

COLUMBINE LOGGING

Scale: 5" / 100'
Measured Depth Log

Well Name Fiscus Federal LD15-77HN

Location NENW SEC15 T9N R58W

State CO

County WELD

Country USA

Rig Number PRECISION 828

API Number 05-123-37367

AFE # 200238

Region DENVER-JULESBURG BASIN

Field WILDCAT

Spud Date 10/27/2014

Drilling Completed 11/1/2014

Surface Coordinates 280' FNL, 1682' FWL

Lat/Long: 40.75785/-103.85377

Ground Elevation 4701'

K.B. Elevation 4717'

Logged Interval 1220' **To** 5000'

Total Depth 9906'

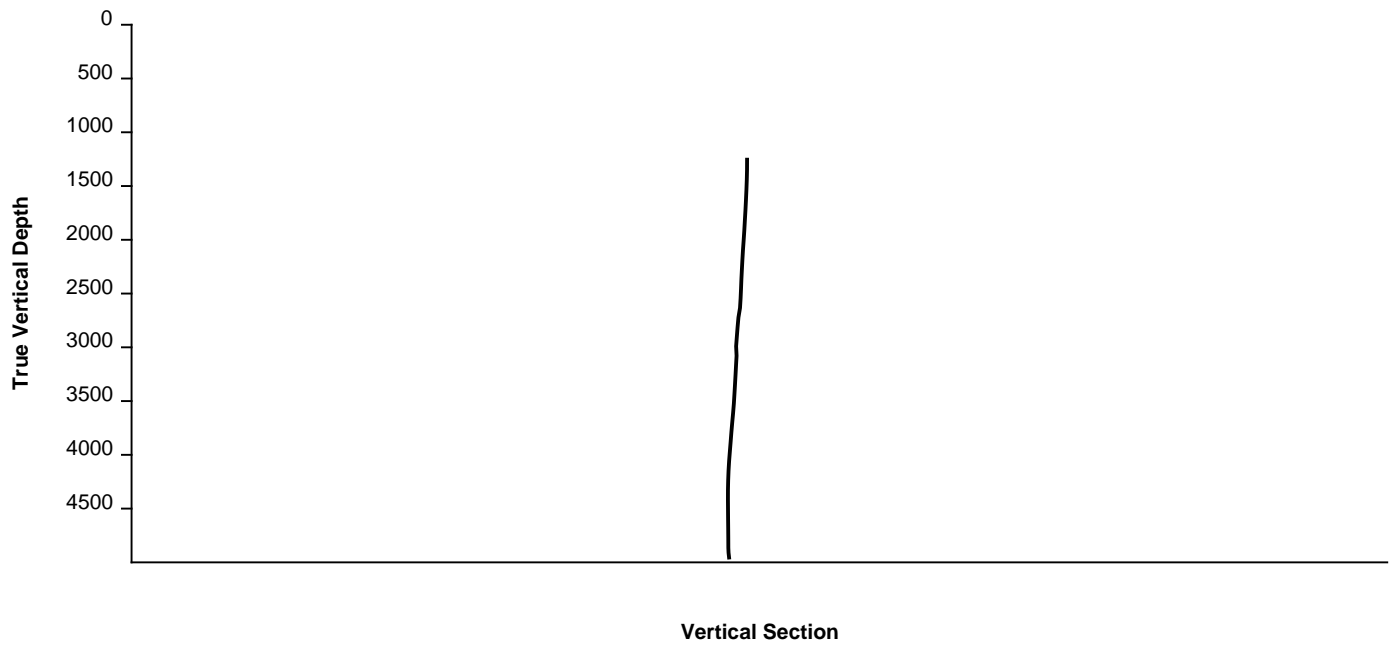
Formation FOX HILLS, PIERRE (PARKMAN, SUSSEX, SHANNON, TEEPEE BUTTES)

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



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

W 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

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

ANHYDRITIC

ARGILLACEOUS

FERRUGINOUS

GLAUCONITE

GYPSIFEROUS

TUFFACEOUS

Stringer

Other

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

LOG CONTINUES ON FILE: Fiscus Federal LD15-77HN 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.

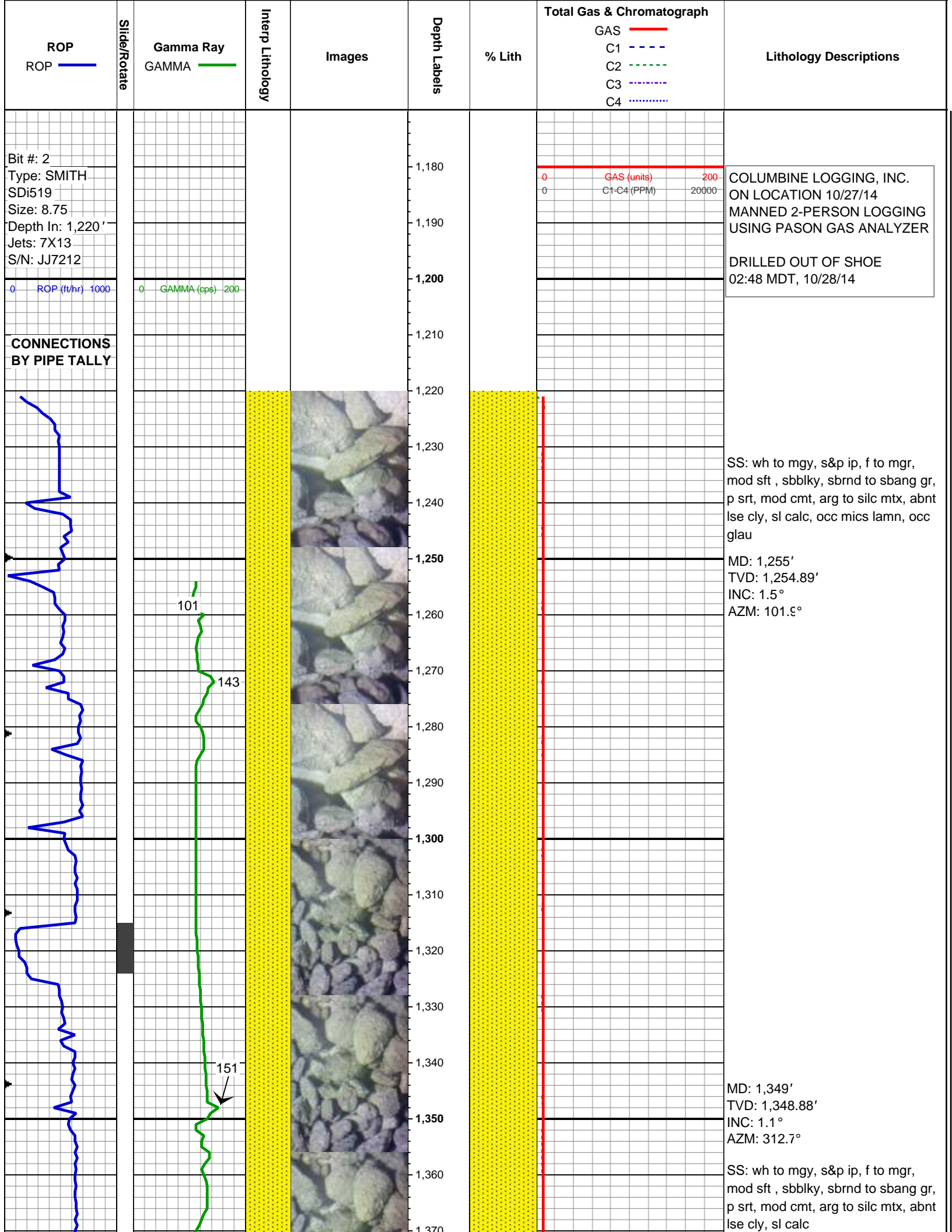
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Denver, CO 80202

