



Scale: 5" / 100'  
Measured Depth Log

Well Name Arellano Q-10-9HN

Location SESE Section 10, T5N, R65W

State Colorado

County Weld

Country United States

Rig Number Frontier (Utah) 8

API Number 05-123-41108

AFE # 41108

Region DJ Basin

Field Wattenberg

Spud Date 3/31/2015

Drilling Completed 6/20/2015

Surface Coordinates Section 10:

460' FSL x 490' FEL

Bottom Hole Coordinates Section 9:

1211' FSL x 2316' FEL

Ground Elevation 4616'

K.B. Elevation 4640'

Logged Interval 6000' To 14001'

Total Depth 14001'

Formation Niobrara

Type of Drilling Fluid FWLSND

## Operator

Company Bayswater Exploration & Production, LLC.

Address 730 17th St.  
Denver, CO 80202

## Geologist

Name Mark E. Brown

Company Bayswater Exploration & Production, LLC.

Address 730 17th St.  
Denver, CO 80202

## Other

Robert Davis Wellsite Geologist

Ben Katka Wellsite Geologist

Joey Luce Wellsite Geologist

Columbine Logging Computer 148

Bloodhound Unit 298

## Zone Color Coding

Oil  
Note  
Error





























































Condensate  
Core  
Water

Gas  
Pressu  
Seal

## Rock Types

UNKNOWN	COAL	MARLSTONE	SHALY SANDSTONE
ANHYDRITE	CONGLOMERATE	METAMORPHIC	SHALY SILTSTONE
BENTONITE	DOLOMITE	NO SAMPLE	SILT SHALE
BRECCIA	DOLOMITIC LIMESTONE	SALT	SILTSTONE
CHALK	GRANITE	SANDSTONE	TILL
CEMENT	GYPSUM	SALT-PEPPER SAND	TUFF
CHERT	IGNEOUS	SHALE	WELDED TUFF
CLAY CHOKE SAND	SIDERITE or LIMONITE	SHALE COLORED	
CLAYSTONE	LIMESTONE	SHALE GRAY	

## Accessories

Fossils		Minerals		Stringer	
 GASTROPOD	 ARGILLITE GRAIN	 HEAVY MINERAL		 ANHYDRITE STRINGER	
 INOCERAMUS	 B BENTONITE	 K KAOLIN		 B BENTONITE STRINGER	
 ALGAE	 O OOLITE	 BITUMENOUS SUBSTANCE		 M MARCASITE	
 AMPHIPORA	 O OSTRACOD	 BRECCIA FRAGMENTS		 T MARLSTONE	
 BELEMNITE	 P PELECYPOD	 C CALCAREOUS		 U MICACEOUS	
 BIOCLASTIC	 P PELLET	 C CARBONACEOUS FLAKES		 M MINERAL CRYSTALS	
 BRACHIOPOD	 P PISOLITE	 C HTDK		 N NODULES	
 BRYOZOA	 P PLANT REMAINS	 C HTLT		 P PHOSPHATE PELLETS	
 CEPHALOPOD	 S PLANT SPORES	 C COAL - THIN BEDS		 P PYRITE	
 CORAL	 S SCAPHOPOD	 D DOLOMITIC		 B SALT CAST	
 CRINOID	 S STROMATOPOROID	 F FELDSPAR		 S SANDY	
 ECHINOID	 F FERRUGINOUS PELLET	 S SIDERITE		 S SILTACEOUS	
 FISH	 F FERRUGINOUS	 S SILICEOUS		 S SHALE STRINGER	
 FORAMINIFERA	 A ANHYDRITIC	 G GLAUCONITE		 S SILTY	
 F FOSSIL	 A ARGILLACEOUS	 G GYPSIFEROUS		 T TUFFACEOUS	

## Oil Show

**P** PINPOINT

# Engineering

☒ EVEN ☐ QUESTIONABLE ☒ BIT

**SPOTTED STAINING** **CONNECTION (UP)**

## Porosity

- Porosity**
- ▼ CONNECTION (DOWN)
- 🏠 CONNECTION GAS
- E EARTHY
- 🔧 CONNECTION GAS
- F FENESTRAL
- 🚪 TRIP GAS
- F FRACTURE
- 🔥 TRIP GAS (LEFT)
- X INTERCRYSTALLINE
- ⬇️ DOWN TIME GAS
- 💧 INTEROOLITIC
- 🕒 DOWN TIME GAS (L)
- 👉 MOLDIC
- ↓ CORE - LAST
- 🟩 CORE - RECOVERED

