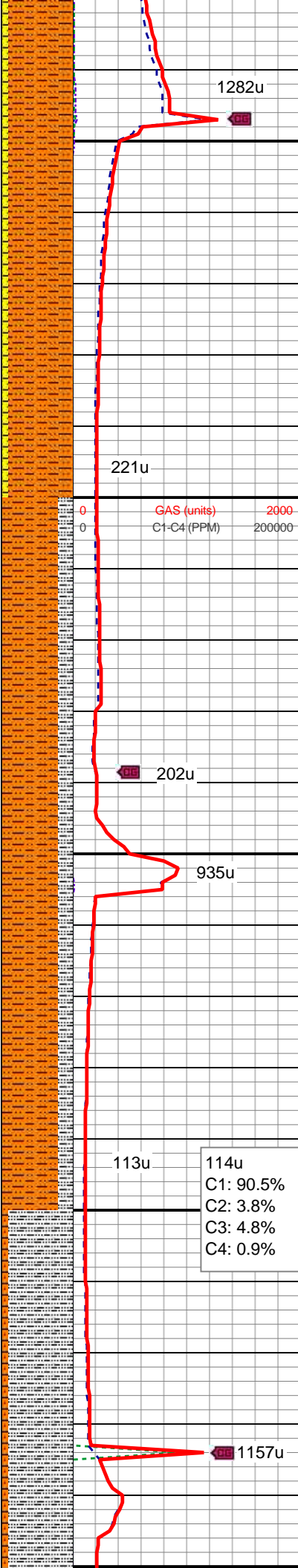
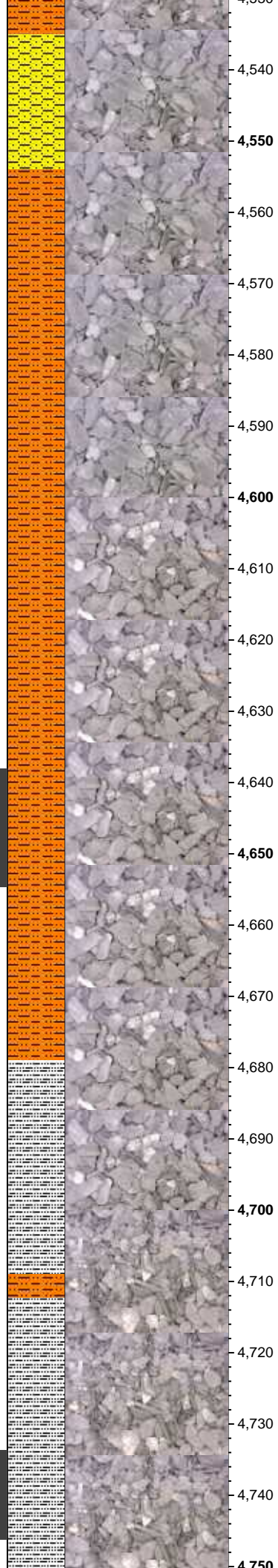
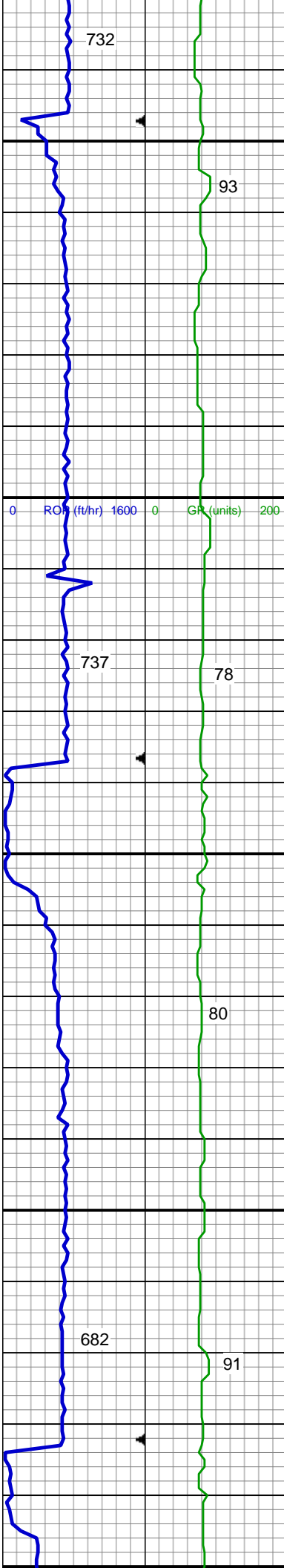
TVD: 4,242.03'
Inclination: 0.6 °
Azimuth: 61.1 °
VS: -473.89'