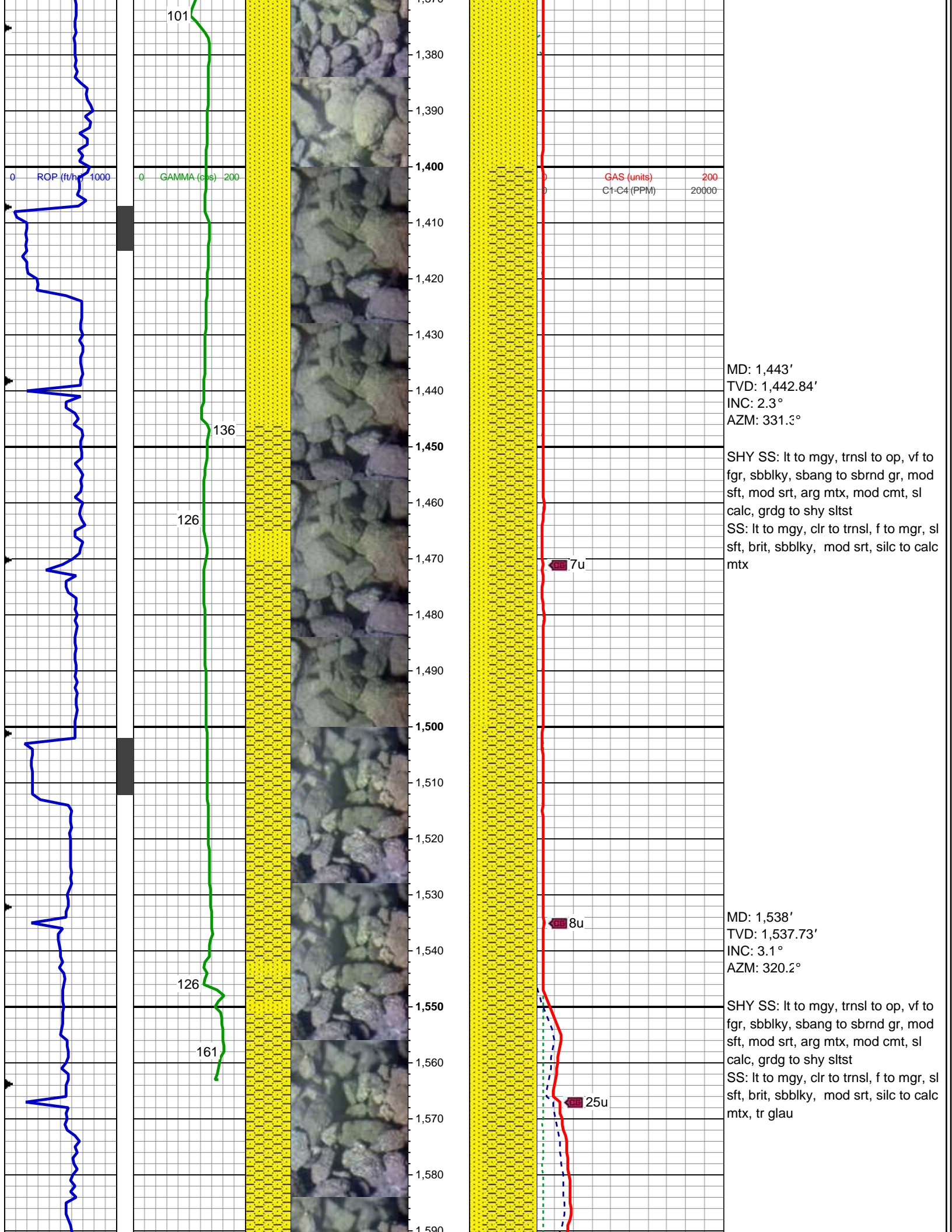
Geologist

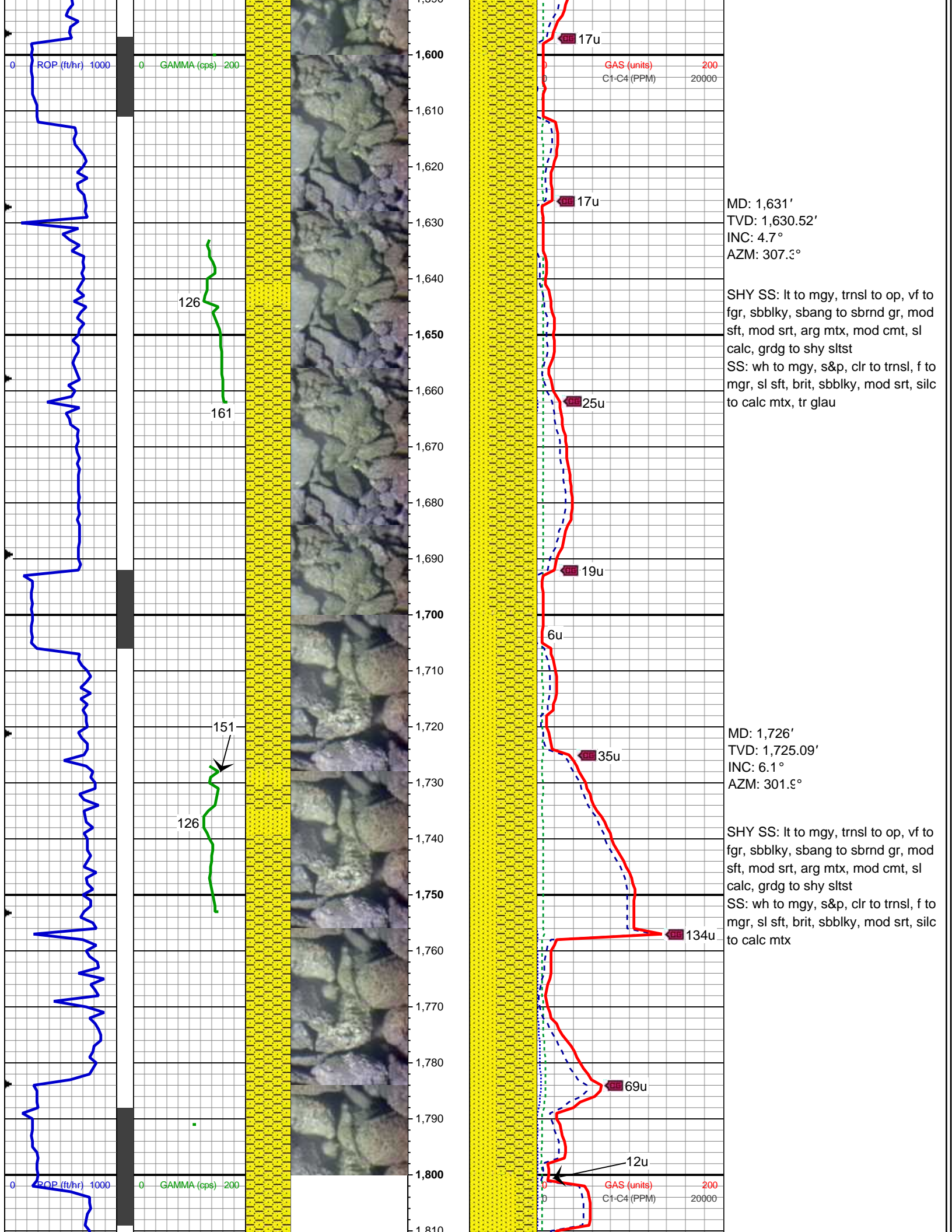
Name TERESA MALESARDI

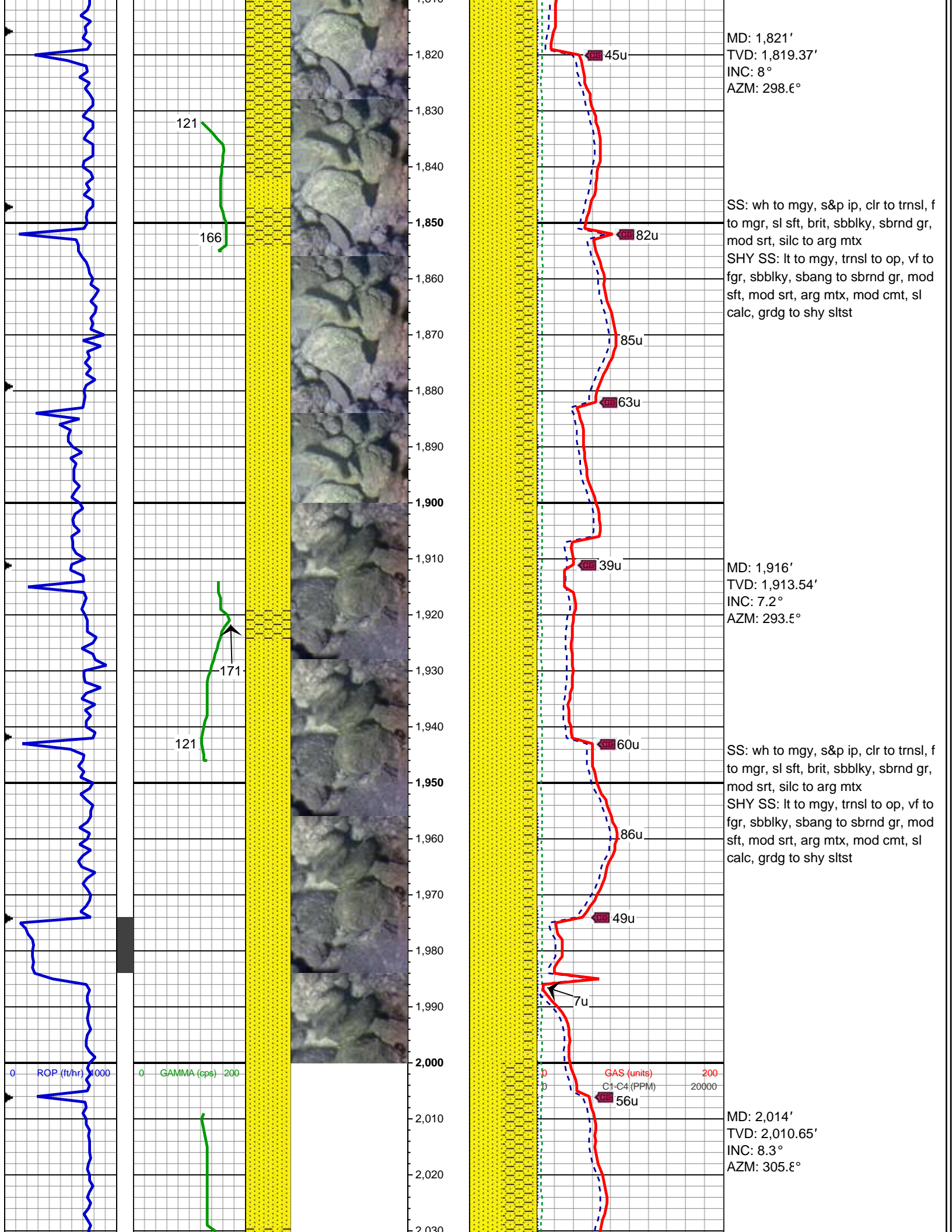