# Other Symbols

 DST INTERVAL       WIRELINE TESTED - LEFT   **E** EARTHY

 FAULT       WIRELINE TESTED - RT    **FX** FINELYXLN

 FORMATION TOP       DRILL STEM TEST      **GS** GRAINSTONE

 GAS SHOW       **MINDEPTH** MN DEPTH      **L** LITHOGRAPHIC


 OIL SHOW      **MX** MICROXLN


 **MINDEPTH** MN DEPTH UP      **MS** MUDSTONE

## Rounding

 **MINDEPTH** MN DEPTH (DOWN)      **A** ANGULAR      **PS** PACKSTONE

 NORMAL FAULT      **R** ROUNDED      **WS** WACKSTONE

 **(LEFT)** OVERTURNED STRATA      **B** SUBANG


 REVERSE FAULT      **R** SUBRND

## Sorting


 CASING      **M** MODERATE

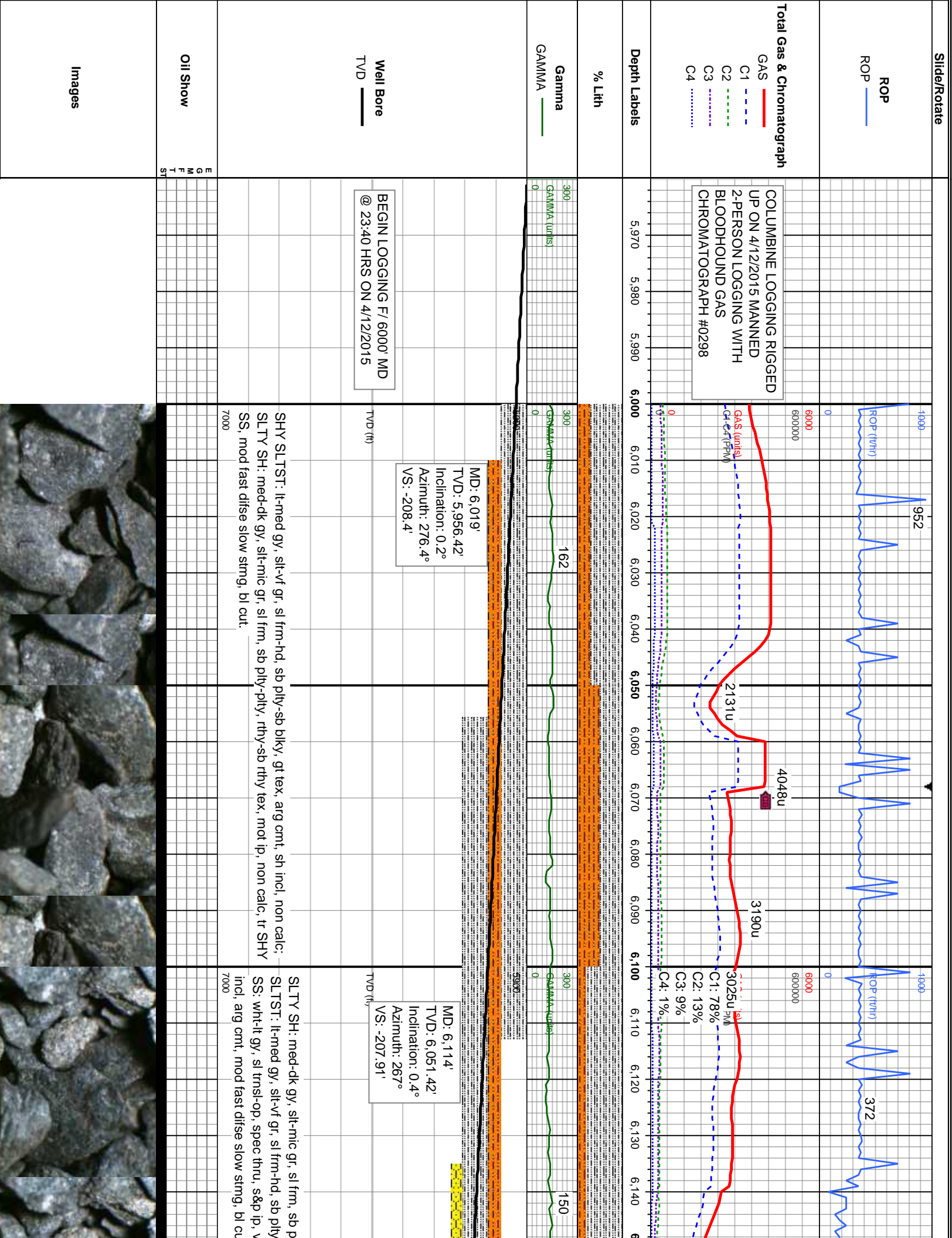
## Textures

 SIDEWALL CORE (LEFT)      **P** POOR

 **(LEFT)** SIDEWALL CORE (RIGHT) **BS** BOUNDSTONE      **W** WELL

 SLIDE      **C** CHALKY

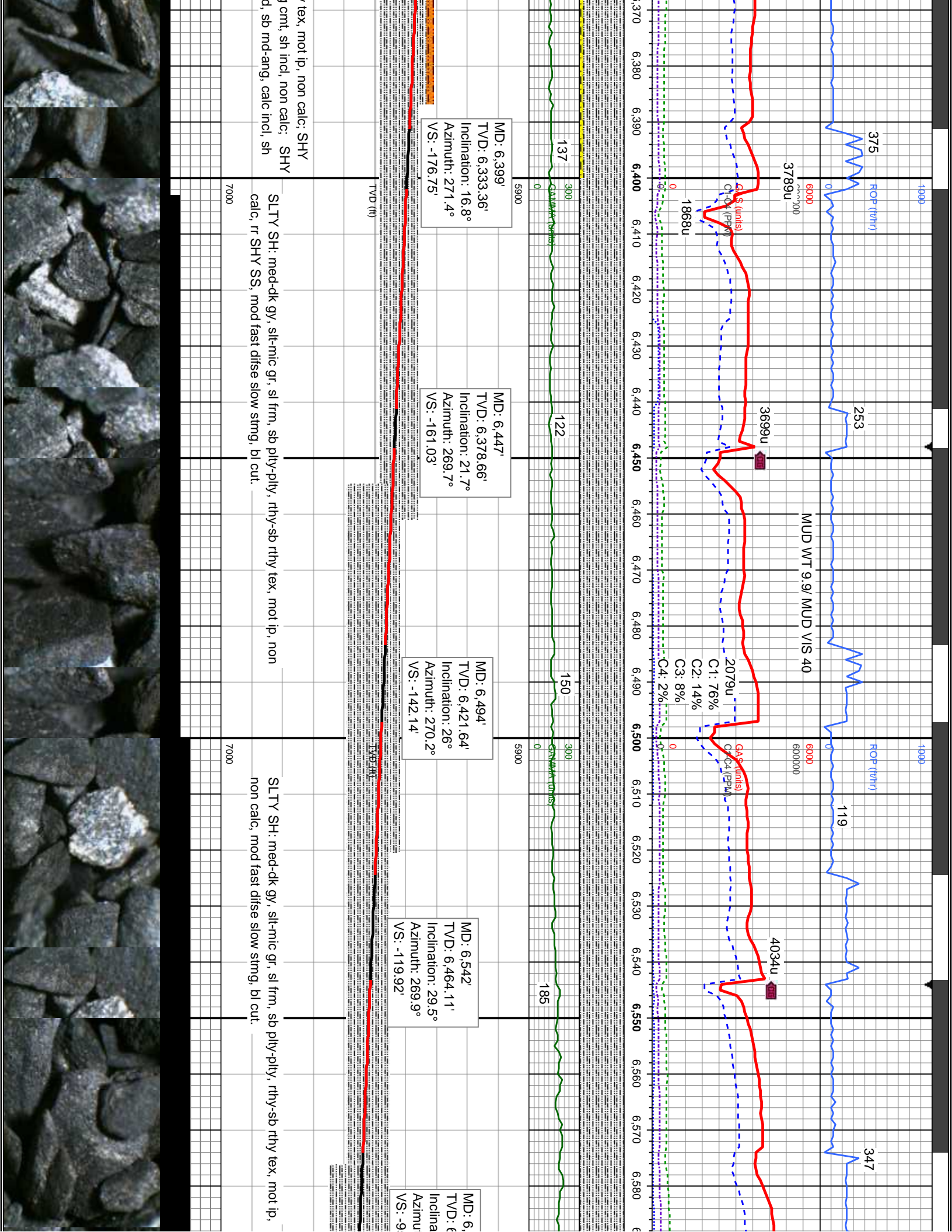
 **DST** SURVEY      **CX** CRYPTOXLN





MINDDEPTH



















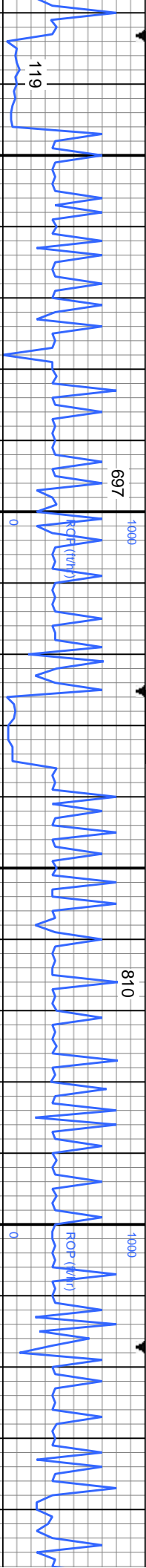












MUD WT 9.2/ MUD VIS 43

ROP (ft/hr)

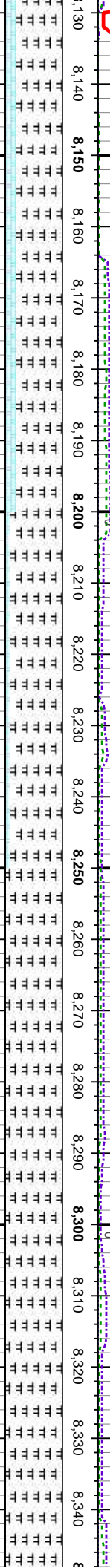
ROP (ft/hr)



GAS (units)  
C1-C4 (PPM)

GAS (units)  
C1-C4 (PPM)

C1: 84%  
C2: 4%  
C3: 12%  
C4: 0%



MRLST

MRLST

spec, slt gr, sl frm, sb ply-pty, gt tex, calc, dissim pyr; CHK: , brit, sl sft, sb rthy-sm tex, v calc, tr bent, rr inoc; mod difse, mod-fast string, fr blshwh cut

MRLST: med-dk gy, mot-spec, slt gr, sl frm, sb ply-pty, gt tex, calc, dissim pyr; CHK: lt-med gy, str, sb ply-bkly, brit, sl sft, sb rthy-sm tex, v calc, tr bent, rr inoc; mod difse, mod-fast string, fr blshwh cut

MRLST: med-dk gy, mot-spec, slt gr, sl frm, sb ply-pty, gt tex, calc, dissim pyr; CHK: mod difse, mod string, fr blshwh cut

MRLST: med-dk gy, mot-spec, slt gr, sl frm, sb ply-pty, gt tex, calc, dissim pyr; CHK: mod difse, mod string, fr blshwh cut

MD: 8,171'  
TVD: 6,878.33'  
Inclination: 89.7°  
Azimuth: 268.9°  
VS: 1,345.16'

MD: 8,263'  
TVD: 6,878.09'  
Inclination: 90.6°  
Azimuth: 269.5°  
VS: 1,436.78'

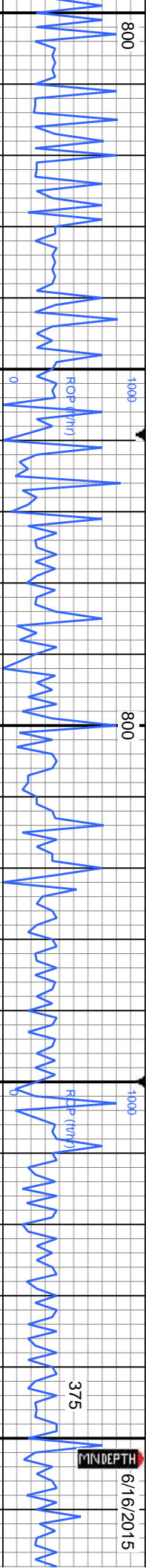
TVD (ft)

TVD (ft)





375

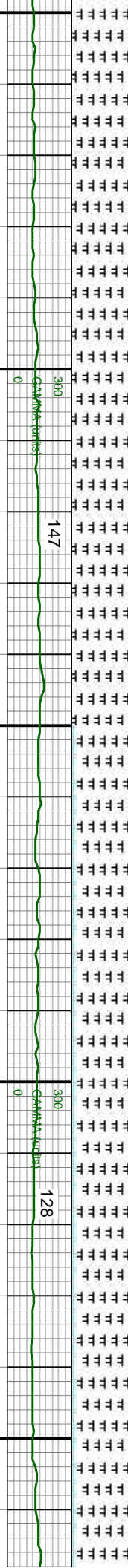
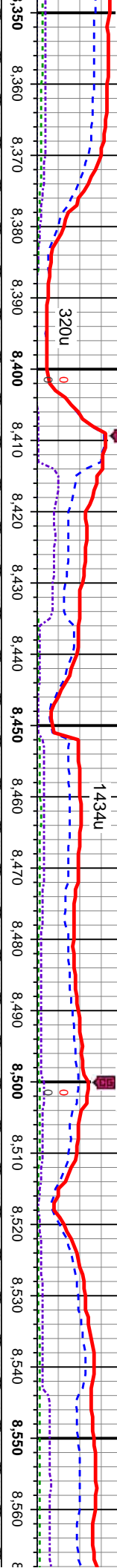


ROP (ft/hr)

ROP (ft/hr)

GAS: 2240u  
Cl-Cd (PPM)

GAS (units)  
C1: 81%  
C2: 6%  
C3: 13%  
C4: 0%  
1661u  
24 (PPM)



MRLST: med-dk gy, mot-spec, slt gr, sl frm,  
sb ply-pty, gt tex, calc, dissim pyr, tr CHK.;  
mod difse, mod sting, fr blshwh cut

MRLST: med-dk gy, mot-spec, slt gr, sl frm,  
sb ply-pty, gt tex, calc, dissim pyr, tr CHK.;  
mod difse, mod sting, fr blshwh cut

MRLST: med-dk gy, mot-spec, slt gr, sl frm,  
sb ply-pty, gt tex, calc, dissim pyr, CHK;  
lt-med gy, str, sb ply-blky, brt, sl sft, sb  
rthy-sm tex, v calc, tr bent, rr inoc; mod  
difse, mod sting, fr blshwh cut

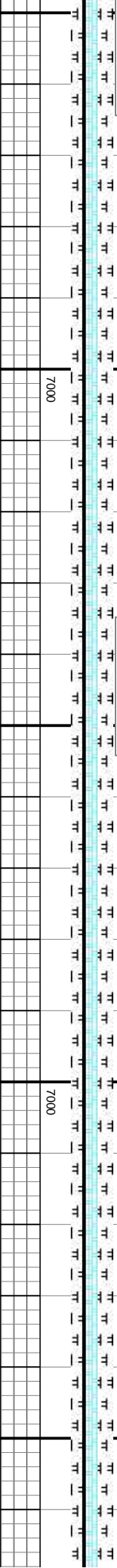
MRLST: med-dk gy, mot-spec, slt gr, sl frm,  
sb ply-pty, gt tex, calc, dissim pyr, CHK;  
lt-med gy, str, sb ply-blky, brt, sl sft, sb  
rthy-sm tex, v calc, tr bent, rr inoc; mod-fast  
difse, mod sting, fr blshwh cut

MRLST: med-dk  
sb ply-pty, gt te  
lt-med gy, str, sk  
rthy-sm tex, v ce  
mod sting, fr bls

D: 8,354'  
D: 6,876.98'  
Inclination: 90.8°  
Azimuth: 269.5°  
VS: 1,527.35'

