

COLUMBINE LOGGING

Scale: 5" / 100'
Measured Depth Log

Well Name Heartland C31-79-1HN

Location SESE SEC25 T4N R65W

State COLORADO

County WELD

Country USA

Rig Number PRECISION 828

API Number 05-123-39553

AFE # 200376

Region DENVER-JULESBURG BASIN

Field WATTENBERG

Spud Date 9/9/2014

Drilling Completed 9/17/2014

Surface Coordinates 282' FSL, 298' FEL

Lat/Long: 40.27673/-104.6034

Ground Elevation 4845'

K.B. Elevation 4861'

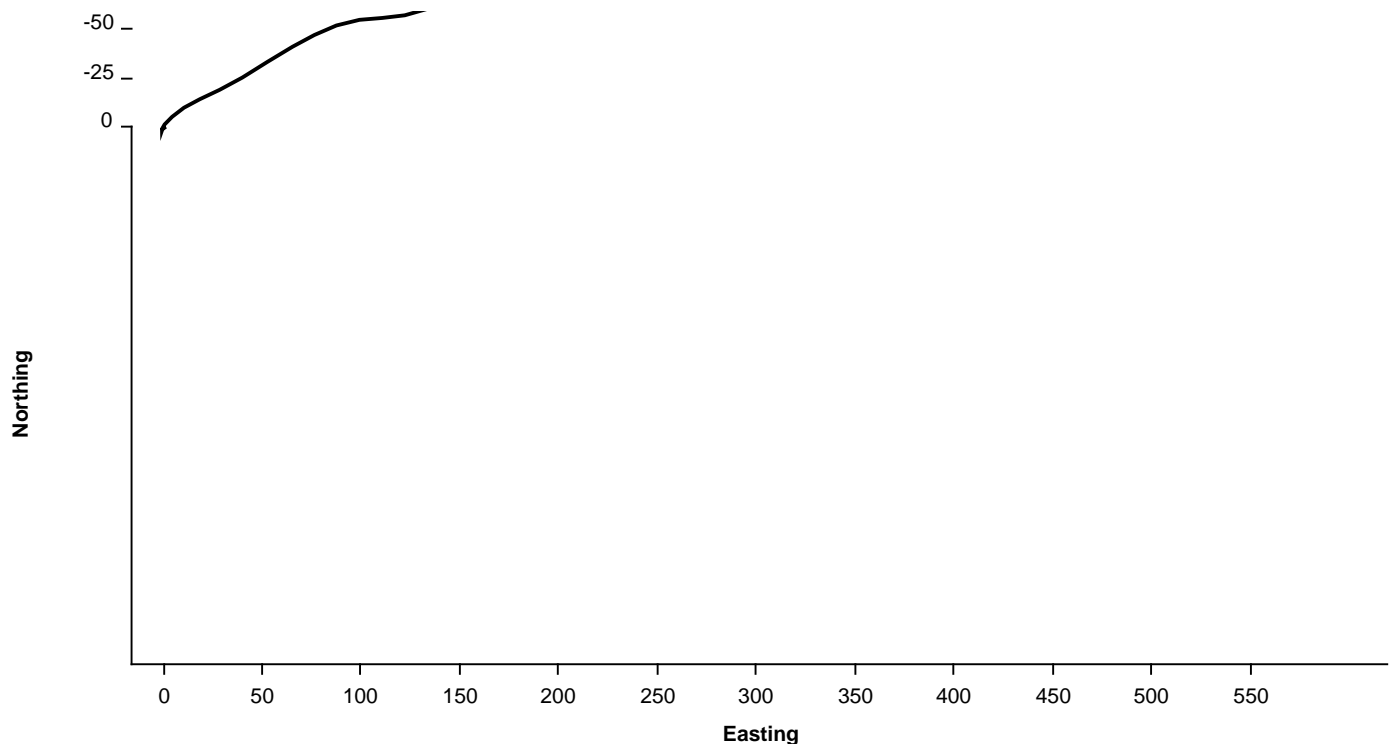
Logged Interval 721' **To** 9400'

Total Depth 19111'

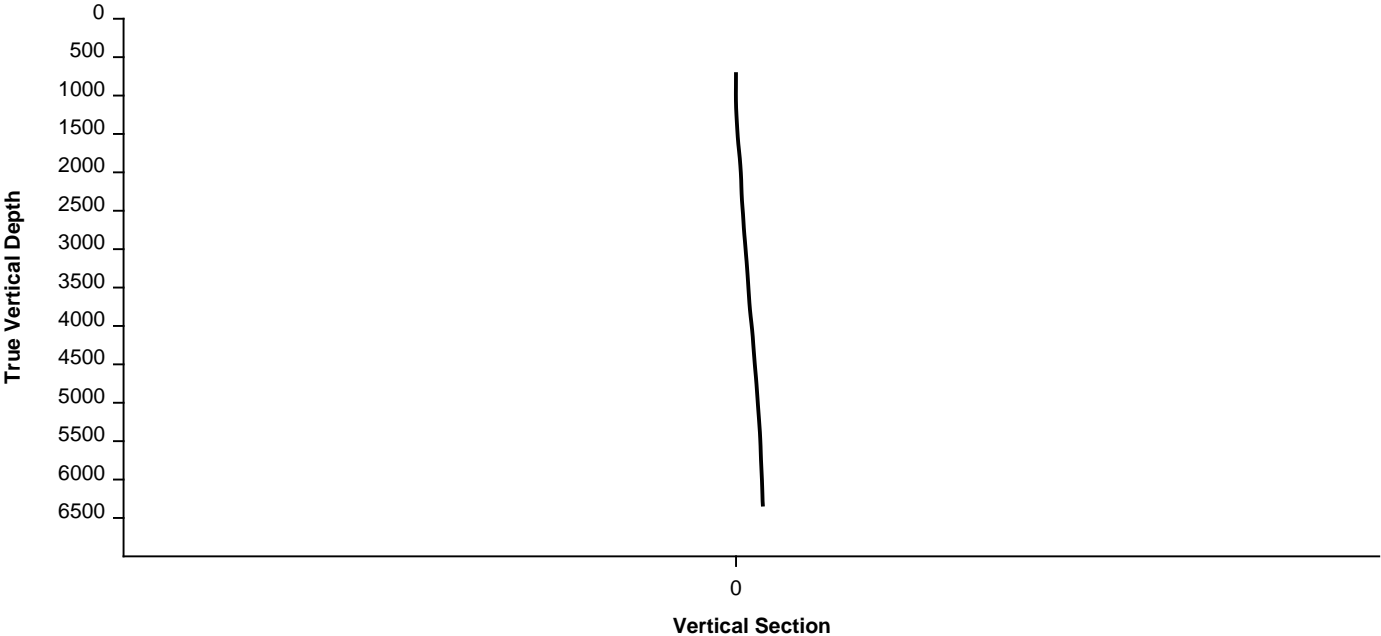
Formation FOX HILLS, PIERRE (PARKMAN, SUSSEX, SHANNON, TEEPEE BUTTES)

Type of Drilling Fluid FRESH WATER, LSND

Survey Plan



Survey Elevation



Other

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

LOG CONTINUES ON FILE: Heartland State C31-79-1HN Horiz.mplot


GEOLOGICAL SERVICES PROVIDED BY COLUMBINE LOGGING, INC.

