

# COLUMBINE LOGGING

Scale: 5" / 100'  
Measured Depth Log

Well Name Burkhardt 16C-3HZ

Location NWNE SEC 3, T1N, R66W

State COLORADO

Country USA

API Number 05-123-39180

Region DJ BASIN

Spud Date 8/19/2014

Surface Coordinates 420 FNL  
1890 FEL

Bottom Hole Coordinates 460 FSL  
1085 FEL

Ground Elevation 5062'

Logged Interval 7000'

Formation CODELL

Type of Drilling Fluid LSND

County WELD

Rig Number XTREME 6

Field WATTENBERG

Drilling Completed 9/14/2014

K.B. Elevation 5092'

Total Depth 11987'

Company Anadarko

Address Granite Tower  
1099 18th St. #1  
Denver, CO 802  
(JG)

WELL SITE G

Oil  
Note  
Error

UNKNOWN  
ANHYDRITE  
BENTONITE  
BRECCIA  
CHALK  
CEMENT  
CHERT  
CLAY CHOKE SANC  
CLAYSTONE  
CO.  
TT

# Operator


800

02

## Other

**ECOLOGIST** ANDREA ZUIDEMA ADAM NEUMANN

## Zone Color Coding























































	Condensate		Gas
	Core		Pressure
	Water		Seal

## Rock Types

[illegible]

## Accessories

















## Fossils

Fossils		Stringer	
 FOSSIL	 ARGILLACEOUS	 GLAUCONITE	 TUFFACEOUS
 GASTROPOD	 ARGILLITE GRAIN	 GYPSIFEROUS	
 OOLITE	 B BENTONITE	 H HEAVY MINERAL	
 OSTRACOD	 BITUMINOUS SUBSTANCE	 I INOCERAMUS	 ANHYDRITE STRINGER
 BELEMNITE	 BRECCIA FRAGMENTS	 K KAOLIN	 B BENTONITE STRINGER
 BIOCLASTIC	 C CALCAREOUS	 M MARLSTONE	 COAL STRINGER
 BRYOZOID	 CARBONACEOUS FLAKES	 MINERAL CRYSTALS	 DOLOMITE STRINGER
 PLANT REMAINS	 CHTDK	 N NODULES	 GYPSUM STRINGER
 CEPHALOPOD	 CHTLT	 P PHOSPHATE PELLETS	 LIMESTONE STRINGER
 CORAL	 COAL - THIN BEDS	 P PYRITE	 MARLSTONE (CALC) STRG
 CRINOID	 D DOLOMITIC	 S SALT CAST	 MARLSTONE (DOL) STRG
 ECHINOID	 F FELDSPAR	 S SANDY	 SANDSTONE STRINGER
Minerals		 F FERRUGINOUS PELLET	 S SILICEOUS
 FISH		 F FERRUGINOUS	 S SILTY
 FORAMINIFERA	 ANHYDRITIC		 SILTSTONE STRINGER
















## Minerals

## Other Symbols

## Oil Show

-  MOLDIC
-  DEAD
-  EVEN
-  VUGVY
-  PINPOINT
-  ORGANIC
-  FAULT
-  FORMATION TOP
-  GAS SHOW
-  MINDEPTH
-  WIRELINE TESTED - LEFT
-  WIRELINE TESTED - RT
-  E EARTHY
-  Fx FINELYXLN
-  GS GRAINSTONE
-  L LITHOGRAPHIC

# Engineering

	QUESTIONABLE		ANGULAR		M <sub>X</sub> MICROXN
	SPOTTED STAINING		OIL SHOW		M <sub>S</sub> MUDSTONE
<b>Engineering</b>					
	BIT		OVERTURNED STRATA		PS SUBANG
	CONNECTION (LEFT)		REVERSE FAULT		MS SUBS
<b>Porosity</b>					
	WACKESTONE		PACKSTONE		M <sub>X</sub> MICROXN