SHY SS: lt - med gy, frm, brit, vf - f gr, sb ang - sb blkly, mod w srt, arg cmt, sl calc ip; SS: off wh -gy, frm, brit, vf -med gr, sb ang - sb blkly, mod srt; SHY SLTST: lt - med gy, mod frm - frm, brit, vf gr, sb plty - plty, arg cmt

MD: 4,399'
TVD: 4,336.82'
Inclination: 0.9 °
Azimuth: 51.5 °
VS: -474.49'

SHY SLTST: lt - med gy, mod frm - frm, brit, vf gr, sb plty - plty SHY SS: lt - med gy, frm, brit, vf - f gr, sb ang - sb blkly, mod w srt, arg cmt, sl calc ip; SS: off wh -gy, frm, brit, vf -med gr, sb ang - sb blkly, mod srt, arg cmt

MD: 4,494'
TVD: 4,431.81'
Inclination: 1.4 °
Azimuth: 132.5 °
VS: -474.04'



SHY SLTST: lt - med gy, mod frm - frm, brit, vf gr, sb plty - plty SHY SS: lt - med gy, frm, brit, vf - f gr, sb ang - sb blkly, mod w srt, arg cmt, sl calc ip; SS: off wh -gy, frm, brit, vf -med gr, sb ang - sb blkly, mod srt, arg cmt

MD: 4,588'
TVD: 4,525.78'
Inclination: 1.4 °
Azimuth: 129.9°
VS: -472.37'

