

COLUMBINE LOGGING

Scale: 5" / 100'
Measured Depth Log

Well Name Rohn State LD10-69-1HN

Location NENE SEC9 T9N R58W

State CO

County WELD

Country USA

Rig Number PRECISION 828

API Number 05-123-37619

AFE # 200316

Region DENVER-JULESBURG BASIN

Field WILDCAT

Spud Date 10/17/2014

Surface Coordinates 860' FNL, 330' FEL

Lat/Long: 40.7708/-103.86116

Ground Elevation 4739'

K.B. Elevation 4755'

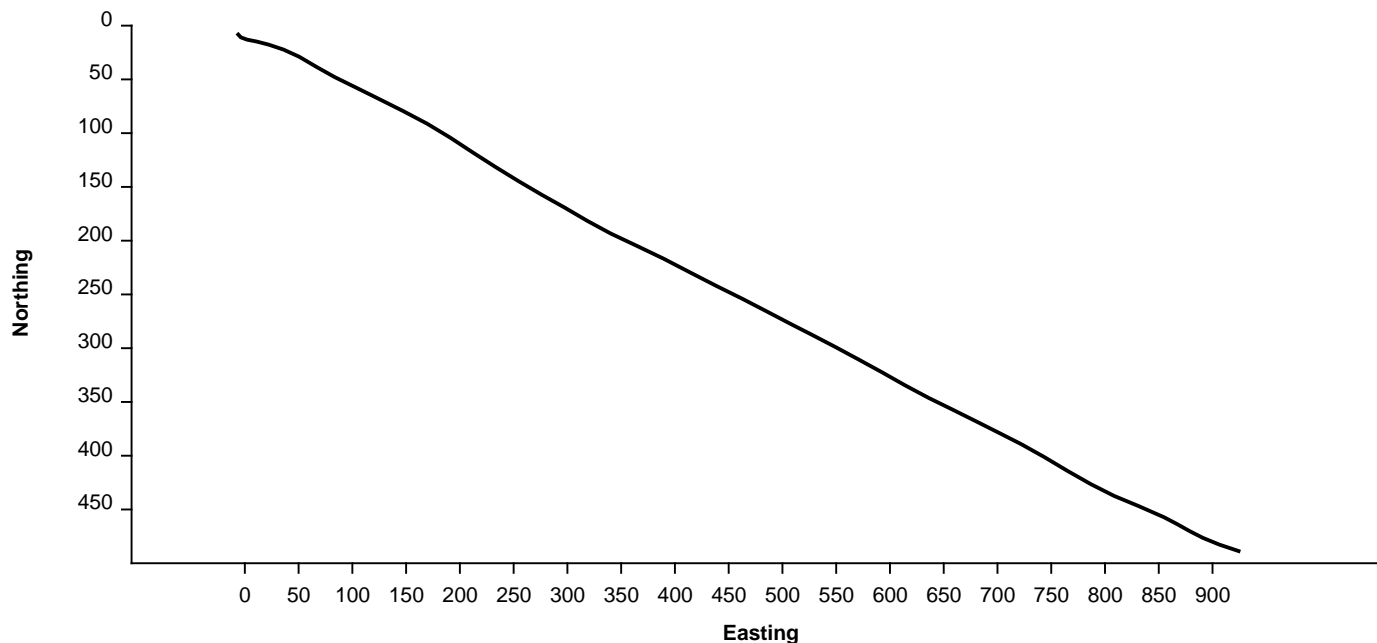
Logged Interval 1225' **To** 6400'

Total Depth 9551'

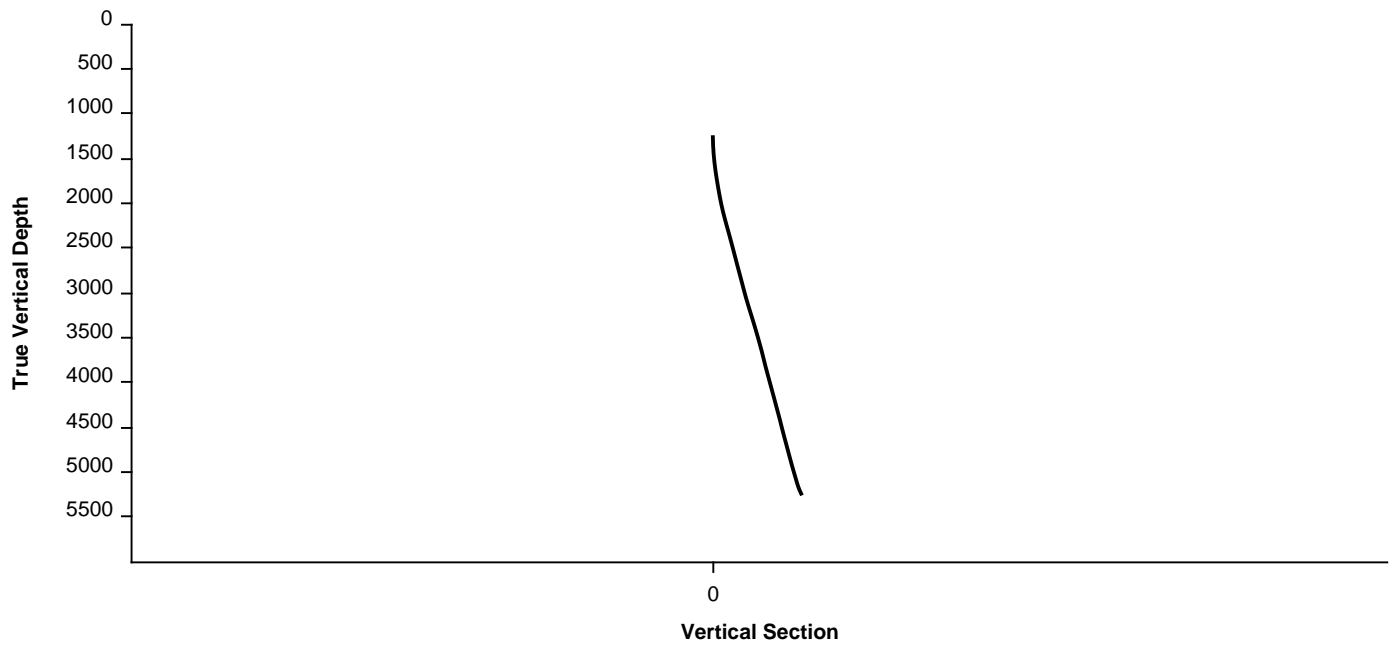
Formation FOX HILLS, PIERRE (PARKMAN, SUSSEX, SHANNON, TEEPEE BUTTES)

Type of Drilling Fluid FRESH WATER, LSND

Survey Plan



Survey Elevation



Other Symbols

Oil Show

- DEAD
- EVEN
- QUESTIONABLE
- SPOTTED STAINING

Porosity

- E EARTHY
- F FENESTRAL
- F FRACTURE
- X INTERCRYSTALLINE
- ◇ INTEROOLITIC
- ∩ MOLDIC

- ORGANIC
- P PINPOINT
- V 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

- DST 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

Accessories

Fossils

- ALGAE
- AMPHIPORA
- BELEMNITE
- BIOCLASTIC
- BRACHIOPOD
- BRYOZOA
- CEPHALOPOD
- CORAL
- CRINOID
- ECHINOID

- GASTROPOD
- INOCERAMUS
- OOOLITE
- OSTRACOD
- PELECYPOD
- PELLET
- PISOLITE
- PLANT REMAINS
- PLANT SPORES
- SCAPHOPOD
- STROMATOPOROID

Minerals

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

- HEAVY MINERAL
- KAOLIN
- MARLSTONE
- MICACEOUS
- MINERAL CRYSTALS
- NODULES
- PHOSPHATE PELLETS
- PYRITE
- SALT CAST
- SANDY
- SILICEOUS
- SILTY

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

FISH

FORAMINIFERA

FOSSIL

ANHYDRITIC

ARGILLACEOUS

FERRUGINOUS

GLAUCONITE

GYPSIFEROUS

TUFFACEOUS

Stringer

Other

WELLSITE GEOLOGISTS: GARY L. MYERS
C.S. METZ

LOG CONTINUES ON FILE: Rohn State LD-10-69-1HN Horiz.mplot

GEOLOGICAL SERVICES PROVIDED BY COLUMBINE LOGGING, INC.

Rock Types

UNKNOWN

SANDSTONE

SHALY SANDSTONE

SHALY SILTSTONE

SILTY SHALE

ANHYDRITE

BENTONITE

BRECCIA

CEMENT

CHALK

CHERT

CLAY CHOKE SAND

CLAYSTONE

COAL

CONGLOMERATE

DOLOMITE

DOLOMITIC LIMESTONE

GRANITE

GYPSUM

IGNEOUS

LIMESTONE

SIDERITE or LIMONITE

MARLSTONE

METAMORPHIC

NO SAMPLE

SALT

SALT- PEPPER SAND

SHALE

SHALE COLORED

SHALE GRAY

SILTSTONE

TILL

TUFF

WELDED TUFF

Operator

Company NOBLE ENERGY INC.