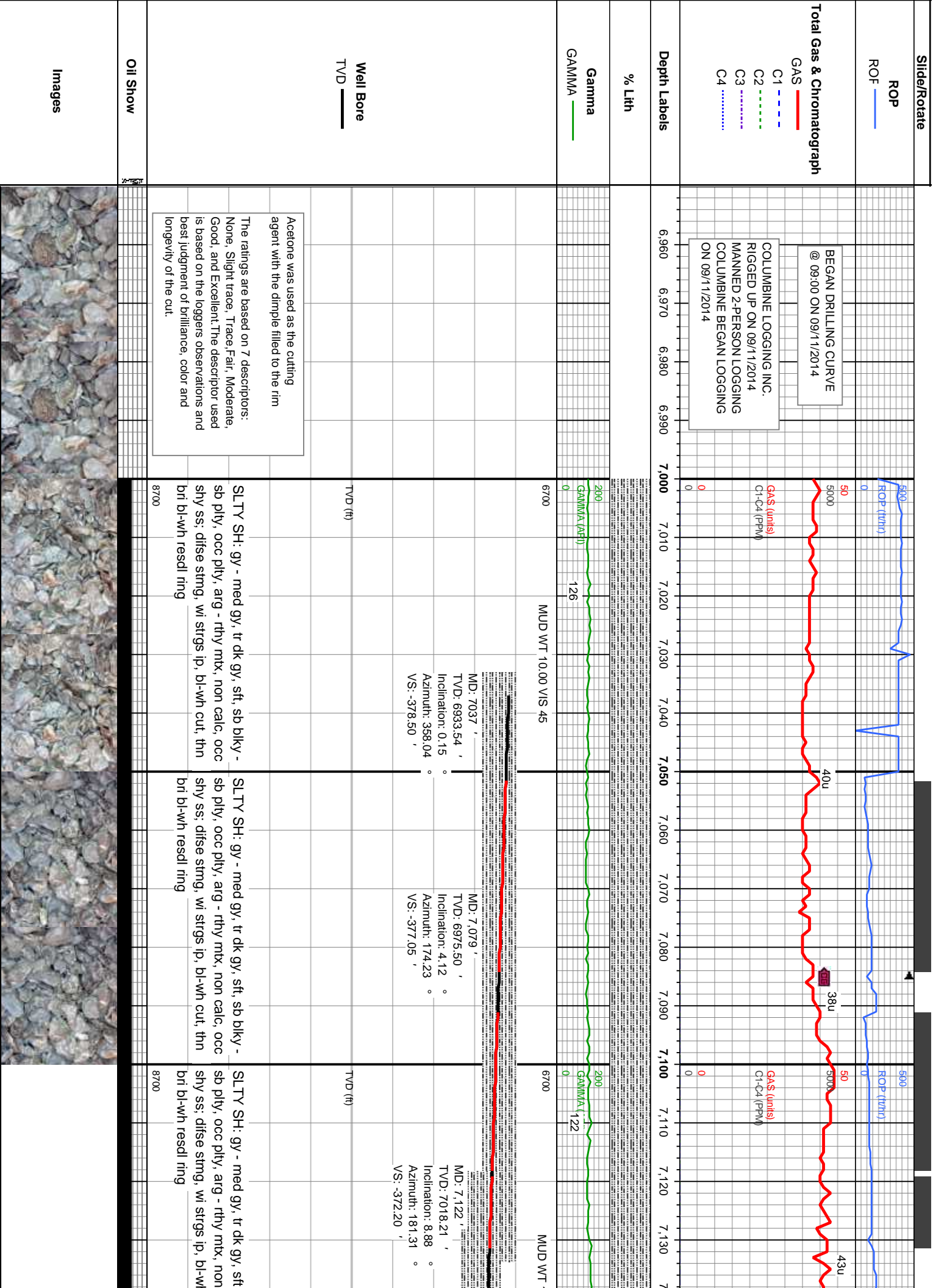
## Porosity

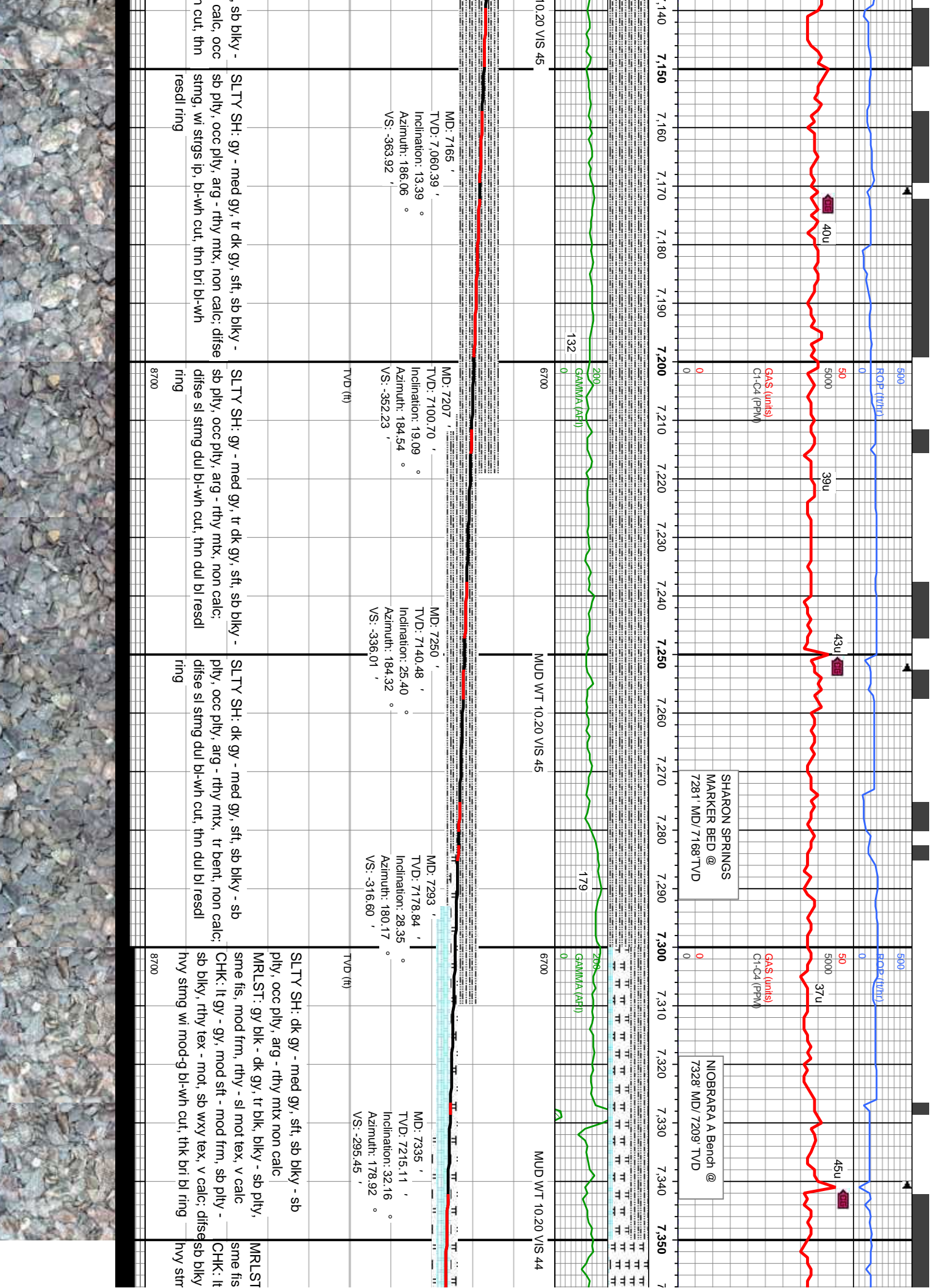
<b>E</b>	EARTH		CONNECTION (RIGHT)		SIDEWALL CORE (LEFT)
<b>F</b>	FENESTRAL		CONNECTION GAS		SIDEWALL CORE (RIGHT)
<b>F</b>	FRACTURE		CORE - LOST		SLIDE
<b>X</b>	INTERCRYSTALLINE		CORE - RECOVERED		SURVEY
	INTEROOLITIC		TRIP GAS		
	DST INTERVAL				
<b>Textures</b>					
<b>B3</b>	BOUNDSTONE				
	CHALKY				
	CRYPTOXLN				
<b>Sorting</b>					
<b>M</b>	MODERATE				
<b>P</b>	POOR				
<b>W</b>	WELL				

