

COLUMBINE LOGGING

Scale: 5" / 100'
Measured Depth Log

Well Name Morton State LD01-79-1BHN

Location SWSW SEC1 T9N R58W

State CO

County WELD

Country USA

Rig Number PRECISION 828

API Number 05-123-39899

AFE # 200166

Region DENVER-JULESBURG BASIN

Field WILDCAT

Spud Date 12/5/2014

Drilling Completed 12/13/2014

Surface Coordinates 400' FSL, 352' FWL

Lat/Long: 40.77445/-103.82038

Ground Elevation 4656'

K.B. Elevation 4672'

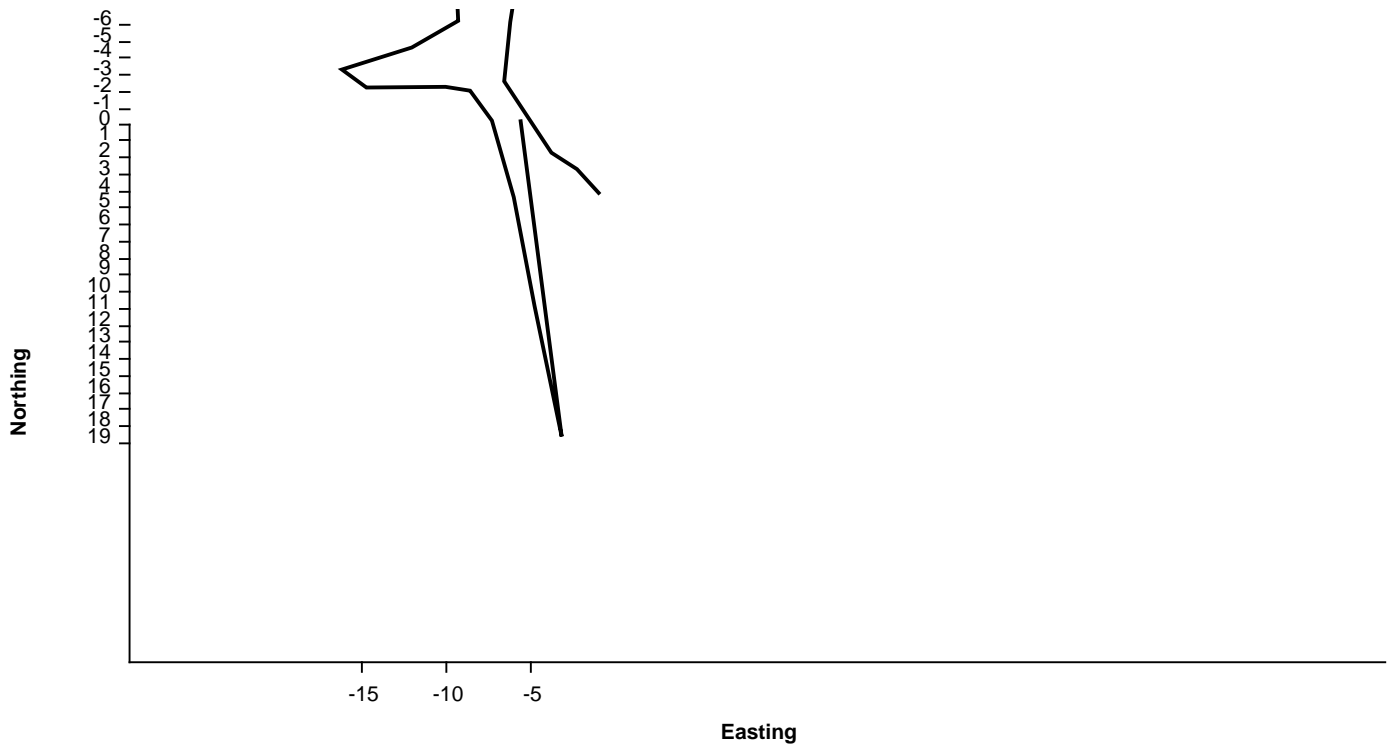
Logged Interval 1231' **To** 4900'

Total Depth 14600'

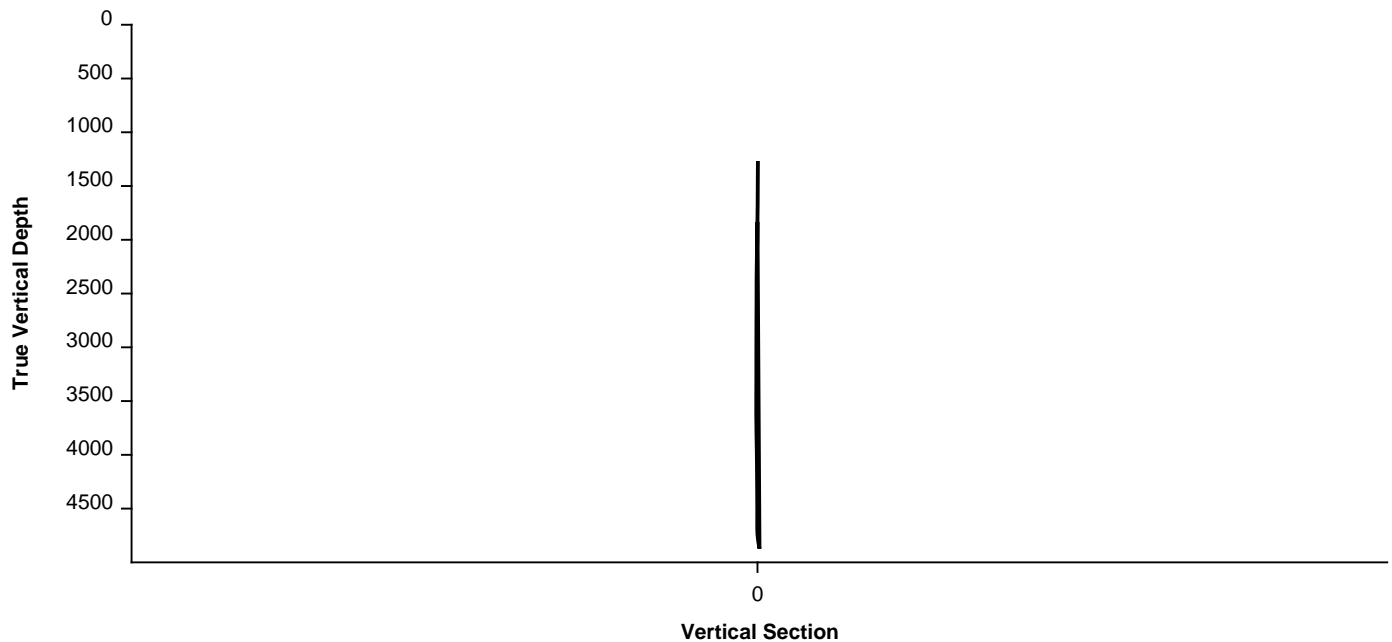
Formation FOX HILLS, PIERRE (PARKMAN, SUSSEX, SHANNON, TEEPEE BUTTES)

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

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

FINELYXLN

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

OOLITE

OSTRACOD

PELECYPOD

PELLET

PISOLITE

PLANT REMAINS

PLANT SPORES

SCAPHOPOD

STROMATOPOROID

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

Minerals

FISH
FORAMINIFERA
FOSSIL
FERRUGINOUS
ANHYDRITIC
ARGILLACEOUS
GLAUCONITE
GYPSIFEROUS

Stringer

Other

WELLSITE GEOLOGISTS: GARY MYERS
C.S. METZ

LOG CONTINUES ON FILE: Morton State LD01-79-1BHN 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