Operator

Company NOBLE ENERGY INC.

Address 1625 Broadway
Denver, CO 80202

Rock Types

 SANDSTONE  SHALY SANDSTONE  SHALY SILTSTONE  SILTY SHALE

Geologist

Name EVAN HOWELL


Other Symbols

Name EVAN HOWELL


Company NOBLE ENERGY, INC.

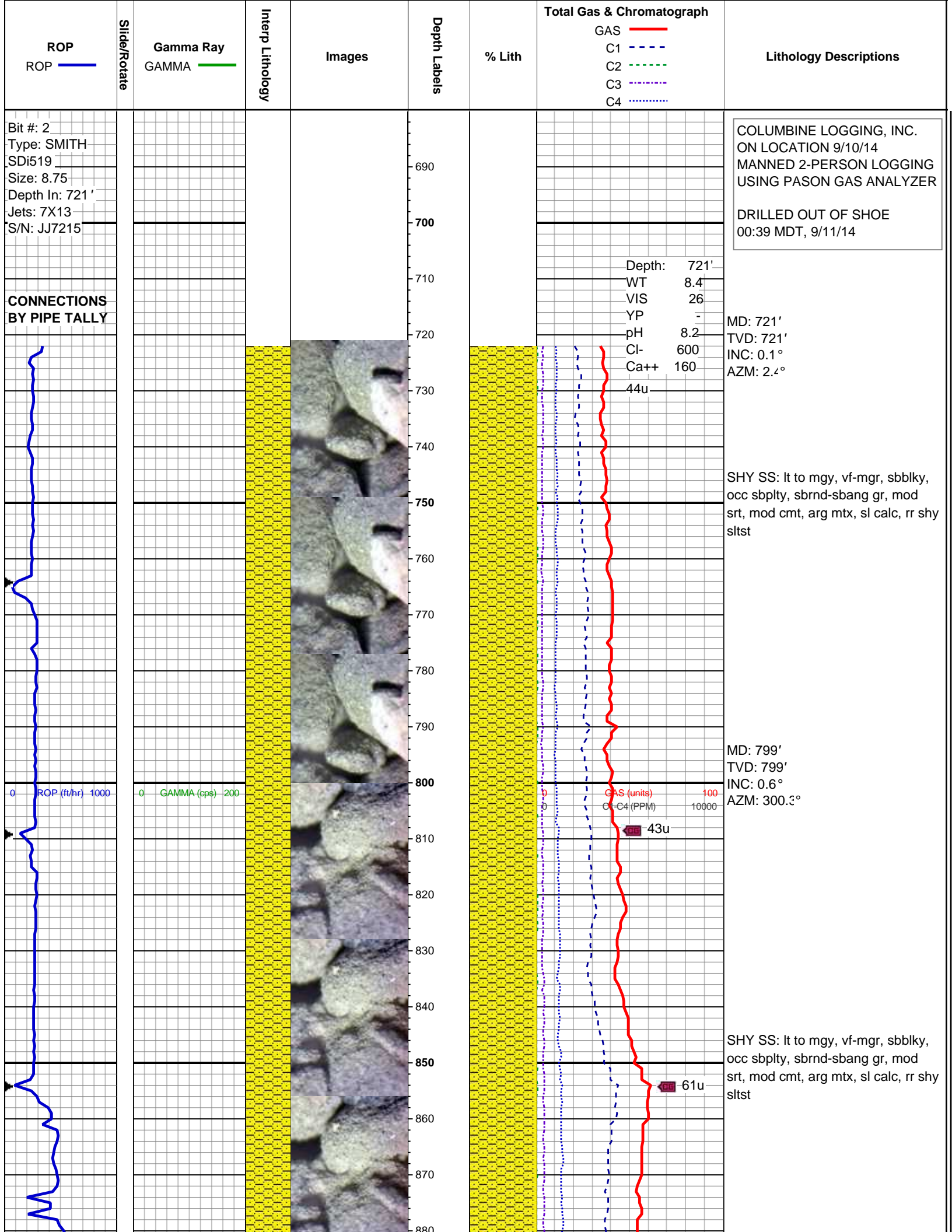
Address 1625 Broadway
Denver, CO 80202

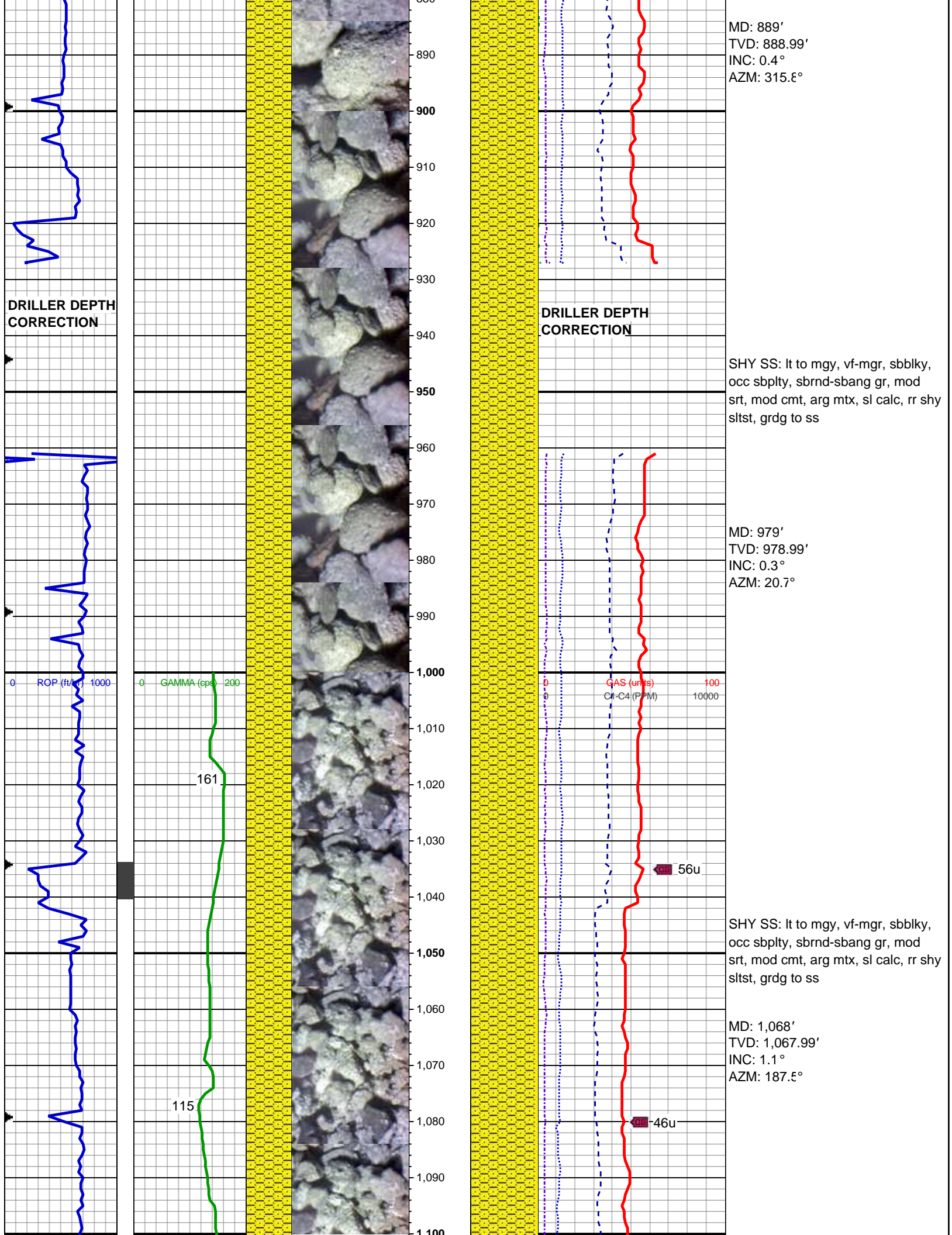
Engineering

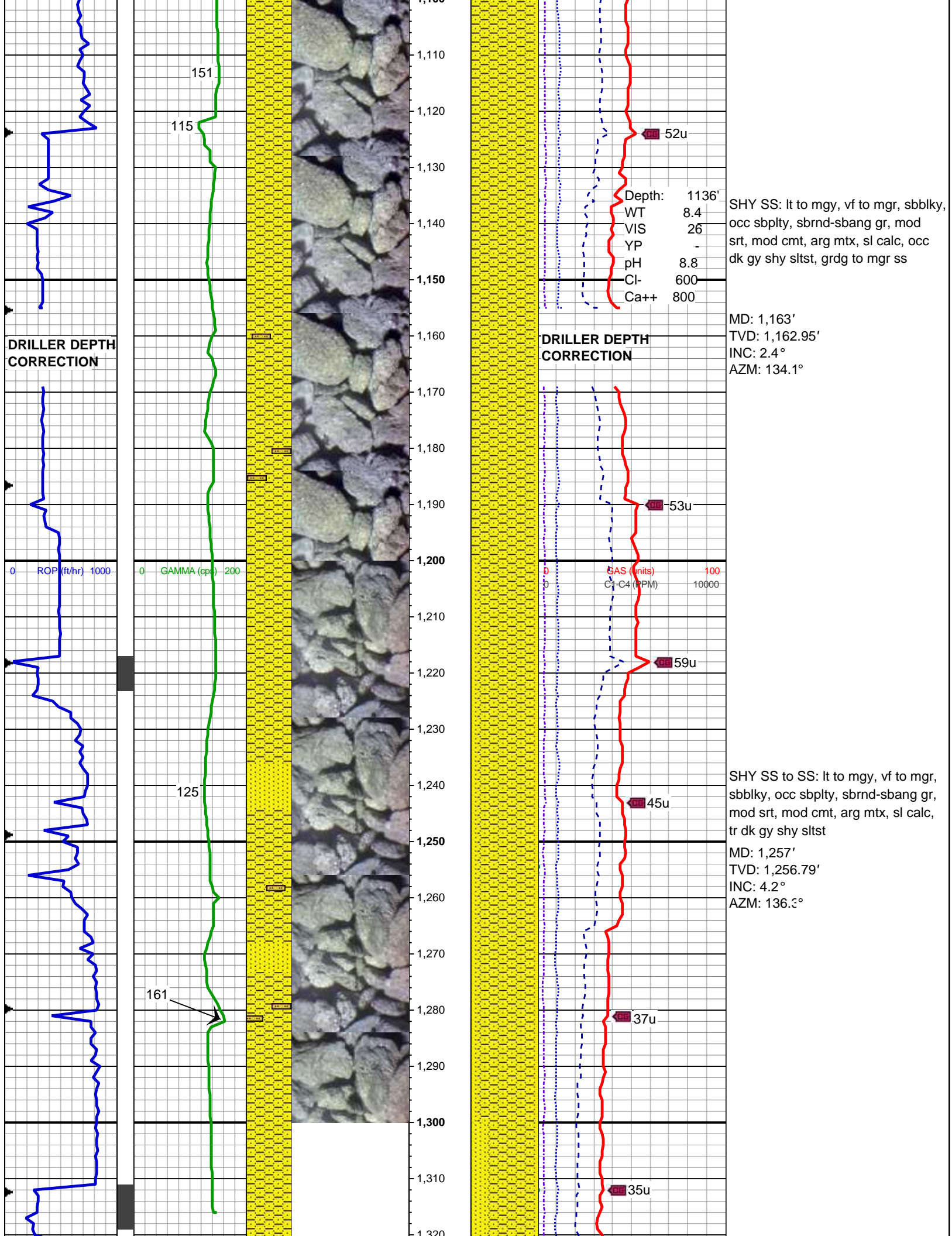
 CONNECTION (RIGHT)