## Textures

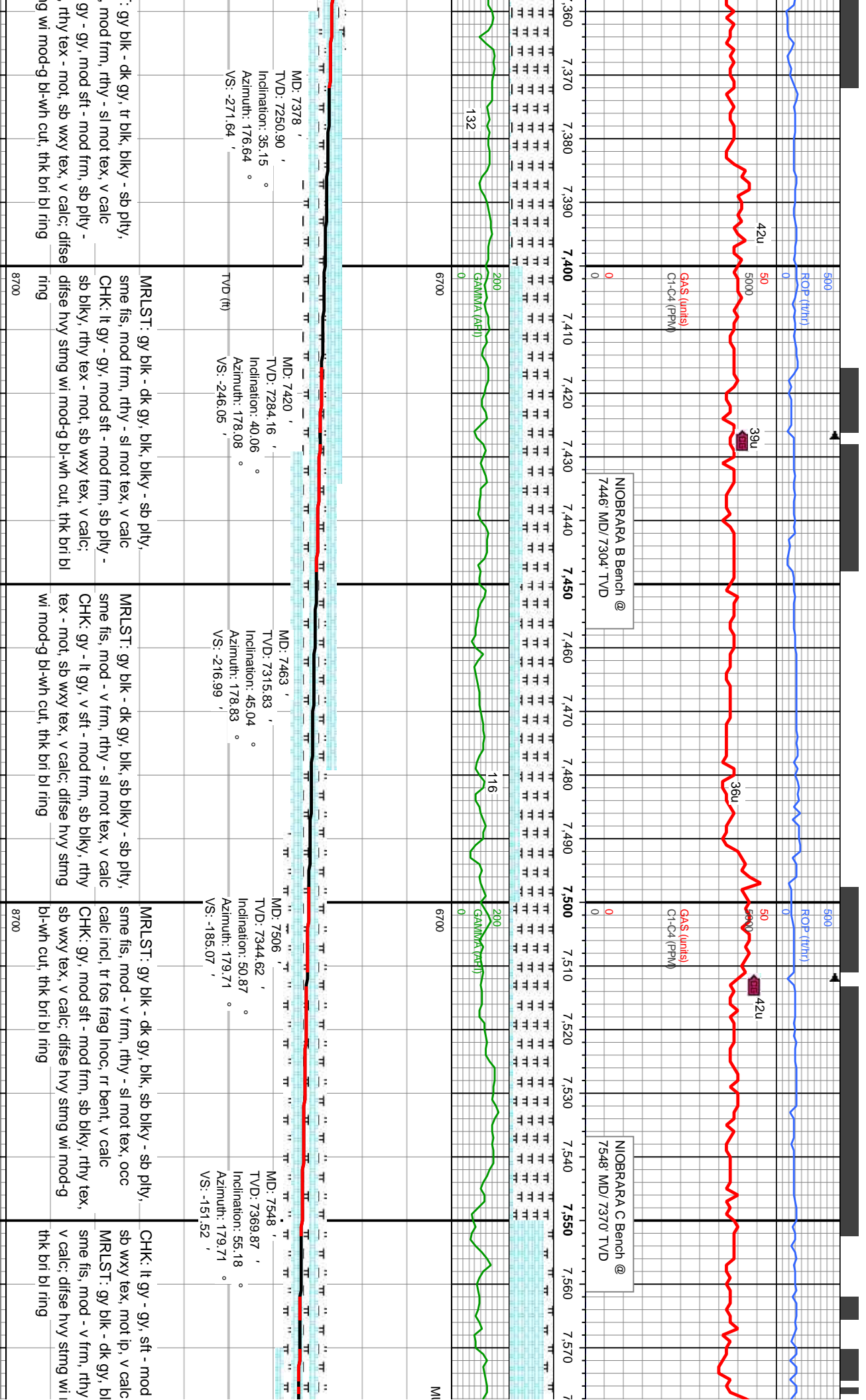
## Sorting

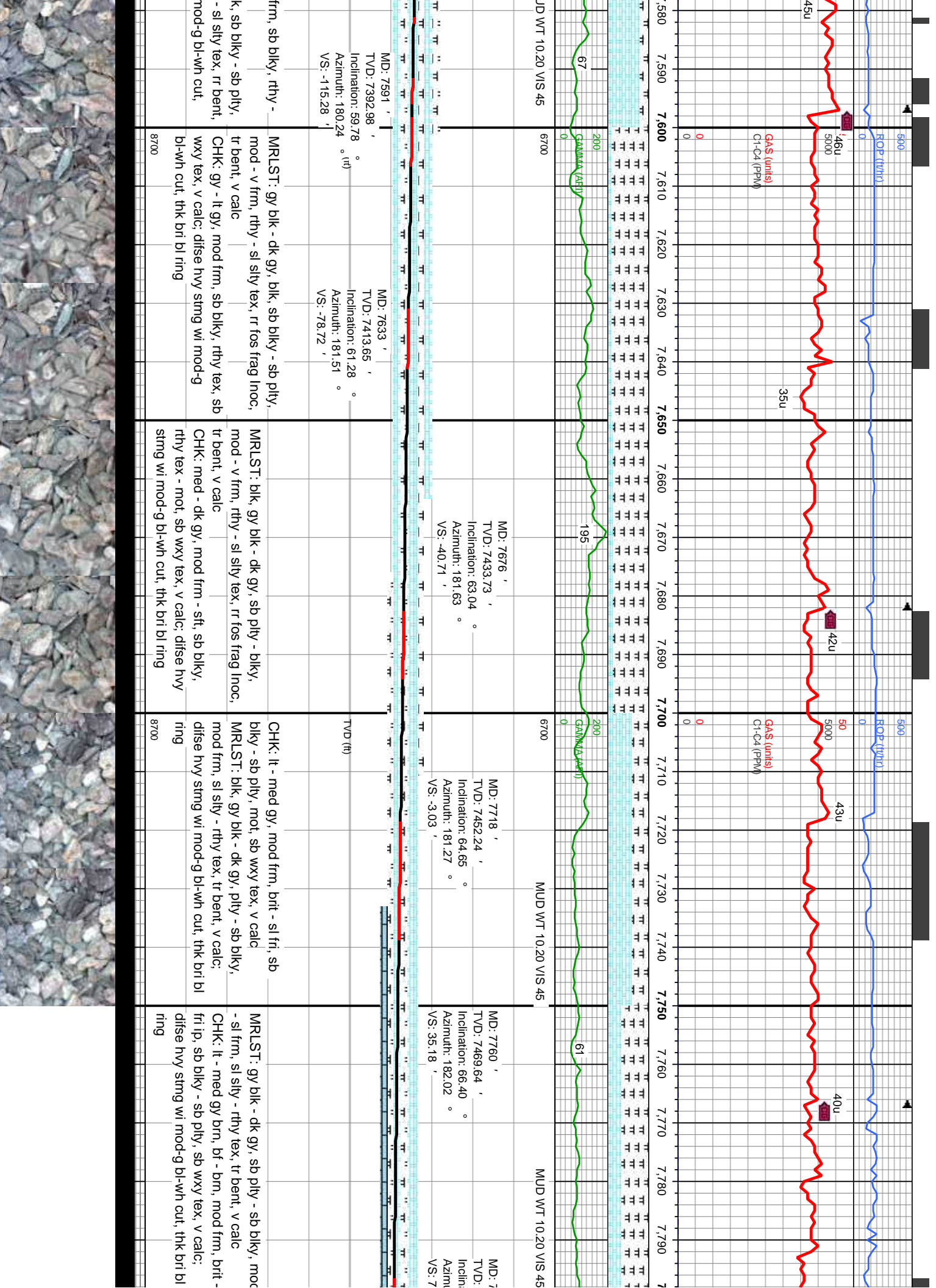
**M** MODERATE  
**P** POOR  
**W** WELL