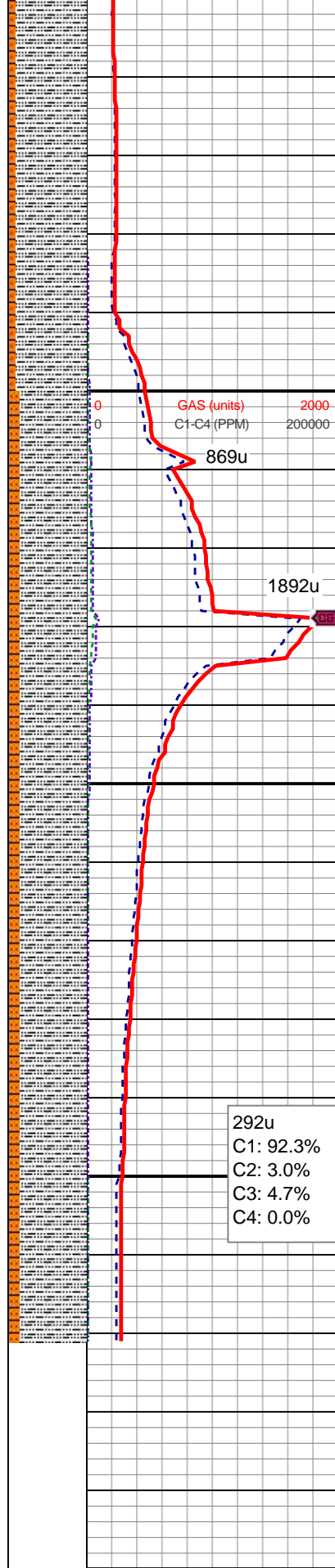
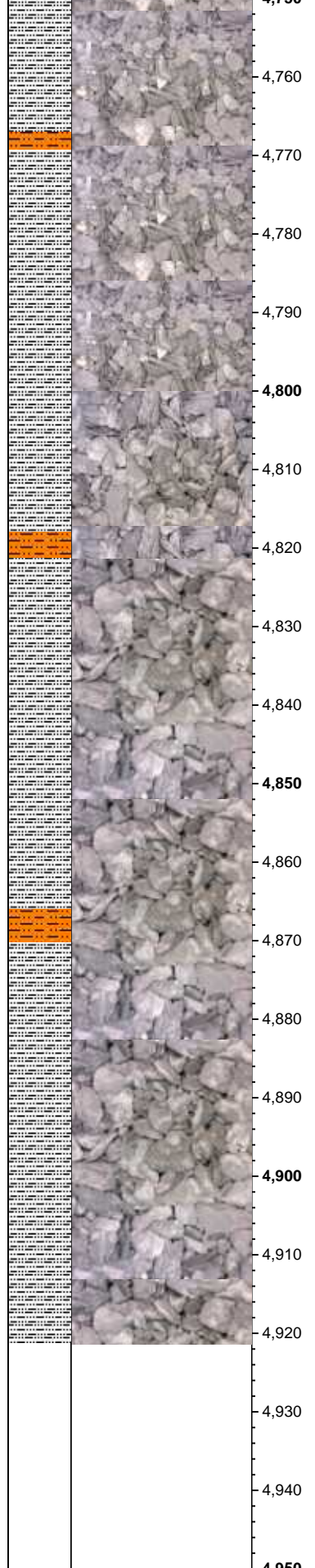
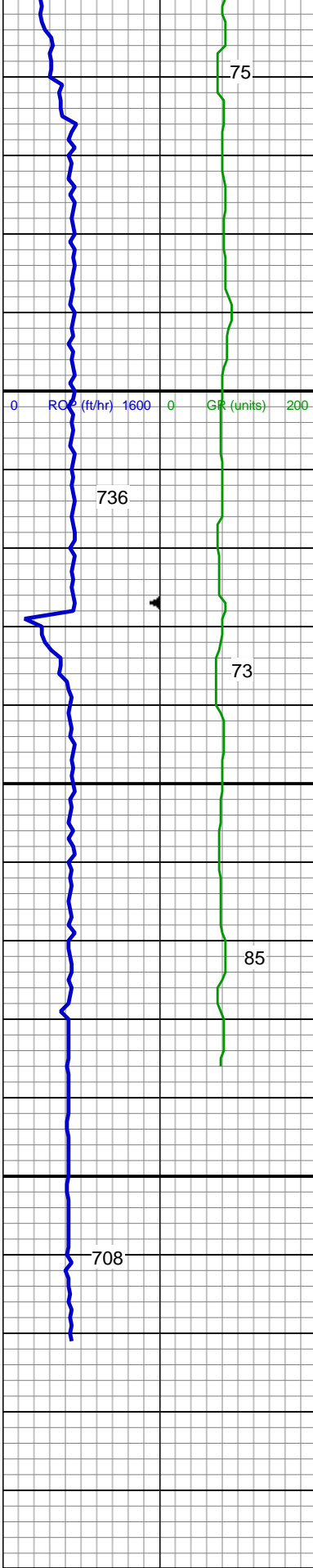
MUD WT: 9.30 VIS: 32

SHY SLTST: lt - med gy, mod frm, brit, vf gr, sb ang - sb plty, arg cmt; SLTY SH: lt - med gy, sme dk gy, mod frm, brit, vf gr, sb ang - sb plty, arg cmt; tr shy ss, sl calc ip

MD: 4,683'
TVD: 4,620.77'
Inclination: 0.8 °
Azimuth: 216.9°
VS: -471.05'

114u
C1: 90.5%
C2: 3.8%
C3: 4.8%
C4: 0.9%

SLTY SH: lt - med gy, sme dk gy, mod frm, brit, vf gr, sb ang - sb plty, arg cmt; tr shy ss, sl calc ip; SHY SLTST: lt - med



shy ss, sl calc ip; SHY SLTST: lt - med gy, mod frm, brit, vf gr, sb ang - sb plty, arg cmt

MD: 4,778'
TVD: 4,715.76'
Inclination: 0.3 °
Azimuth: 253.8 °
VS: -470.52'

SLTY SH: lt - med gy, com dk gy, mod frm, brit, vf gr, sb ang - sb plty, arg cmt; tr shy ss, sl calc ip; SHY SLTST: lt - med gy, mod frm, brit, vf gr, sb ang - sb plty, arg cmt

MD: 4,873'
TVD: 4,810.76'
Inclination: 0.5 °
Azimuth: 263.8 °
VS: -470.46'

TD @ 4,921' MD
12/31/2013 @ 15:30 hrs

TOOH FOR BHA #2
LOG CONTINUES ON MPlot
"CASTOR FEDERAL
LD15-74HN_HORZ"

Thank you for choosing
Columbine Logging Inc.