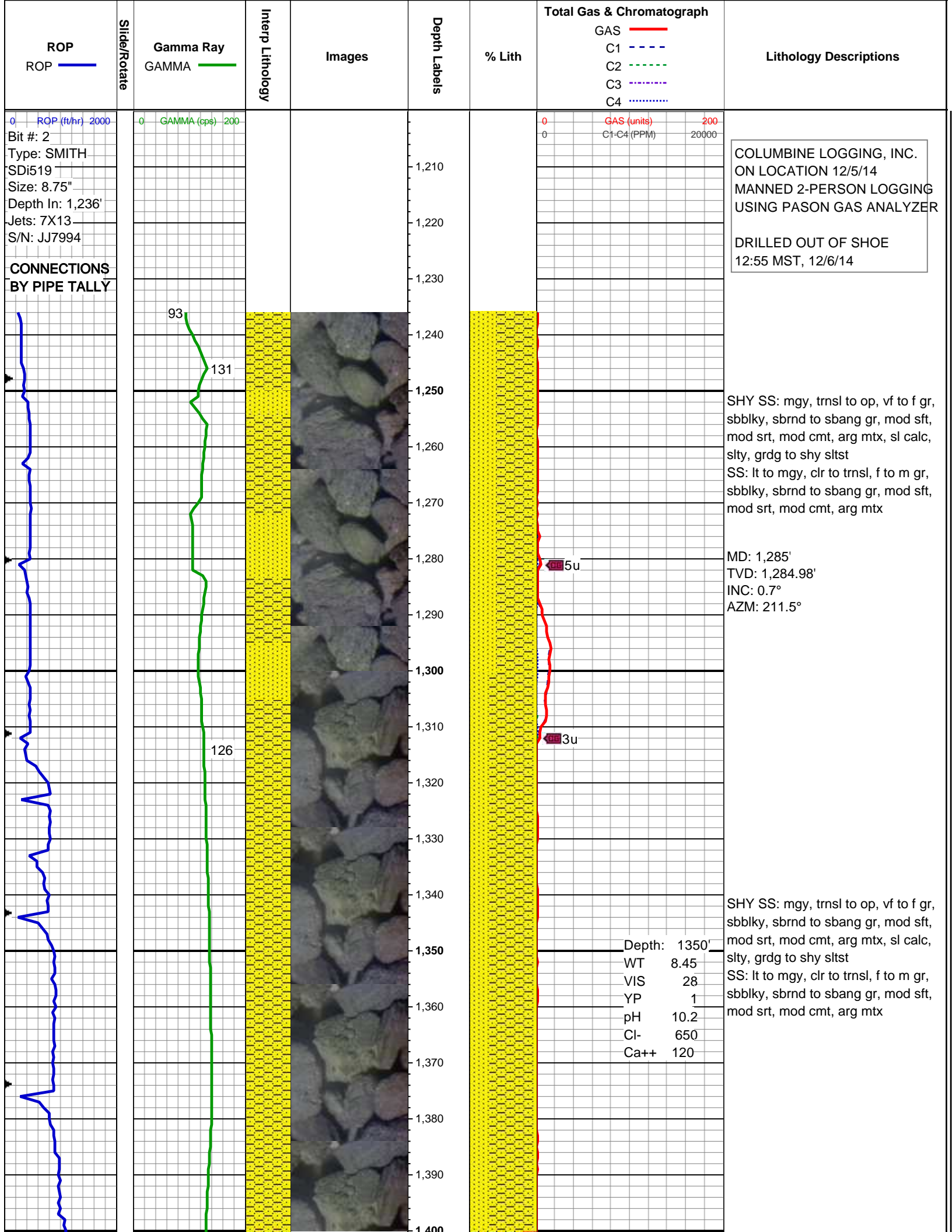
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Denver, CO 80202