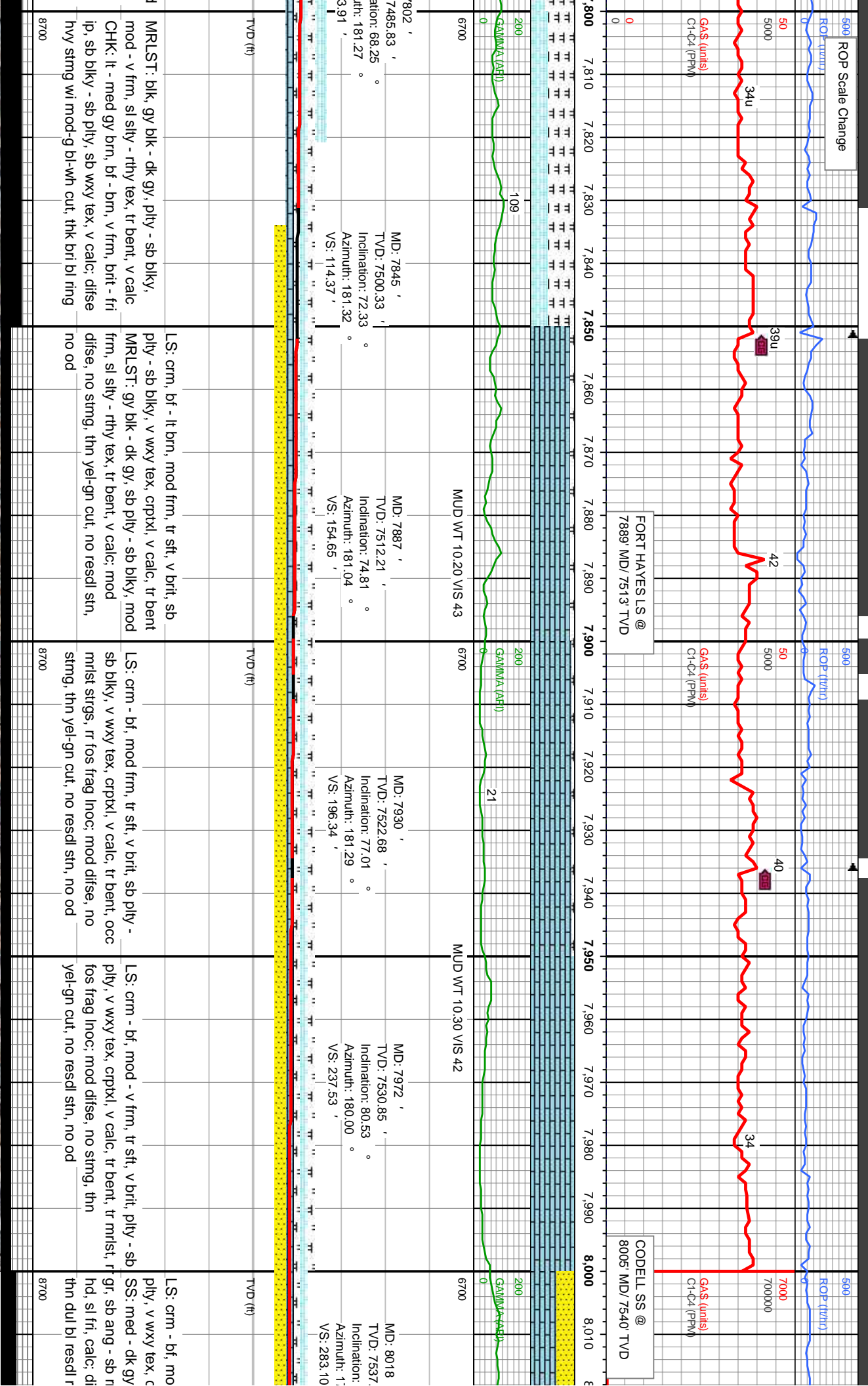










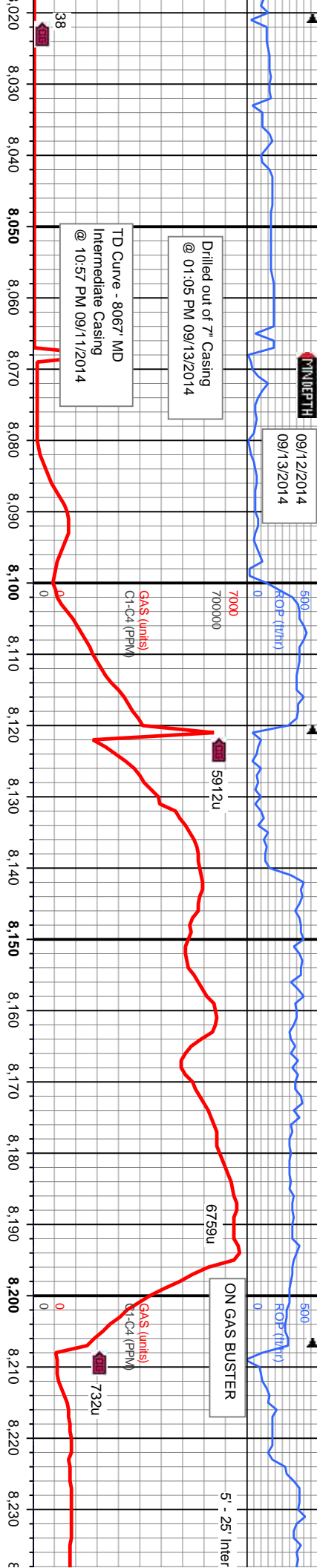


MD: 8071

09/12/2014  
09/13/2014

Drilled out of 7" Casing  
@ 01:05 PM 09/13/2014

TD Curve - 8067 MD  
Intermediate Casing  
@ 10:57 PM 09/11/2014



100 SAMPLE INTERVALS

MUD WT 9.60 VIS 45

MD: 8071 '  
TVD: 7,540.51 '  
Inclination: 88.52 °  
Azimuth: 179.67 °  
VS: 335.97 '

MD: 8156 '  
TVD: 7542.66 '  
Inclination: 88.58 °  
Azimuth: 180.11 °  
VS: 420.94 '

MD: 8,225 '  
TVD: 7,542.66 '  
Inclination: 88.58 °  
Azimuth: 180.11 °  
VS: 420.94 '

SS: med - dk gy brn, lt gy - wh, trmsl - clr gr, vif gr, sb ang - sb rnd, mod cons, p - mod srt, mod hd, sl fri, calc  
SH: dk gy - med gy, sft, pty, tr sb pty, rthy mod, mod cons, w srt, mod  
fse sl stmg dul bl-wh cut, thin dul bl resdl ring

SS: med - dk gy brn, med gy - dk gy, trmsl - clr gr, vif gr, sb ang - sb rnd, mod cons, p - mod srt, mod hd, sl fri, calc  
SHY SS: med - dk gy brn, med gy - dk gy, trmsl - clr gr, f gr, sb ang - sb rnd, p - mod srt, mod hd, v sl calc, tr wh inoc foss; stmg wi mky strgs, bl-wh flr wi bl-wh disse cut, thin bl resdl ring