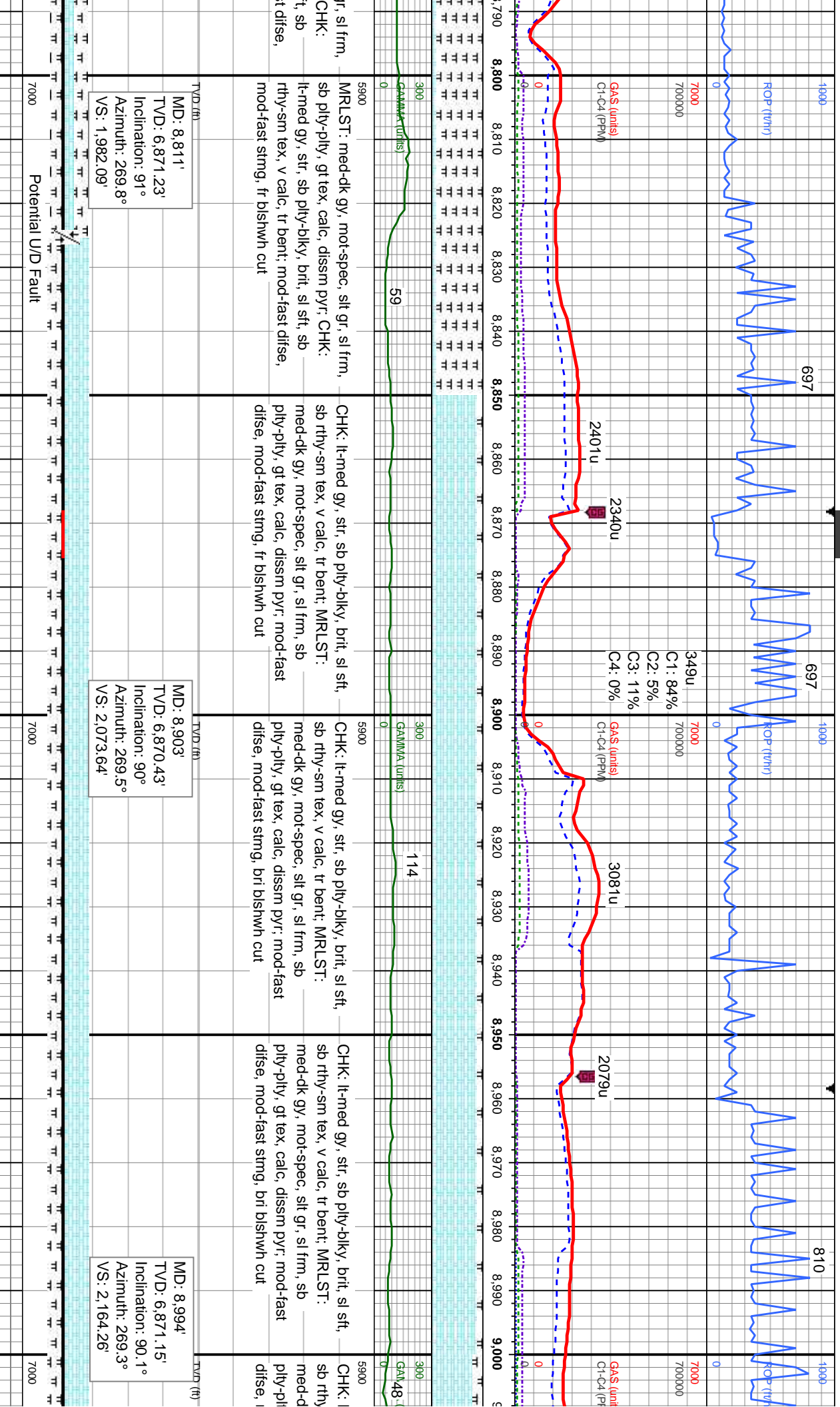
MD: 8,444'  
TVD: 6,875.96'  
Inclination: 90.5°  
Azimuth: 268.9°  
VS: 1,616.97'

MD: 8,535'  
TVD: 6,875.48'  
Inclination: 90.1°  
Azimuth: 269.5°  
VS: 1,707.59'