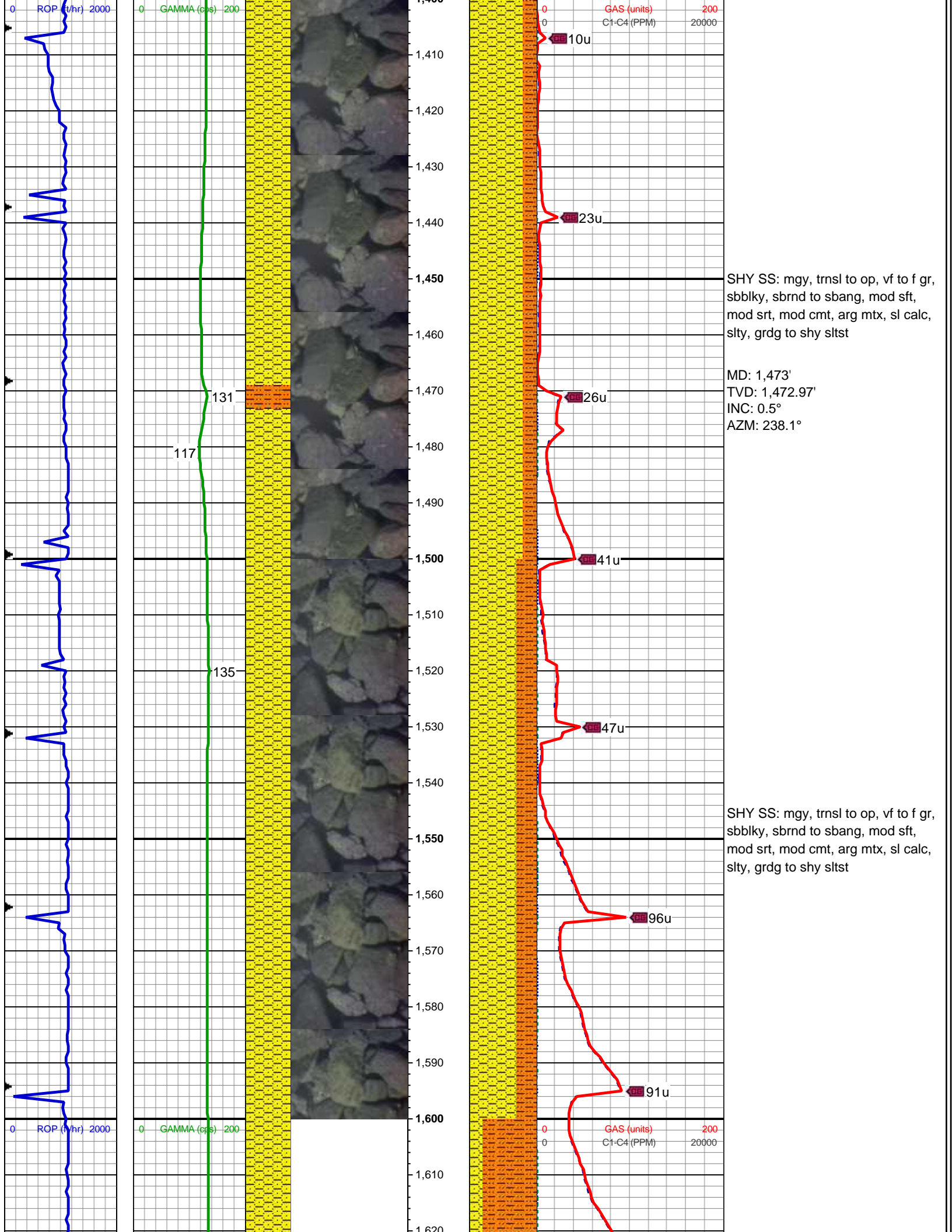
Geologist

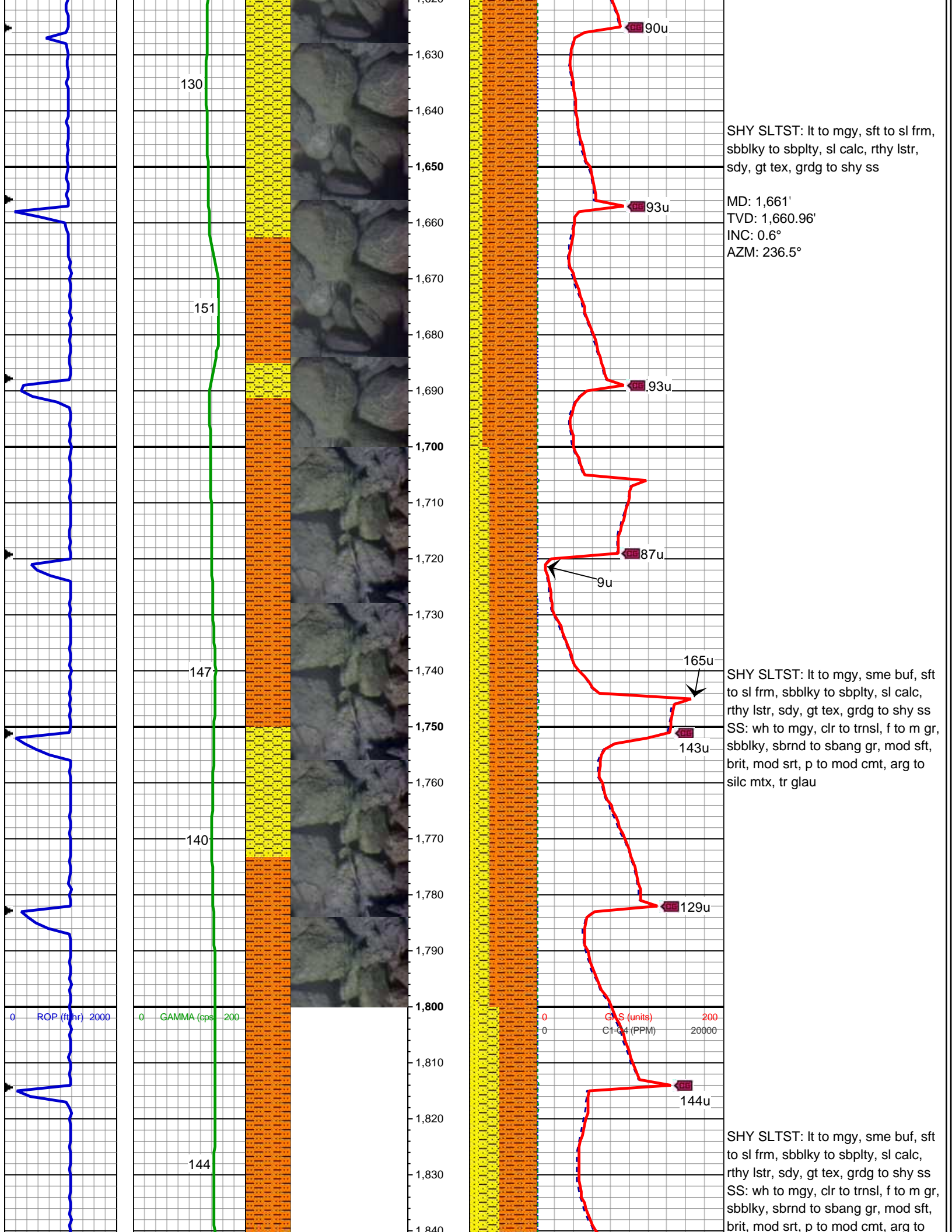
Name TERESA MALESARDI

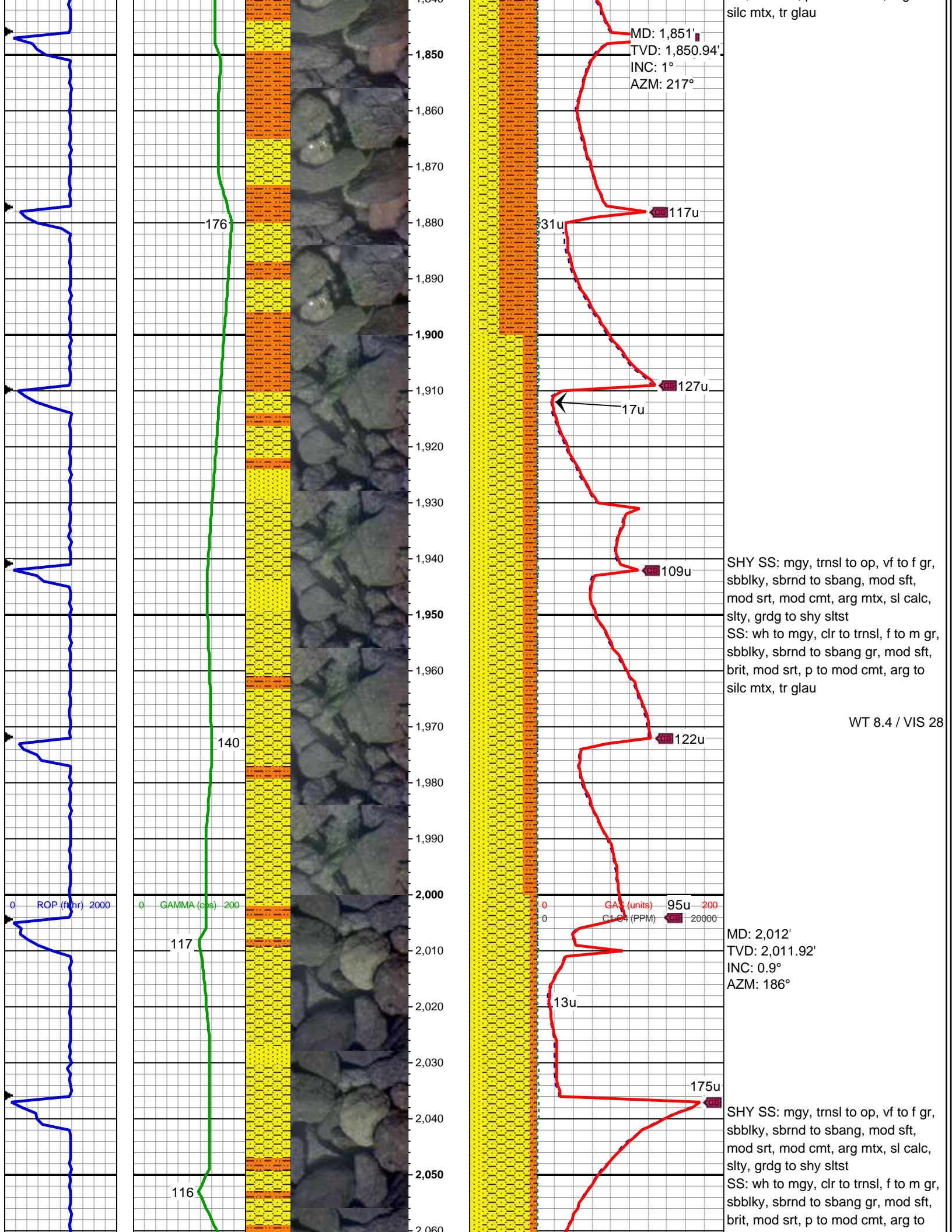
Company NOBLE ENERGY, INC.