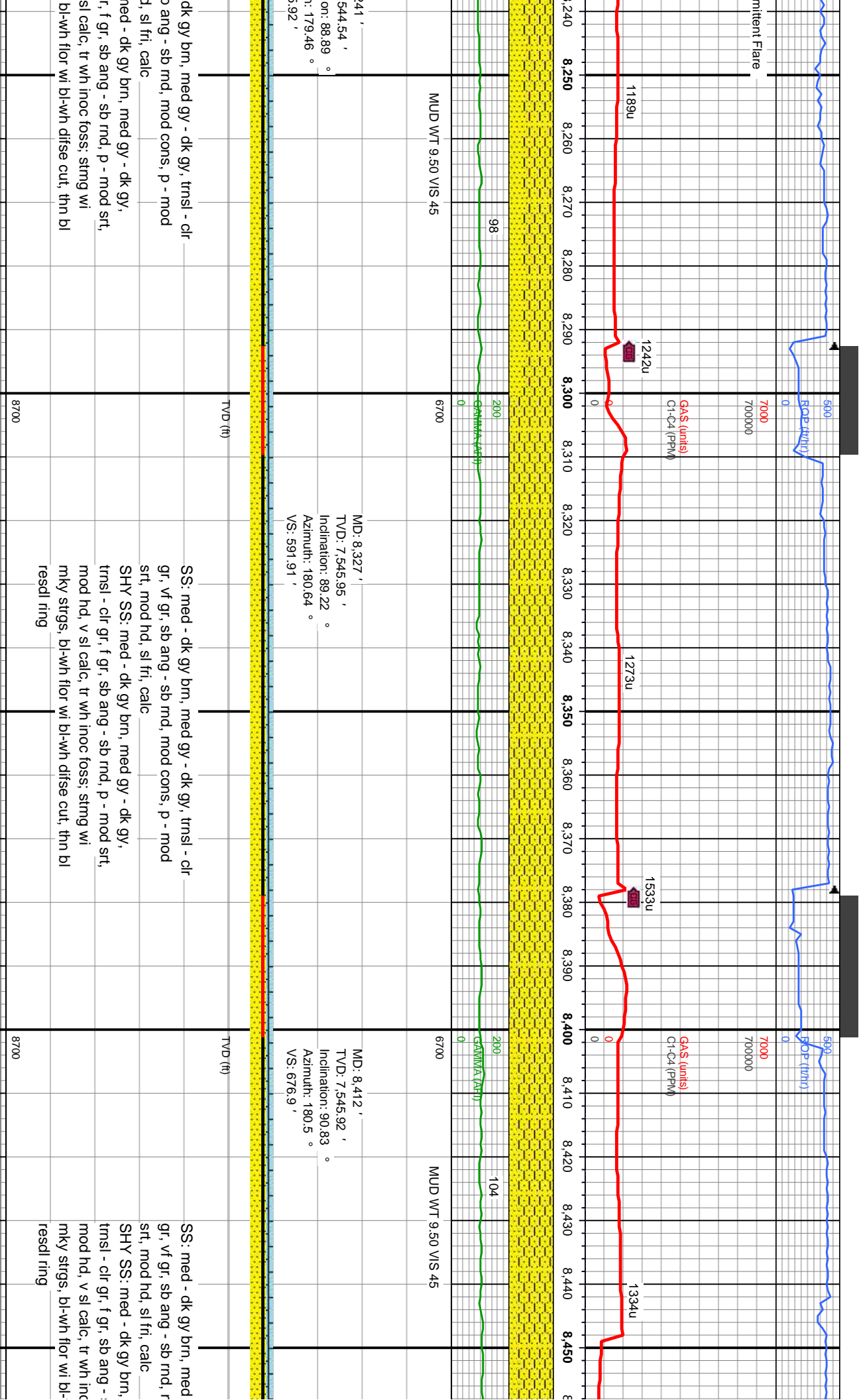
SS: med - gr, vif gr, sl srt, mod hd, SHY SS: r trmsl - clr g mod hd, v mky strgs, resdl ring

TVD (ft)

TVD (ft)