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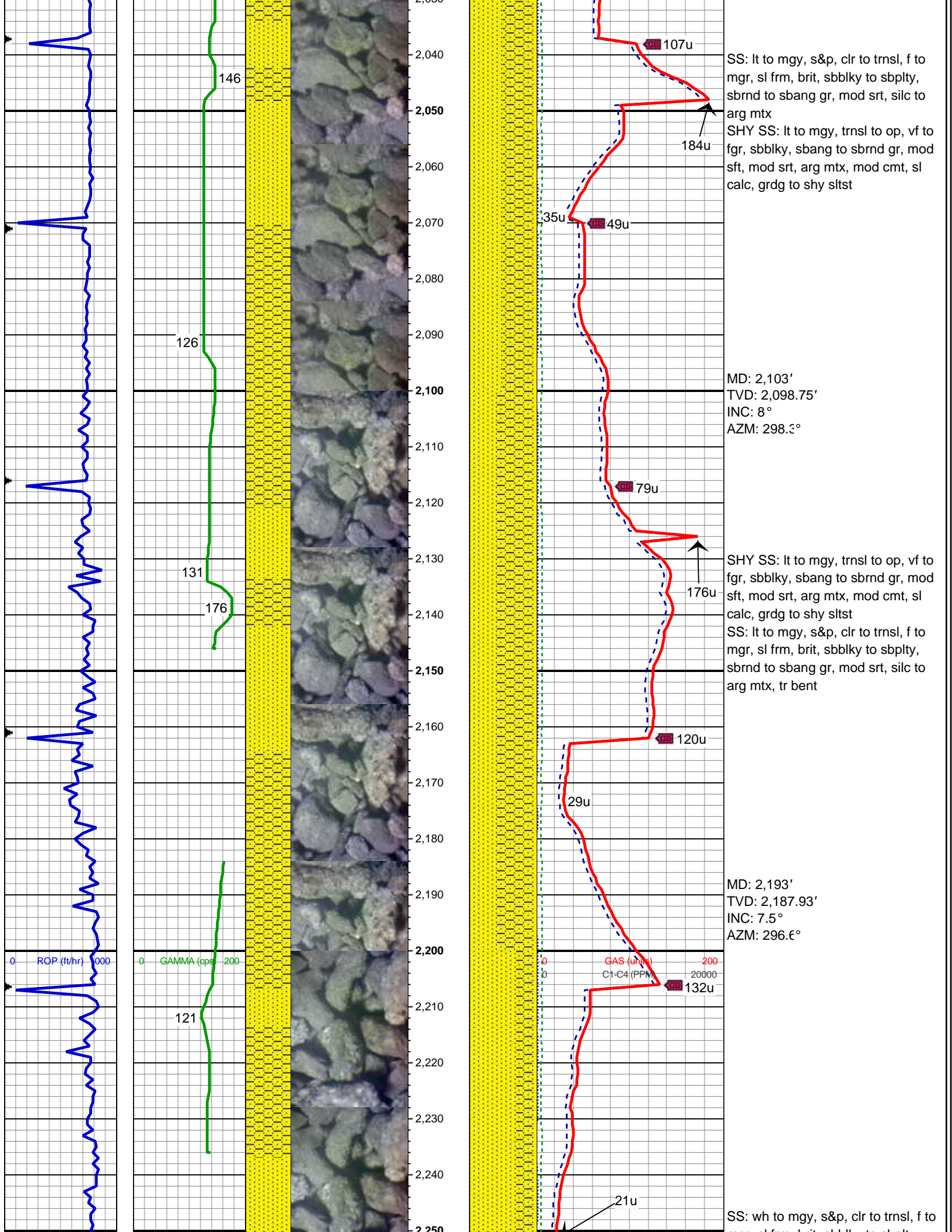
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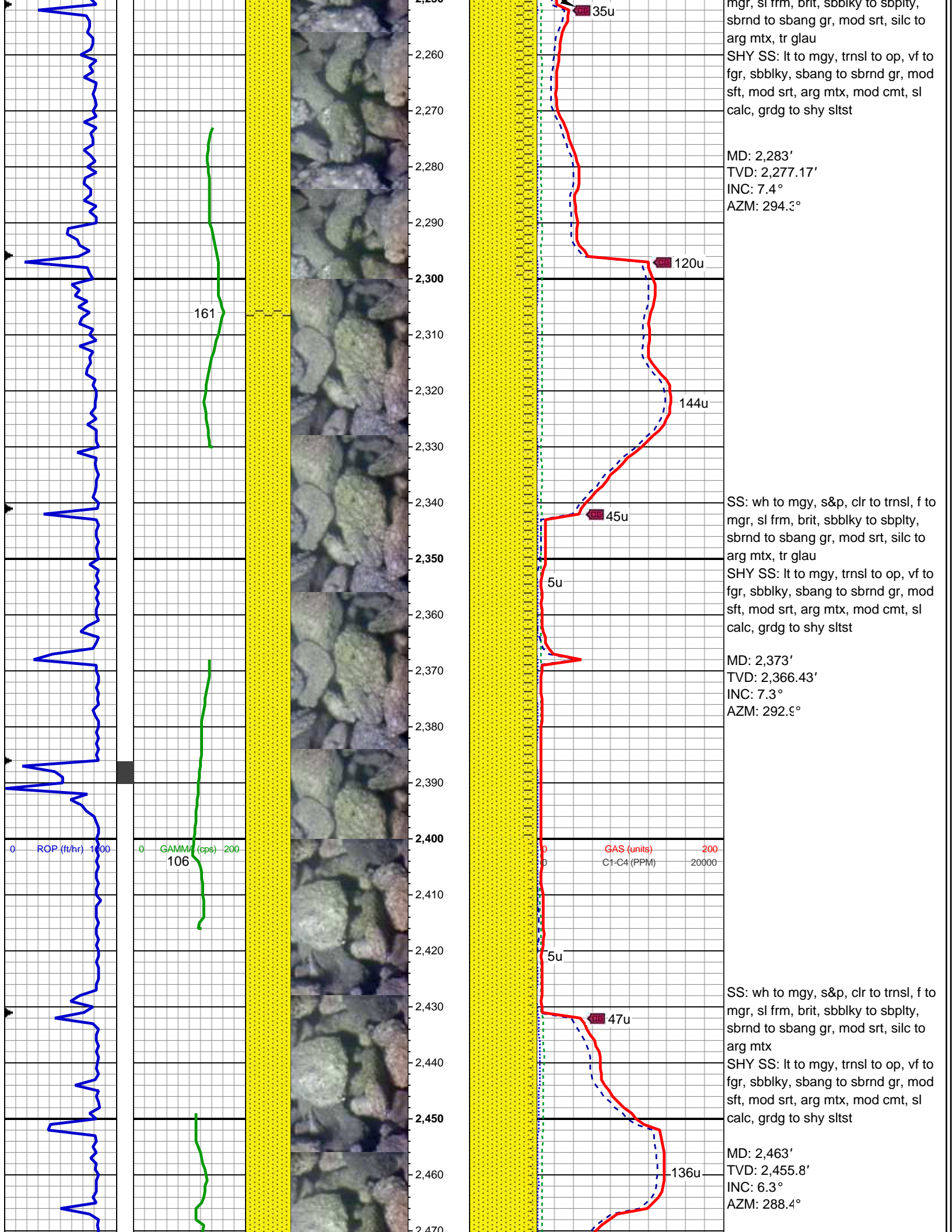