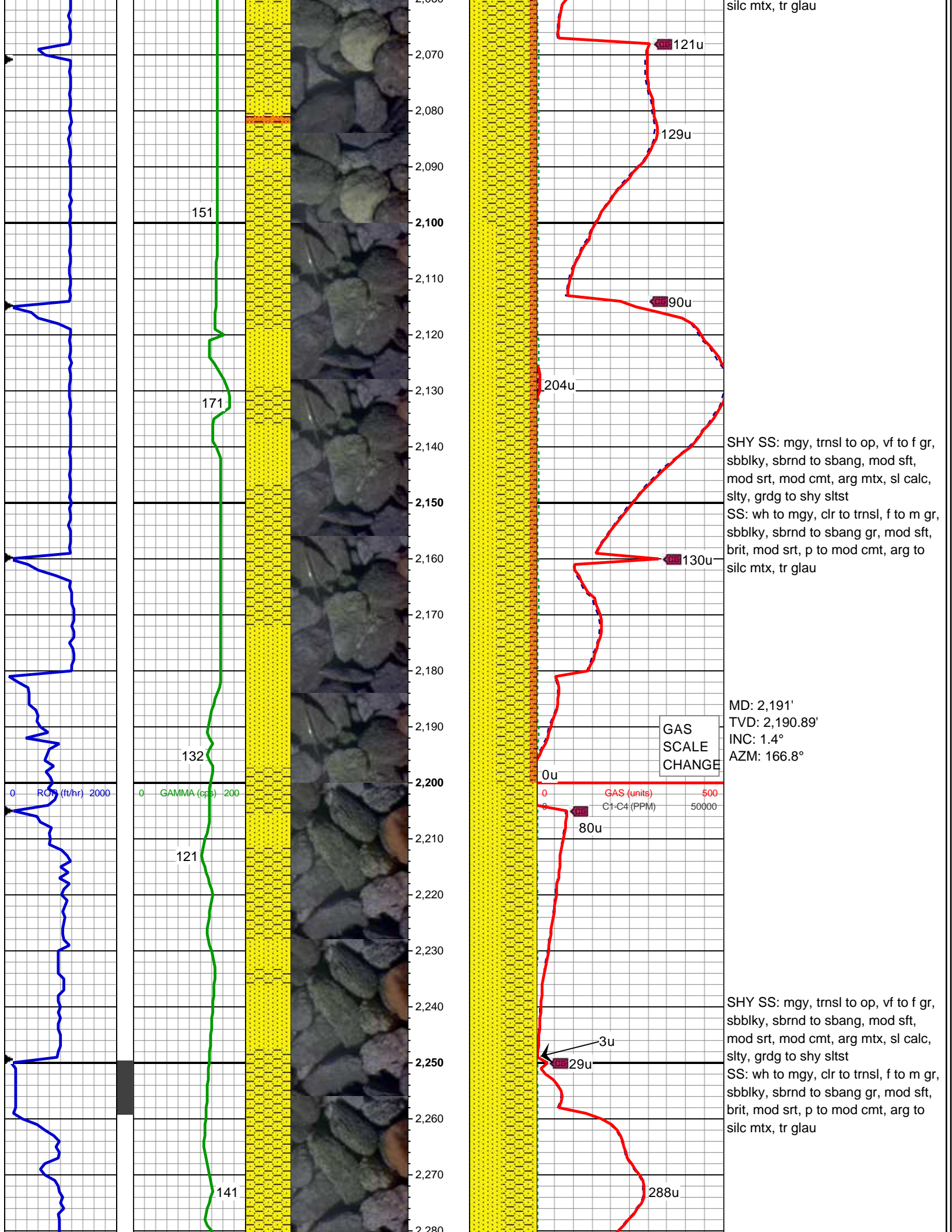
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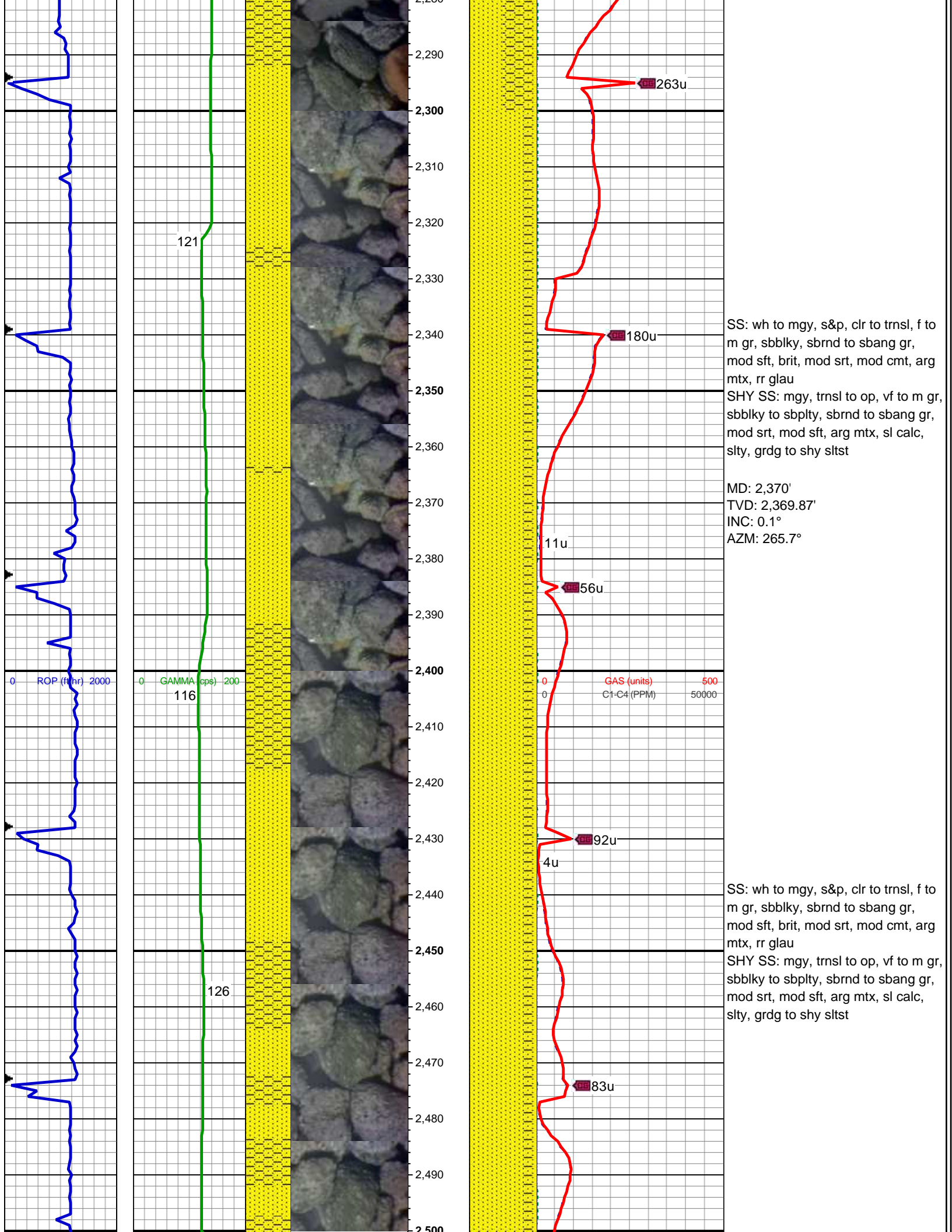


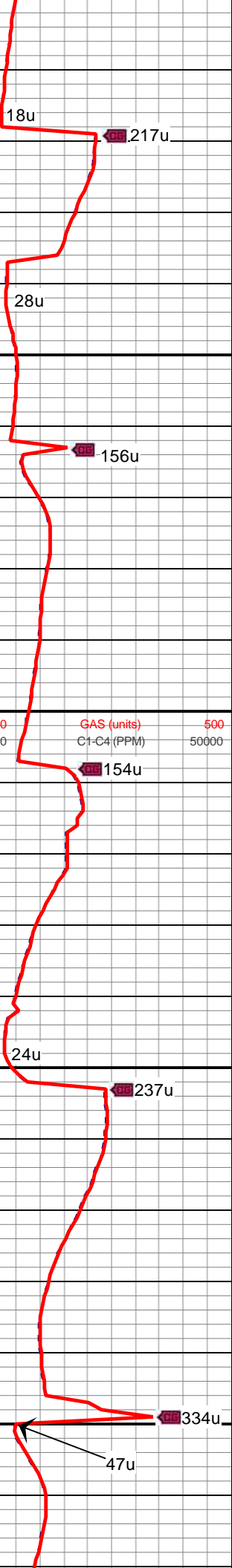
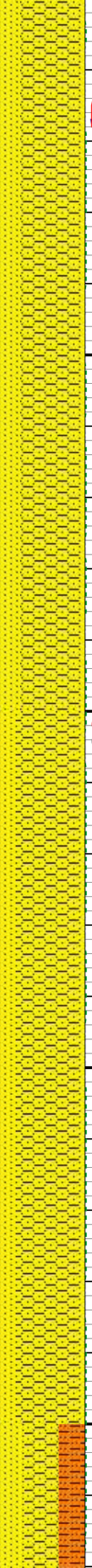
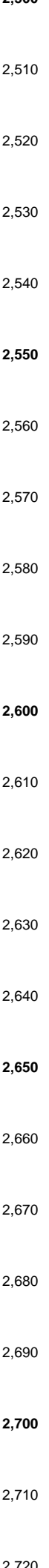
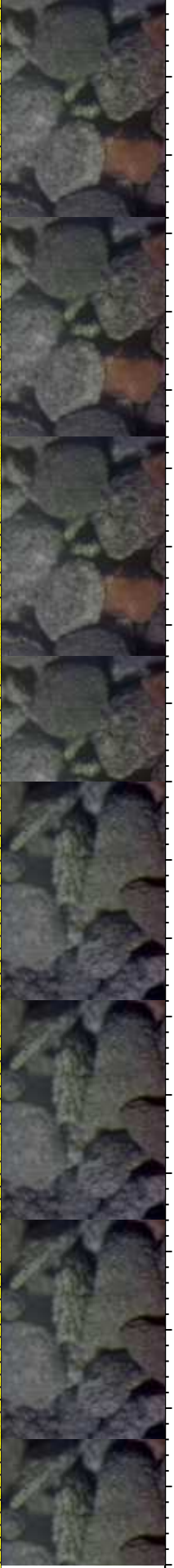
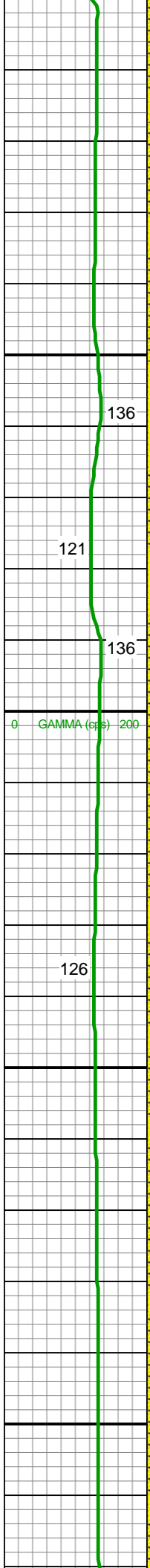
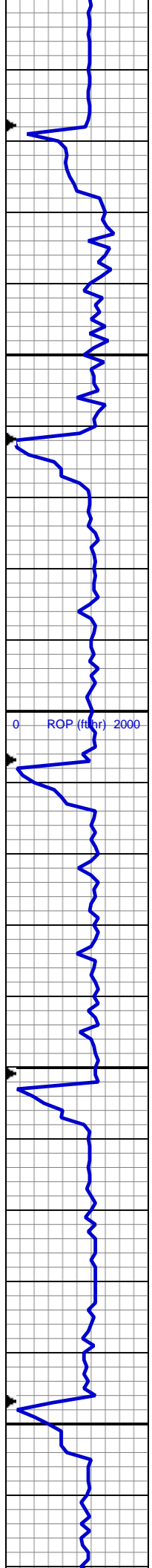