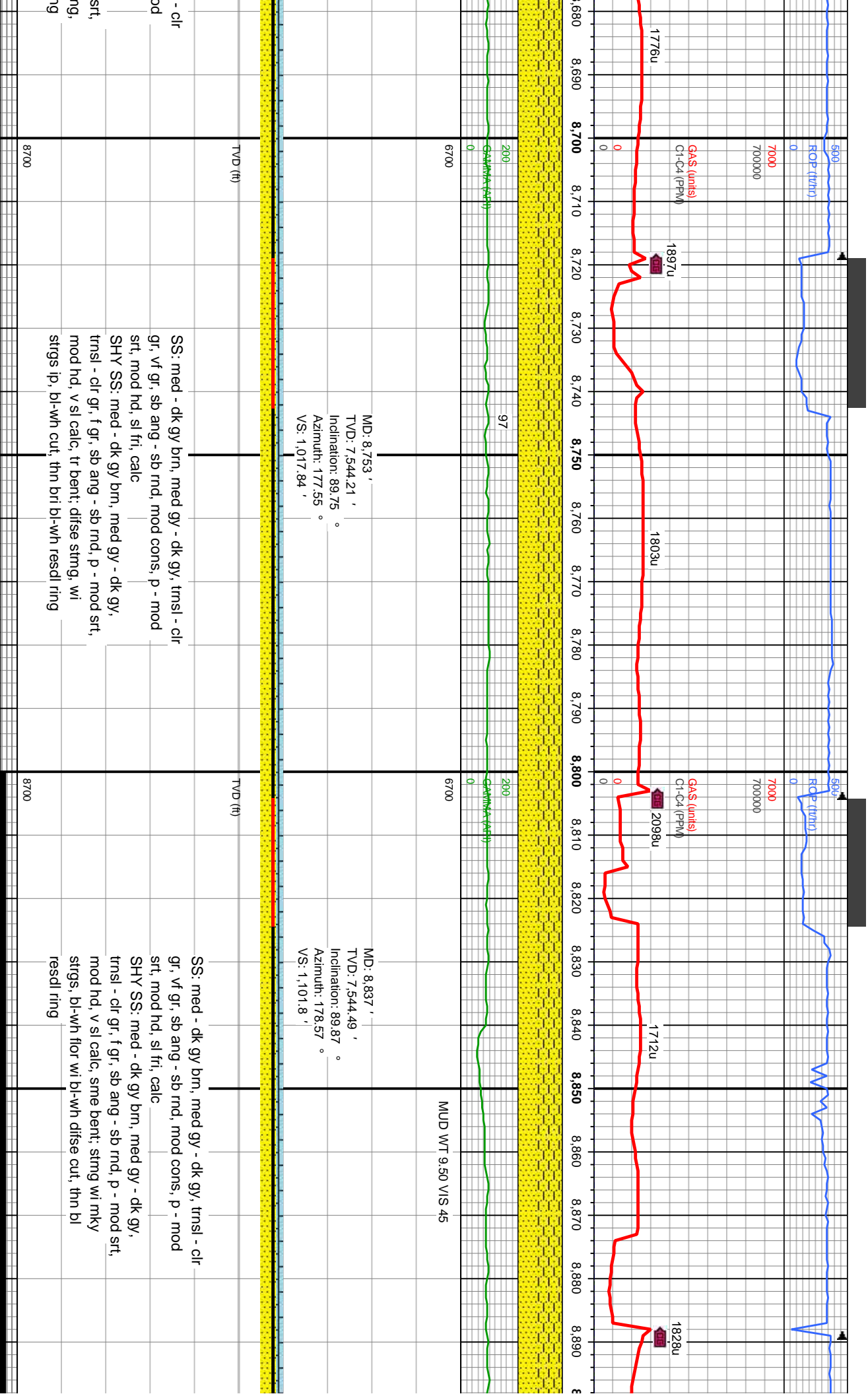