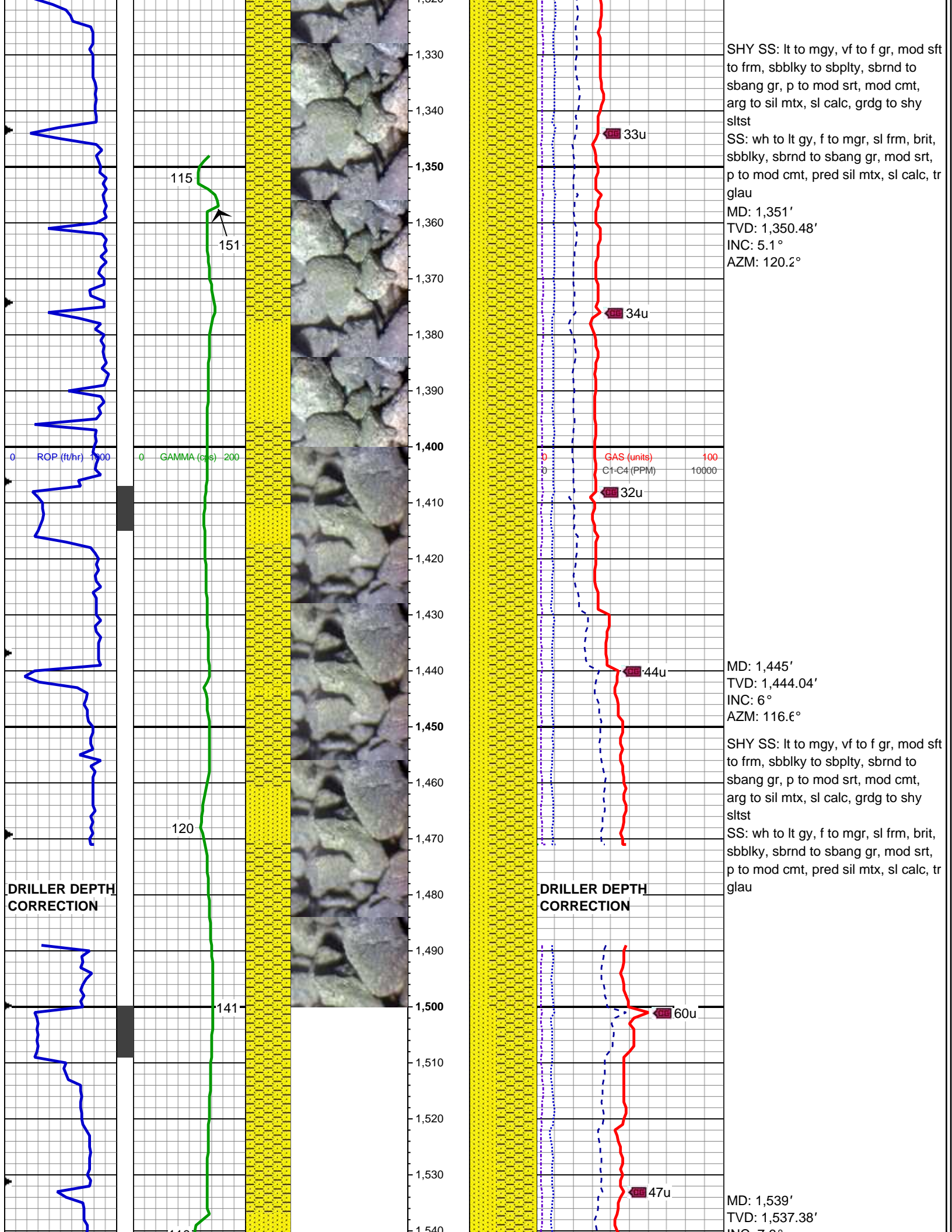
 CONNECTION GAS

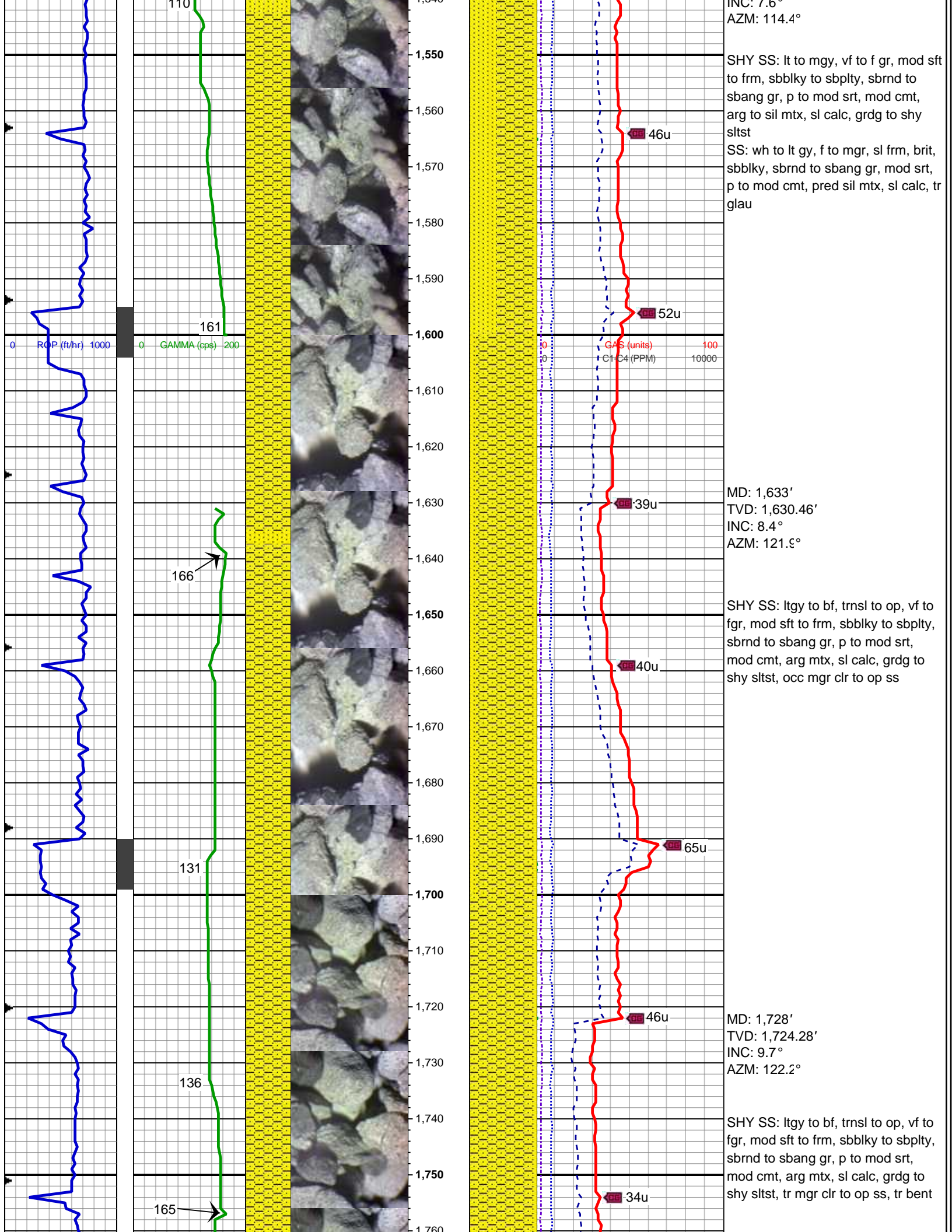
 MN DEPTH (RIGHT)