Address 1625 Broadway
Denver, CO 80202

Geologist

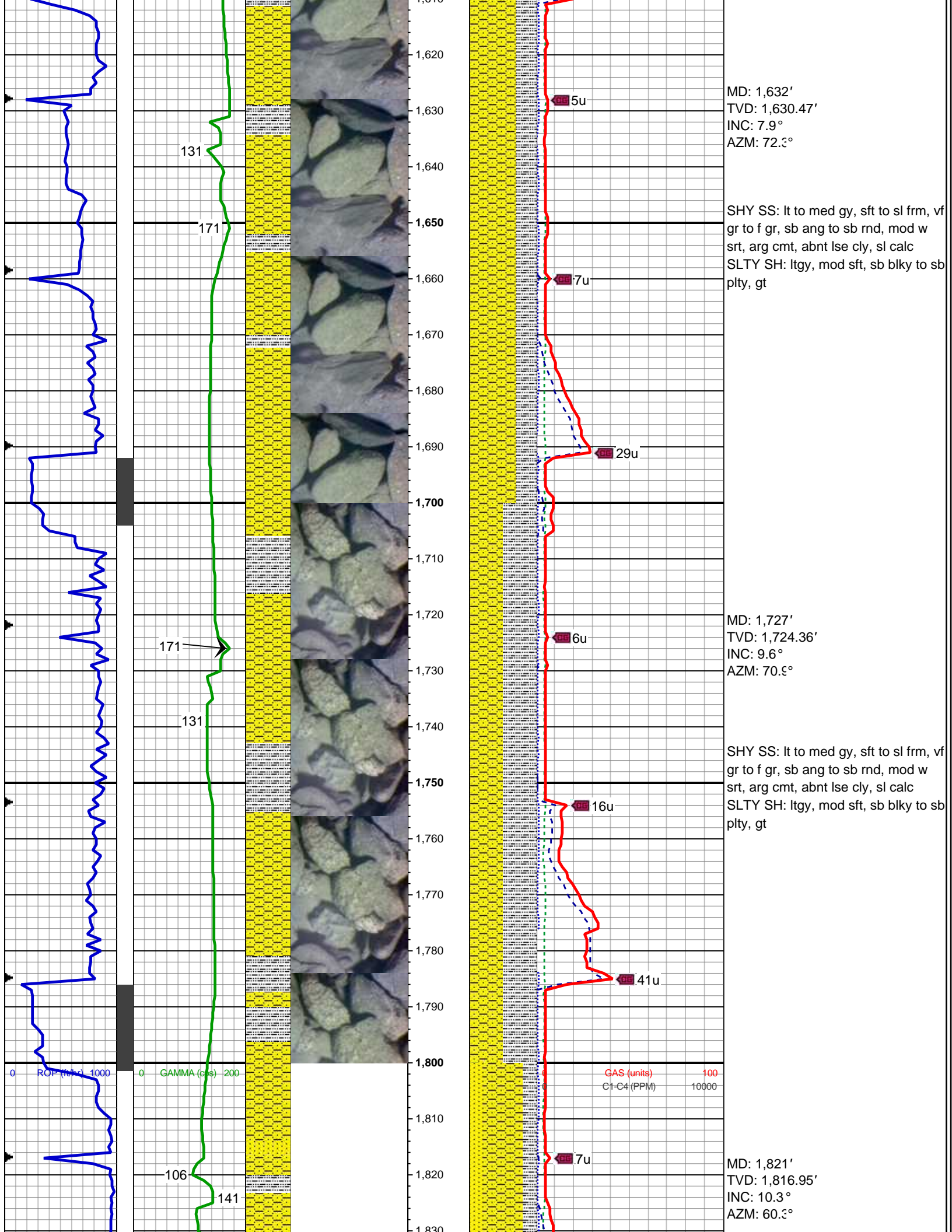
Name TERESA MALESARDI

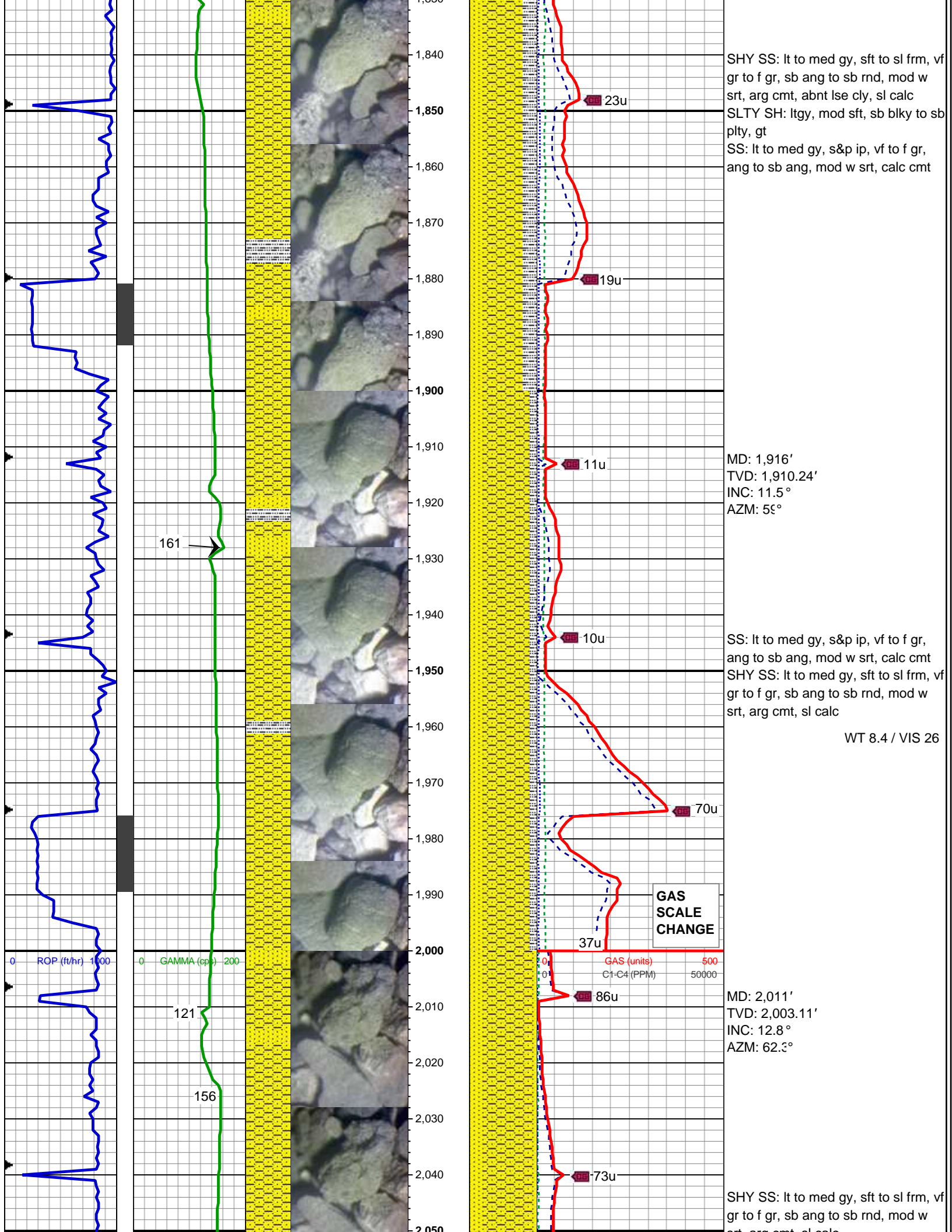
Company NOBLE ENERGY, INC.