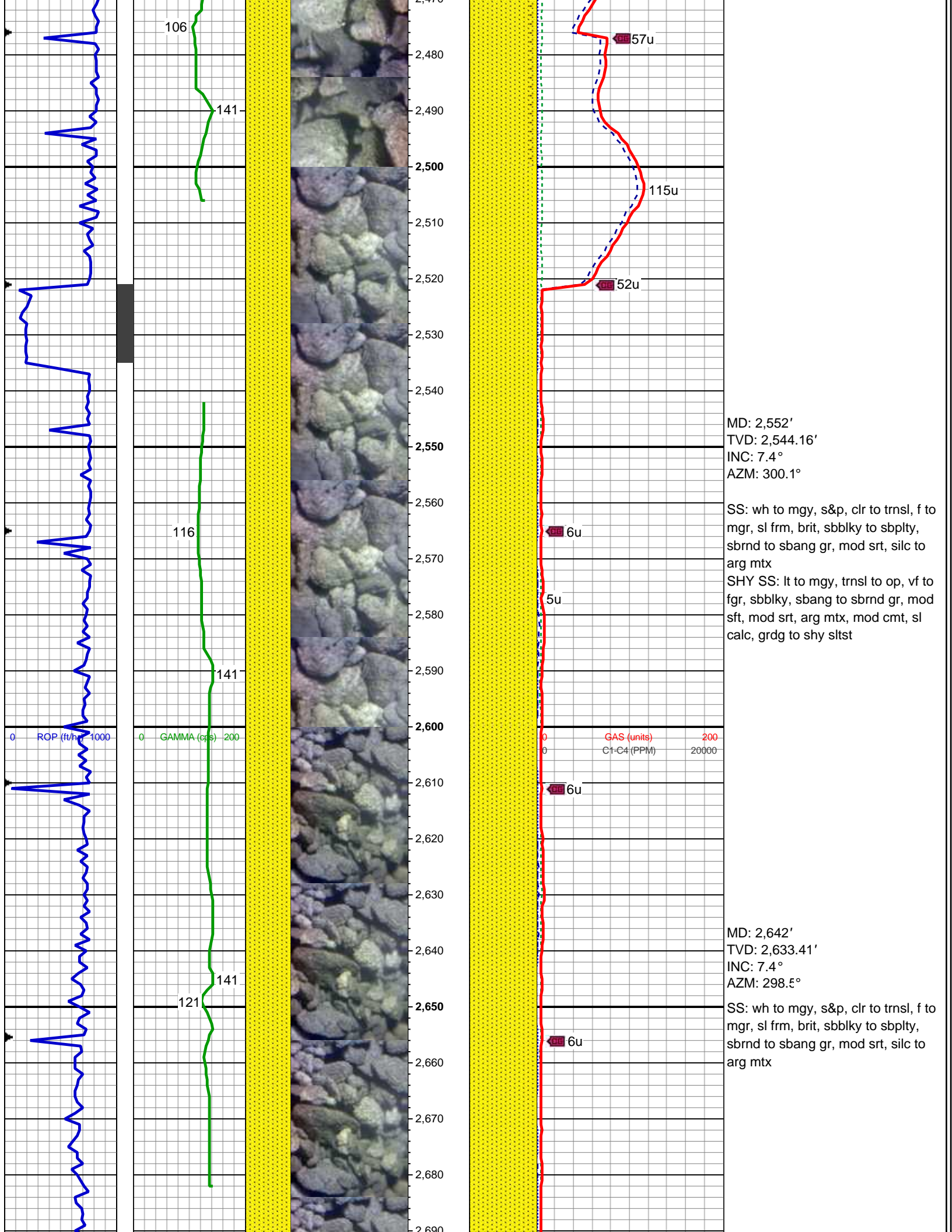


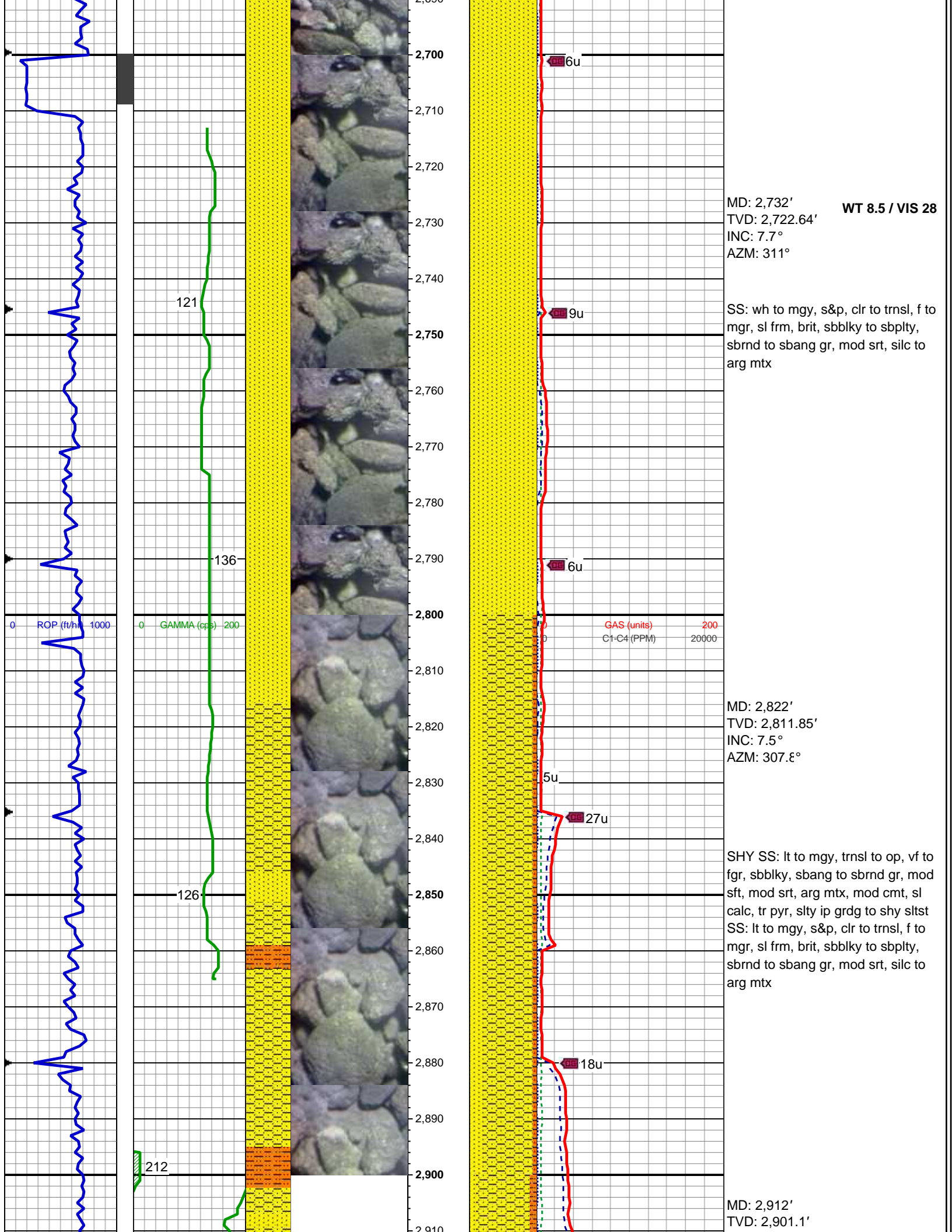


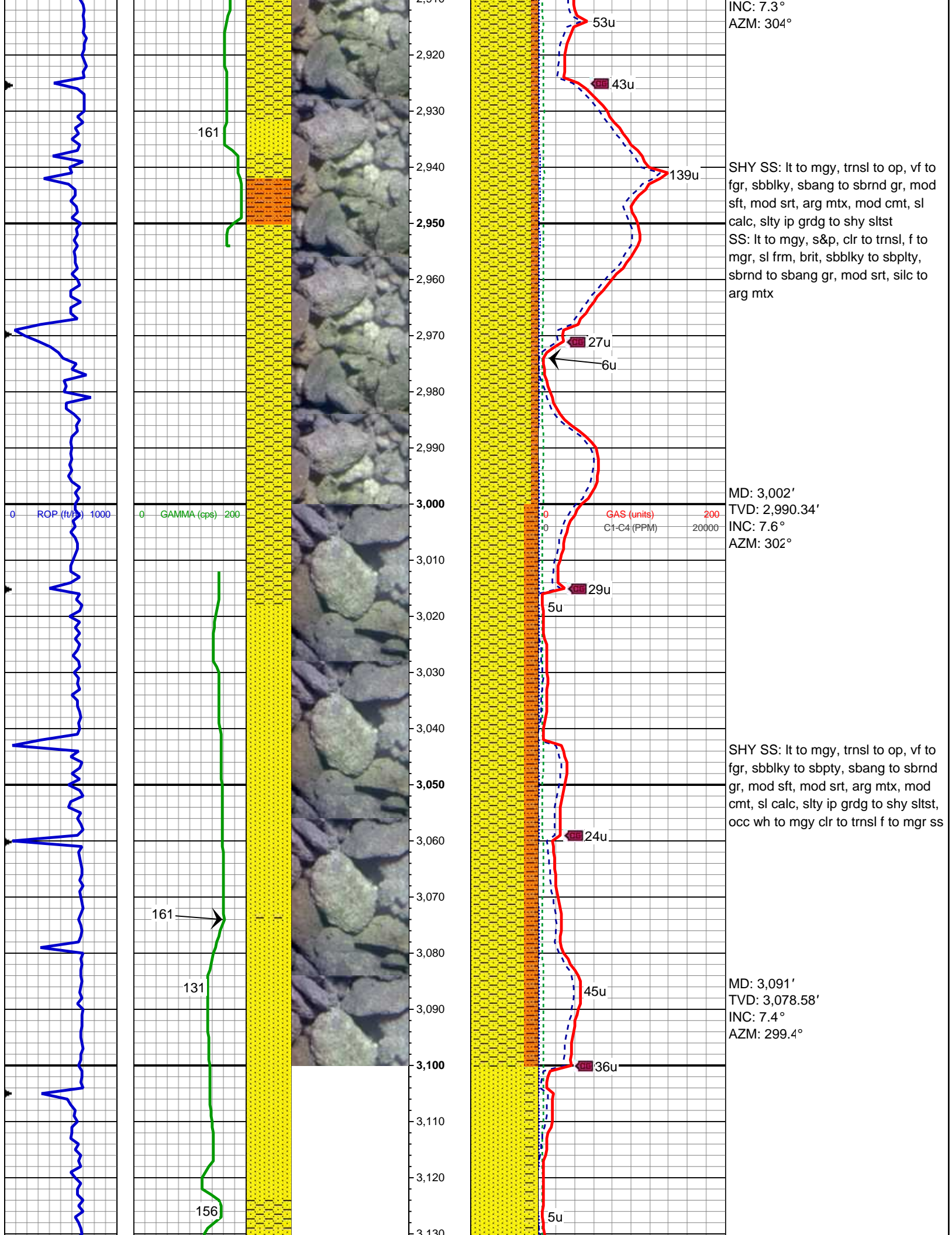


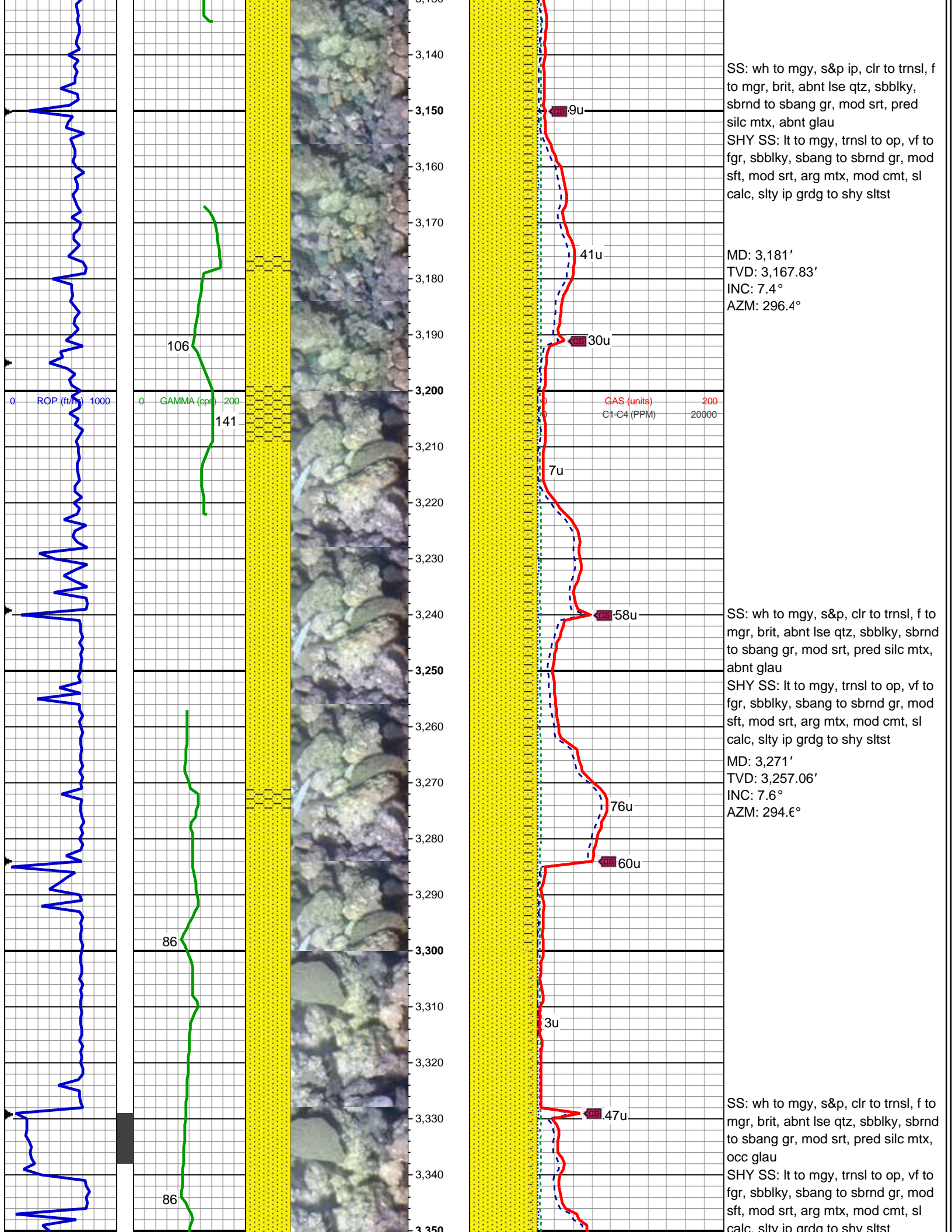