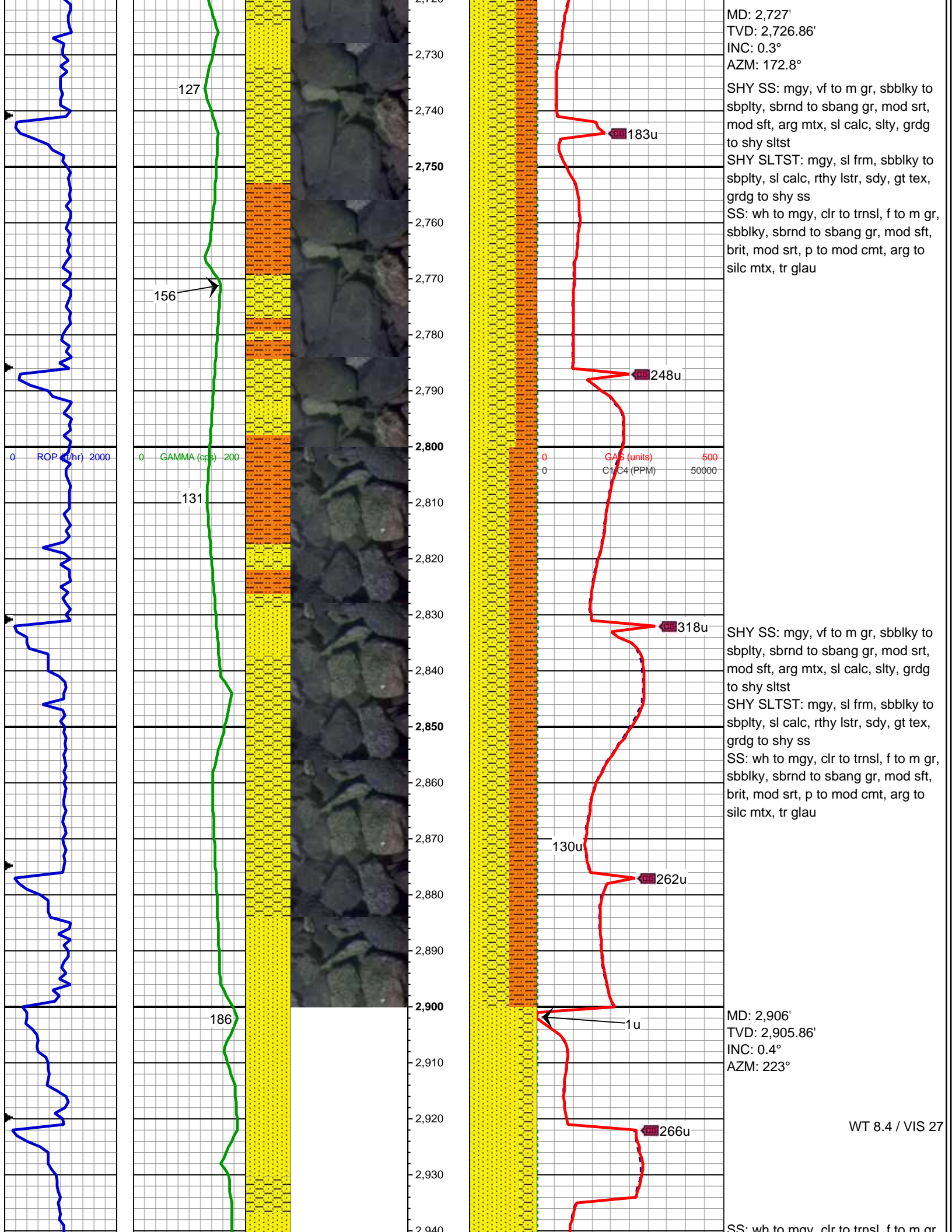


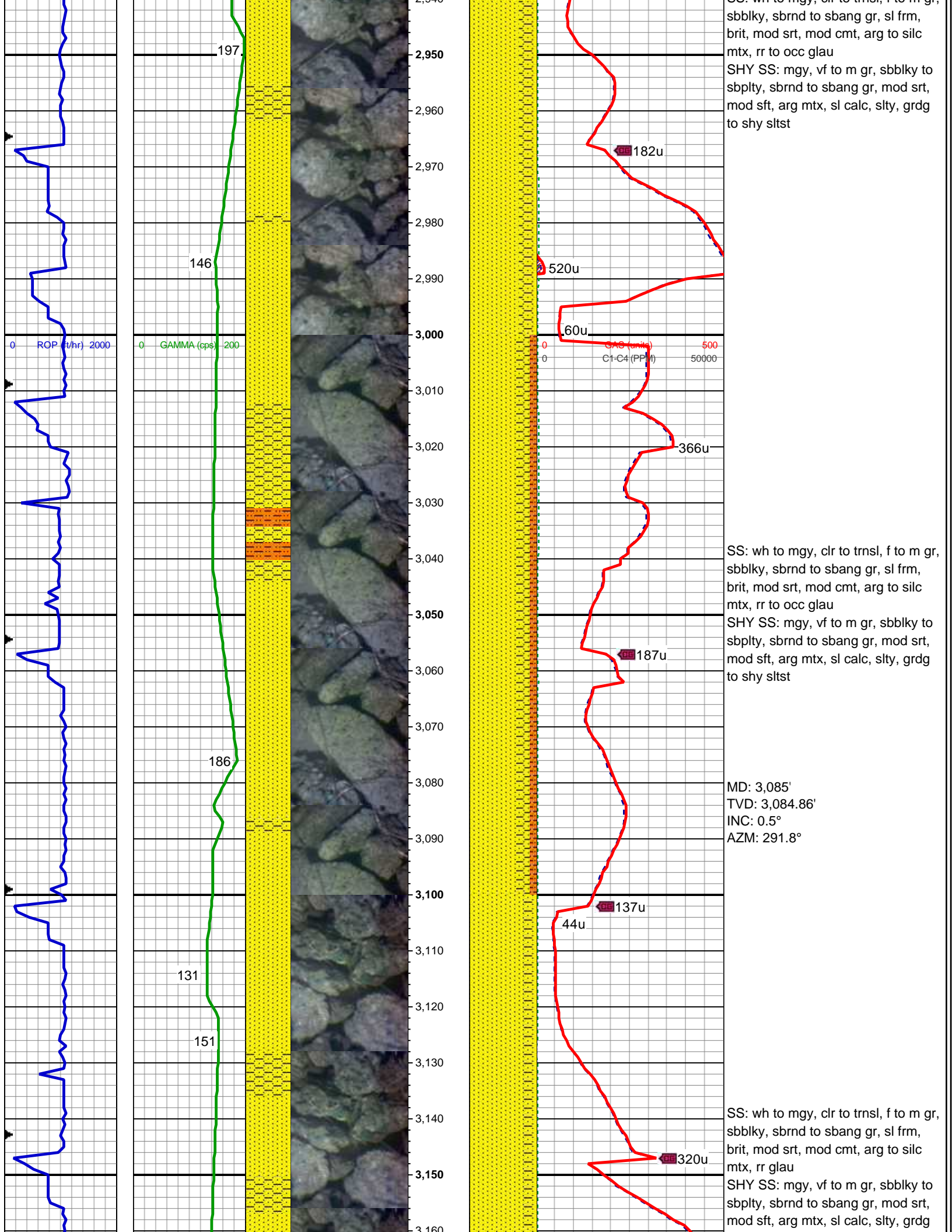


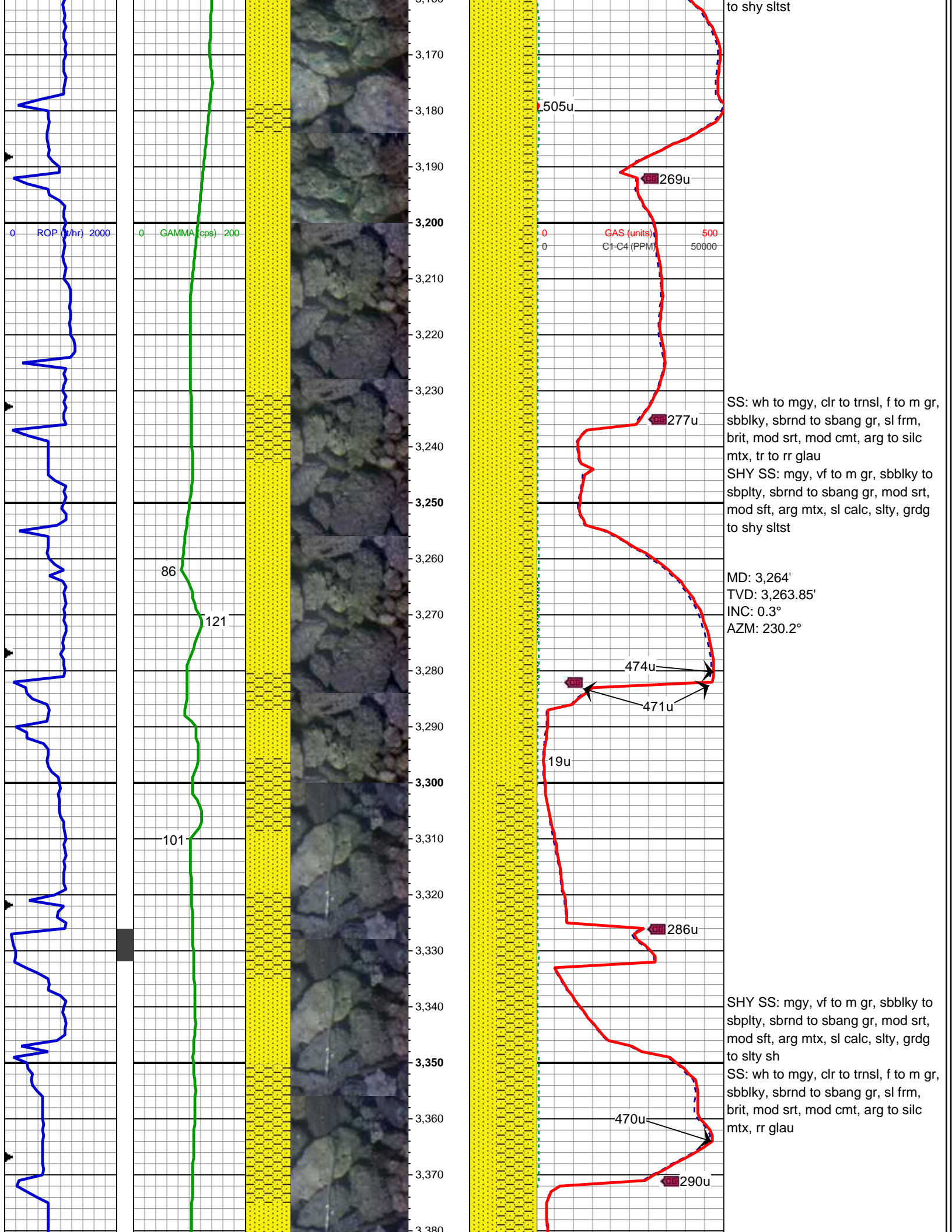
MD: 2,549'
TVD: 2,548.87'
INC: 0.4°
AZM: 242.3°

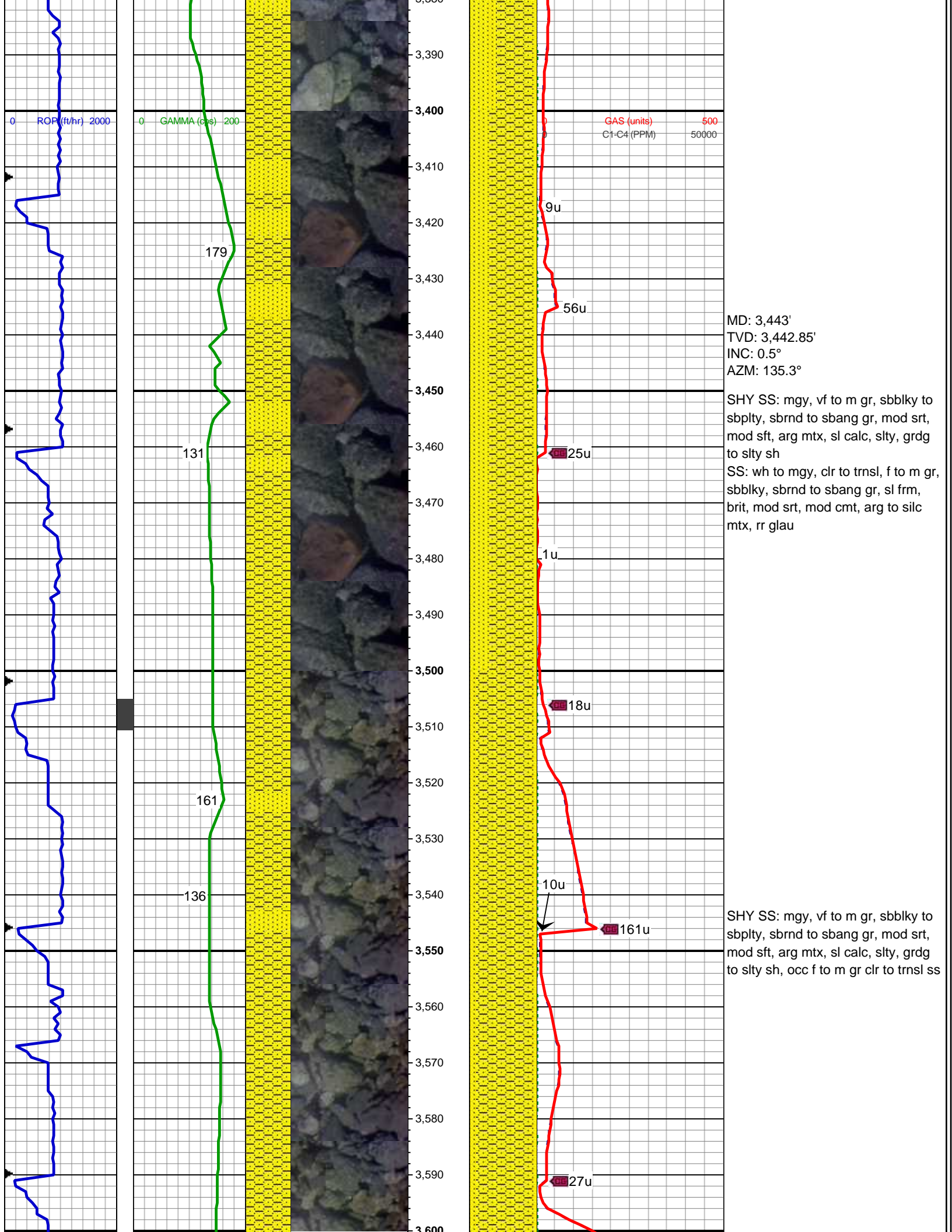
SHY SS: mgy, trnsf to op, vf to m gr,
sbbky to sbply, sbrnd to sbang gr,
mod srt, mod sft, arg mtx, sl calc,
sly, grdg to shy sltst
SS: wh to mgy, s&p, clr to trnsf, f to
m gr, sbbky, sbrnd to sbang gr,
mod sft, brit, mod srt, mod cmt, arg
mtx, rr glau