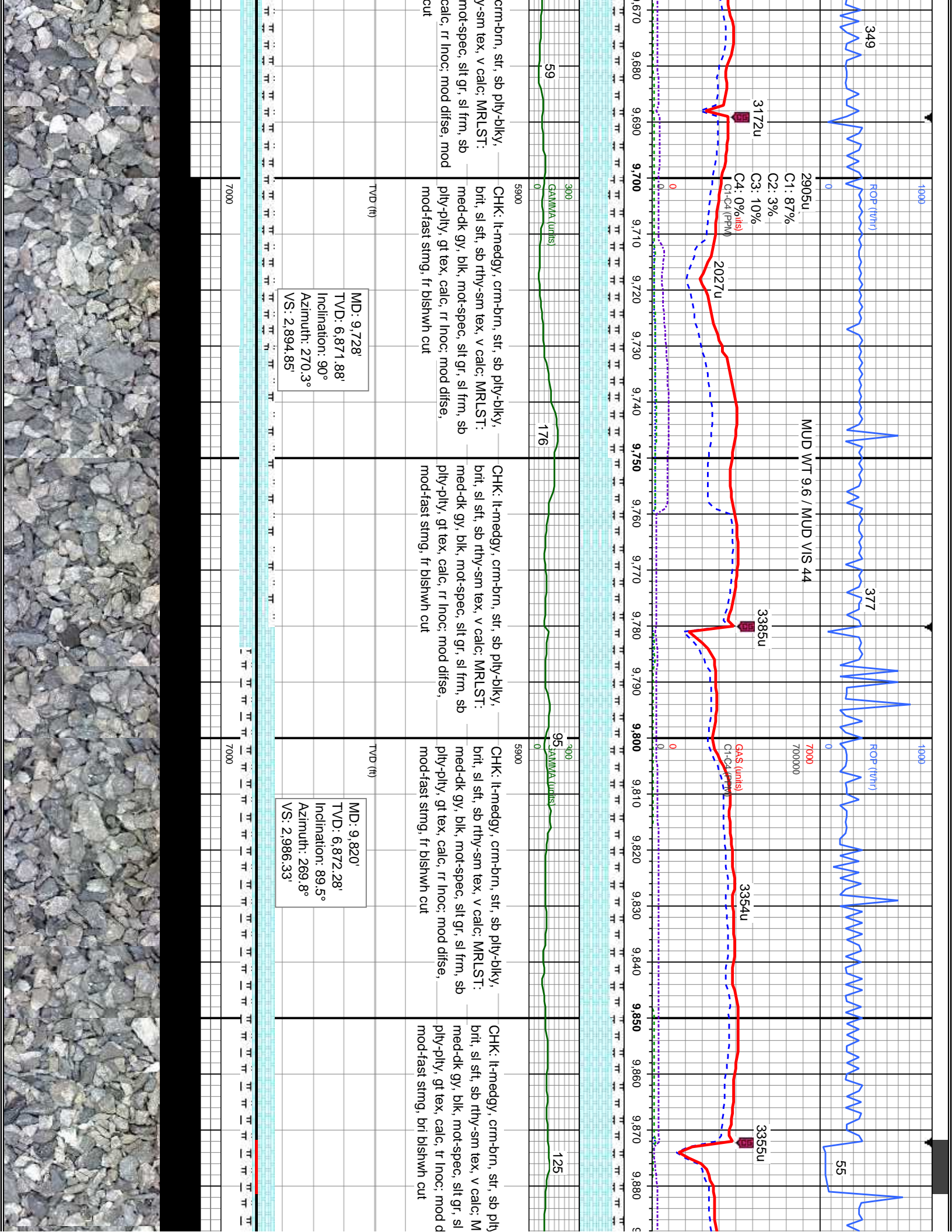




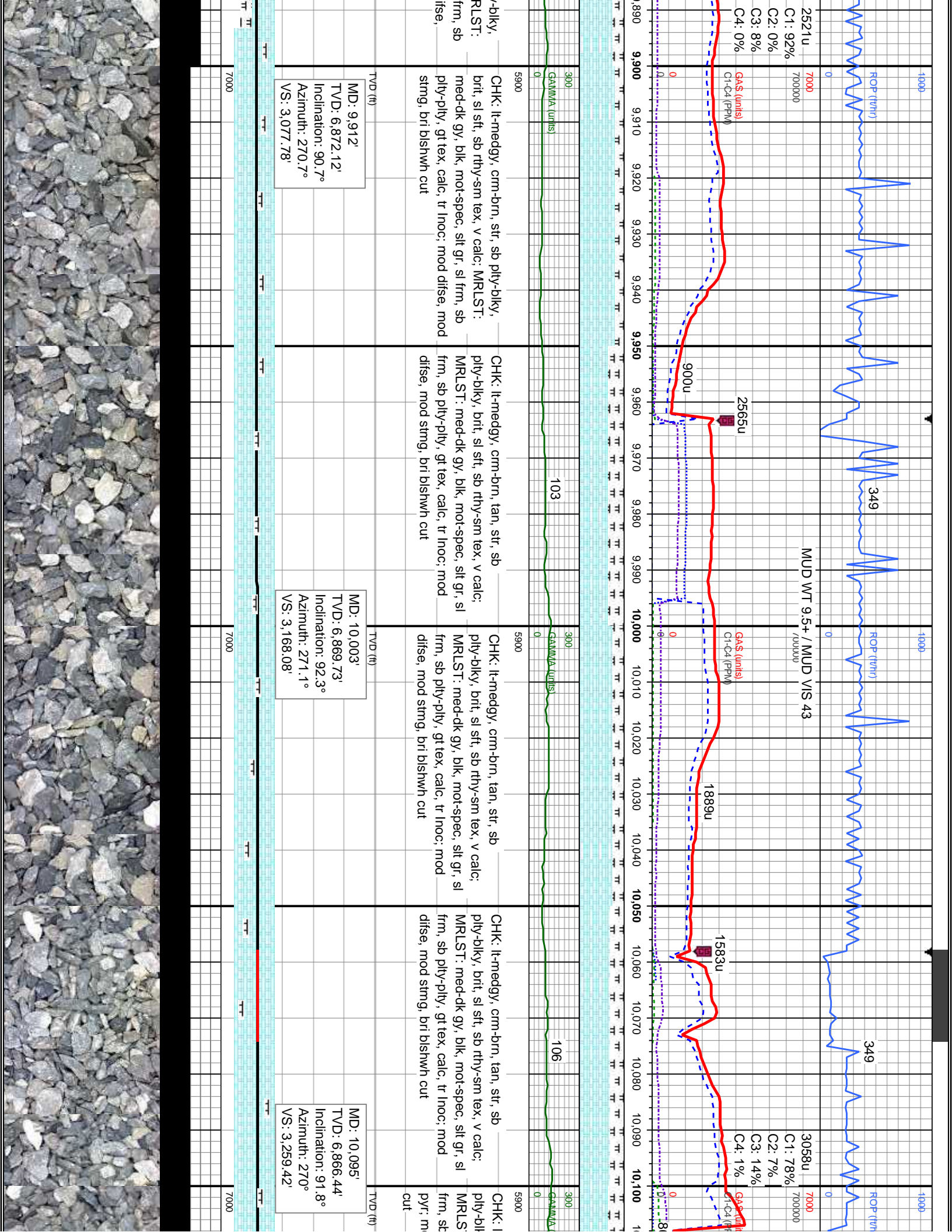




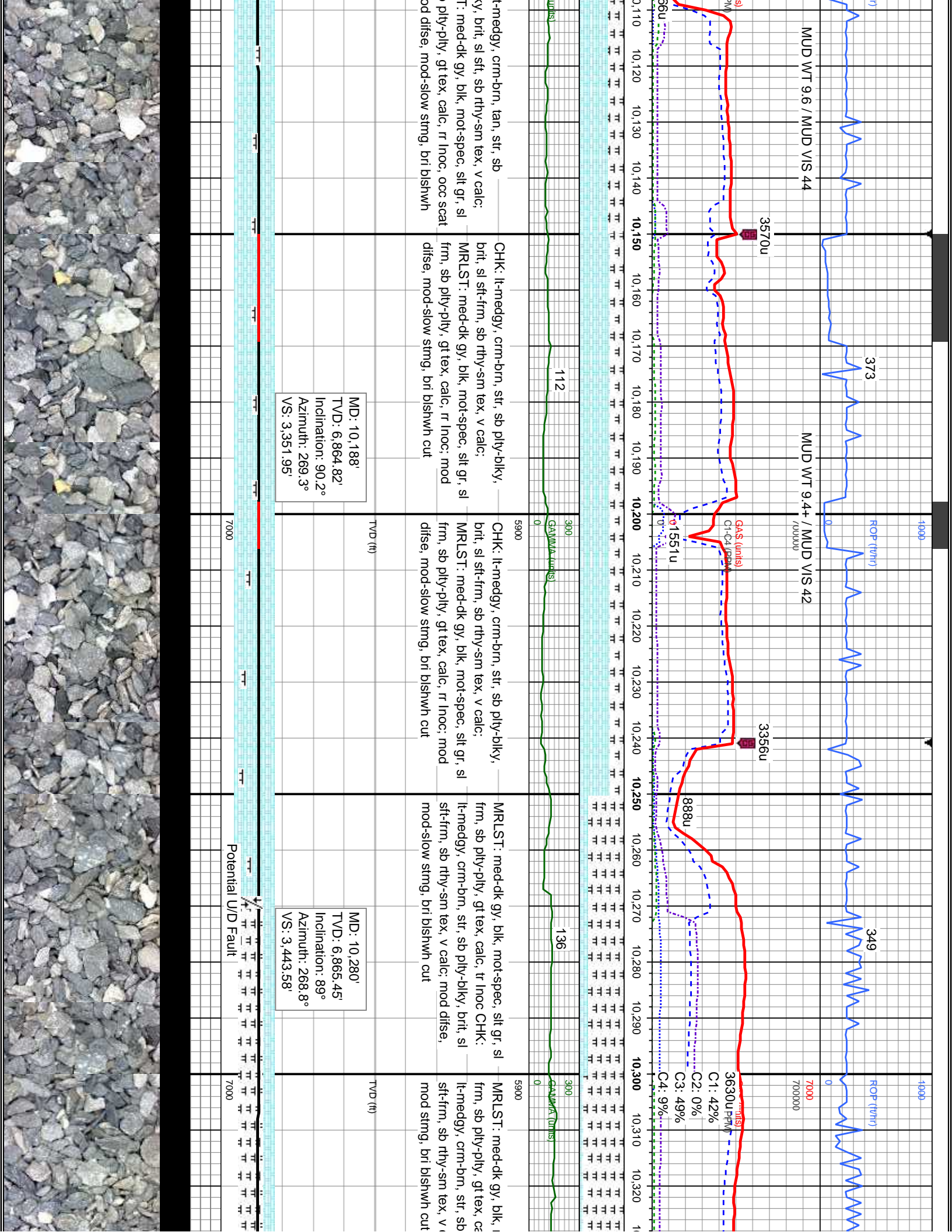


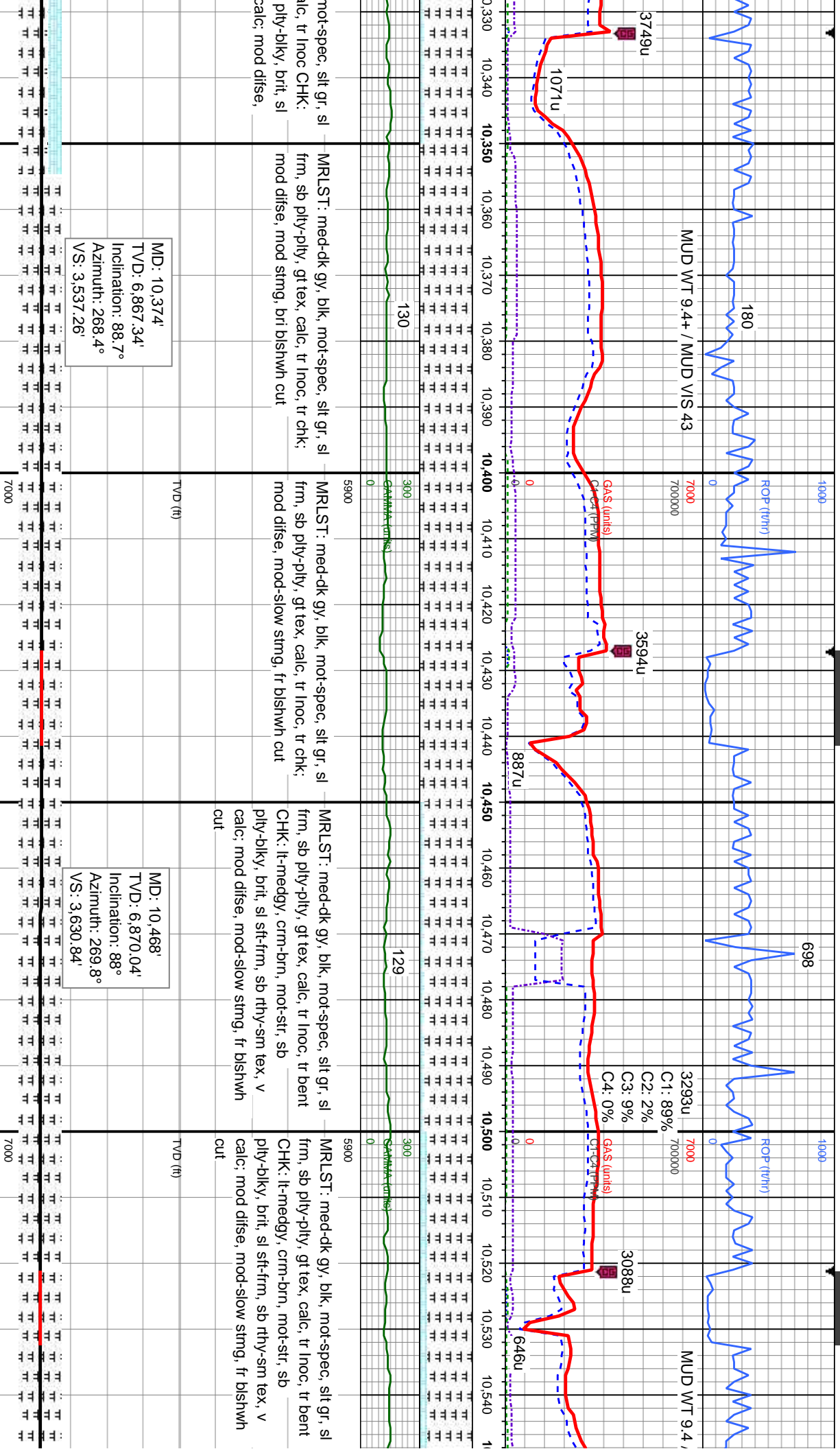








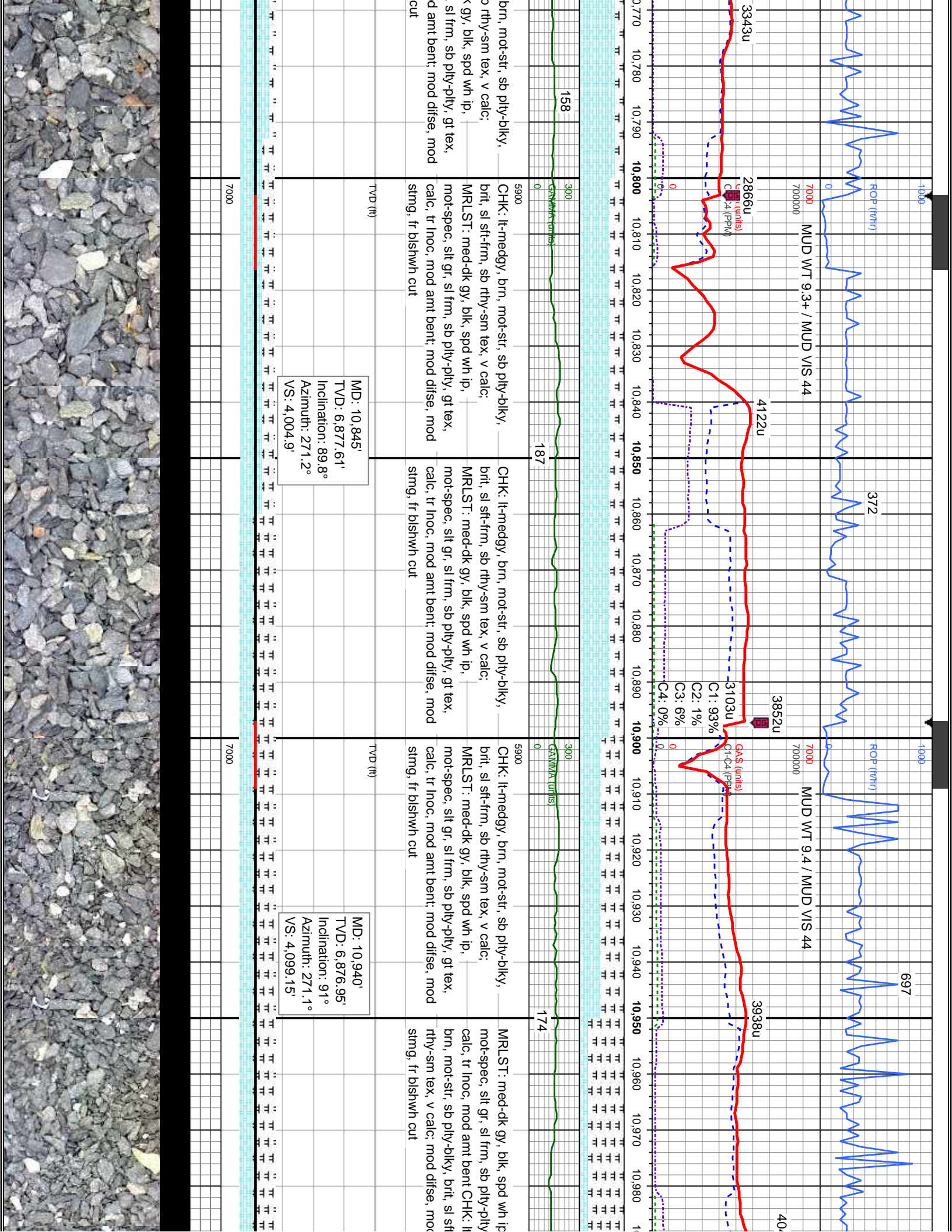








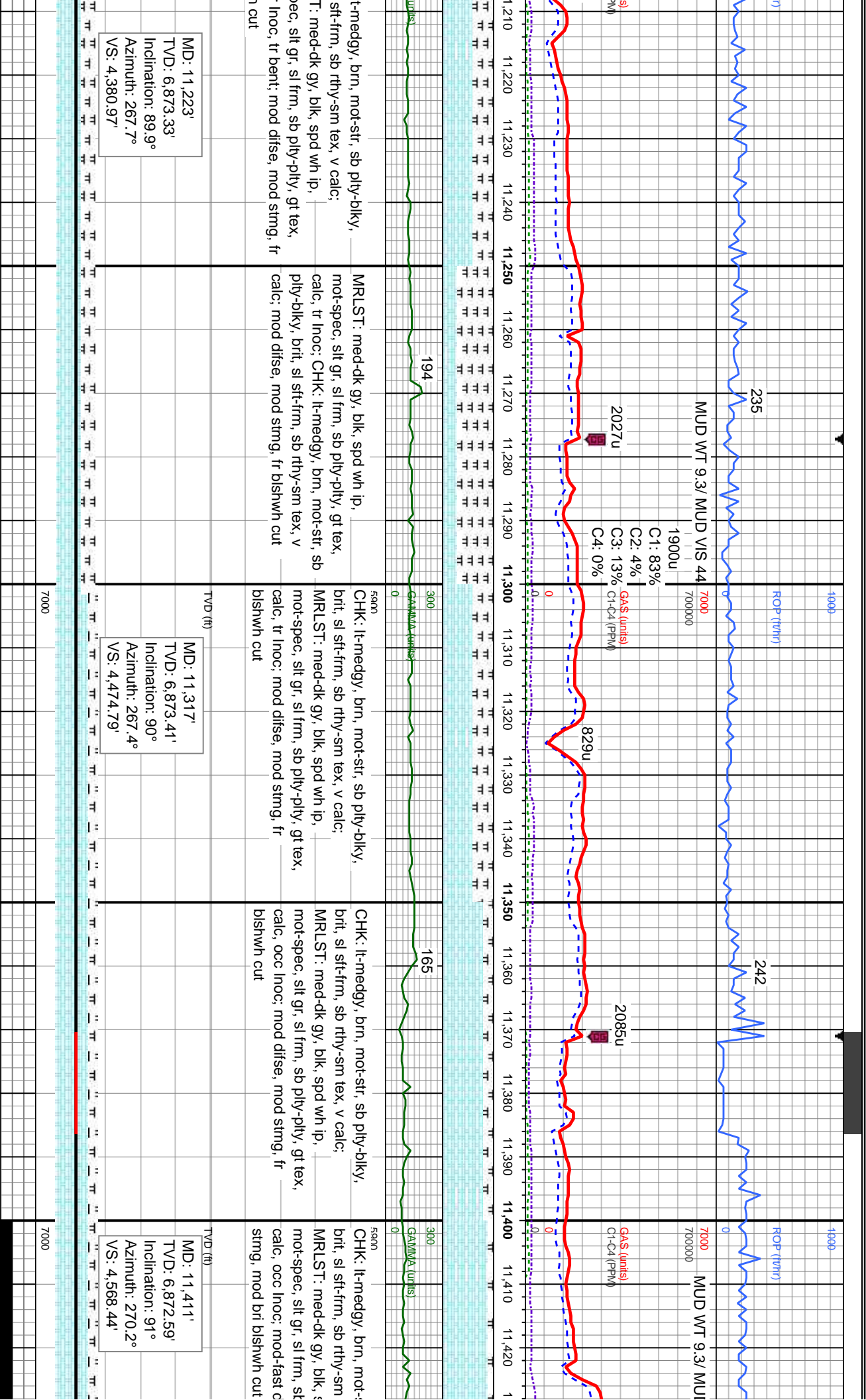












MD: 11,223'  
TVD: 6,873.33'  
Inclination: 89.9°  
Azimuth: 267.7°  
VS: 4,380.97'

t-medgy, brn, mot-str, sb pty-biky, sft-fm, sb rthy-sm tex, v calc; T: med-dk gy, blk, spd wh ip, oec, slt gr, sl frm, sb pty-pty, gt tex, lnoc, tr bent; mod difse, mod string, fr cut

MRLST: med-dk gy, blk, spd wh ip, mot-spec, slt gr, sl frm, sb pty-pty, gt tex, calc, tr lnoc; CHK: lt-medgy, brn, mot-str, sb pty-biky, brit, sl sft-fm, sb rthy-sm tex, v calc; mod difse, mod string, fr blshwh cut