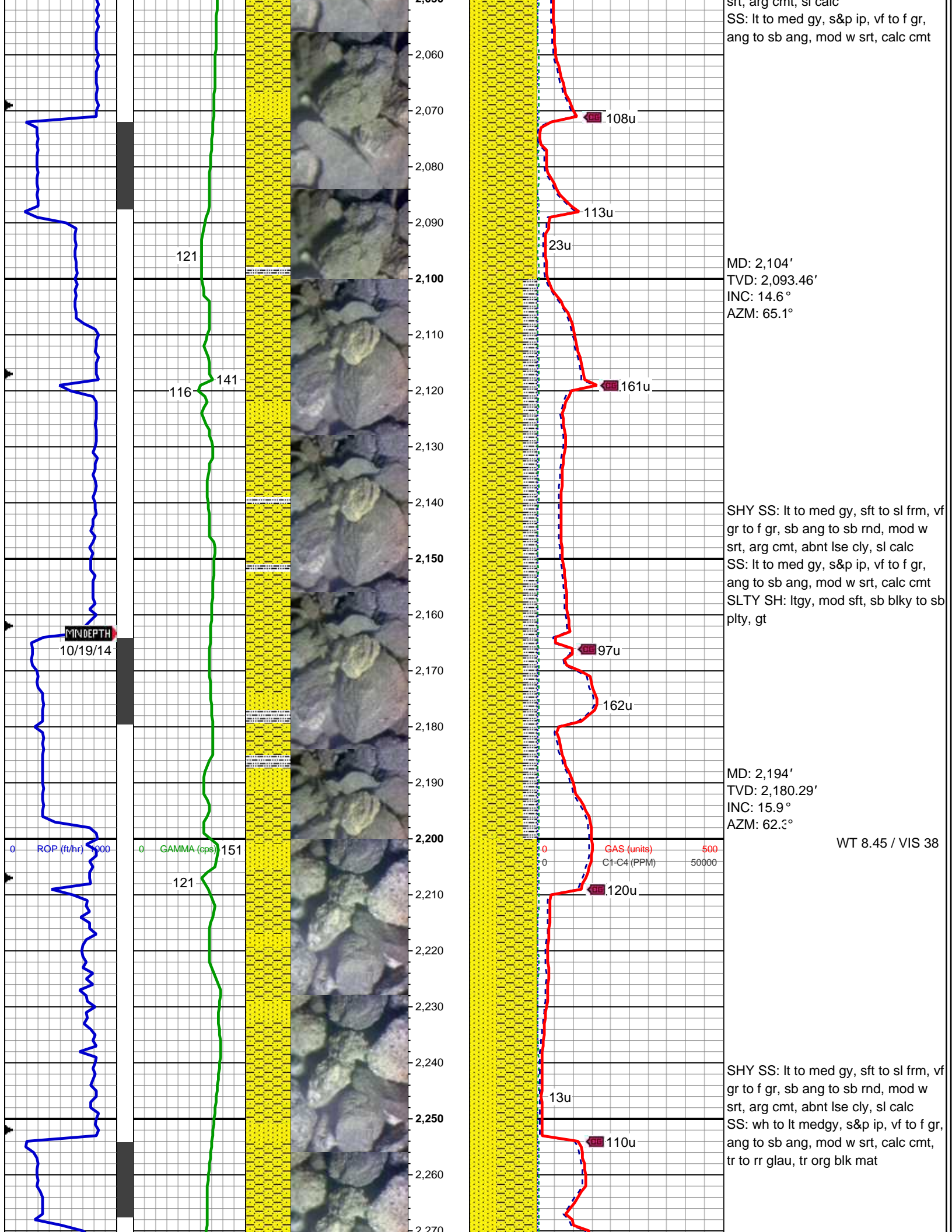
Address 1625 Broadway
Denver, CO 80202

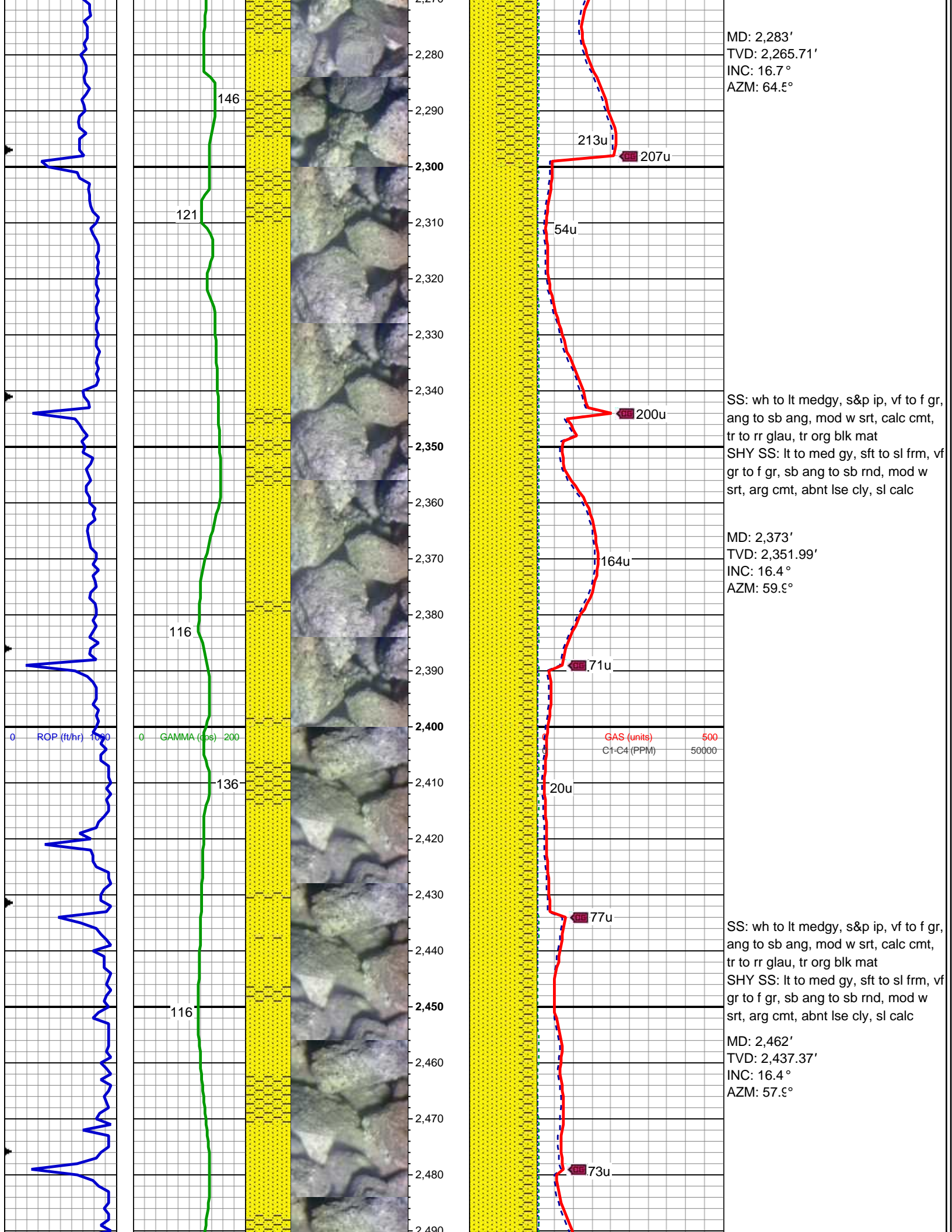
ROP		Slide/Rotate	Gamma Ray		Interp Lithology	Images	Depth Labels	% Lith	Total Gas & Chromatograph					Lithology Descriptions
ROP	ROP		GAMMA	GAMMA					GAS	C1	C2	C3	C4	
CONNECTIONS BY PIPE TALLY														
Bit #: 2 Type: SMITH SDI519 Size: 8.75 Depth In: 1,225' Jets: 7/13 S/N: JJ7212														
ROP (ft/hr) 1000														
GAMMA (cps) 200														
GAS (units) 100														
C1-C4 (PPM) 10000														
COLUMBINE LOGGING, INC. ON LOCATION 10/18/14 MANNED 2-PERSON LOGGING USING PASON GAS ANALYZER														
DRILLED OUT OF SHOE 19:58 MDT, 10/18/14														
MD: 1,255' TVD: 1,254.91' INC: 1.6° AZM: 18.8°														
SS to SHY SS: wh to mgy, s&p ip, vf to m gr, mod sft to frm, sbblky, sbrnd to sbang gr, p to mod srt, mod cmt, arg to sil mtx, abnt lse cly, sl calc														
WT 8.4 / VIS 25														
MD: 1,349' TVD: 1,348.84' INC: 2.8° AZM: 55.2°														
SS to SHY SS: wh to mgy, s&p ip, vf to m gr, mod sft to frm, sbblky, sbrnd to sbang gr, p to mod srt, mod cmt, arg to sil mtx, abnt lse cly, sl calc														