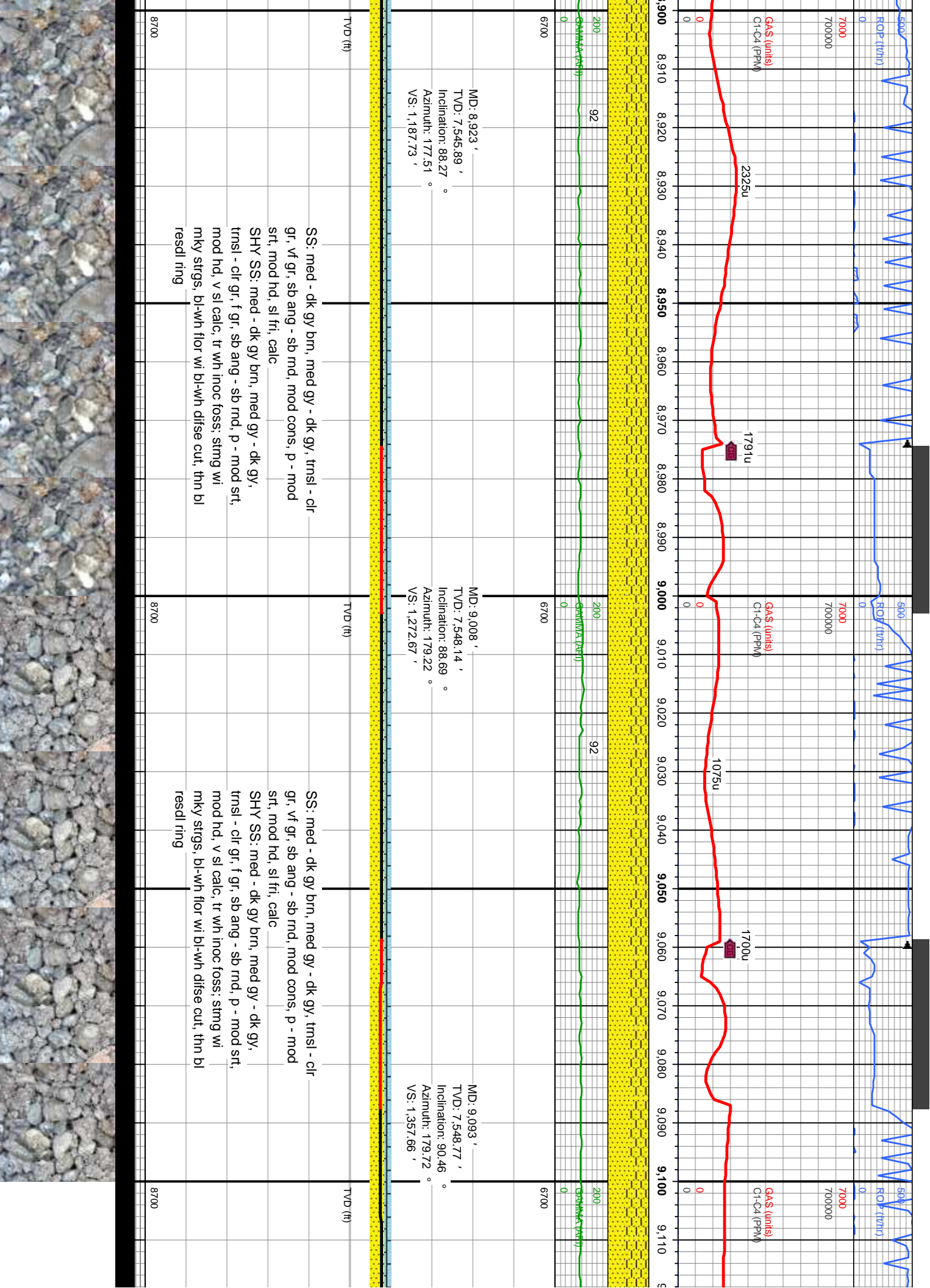


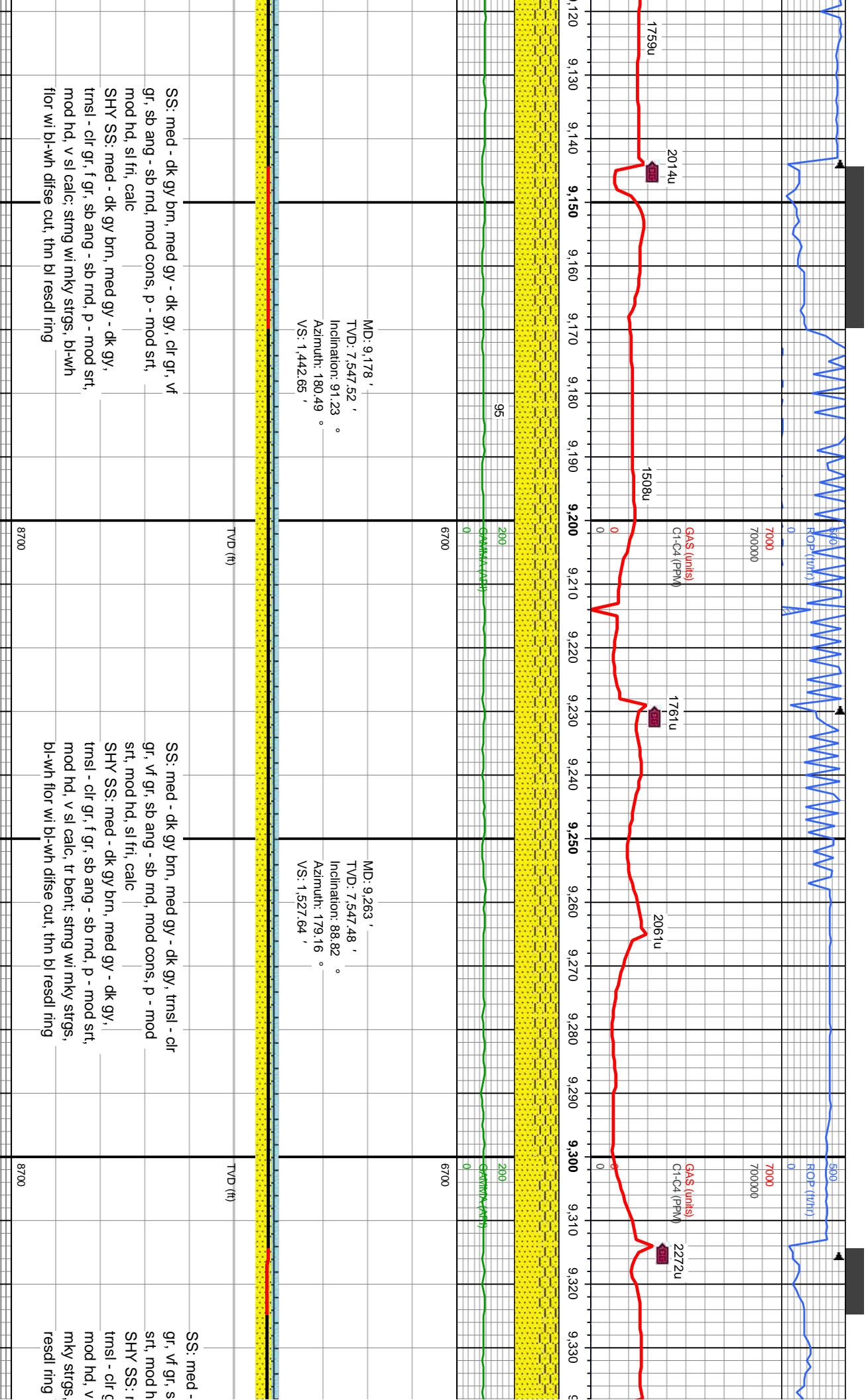