MD: 11,317'  
TVD: 6,873.41'  
Inclination: 90°  
Azimuth: 267.4°  
VS: 4,474.79'

CHK: lt-medgy, brn, mot-str, sb pty-biky, brit, sl sft-fm, sb rthy-sm tex, v calc; MRLST: med-dk gy, blk, spd wh ip, mot-spec, slt gr, sl frm, sb pty-pty, gt tex, calc, tr lnoc; mod difse, mod string, fr blshwh cut

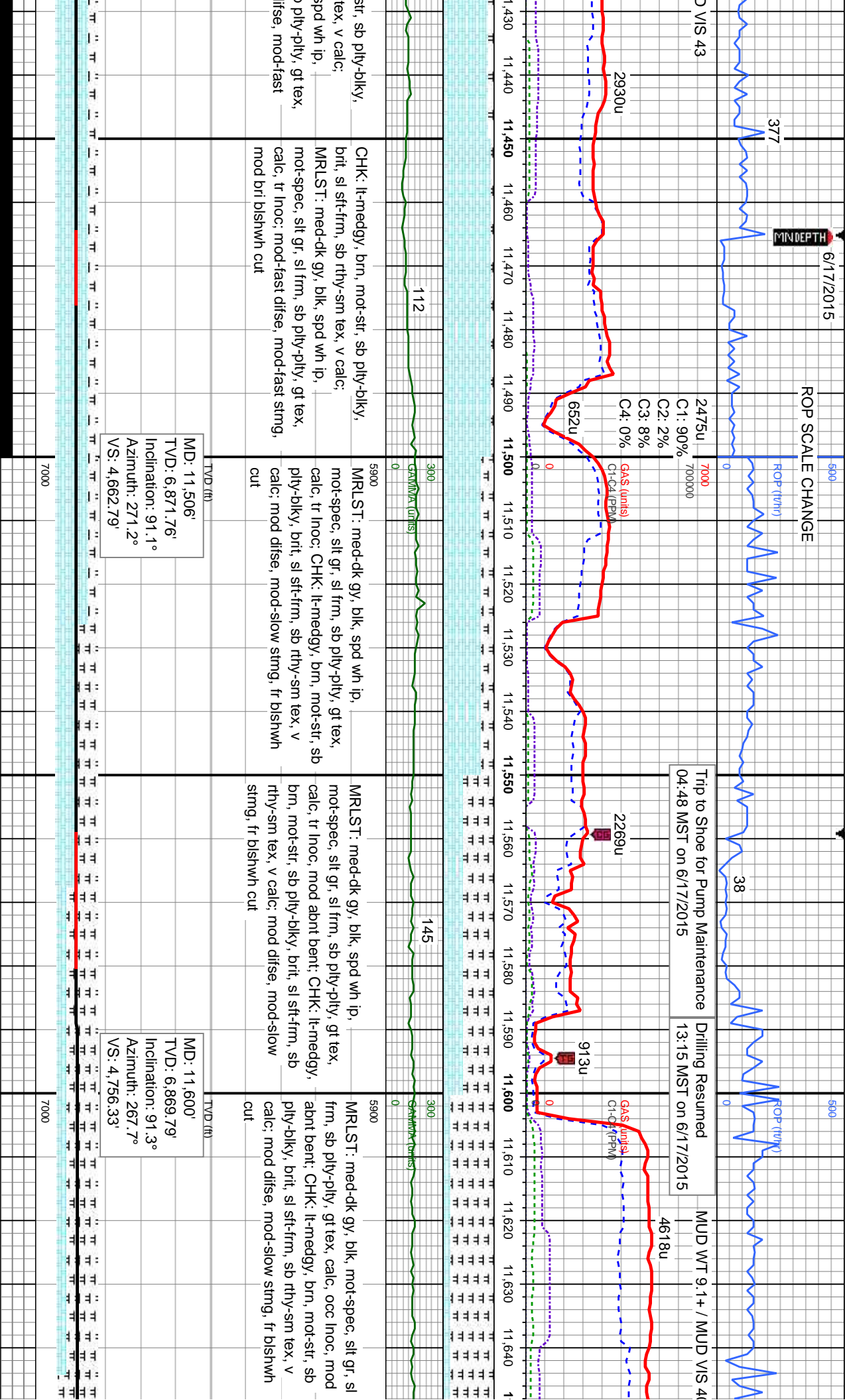
CHK: lt-medgy, brn, mot-str, sb pty-biky, brit, sl sft-fm, sb rthy-sm tex, v calc; MRLST: med-dk gy, blk, spd wh ip, mot-spec, slt gr, sl frm, sb pty-pty, gt tex, calc, occ lnoc; mod difse, mod string, fr blshwh cut

MD: 11,411'  
TVD: 6,872.59'  
Inclination: 91°  
Azimuth: 270.2°  
VS: 4,568.44'