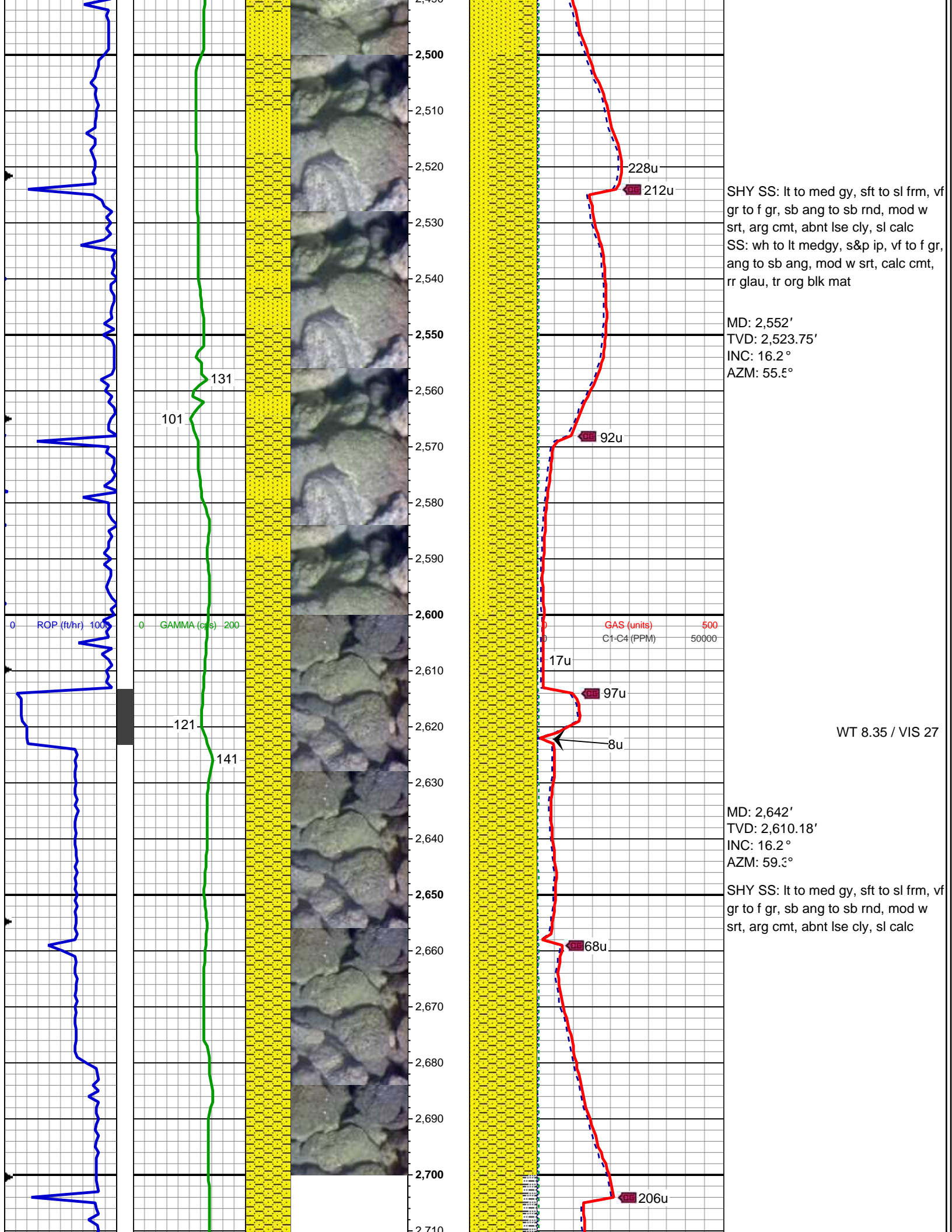


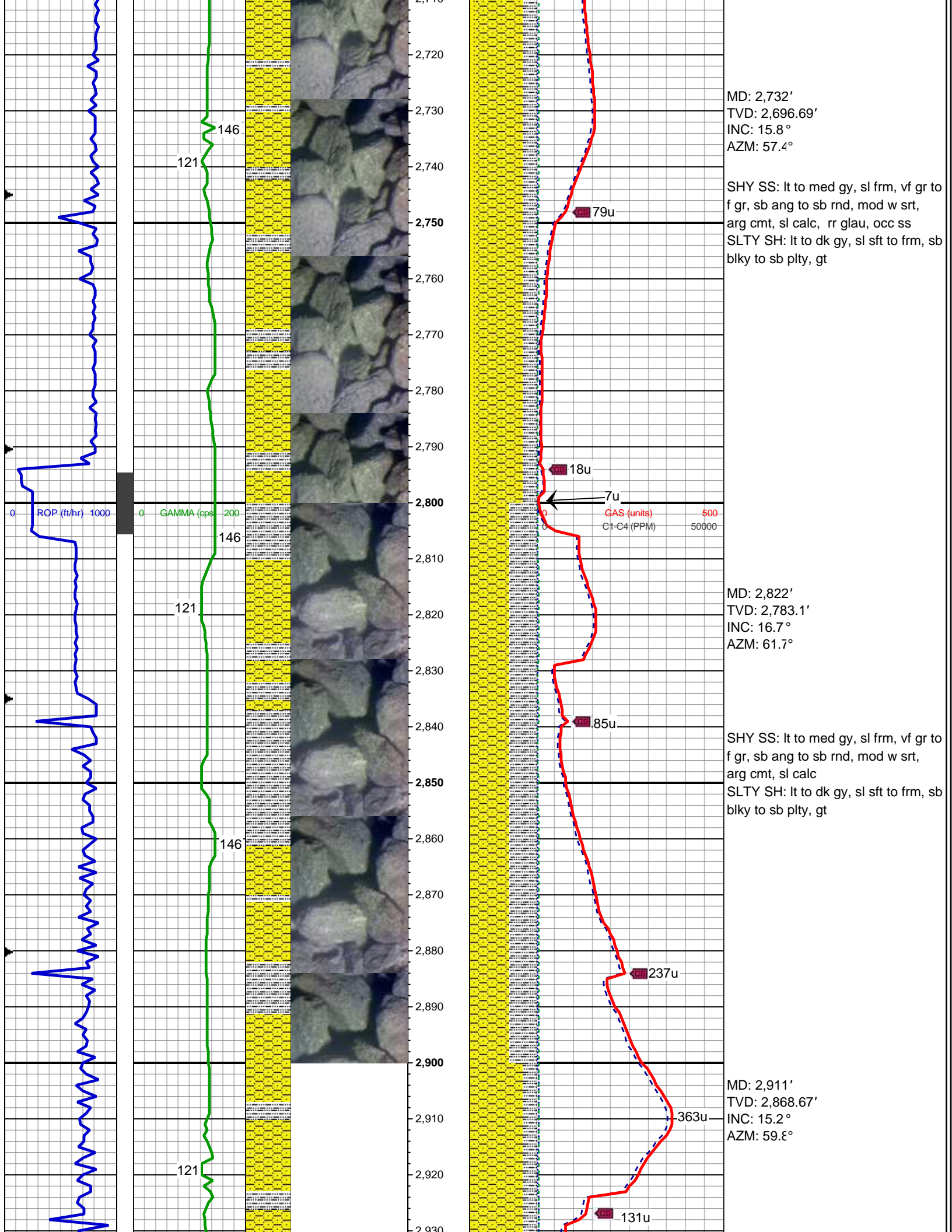


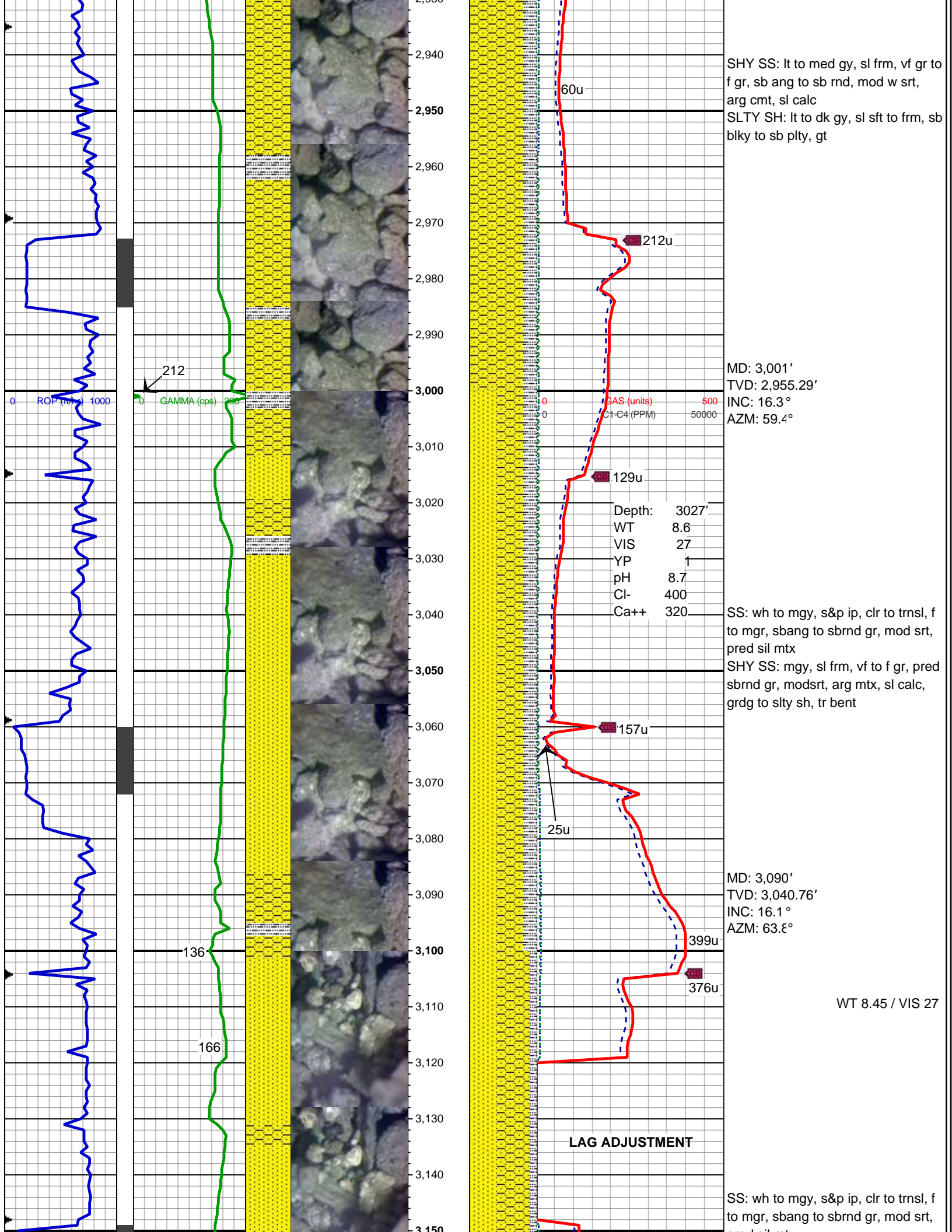


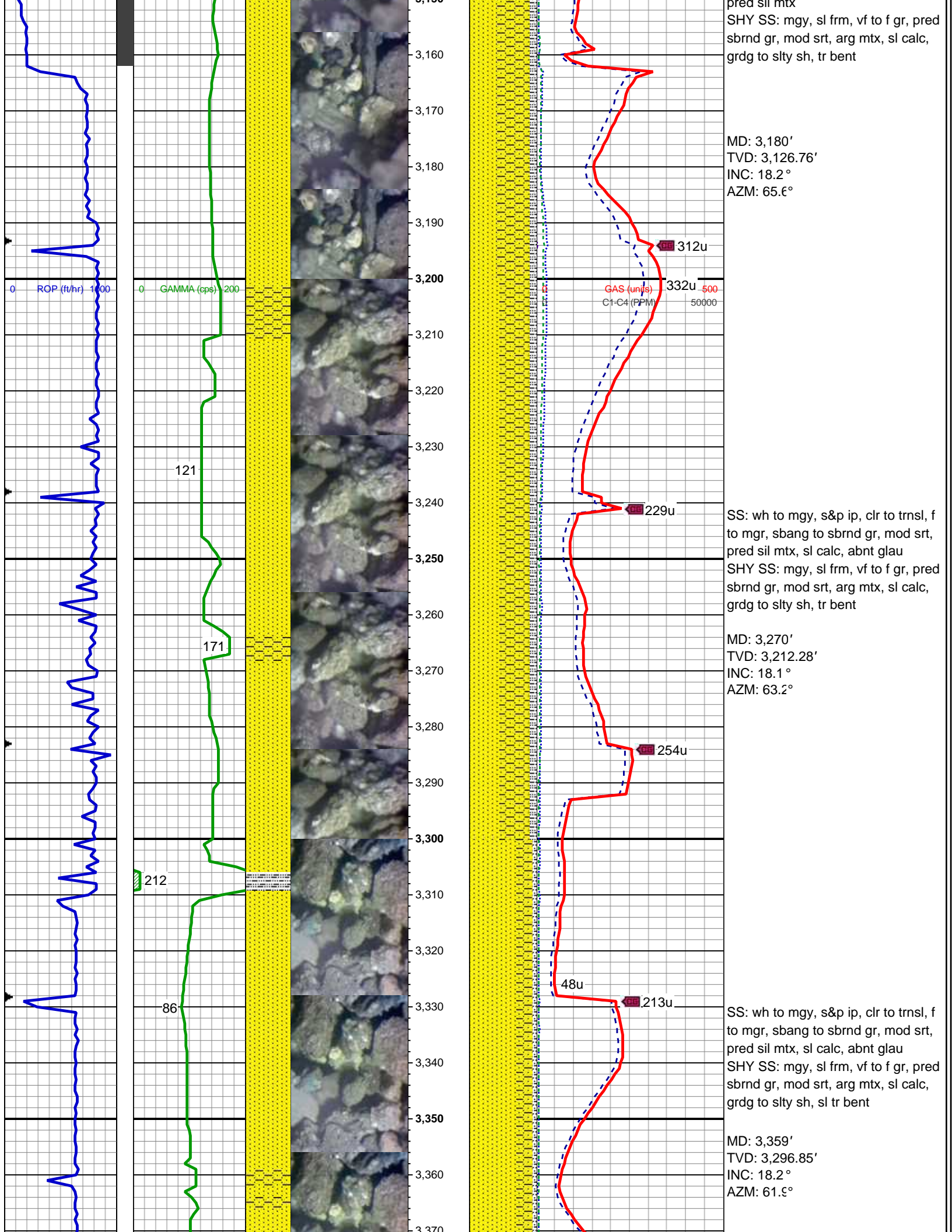


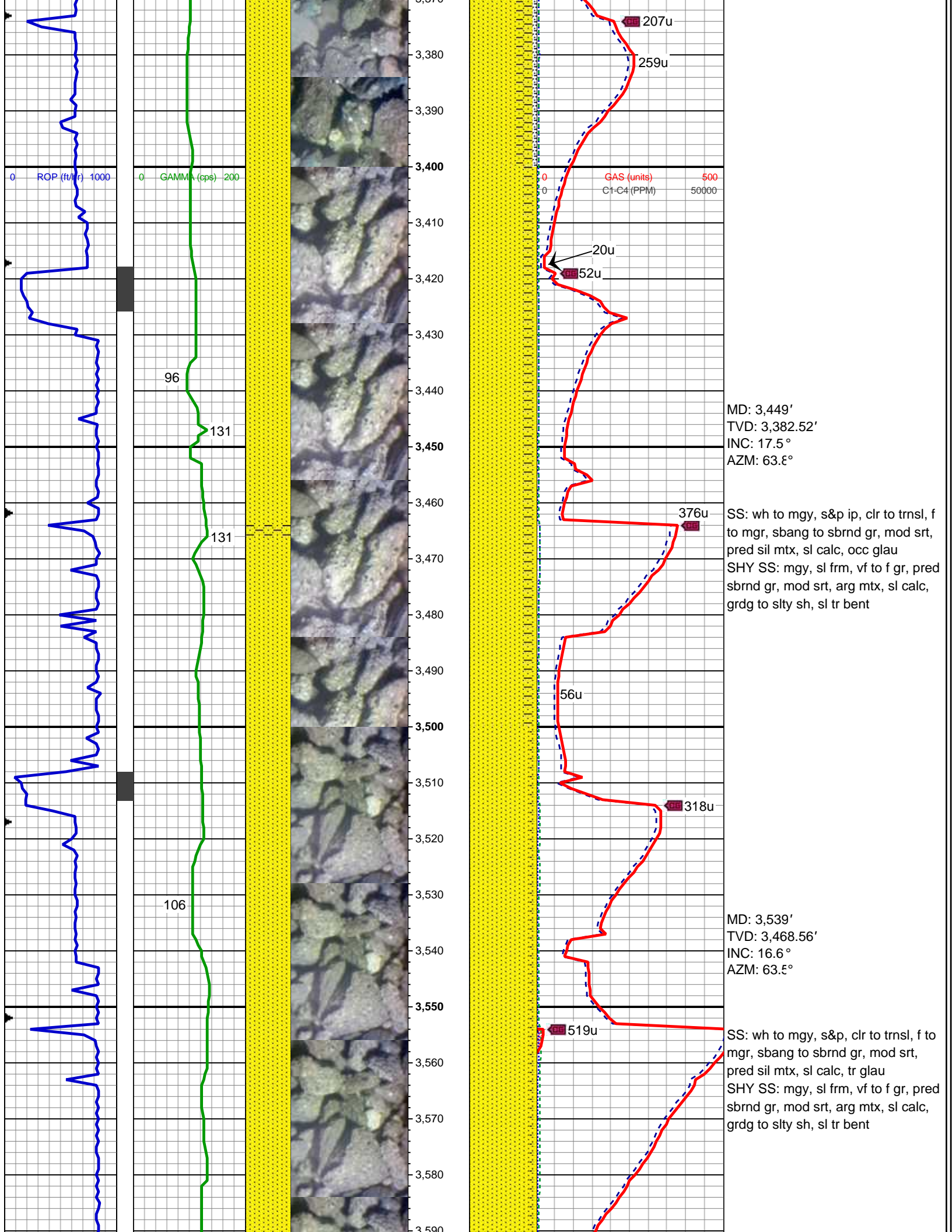


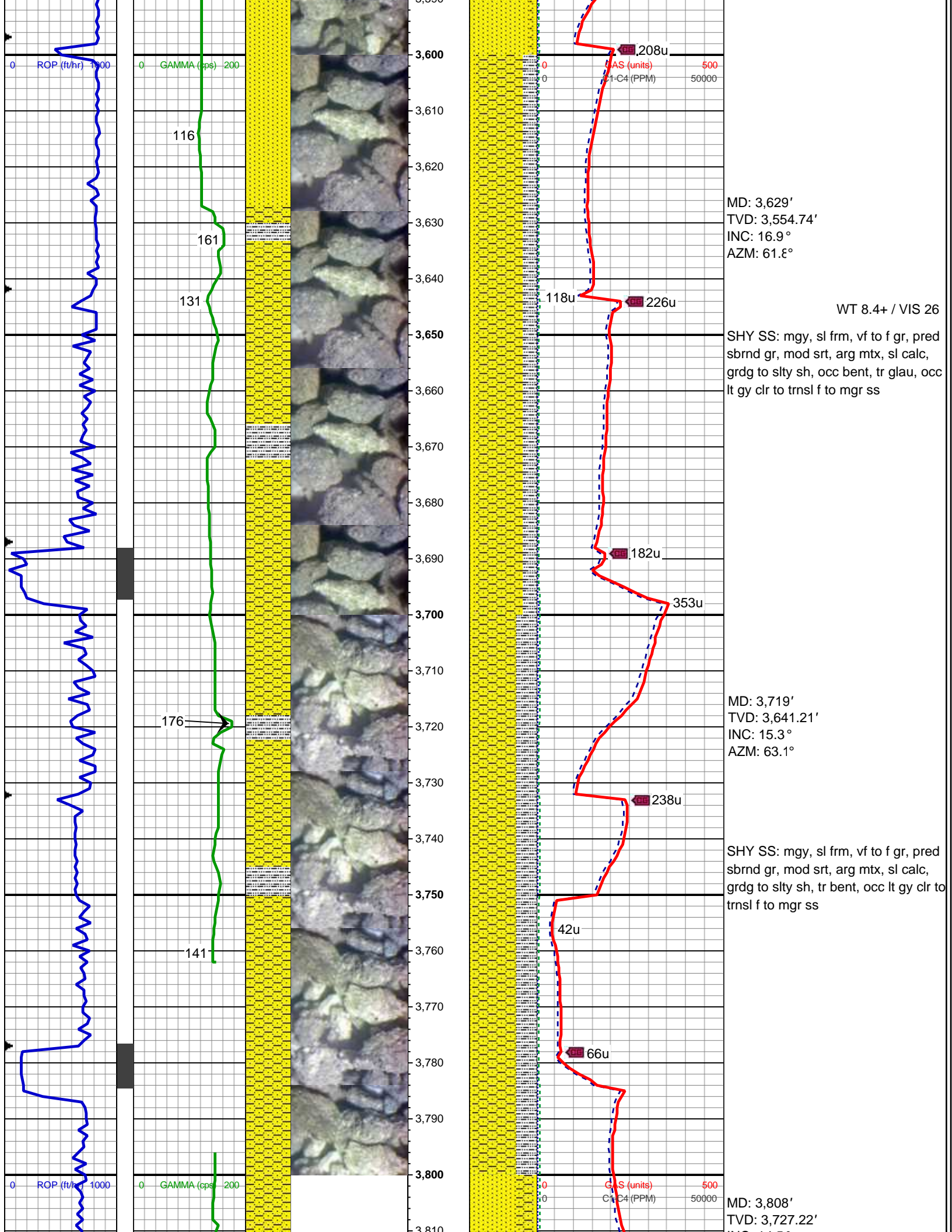


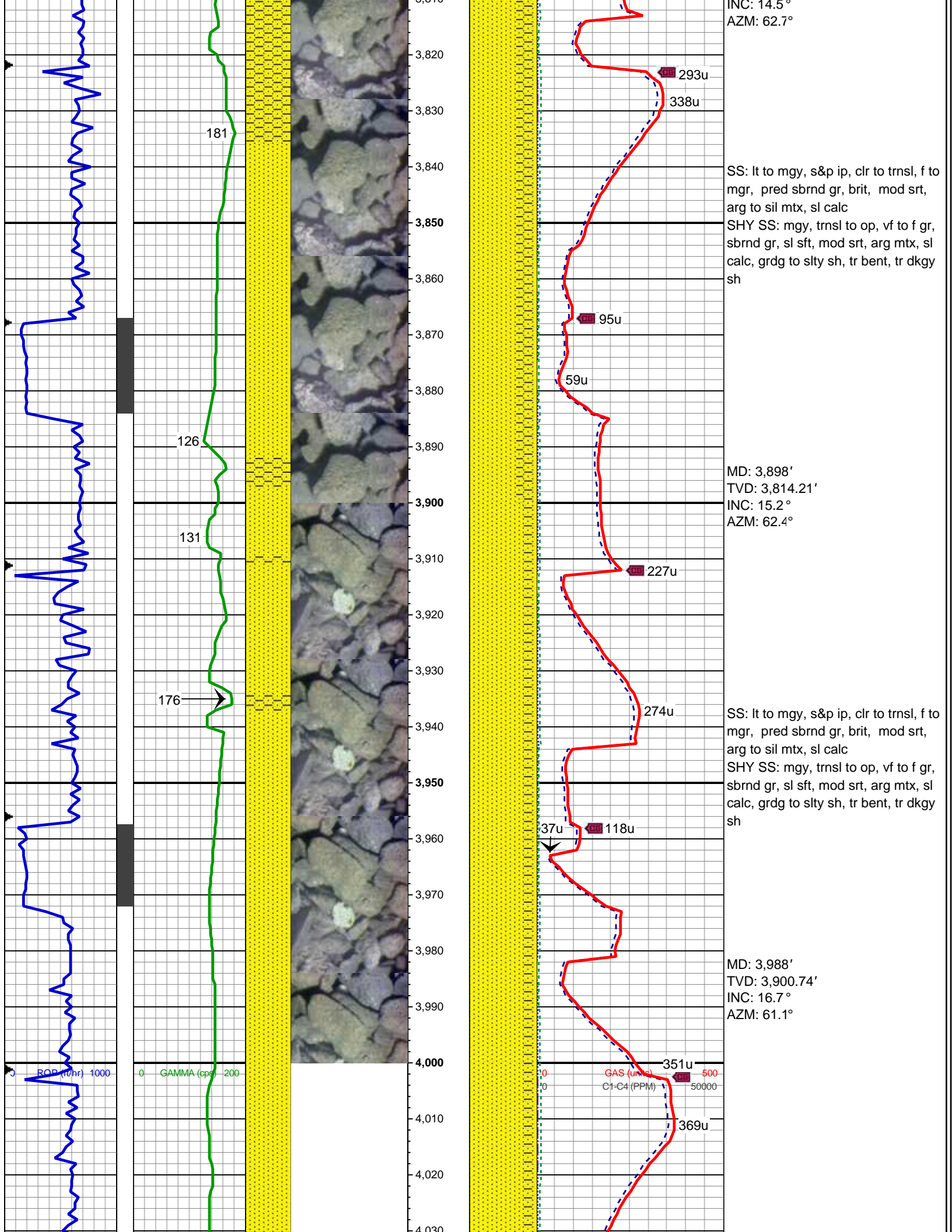












INC: 14.5°