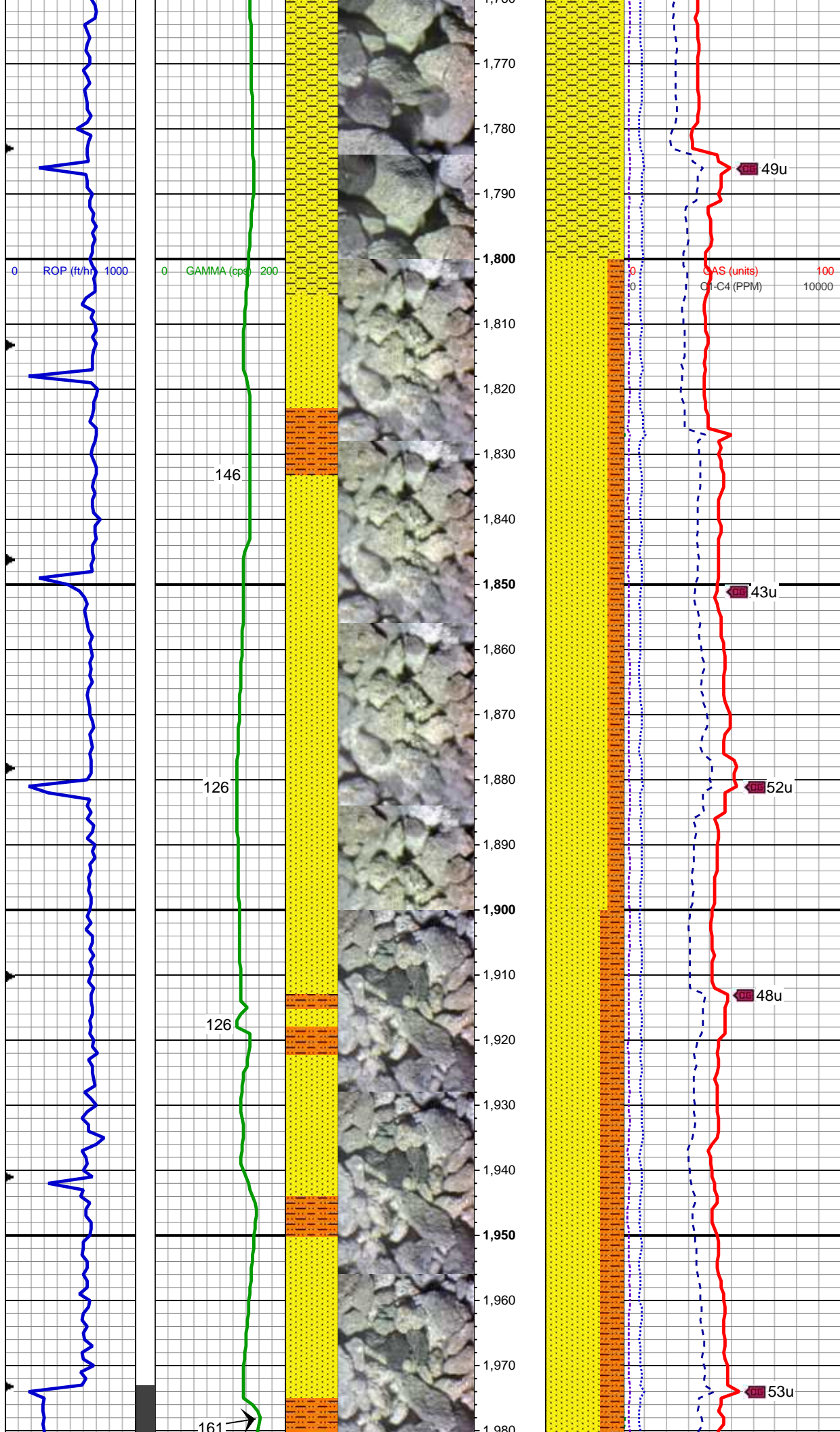










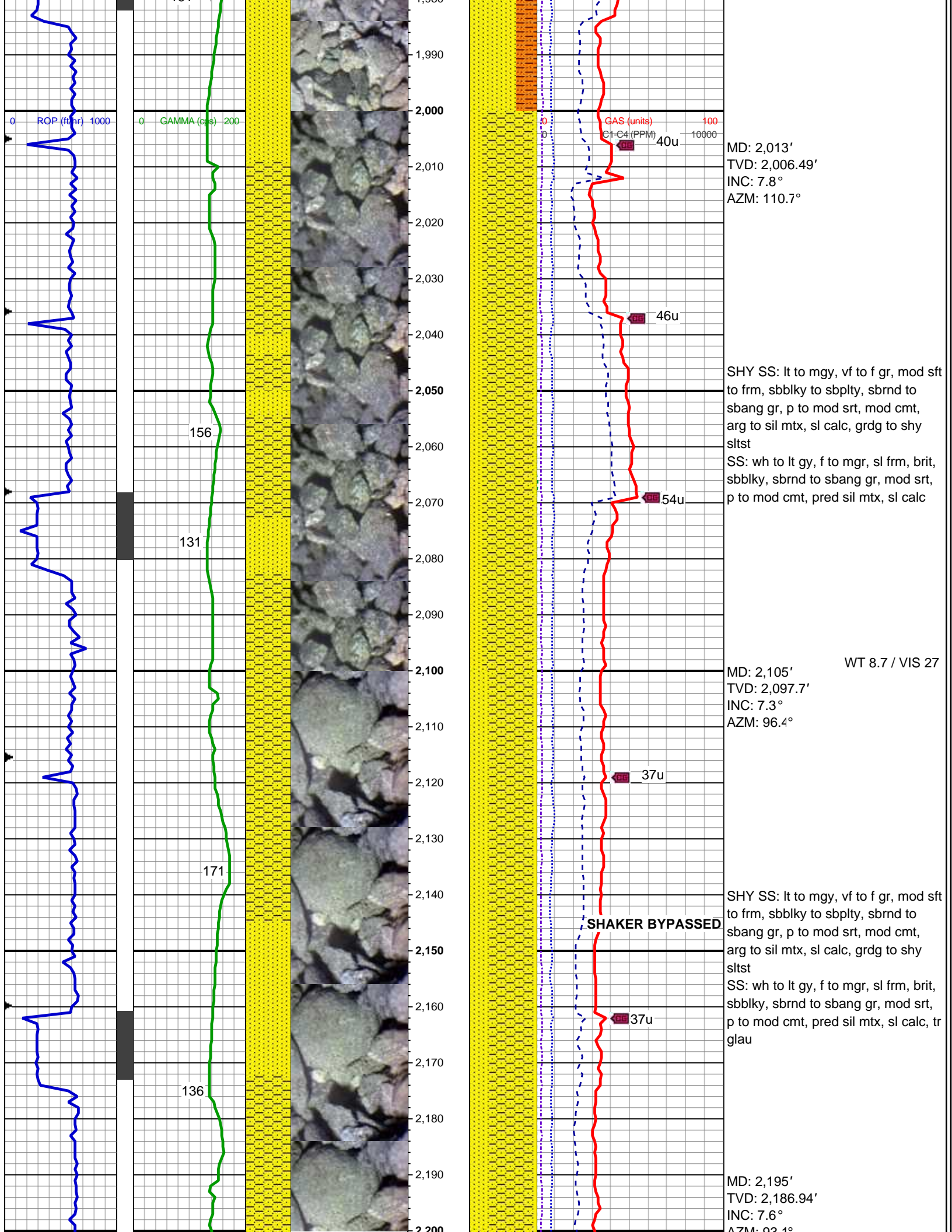


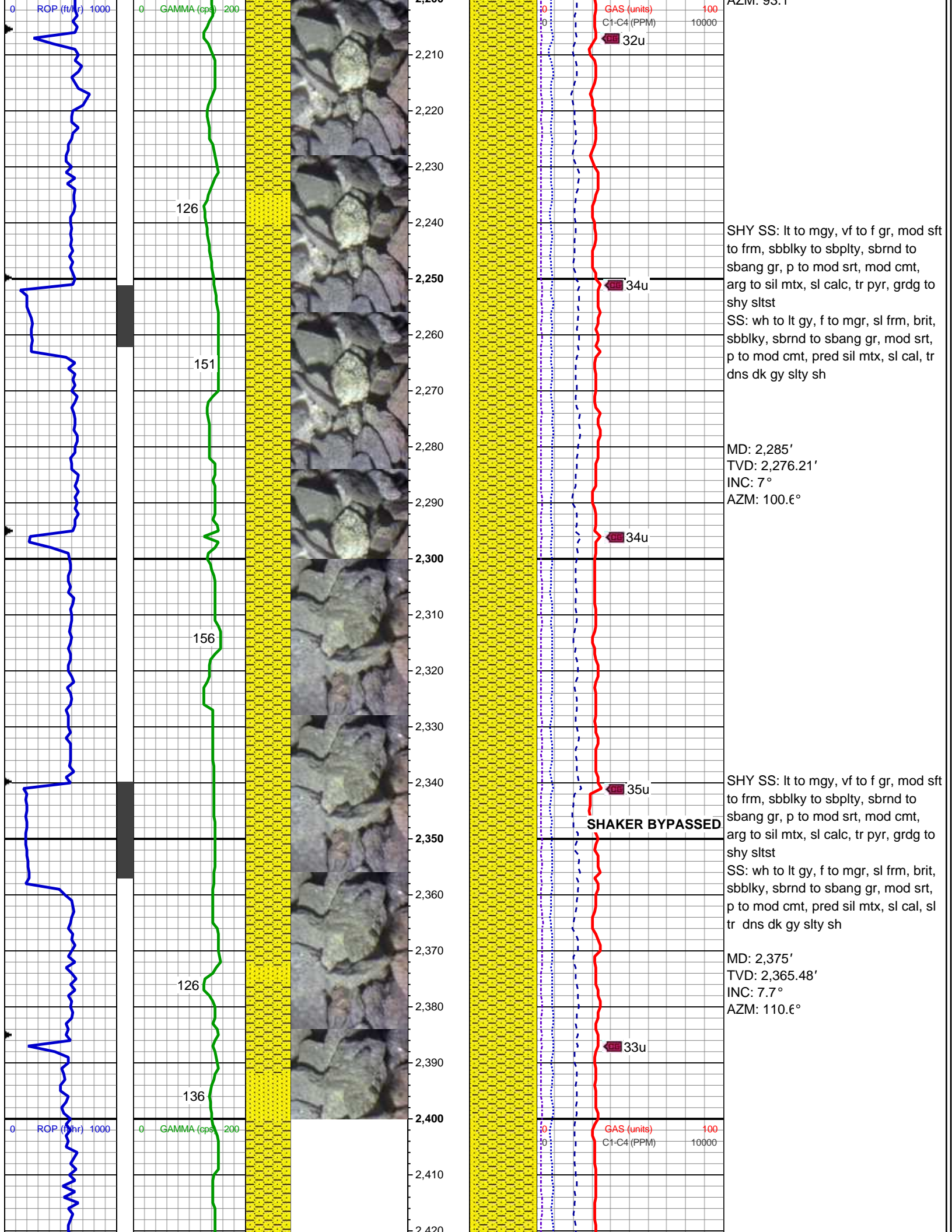
MD: 1,823'
TVD: 1,818.11'
INC: 8.3°
AZM: 119.7°