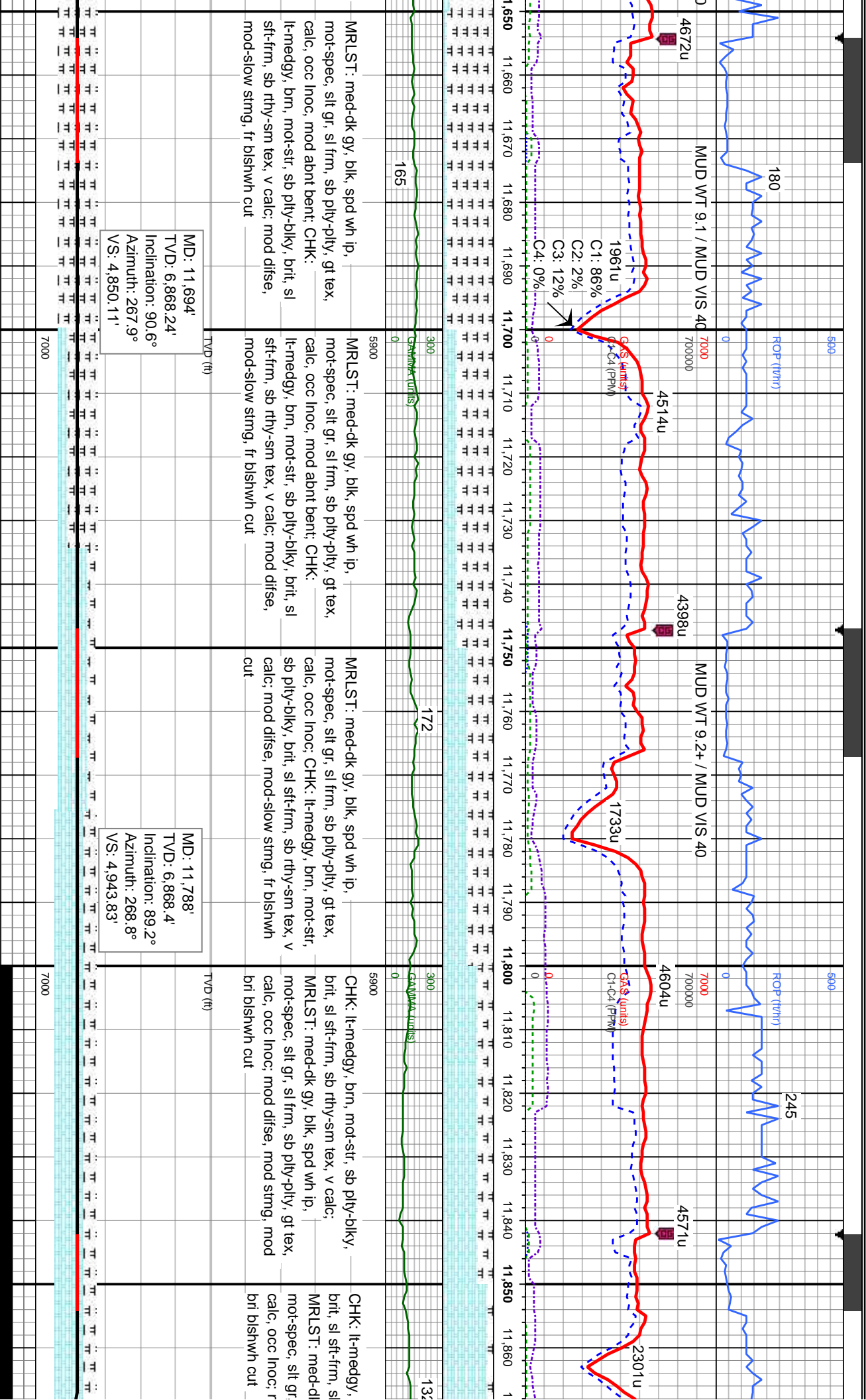
CHK: lt-medgy, brn, mot-str, sb pty-biky, brit, sl sft-fm, sb rthy-sm tex, v calc; MRLST: med-dk gy, blk, spd wh ip, mot-spec, slt gr, sl frm, sb pty-pty, gt tex, calc, occ lnoc; mod difse, mod string, fr blshwh cut



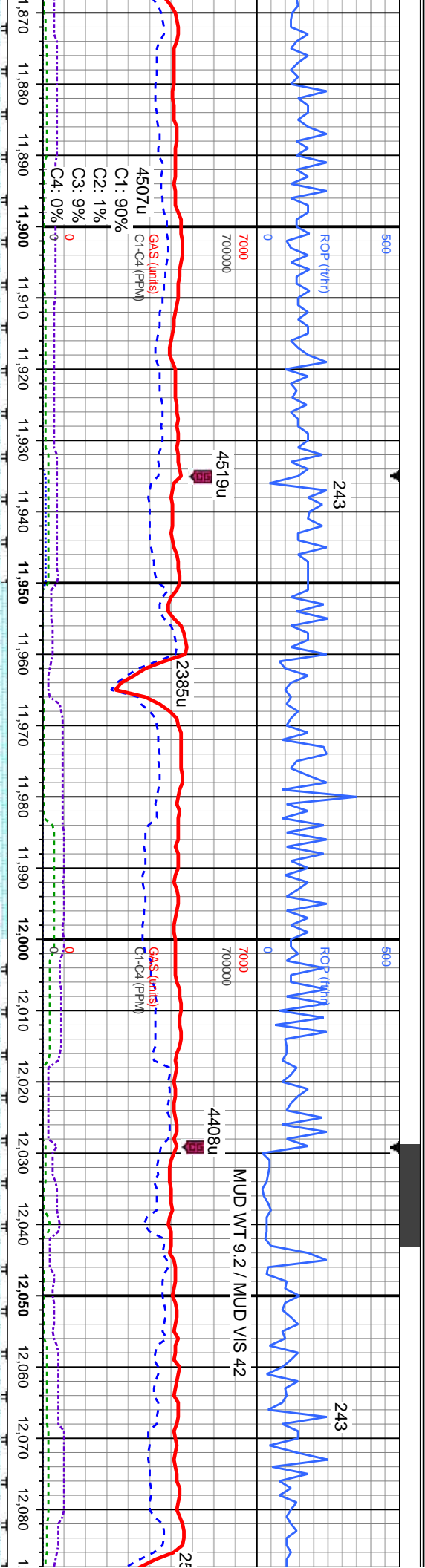












brn, mot-str, sb pily-blky, rthy-sm tex, v calc; k gy, blk, spd wh ip, sl frm, sb pily-pily, gt tex, mod difse, mod stmg, mod

CHK: lt-medgy, brn, mot-str, sb pily-blky, brit, sl sft-frm, sb rthy-sm tex, v calc; MRLST: med-dk gy, blk, spd wh ip, mot-spec, sit gr, sl frm, sb pily-pily, gt tex, calc, tr inoc; mod difse, mod-fast stmg, mod bri bishwh cut

CHK: lt-medgy, brn, mot-str, sb pily-blky, brit, sl sft-frm, sb rthy-sm tex, v calc; MRLST: occ inoc; mod difse, mod-fast stmg, mod bri bishwh cut

CHK: lt-medgy, brn, mot-str, sb pily-blky, brit, sl sft-frm, sb rthy-sm tex, v calc; MRLST: med-dk gy, blk, spd wh ip, mot-spec, sit gr, sl frm, sb pily-pily, gt tex, calc, tr inoc; mod difse, mod-fast stmg, mod bri bishwh cut

CHK: lt-medgy, brn, mot-str, sb pily-blky, brit, sl sft-frm, sb rthy-sm tex, v calc; MRLST: med-dk gy, blk, spd wh ip, mot-spec, sit gr, sl frm, sb pily-pily, gt tex, calc, mod difse, mod-fast stmg, bishwh cut

MD: 11,882'  
TVD: 6,870.29'  
Inclination: 88.5°  
Azimuth: 268.9°  
VS: 5,037.47'

MD: 11,976'  
TVD: 6,872.58'  
Inclination: 88.7°  
Azimuth: 268.8°  
VS: 5,131.1'

MD: 12,071'  
TVD: 6,874.74'  
Inclination: 88.7°  
Azimuth: 270.5°  
VS: 5,225.61'





MUD WT 9.2 / MUD VIS 41

88u

4579u 1-C4 (PPM)

C1: 82%

C2: 5%

C3: 13%

C4: 0%

ROP (ft/hr)

4325u

4532u 1-C4 (PPM)

C1: 82%

C2: 4%

C3: 14%

C4: 0%

ROP (ft/hr)

4532u 1-C4 (PPM)

C1: 82%

C2: 4%

C3: 14%

C4: 0%

MINDEPTH

187

2674u



300 145

5900

300 147

5900

300

5900

CHK: lt-medgy, brn, mot-str, sb pty-blky, brit, sl sft-fm, sb rthy-sm tex, v calc; MRLST: med-dk gy, blk, spd wh ip, mot-spec, slt gr, sl frm, sb pty-pty, gt tex, calc; mod difse, mod-fast stmg, bri bishwh cut

TVD (ft)

TVD (ft)

TVD (ft)

MD: 12,166'  
TVD: 6,875.65'  
Inclination: 90.2°  
Azimuth: 270.3°  
VS: 5,320.01'

MD: 12,260'  
TVD: 6,875.32'  
Inclination: 90.2°  
Azimuth: 270.3°  
VS: 5,413.44'