AZM: 62.7°

SS: lt to mgy, s&p ip, clr to trnsl, f to mgr, pred sbrnd gr, brit, mod srt, arg to sil mtx, sl calc
SHY SS: mgy, trnsl to op, vf to f gr, sbrnd gr, sl sft, mod srt, arg mtx, sl calc, grdg to slty sh, tr bent, tr dkgy sh

MD: 3,898'
TVD: 3,814.21'
INC: 15.2°
AZM: 62.4°

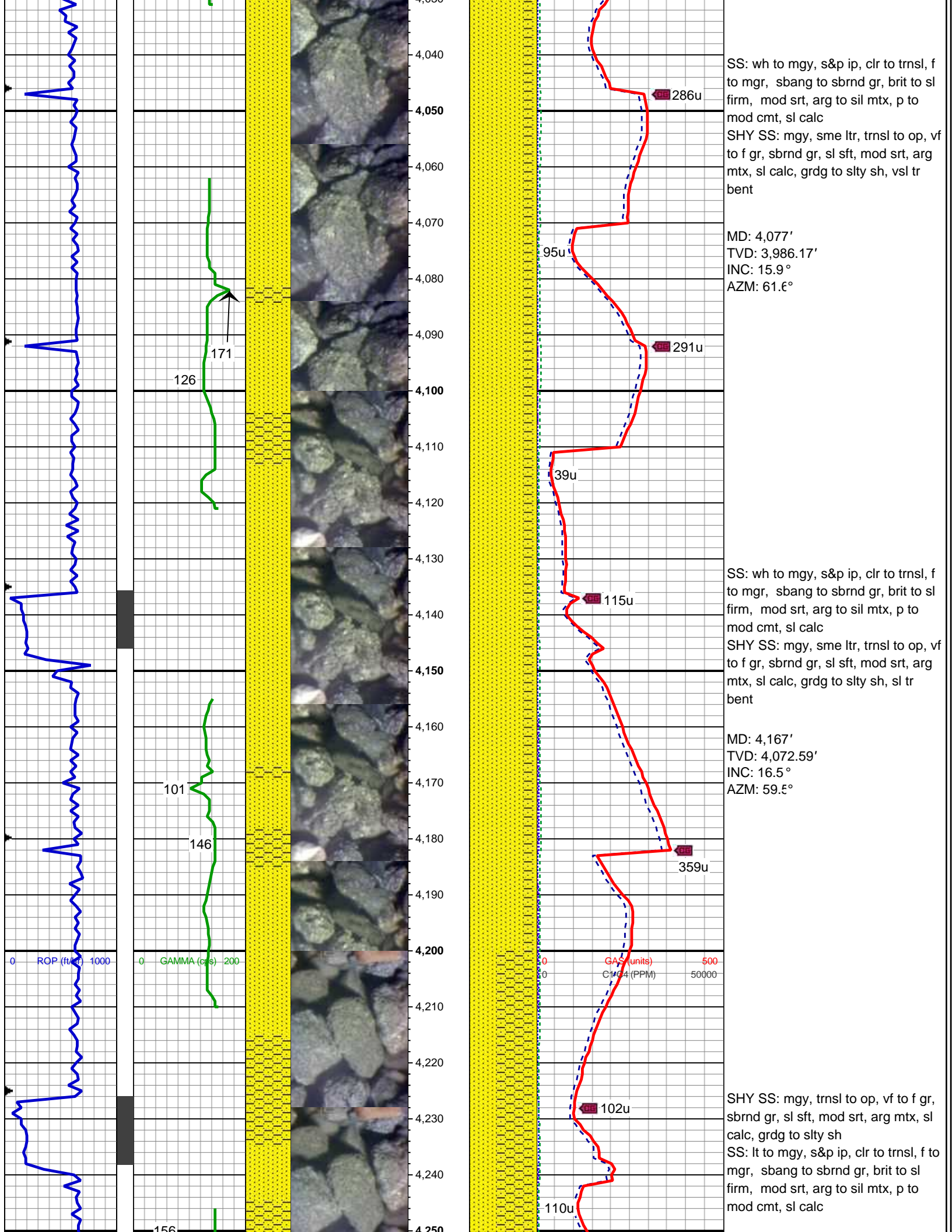