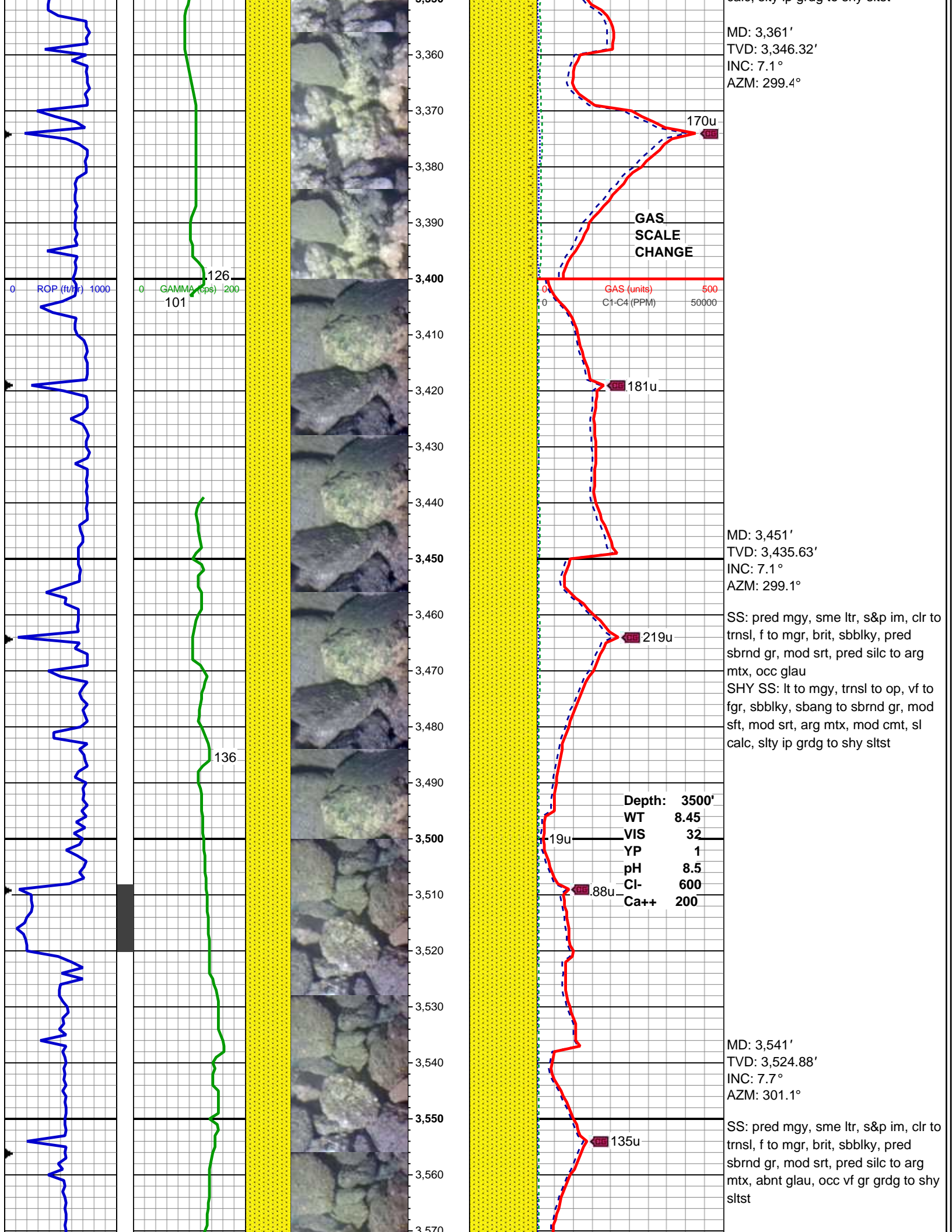


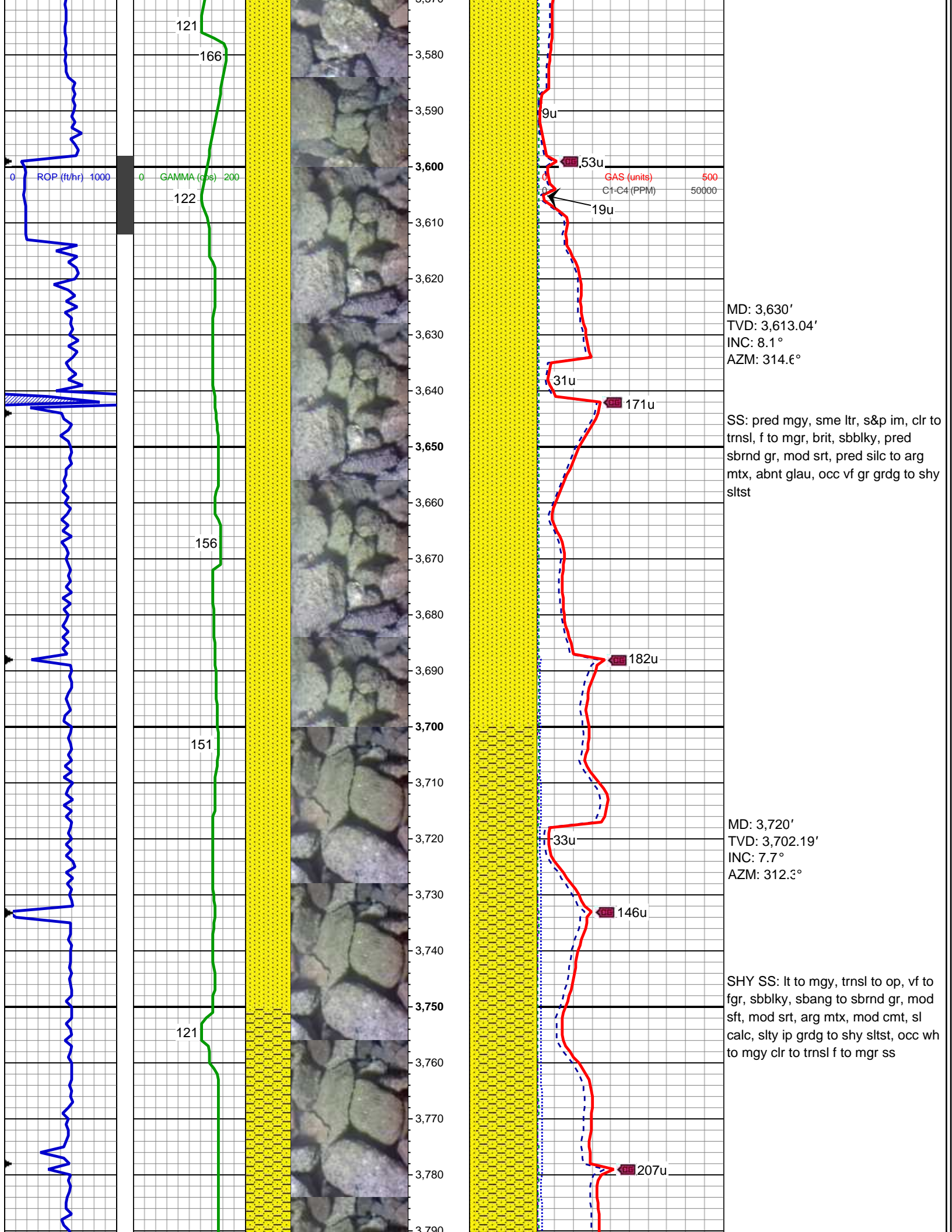


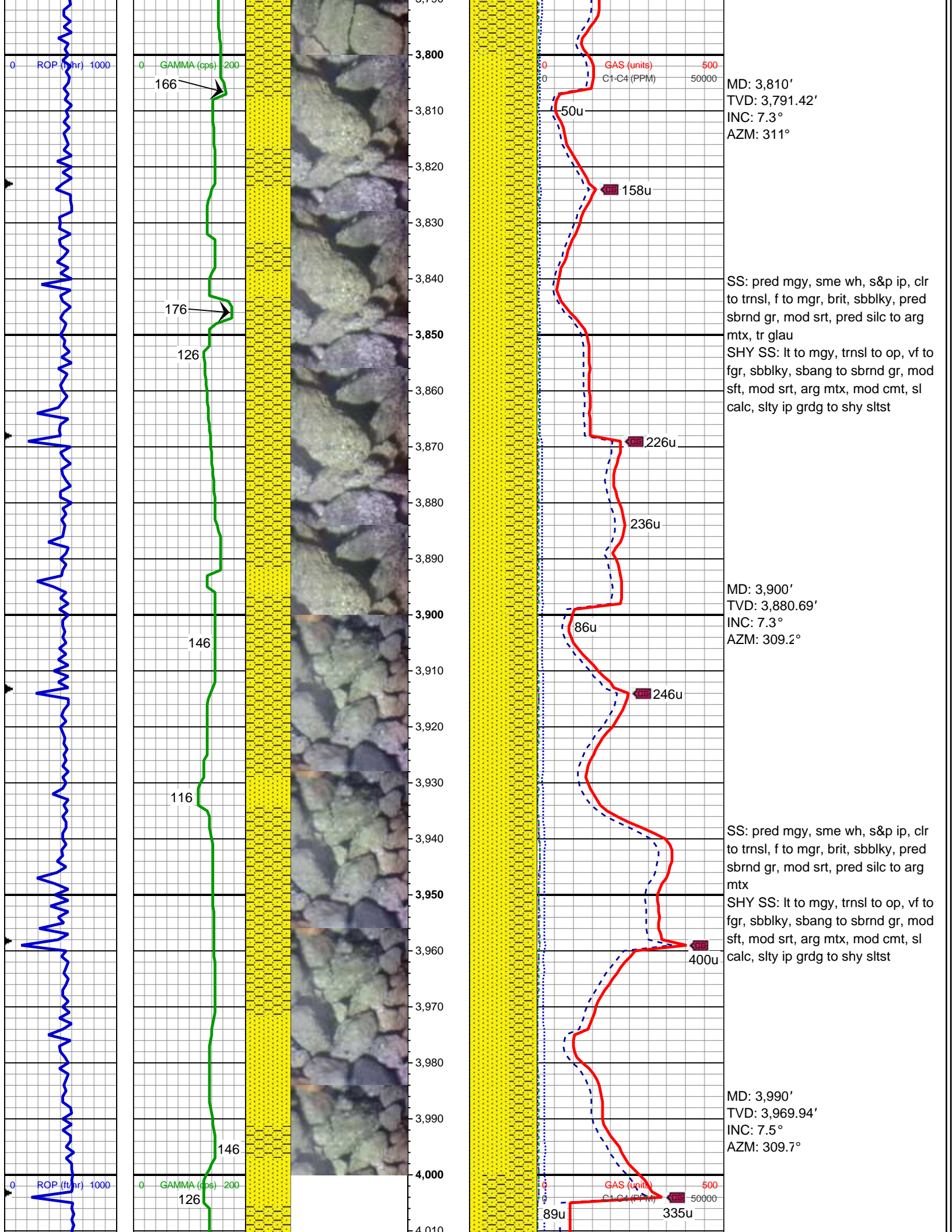