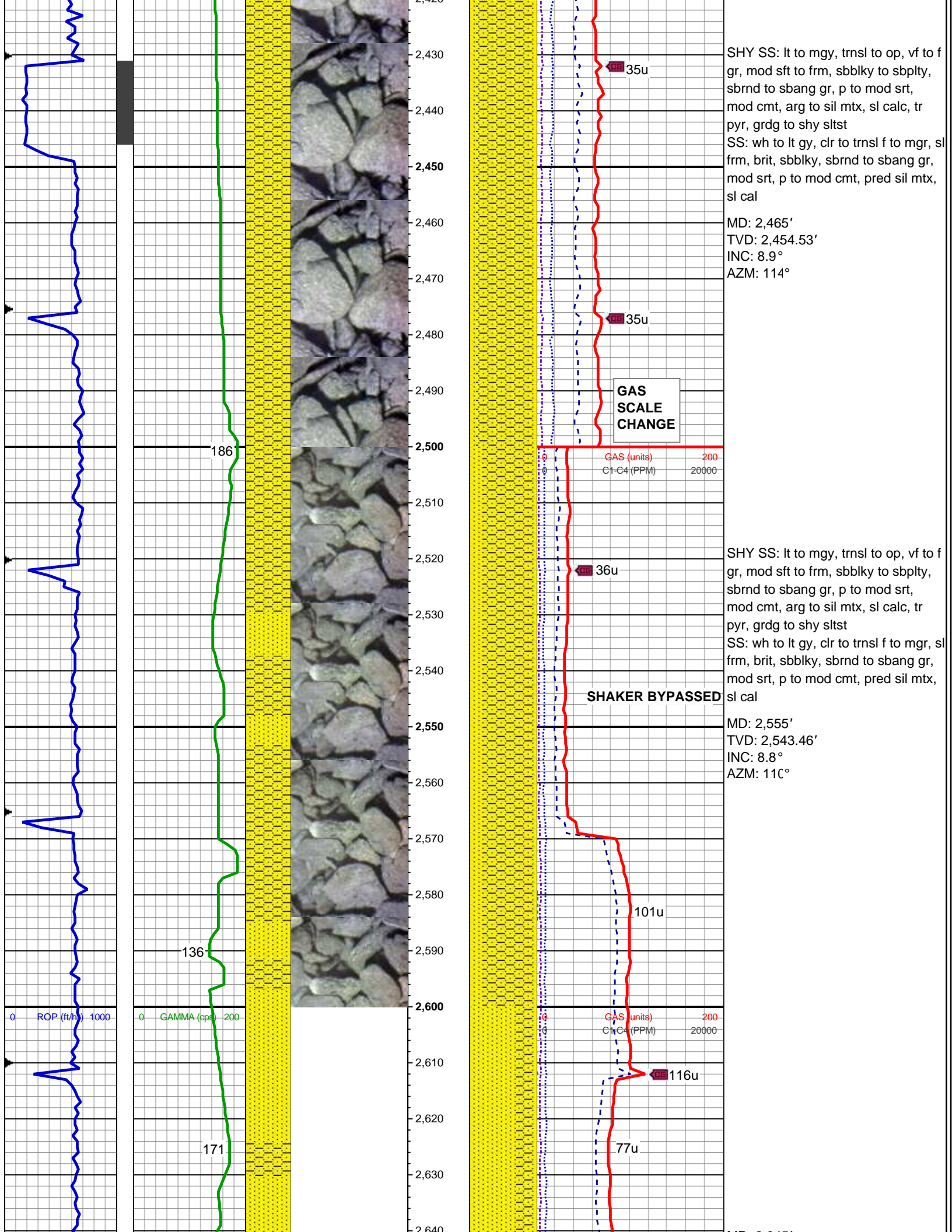
SHY SS: lt to mgy, sme sl gybrn, trnsl to op, vf to fgr, mod sft, sbbkly to sbply, sbrnd to sbang gr, mod srt, mod cmt, arg mtx, sl calc, grdg to shy sltst, tr mgr clr to op ss, tr bent