SS: lt to mgy, s&p ip, clr to trnsl, f to mgr, pred sbrnd gr, brit, mod srt, arg to sil mtx, sl calc
SHY SS: mgy, trnsl to op, vf to f gr, sbrnd gr, sl sft, mod srt, arg mtx, sl calc, grdg to slty sh, tr bent, tr dkgy sh

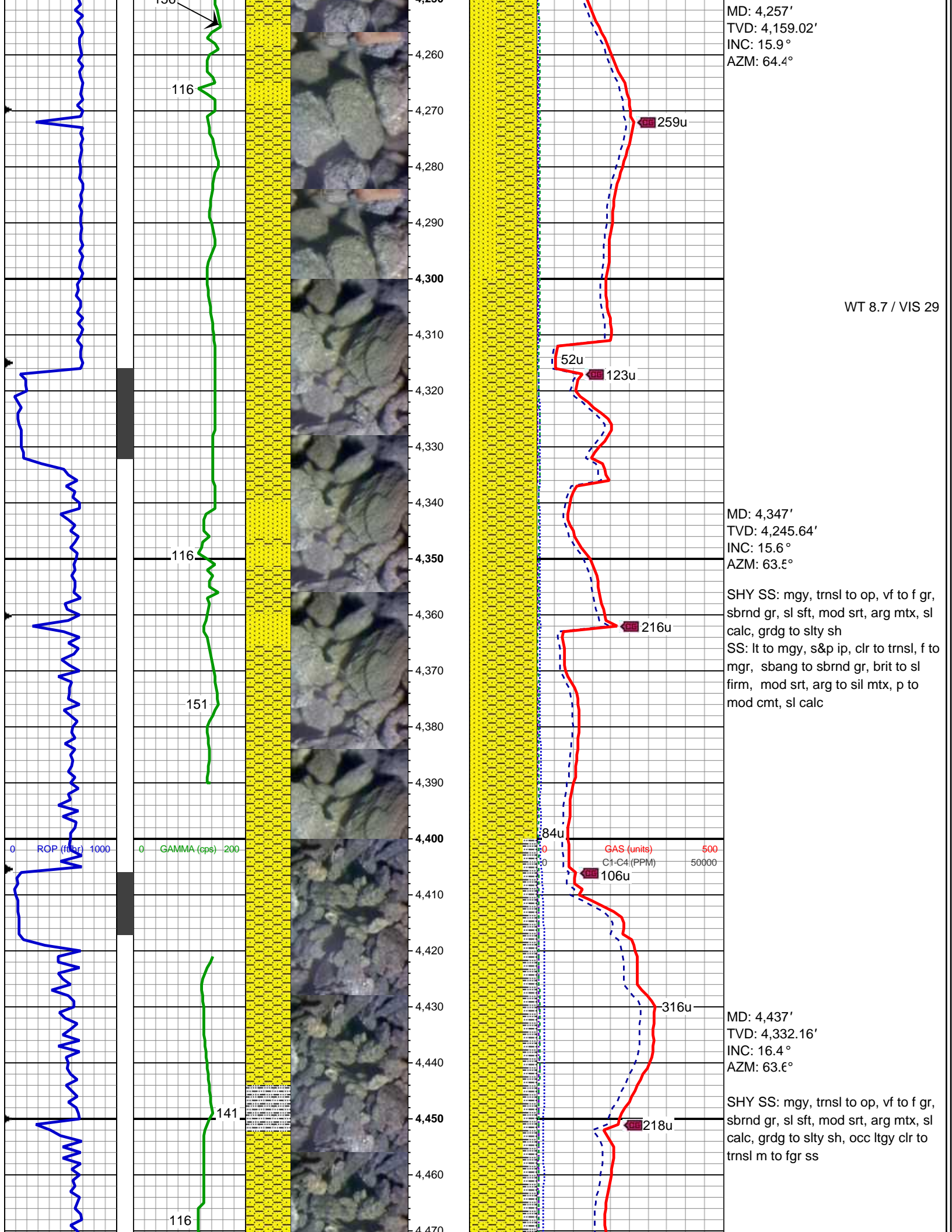
MD: 3,988'
TVD: 3,900.74'
INC: 16.7°
AZM: 61.1°