7000

7000

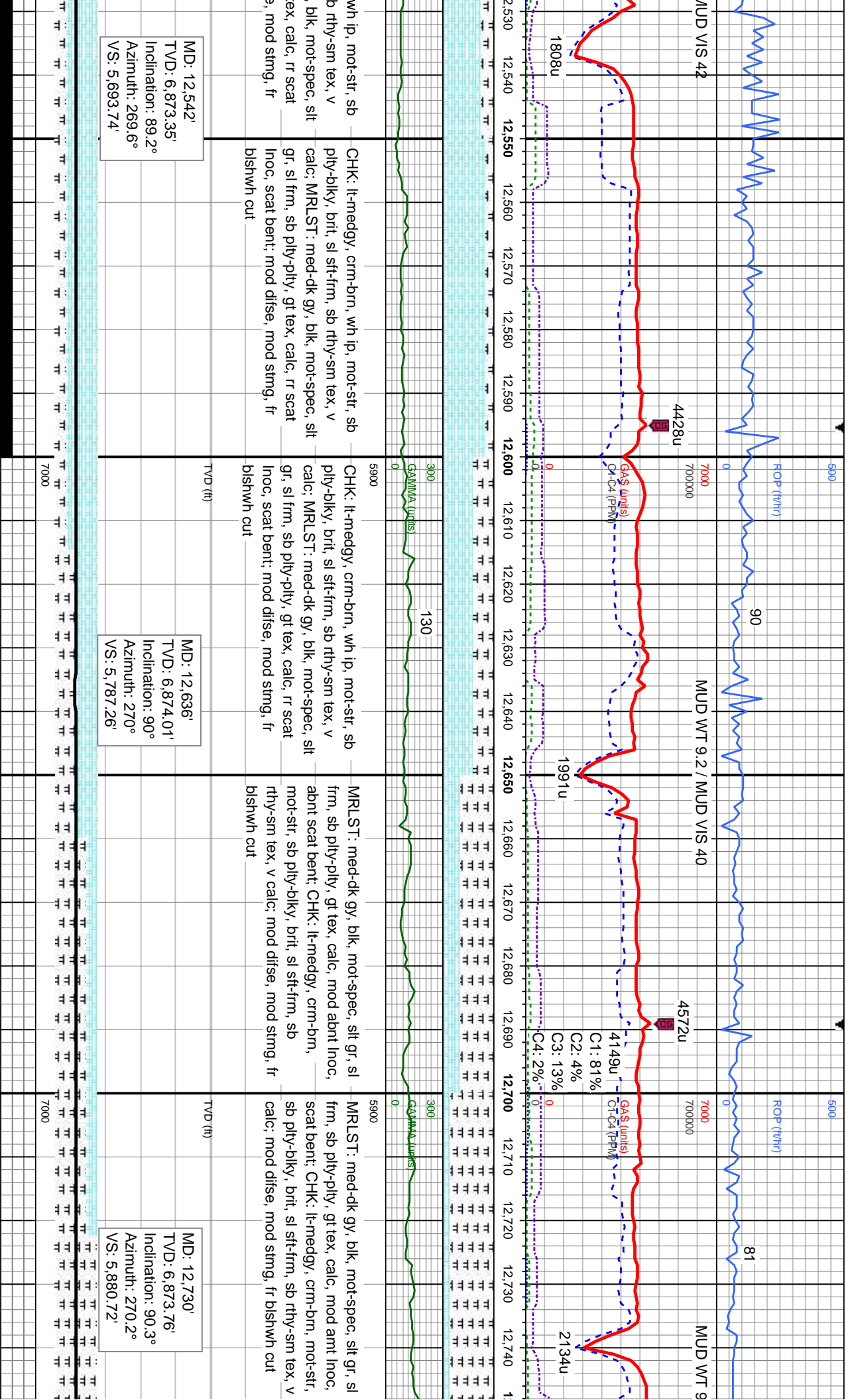
7000



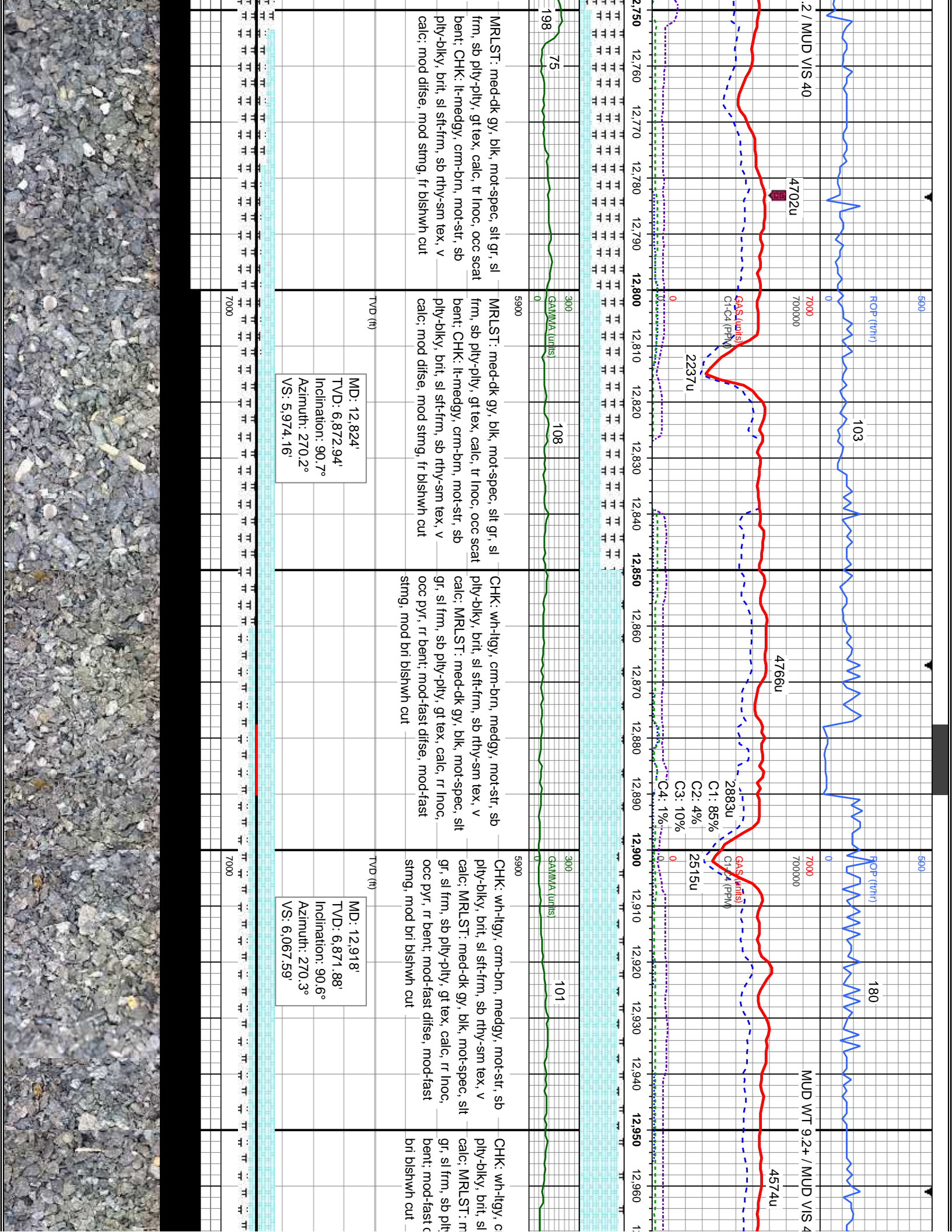




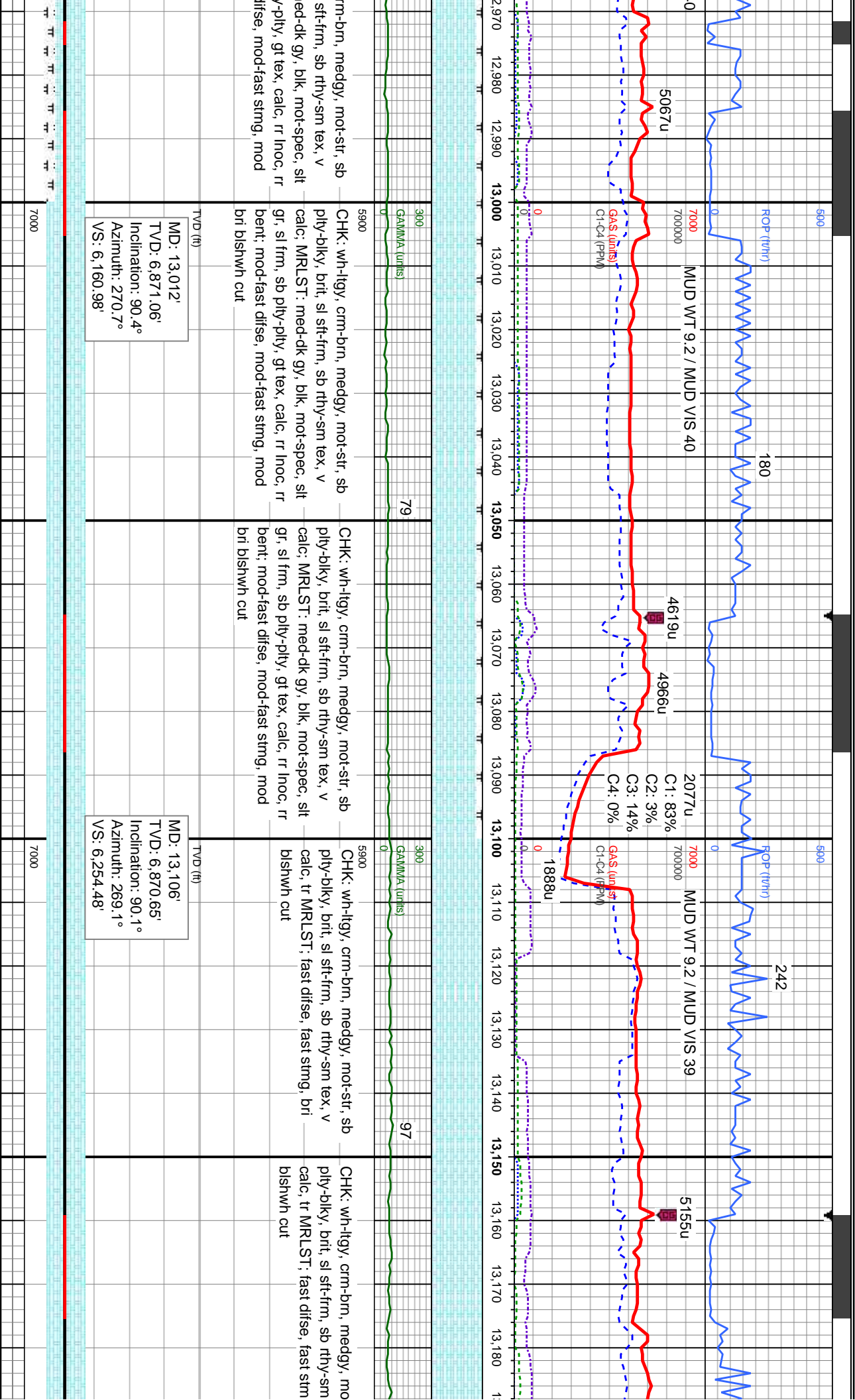




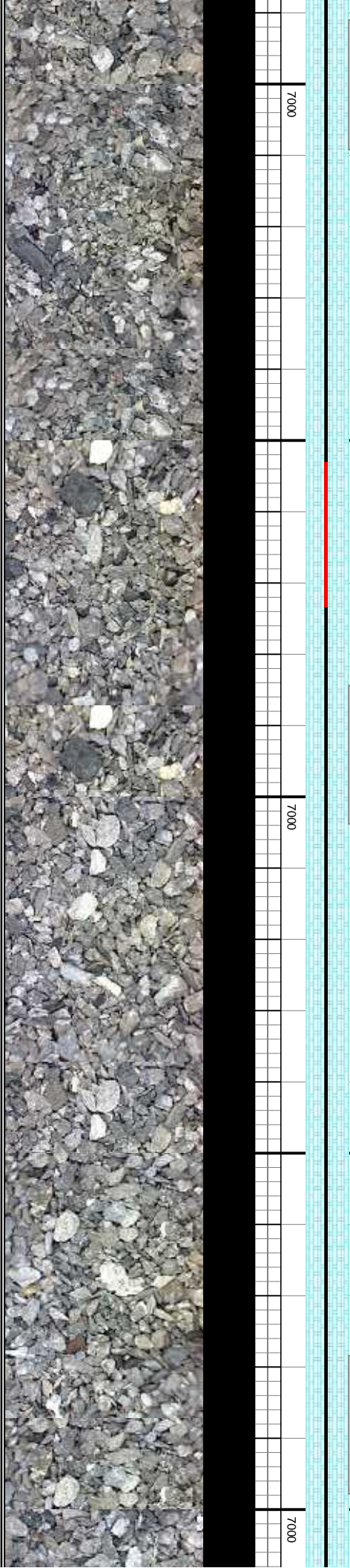
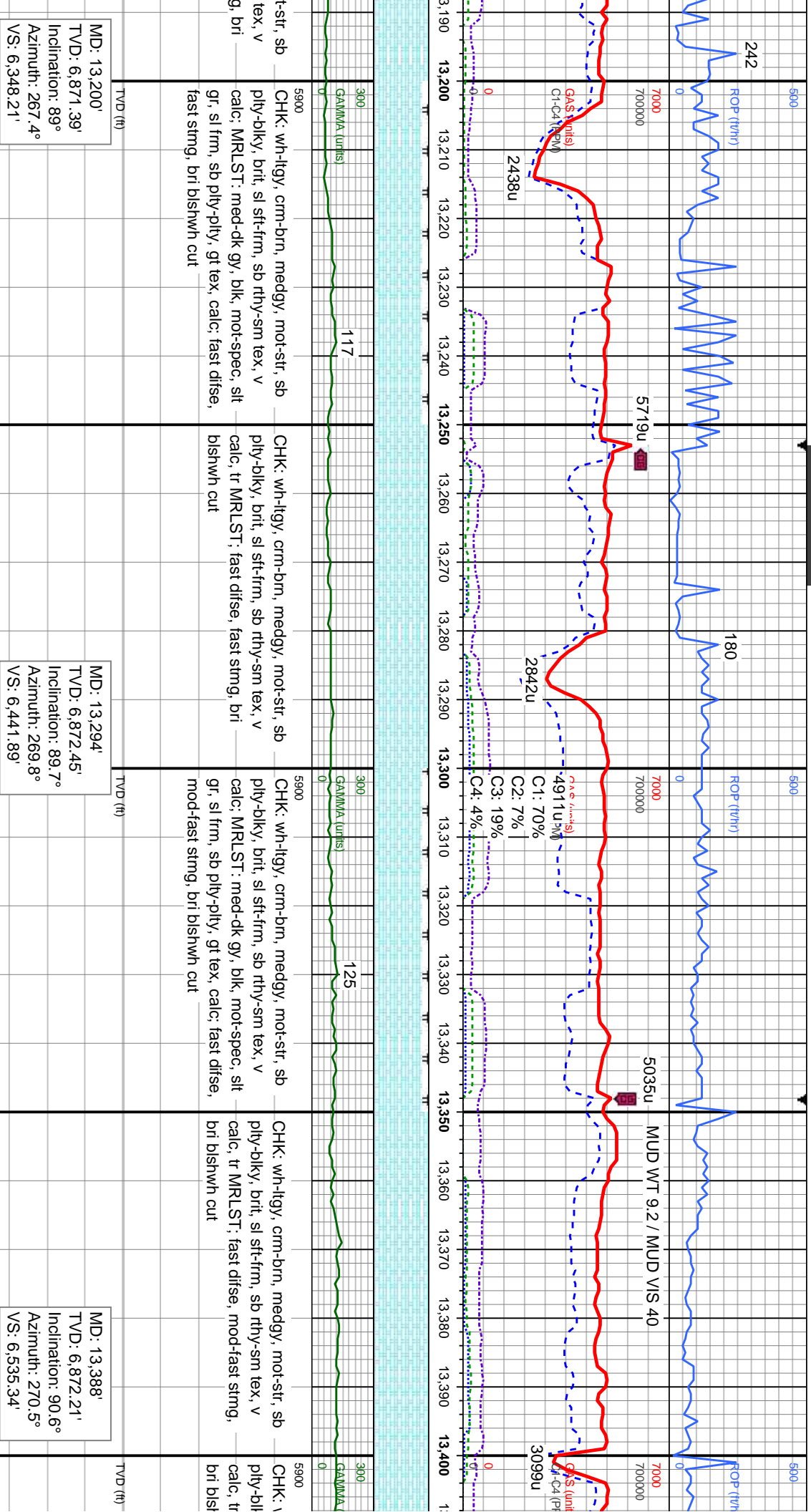














6/19/2015

MINDEPTH

ROP (ft/hr)

ROP (ft/hr)

ROP (ft/hr)

242

121

72

5160u

MUD WT 9.2 / MUD VIS 41

5565u

5706

2918u

5010u  
GAS (units)  
Cl-C4 (PPM)  
C1: 94%  
C2: 0%  
C3: 6%  
C4: 0%

2513u  
GAS (units)  
Cl-C4 (PPM)

13,410 13,420 13,430 13,440 13,450 13,460 13,470 13,480 13,490 13,500 13,510 13,520 13,530 13,540 13,550 13,560 13,570 13,580 13,590 13,600 13,610 13,620

130

GAMMA (units)

110

GAMMA (units)

5900

5900

wh-ltgy, crm-brn, medgy, mot-str, sb  
ply-blky, brit, sl sft-frm, sb rthy-sm tex, v  
calc; MRLST: med-dk gy, blk, mot-spec, sit  
gr, sl frm, sb ply-ply, gt tex, calc, tr bent,  
fast difse, mod-fast sting, bri blshwh cut

CHK: wh-ltgy, crm-brn, medgy, mot-str, sb  
ply-blky, brit, sl sft-frm, sb rthy-sm tex, v  
calc; MRLST: med-dk gy, blk, mot-spec, sit  
gr, sl frm, sb ply-ply, gt tex, calc, tr bent,  
fast difse, mod-fast sting, bri blshwh cut

CHK: wh-ltgy, crm-brn, medgy, mot-str, sb  
ply-blky, brit, sl sft-frm, sb rthy-sm tex, v  
calc; MRLST: med-dk gy, blk, mot-spec, sit  
gr, sl frm, sb ply-ply, gt tex, calc, tr hnoc, tr  
bent; fast difse, mod-fast sting, bri blshwh cut

CHK: wh-ltgy, crm-brn, medgy, mot-str, sb  
ply-blky, brit, sl sft-frm, sb rthy-sm tex, v  
calc; MRLST: med-dk gy, blk, mot-spec, sit  