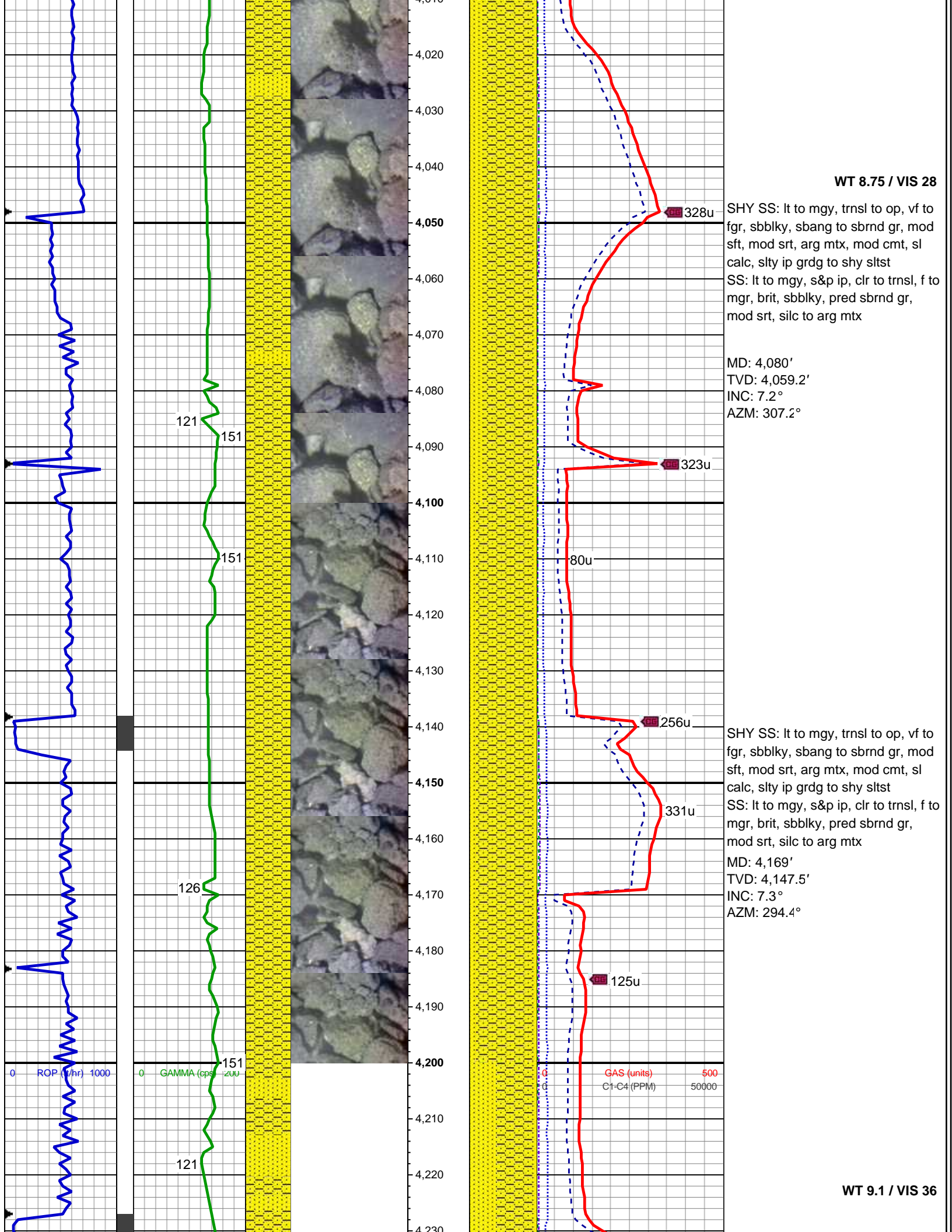


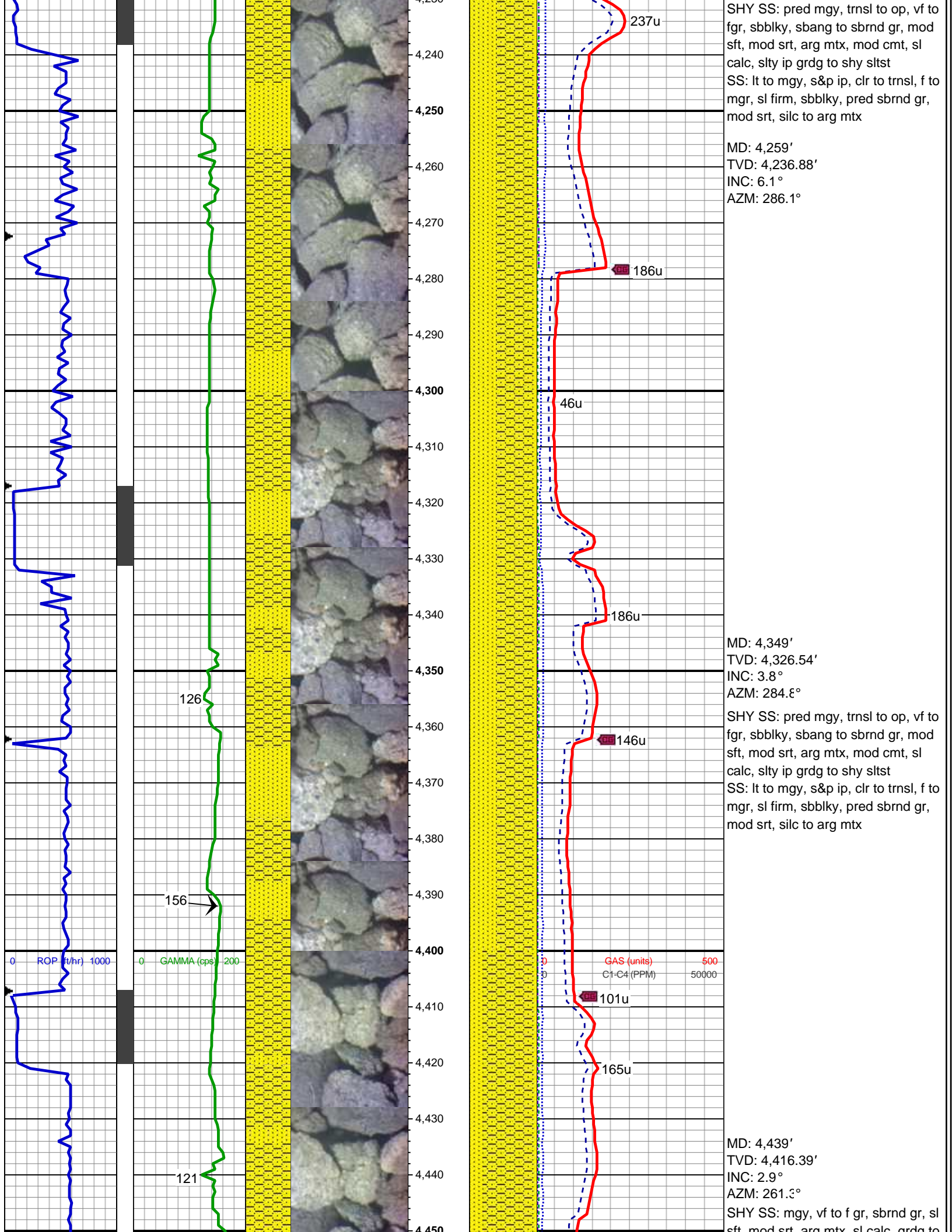


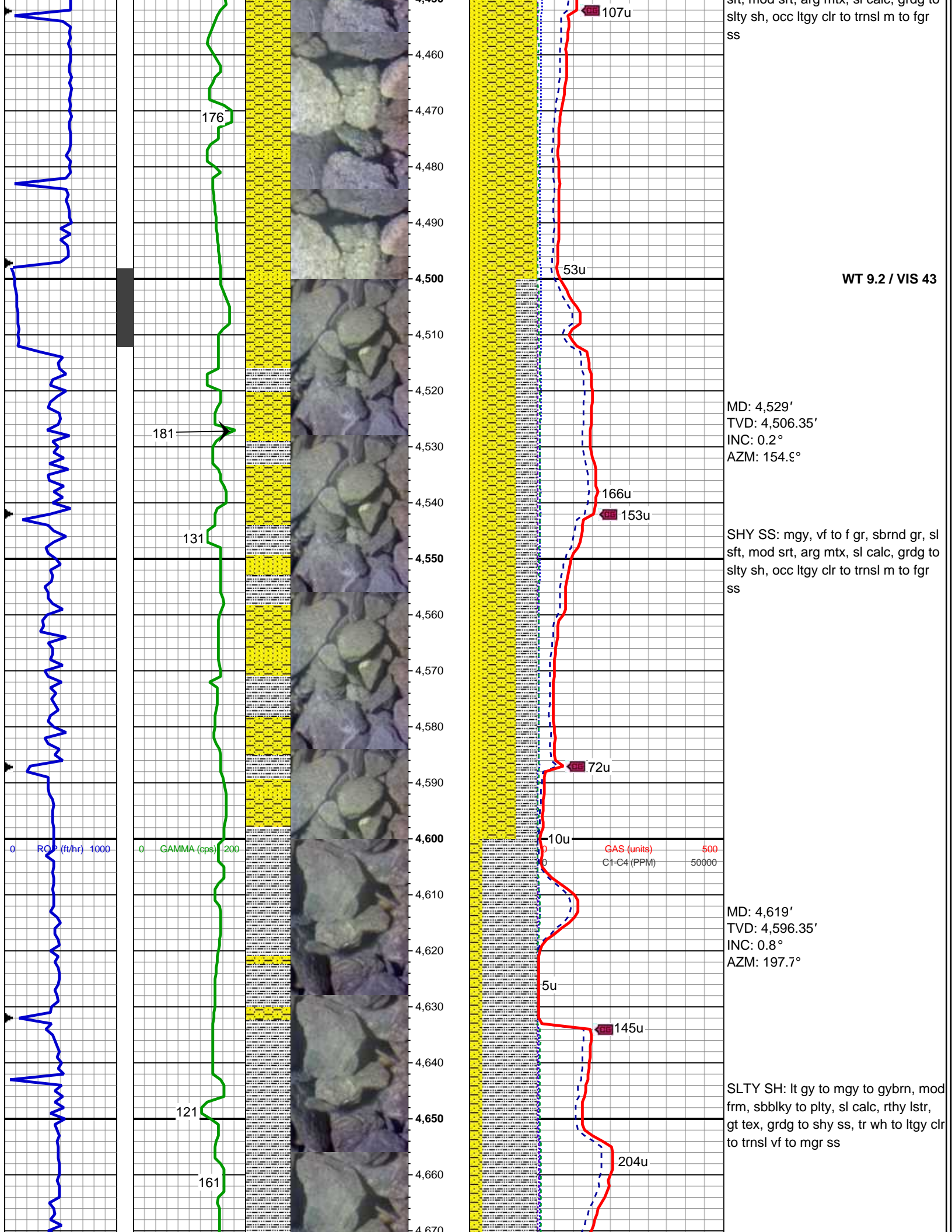


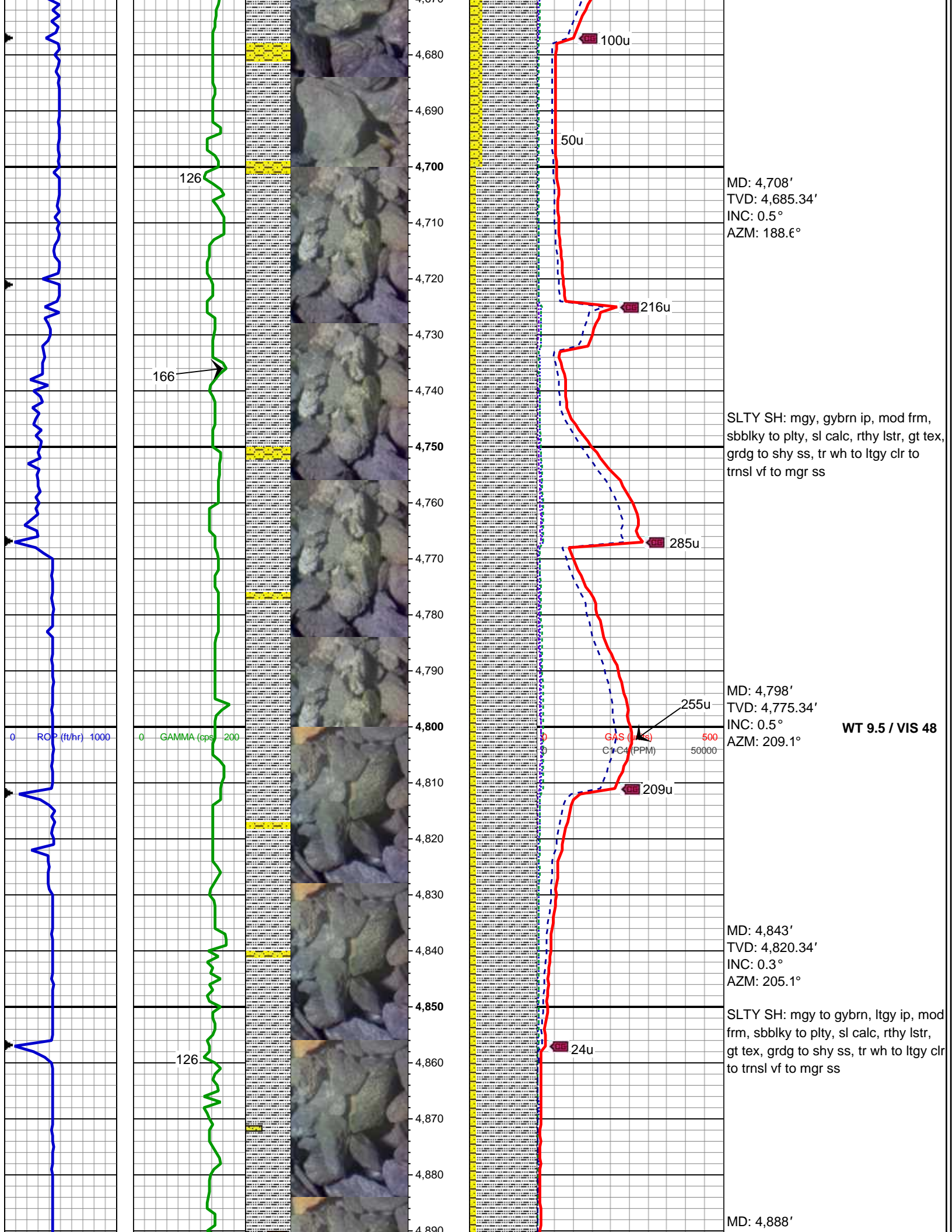