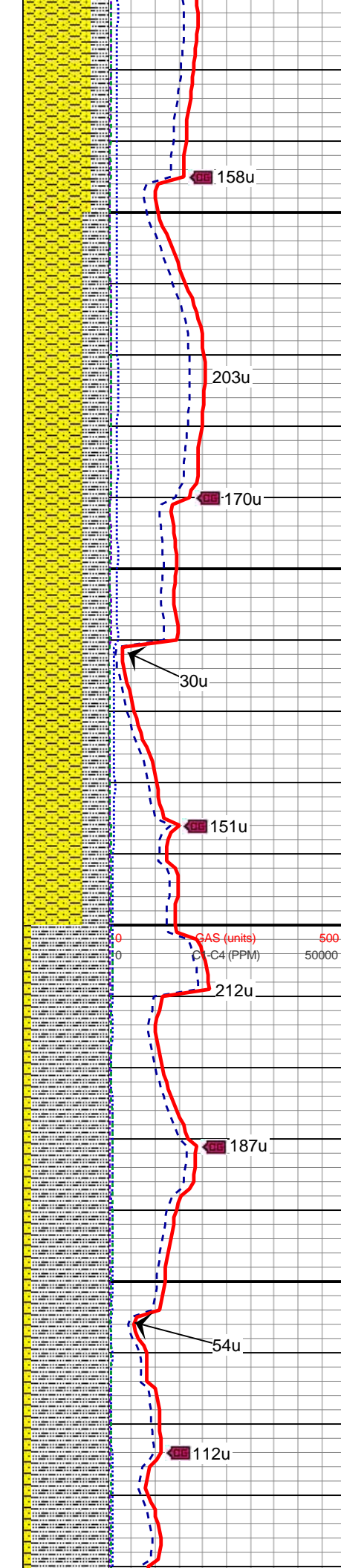
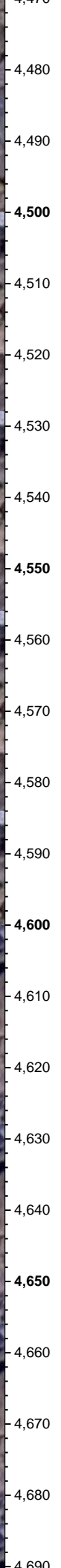
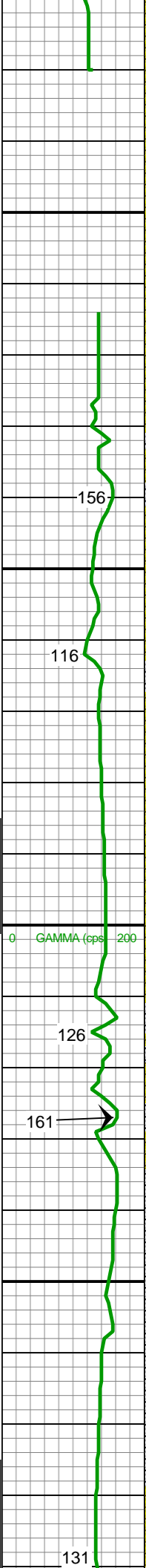
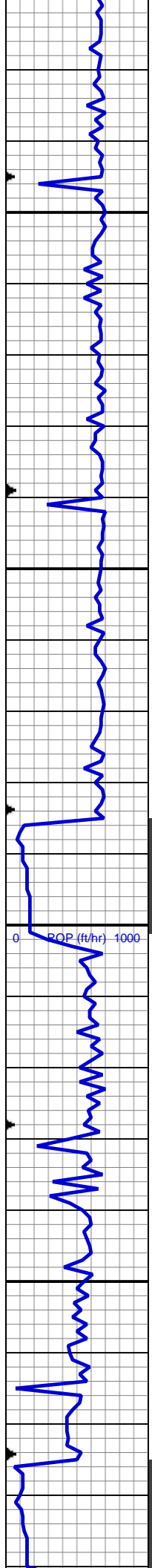
ROP (ft/hr) 1000