gr, sl frm, sb ply-ply, gt tex, calc, about hnoc,  
tr bent; fast difse, mod-fast sting, bri  
blshwh cut

CHK: wh-ltgy, crm-brn, medgy, mot-str, sb  
ply-blky, brit, sl sft-frm, sb rthy-sm tex, v  
calc; MRLST: med-dk gy, blk, mot-spec, sit  
gr, sl frm, sb ply-ply, gt tex, calc, about hnoc,  
tr bent; fast difse, mod-fast sting, bri  
blshwh cut

MD: 13,482'  
TVD: 6,872.53'  
Inclination: 89°  
Azimuth: 269.3°  
VS: 6,628.84'

MD: 13,576'  
TVD: 6,873.85'  
Inclination: 89.4°  
Azimuth: 268.9°  
VS: 6,722.45'

TVD (ft)

TVD (ft)

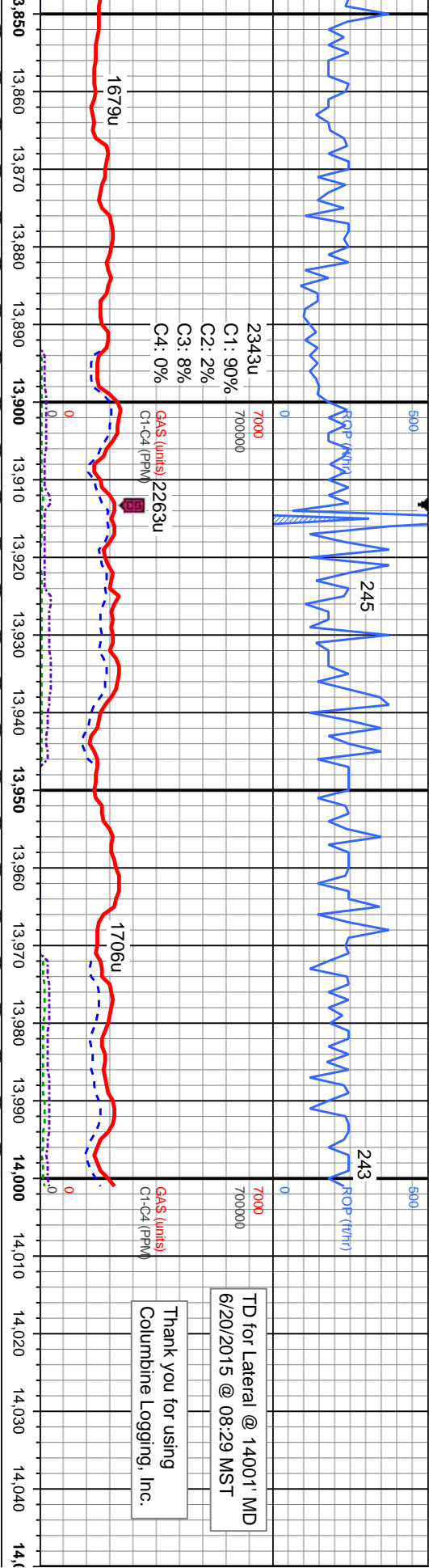
7000

7000



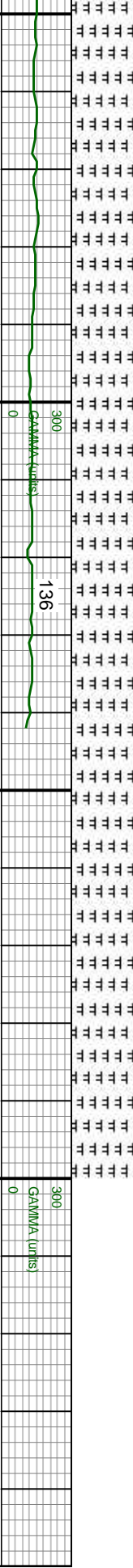






TD for Lateral @ 14001' MD  
6/20/2015 @ 08:29 MST

Thank you for using  
Columbine Logging, Inc.



MRLST: med-dk gy, blk, mot-spec, slt gr, sl  
frm, sb ply-pty, gt tex, calc, mod abnt lnoc,  
mod abnt bent, scat pyr, occ chk; mod  
difse, mod-slow sting, mod bri bishwh cut

MRLST: med-dk gy, blk, mot-spec, slt gr, sl  
frm, sb ply-pty, gt tex, calc, mod abnt lnoc,  
mod abnt bent, scat pyr, occ chk; mod  
difse, mod-slow sting, mod bri bishwh cut

MRLST: med-dk gy, blk, mot-spec, slt gr, sl  
frm, sb ply-pty, gt tex, calc, mod abnt lnoc,  
mod abnt bent, scat pyr, occ chk; mod  
difse, mod-slow sting, mod bri bishwh cut

Projection to Bit

MD: 13,859'  
TVD: 6,872.94'  
Inclination: 90.5°  
Azimuth: 269.3°  
VS: 7,004.23'

MD: 13,946'  
TVD: 6,872.79'  
Inclination: 89.7°  
Azimuth: 269.3°  
VS: 7,090.85'

MD: 14,001'  
TVD: 6,873.07'  
Inclination: 89.7°  
Azimuth: 269.3°  
VS: 7,145.61'