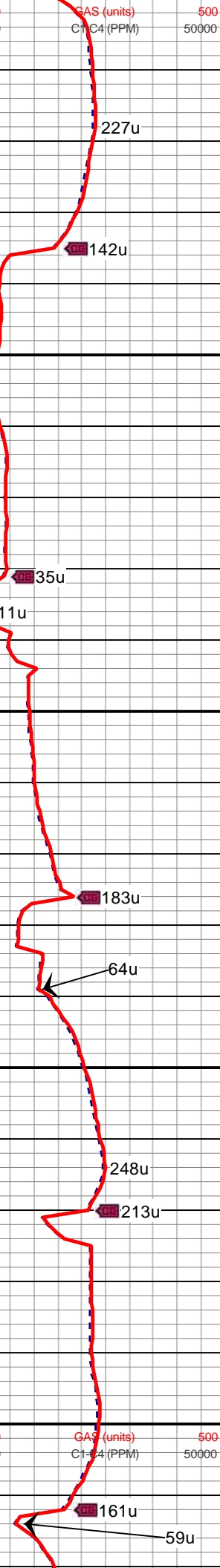
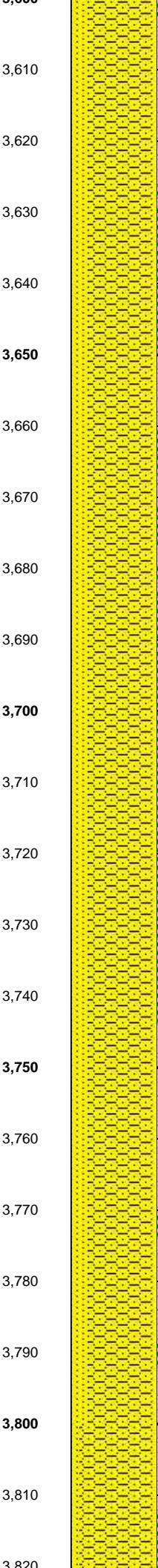
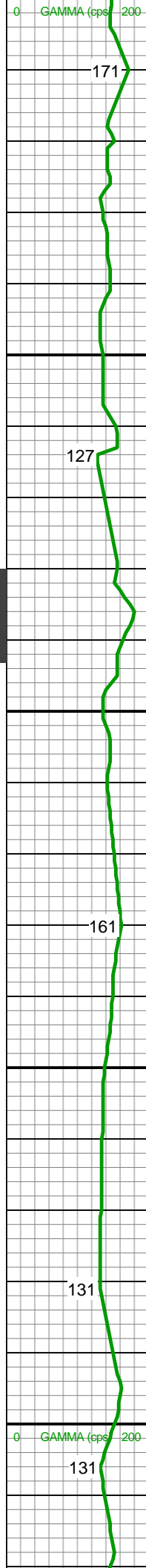
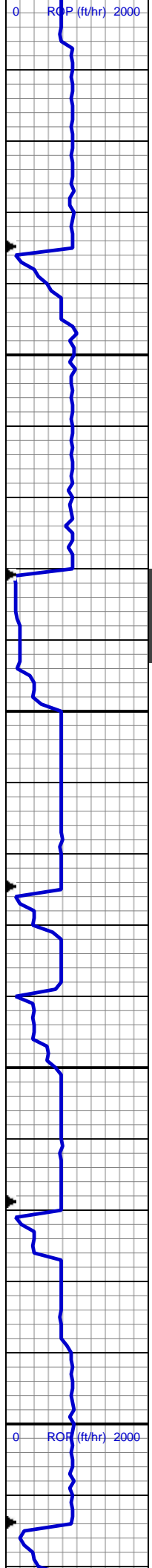
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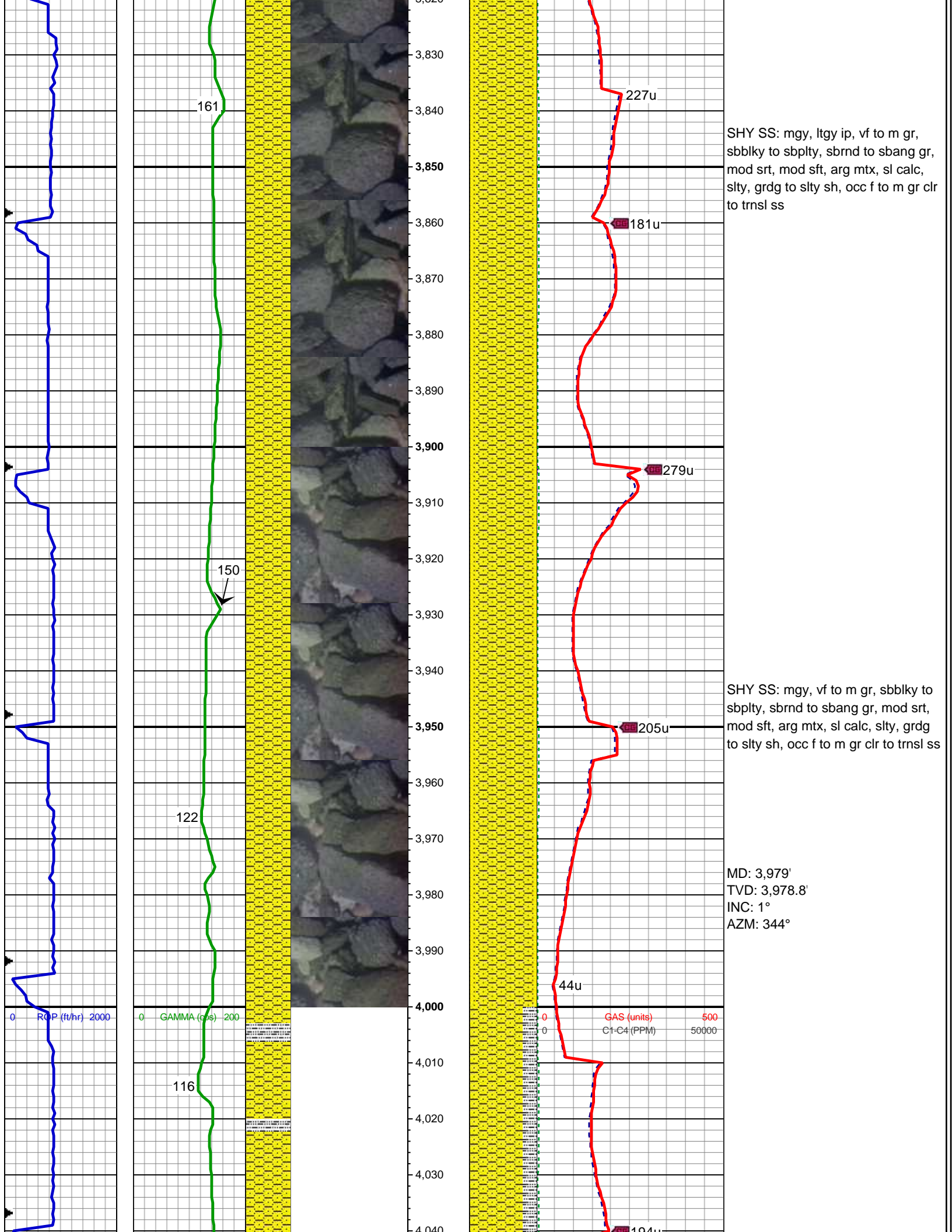