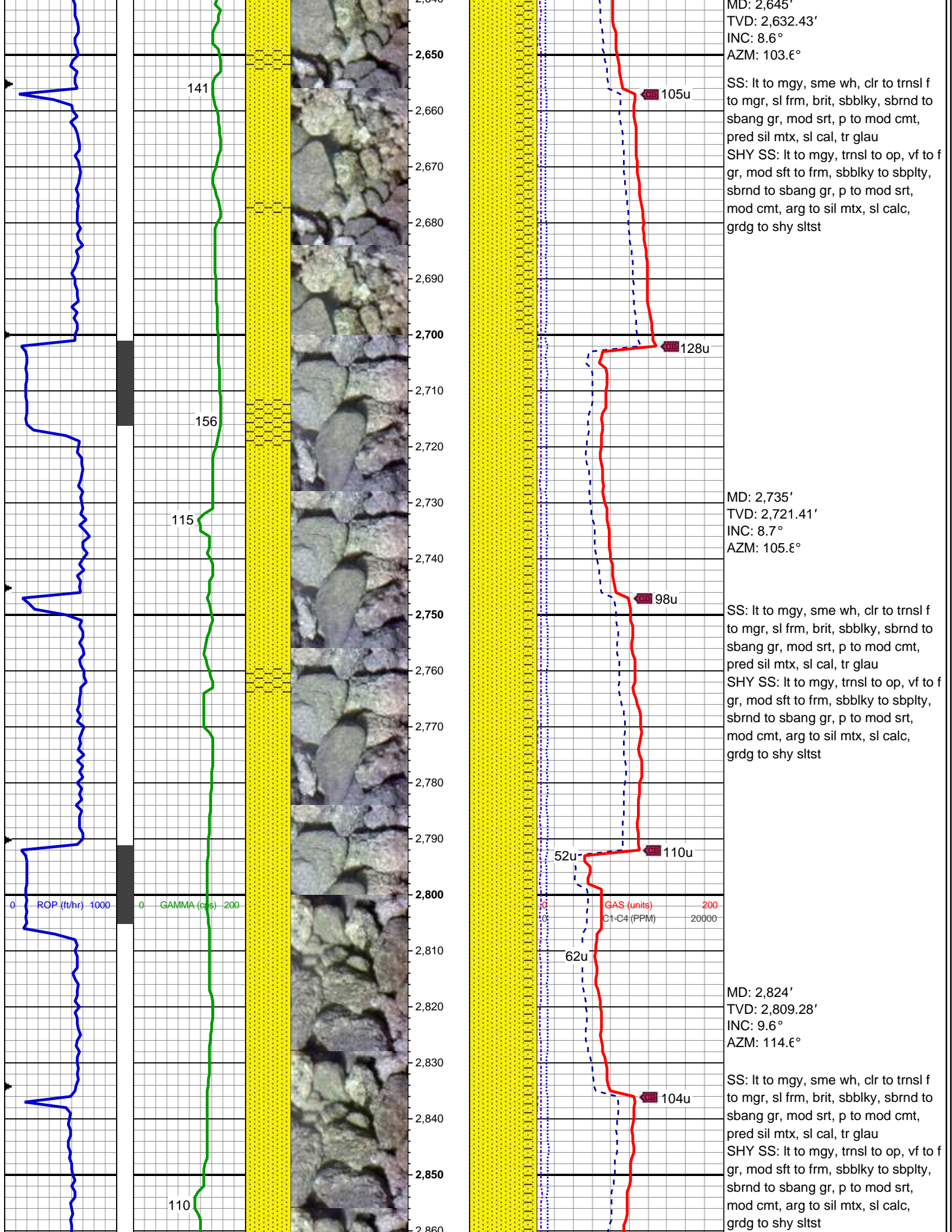
MD: 1,918'
TVD: 1,912.27'
INC: 6.9°
AZM: 116.5°

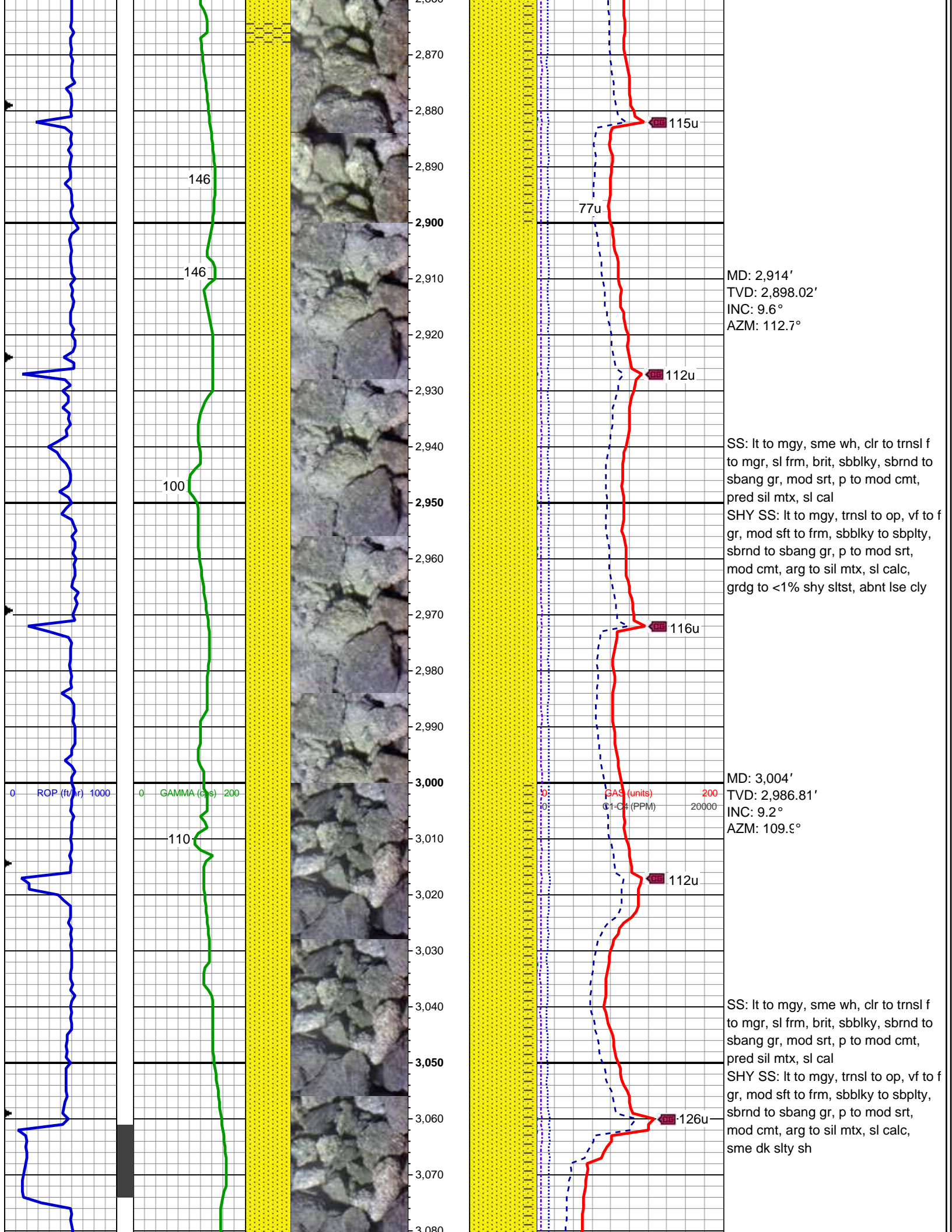
SHY SS: lt to mgy, sme sl gybrn, trnsl to op, vf to fgr, mod sft, sbbkly to sbply, sbrnd to sbang gr, mod srt, mod cmt, arg mtx, sl calc, grdg to shy sltst, tr mgr clr to op ss, tr bent