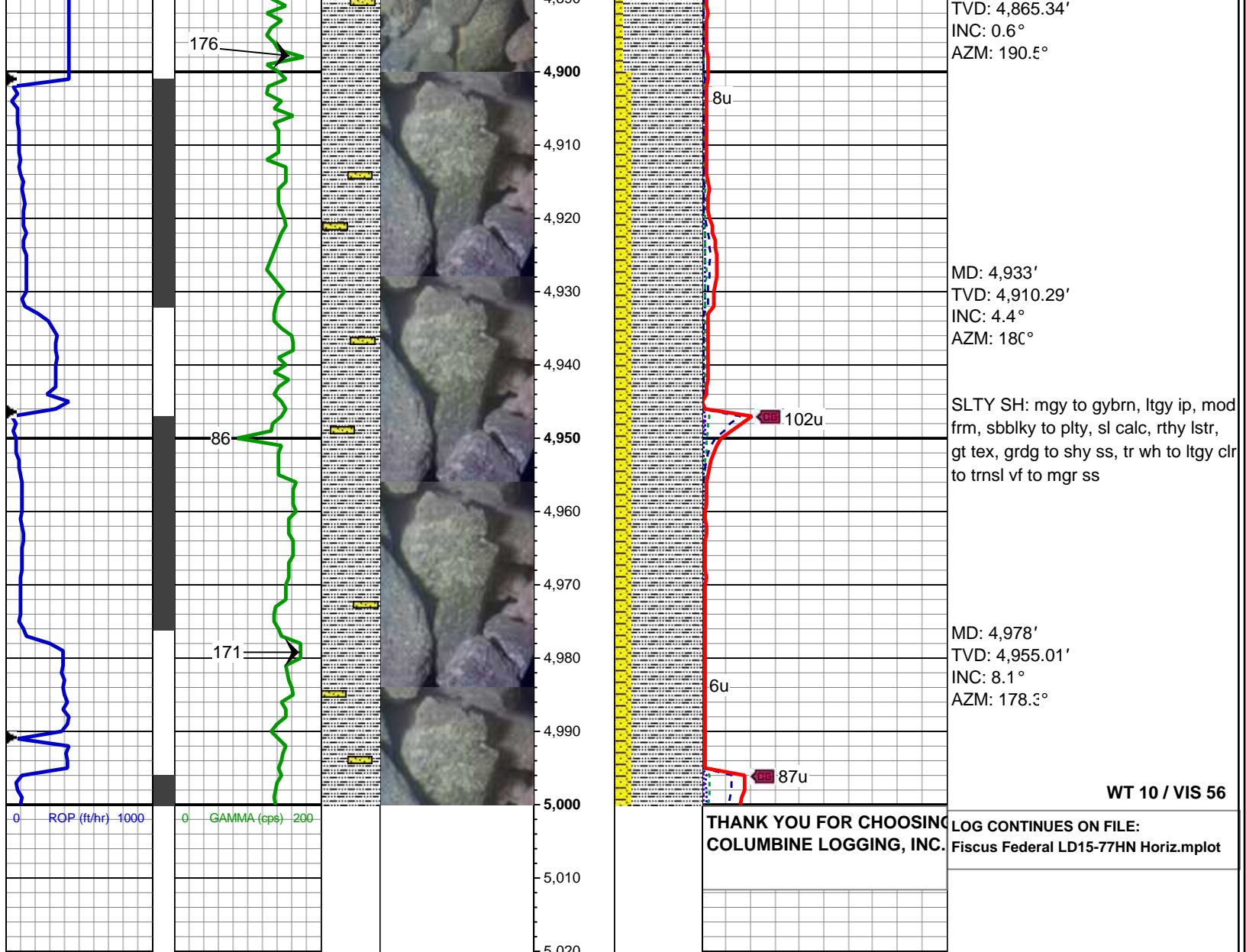












TVD: 4,865.34'
INC: 0.6°
AZM: 190.5°

MD: 4,933'
TVD: 4,910.29'
INC: 4.4°
AZM: 180°

SLTY SH: mgy to gybrn, ltgy ip, mod
frm, sbblky to plty, sl calc, rthy lstr,
gt tex, grdg to shy ss, tr wh to ltgy clr
to trnsf vf to mgr ss

MD: 4,978'
TVD: 4,955.01'
INC: 8.1°
AZM: 178.3°