GAMMA (cps) 200

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





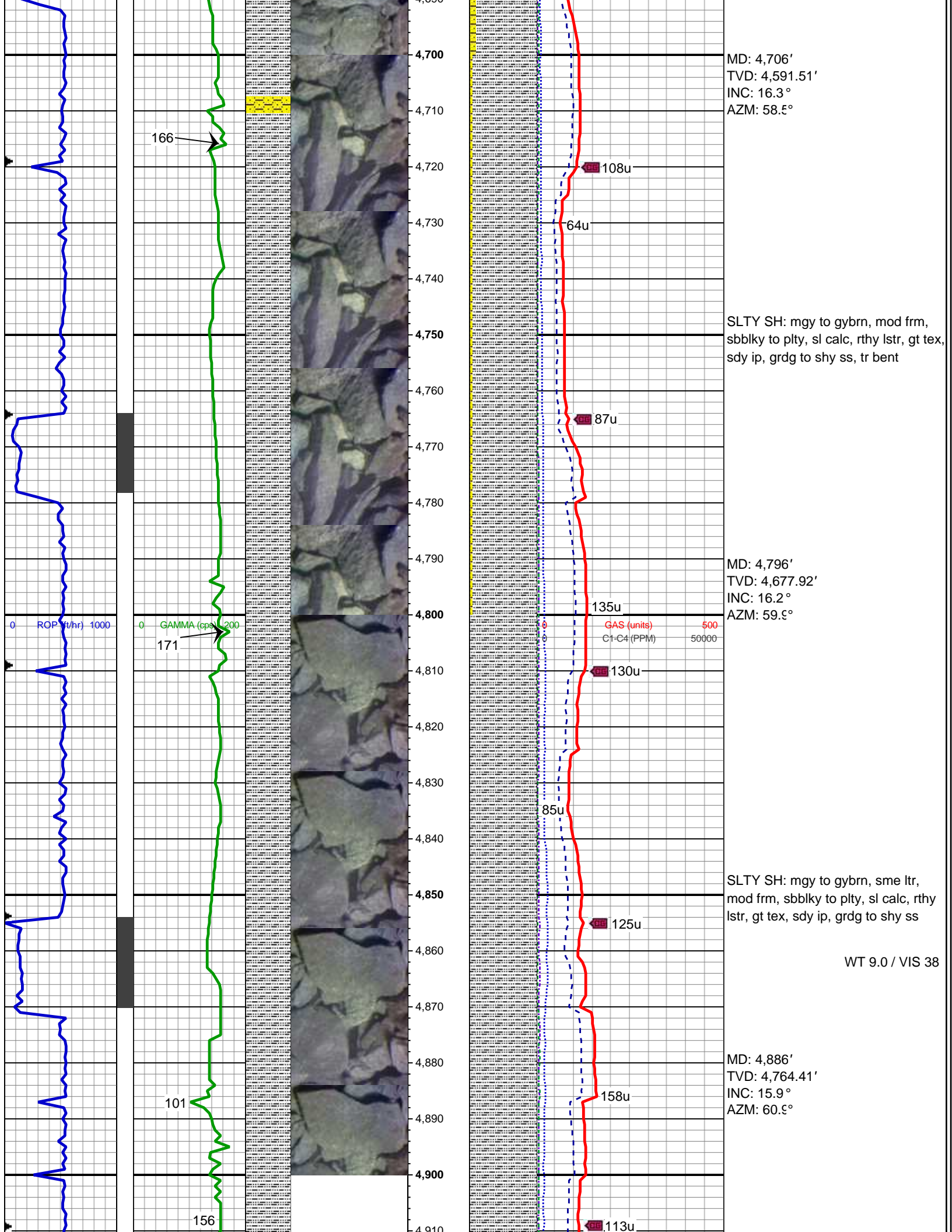


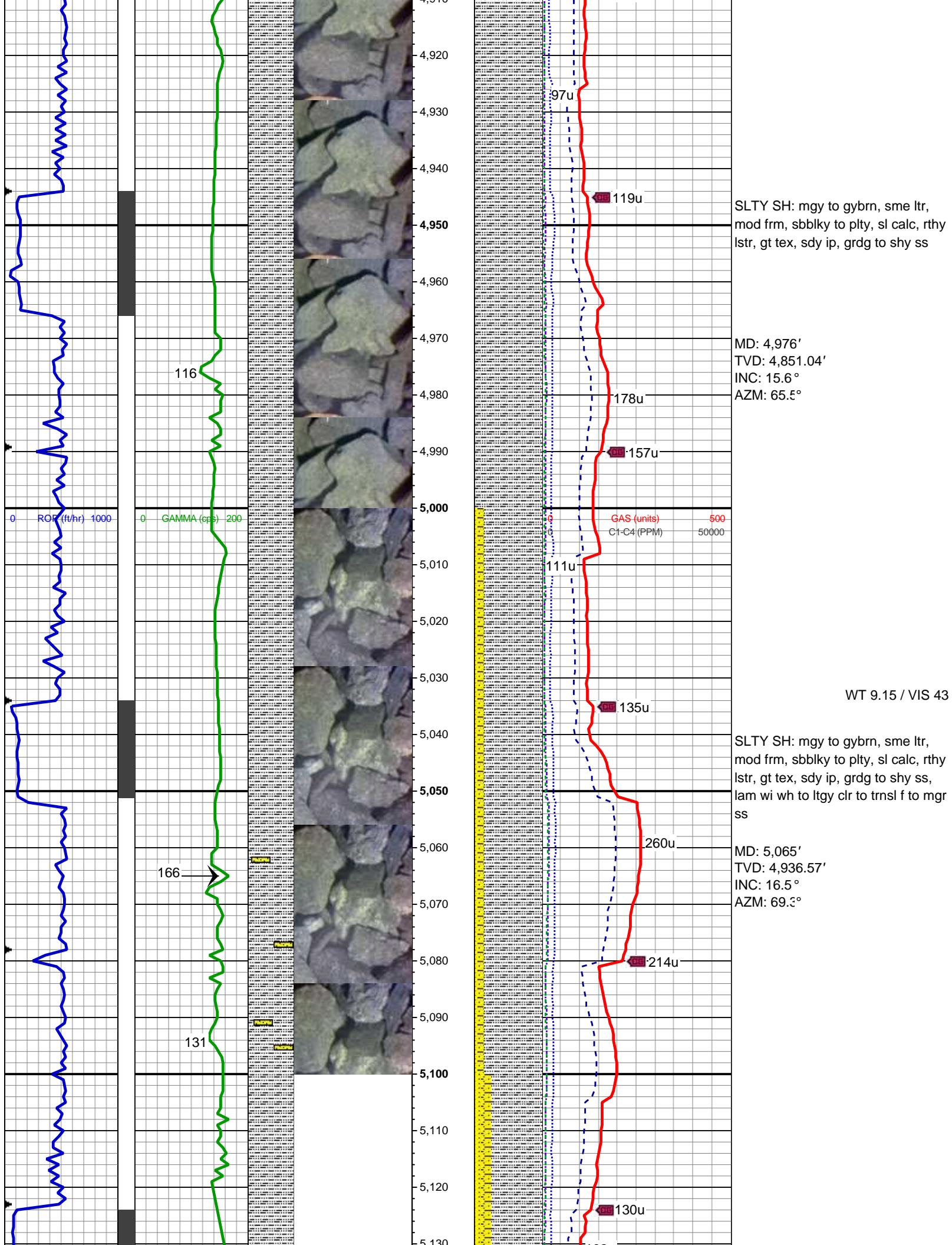
MD: 4,526'
TVD: 4,417.92'
INC: 14.6°
AZM: 62.8°

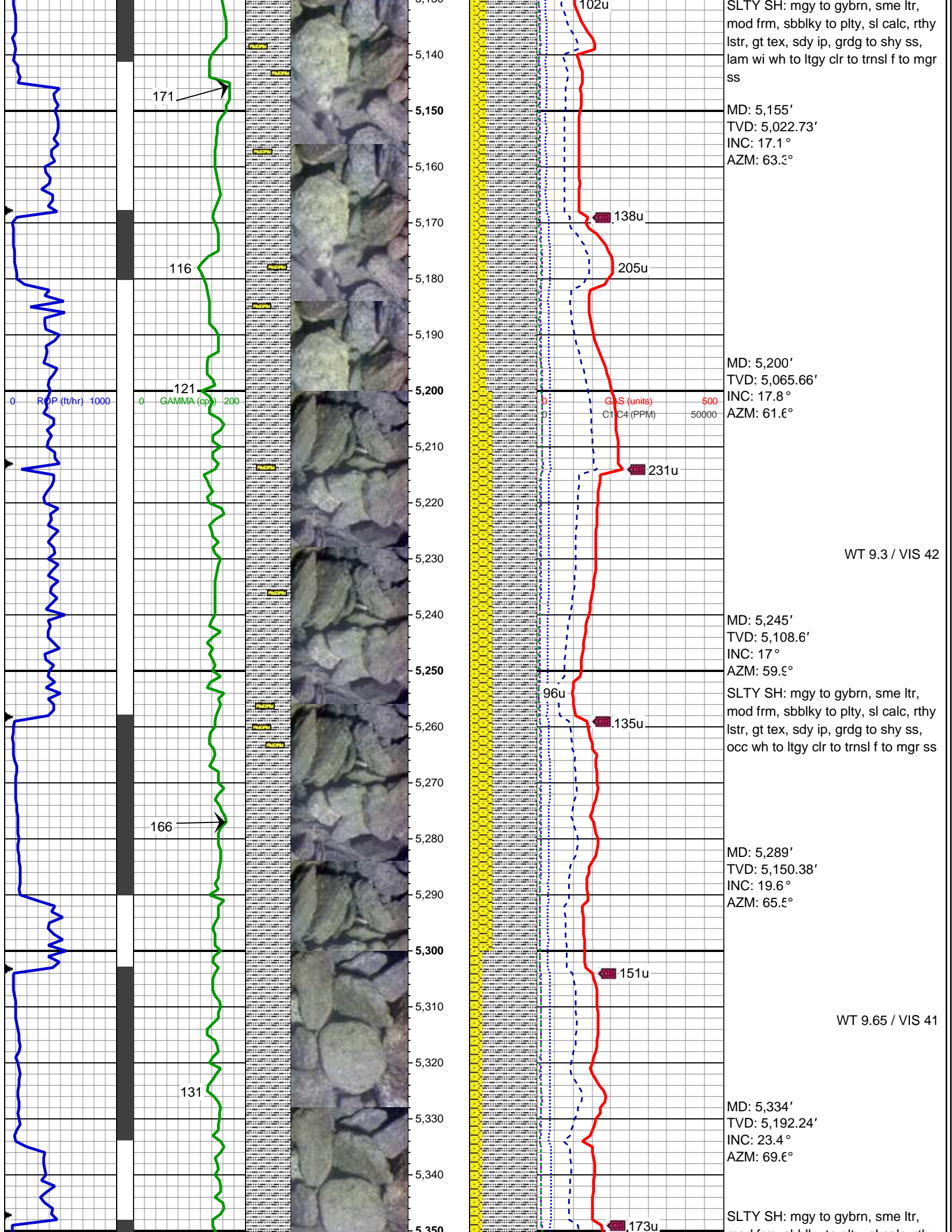
SHY SS: mgy, trnsl to op, vf to f gr, sbrnd gr, sl sft, mod srt, arg mtx, sl calc, grd to slty sh, occ ltgy clr to trnsl m to fgr ss

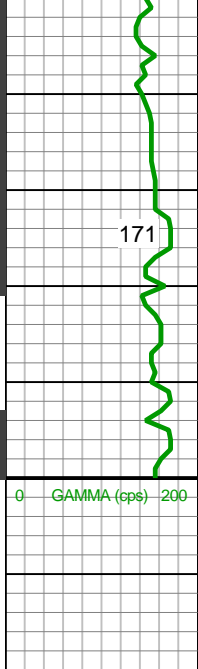
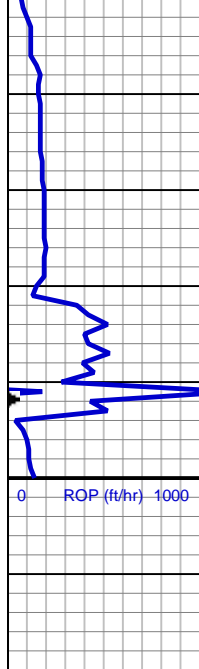
MD: 4,616'
TVD: 4,504.89'
INC: 15.2°
AZM: 63.3°

SLTY SH: mgy to gybrn, mod frm, sbbkly to pty, sl calc, rthy lstr, gt tex, sdy ip, grd to shy ss

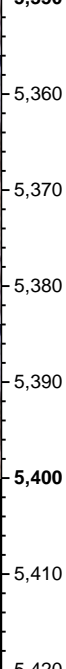




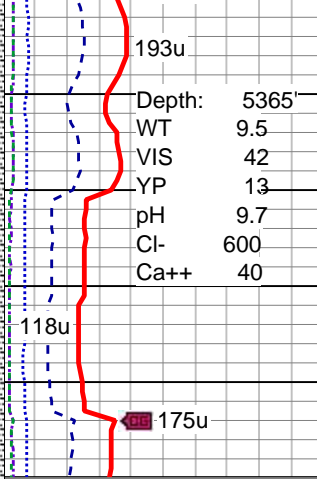




171



193u



118u

175u

THANK YOU FOR CHOOSING
COLUMBINE LOGGING, INC.

mod frm, sbolky to pity, sl calc, rthy
lstr, gt tex, sdy ip, grdg to shy ss, tr
wh to ltgy clr to trns f to mgr ss

Depth: 5365'
WT 9.5
VIS 42
YP 13
pH 9.7
Cl- 600
Ca++ 40

MD: 5,379'
TVD: 5,233.02'
INC: 26.6°
AZM: 73.2°

MW 9.85 / VIS 40

LOG CONTINUES ON FILE:
Rohn State LD10-69-1HN Horiz.mplot