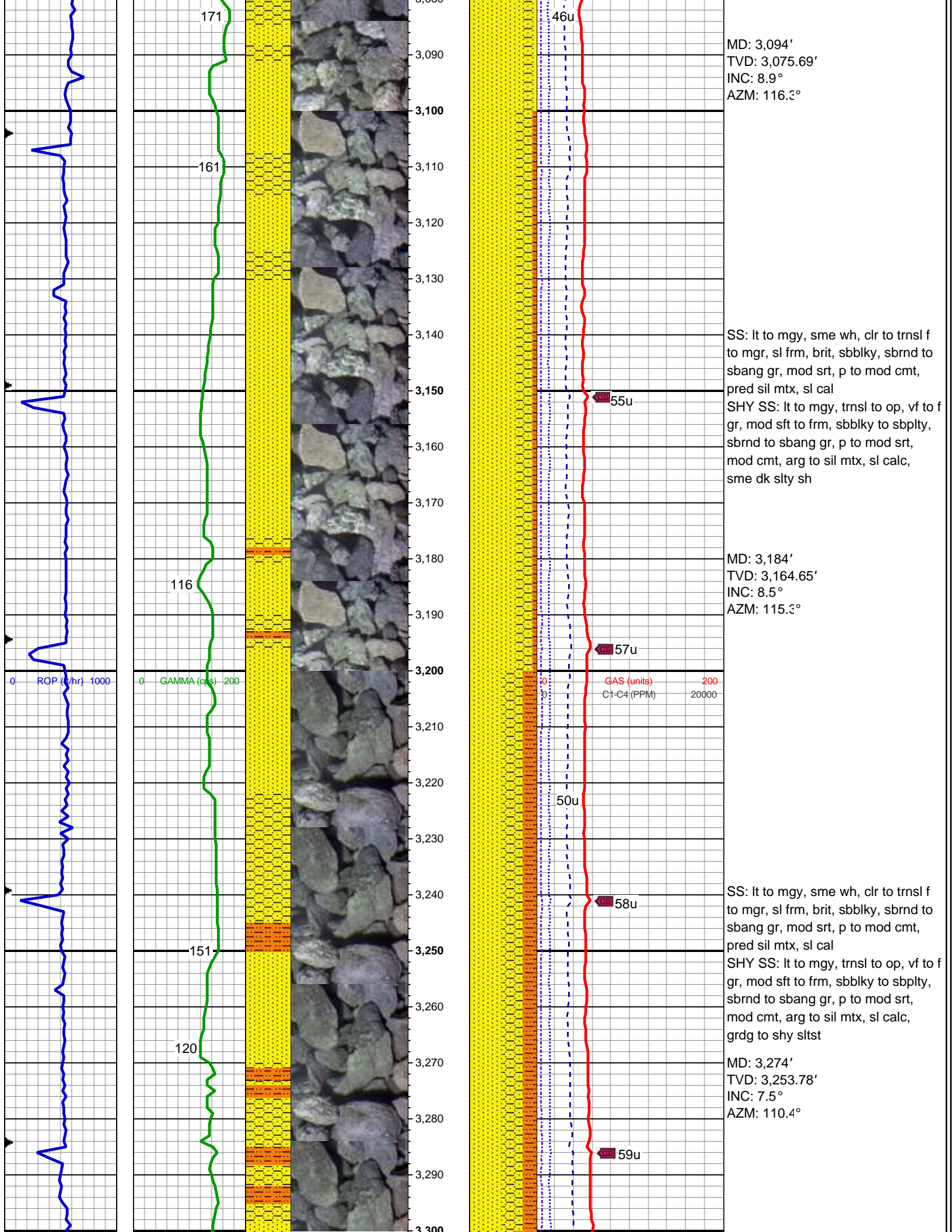


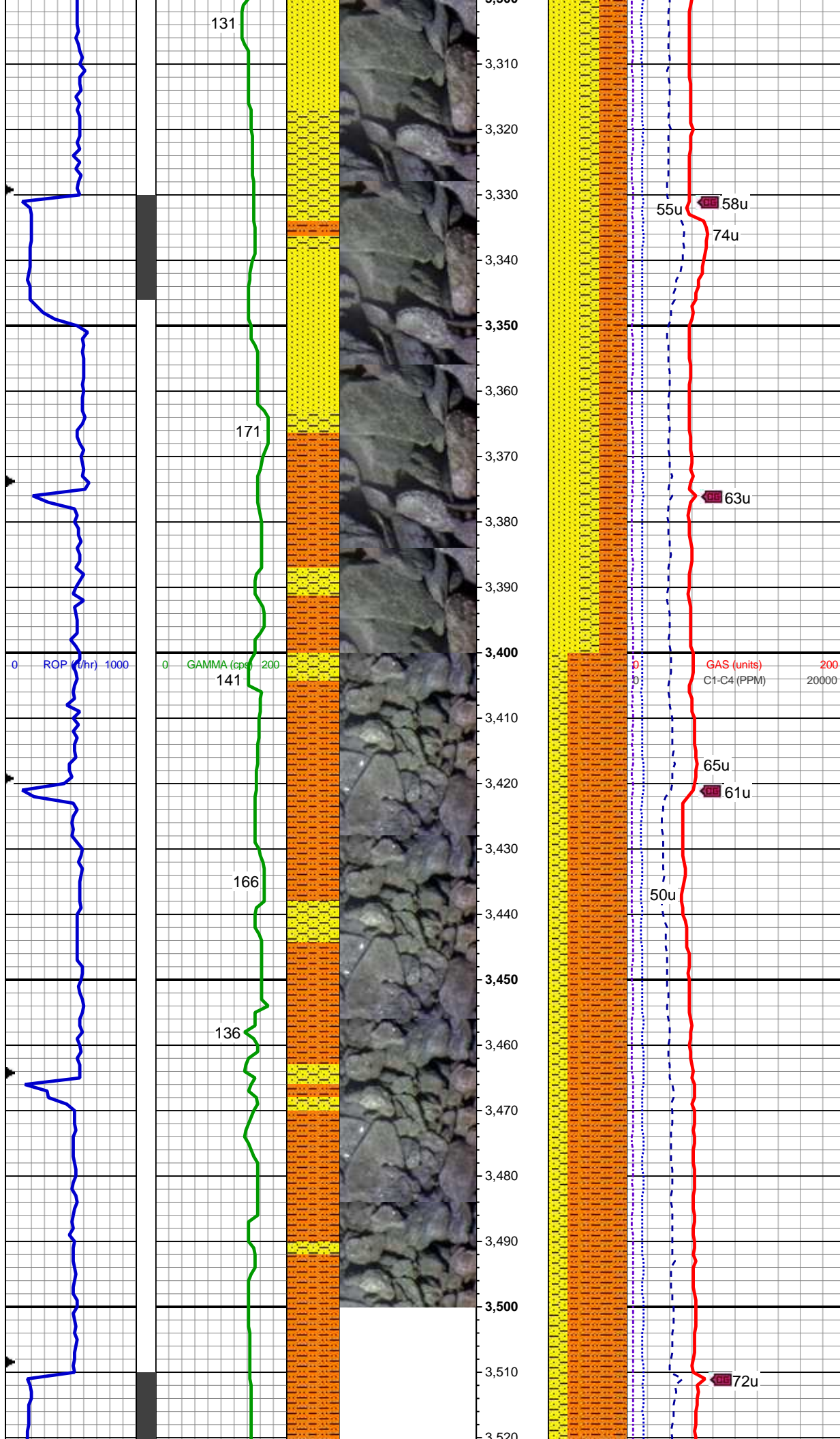












SS: lt to mgy, sme wh, clr to trnsl f
to mgr, sl frm, brit, sbbiky, sbrnd to
sbang gr, mod srt, p to mod cmt,
pred sil mtx, sl cal
SHY SLTST: lt to mgy, sme sl
gybrn, sft to sl frm, sbbiky to sbply,
sl calc, tr pyr, grdg to shy ss

MD: 3,364'
TVD: 3,342.89'
INC: 8.6°
AZM: 113.4°

SHY SLTST: lt to mgy, sme sl
gybrn, sft to sl frm, sbbiky to sbply,
sl calc, grdg to shy ss, sme vlt gy clr
to trnsl mgr ss

MD: 3,453'
TVD: 3,430.98'
INC: 7.8°
AZM: 107.3°