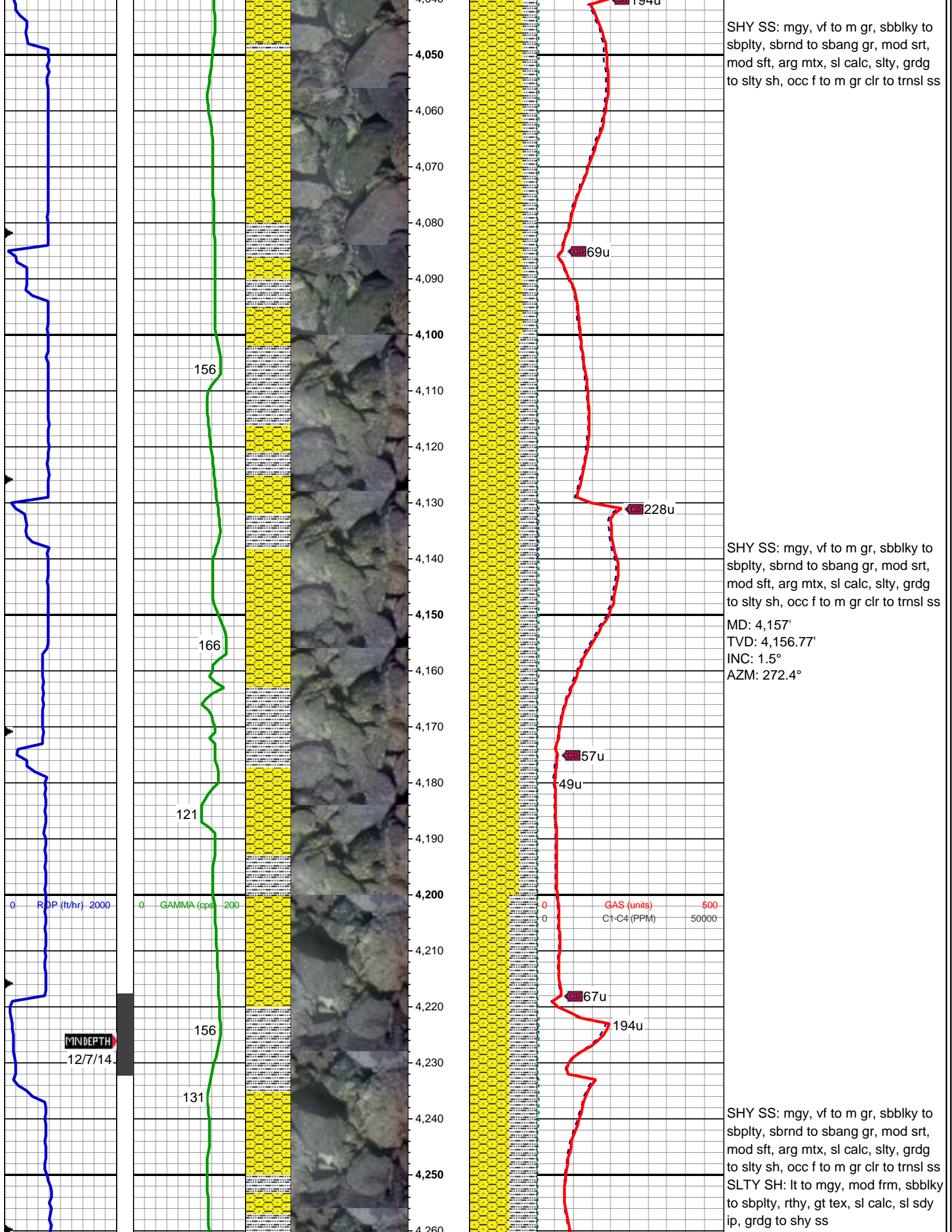
MD: 3,621'
TVD: 3,620.85'
INC: 0.4°
AZM: 296.9°

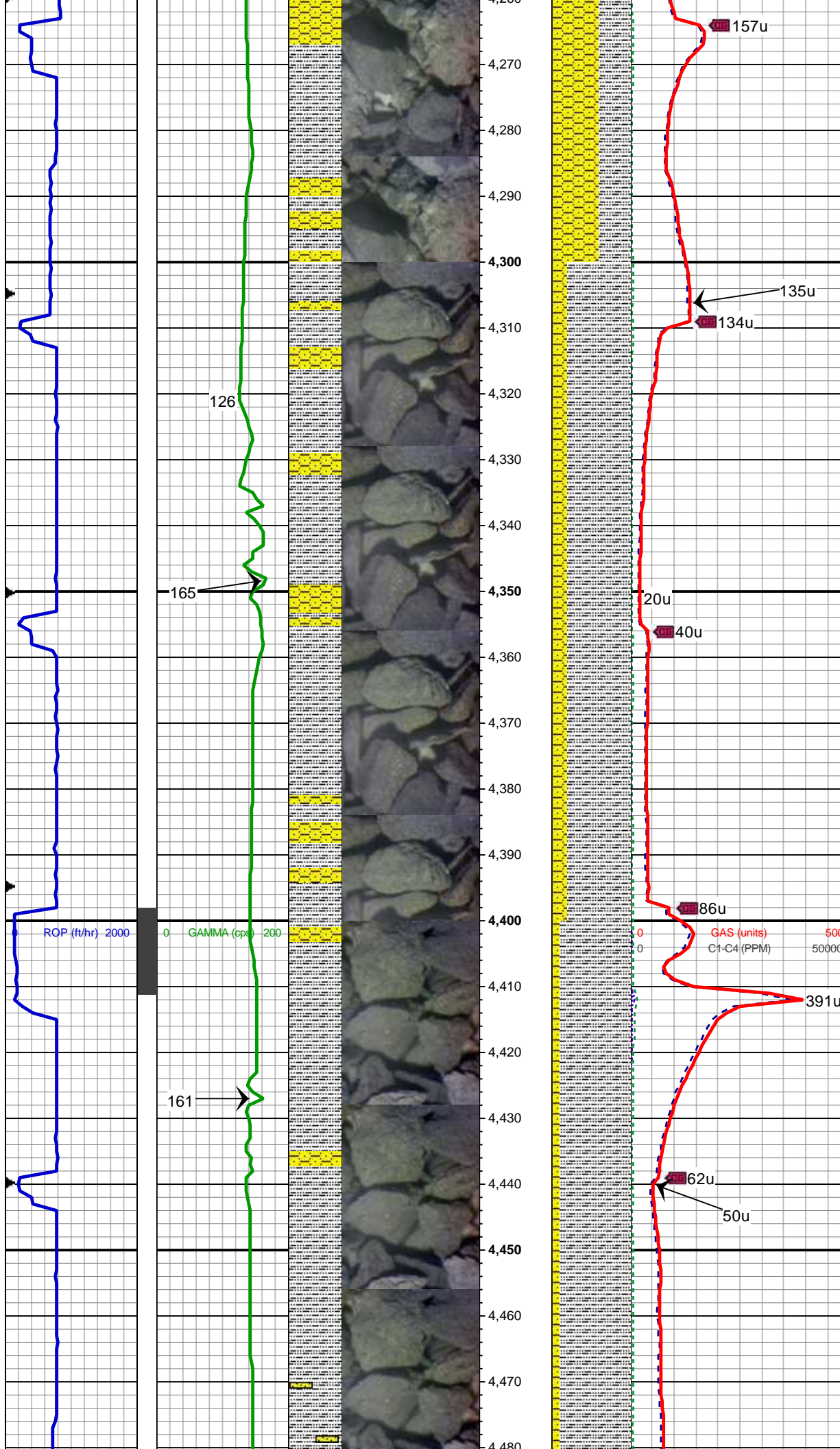
SHY SS: mgy, ltgy ip, vf to m gr,
sbbiky to sbply, sbrnd to sbang gr,
mod srt, mod sft, arg mtx, sl calc,
sly, grdg to sly sh, occ f to m gr clr
to trnsl ss

SHY SS: mgy, ltgy ip, vf to m gr,
sbbiky to sbply, sbrnd to sbang gr,
mod srt, mod sft, arg mtx, sl calc,
sly, grdg to sly sh, occ f to m gr clr
to trnsl ss

MD: 3,800'
TVD: 3,799.83'
INC: 1.2°
AZM: 18.2°







MD: 4,336'
TVD: 4,335.71'
INC: 1.4°
AZM: 303.6°

SLTY SH: lt to mgy, mod frm, sbbkly
to sbplty, rthy, gt tex, sl calc, sl sdy
ip, grdg to shy ss, occ f to m gr clr to
trnsl ss

WT 9.0 / VIS 42

SLTY SH: lt to mgy, mod frm, sbbkly
to sbplty, rthy, gt tex, sl calc, sl sdy
ip, grdg to shy ss, occ f to m gr clr to
trnsl ss