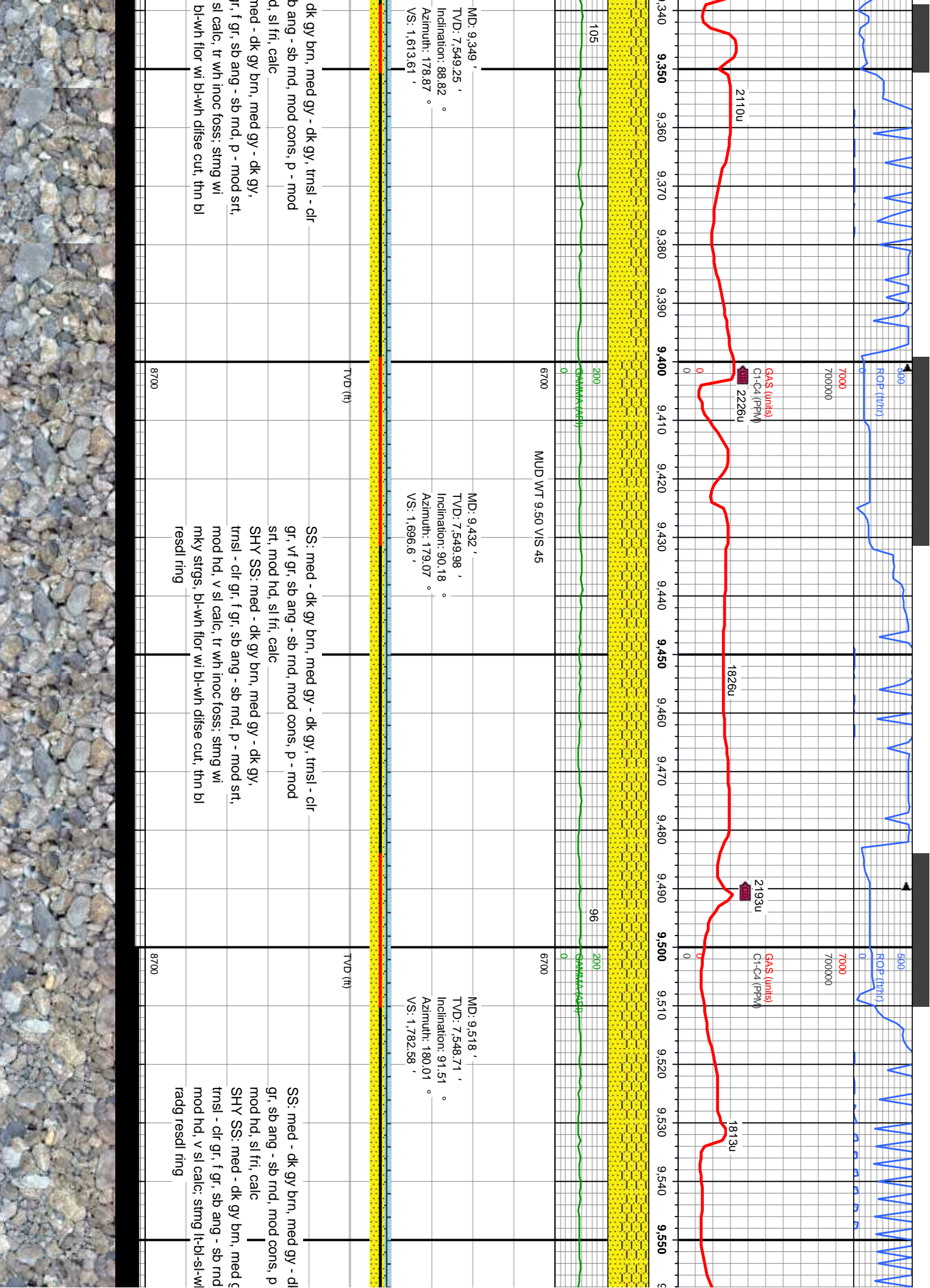




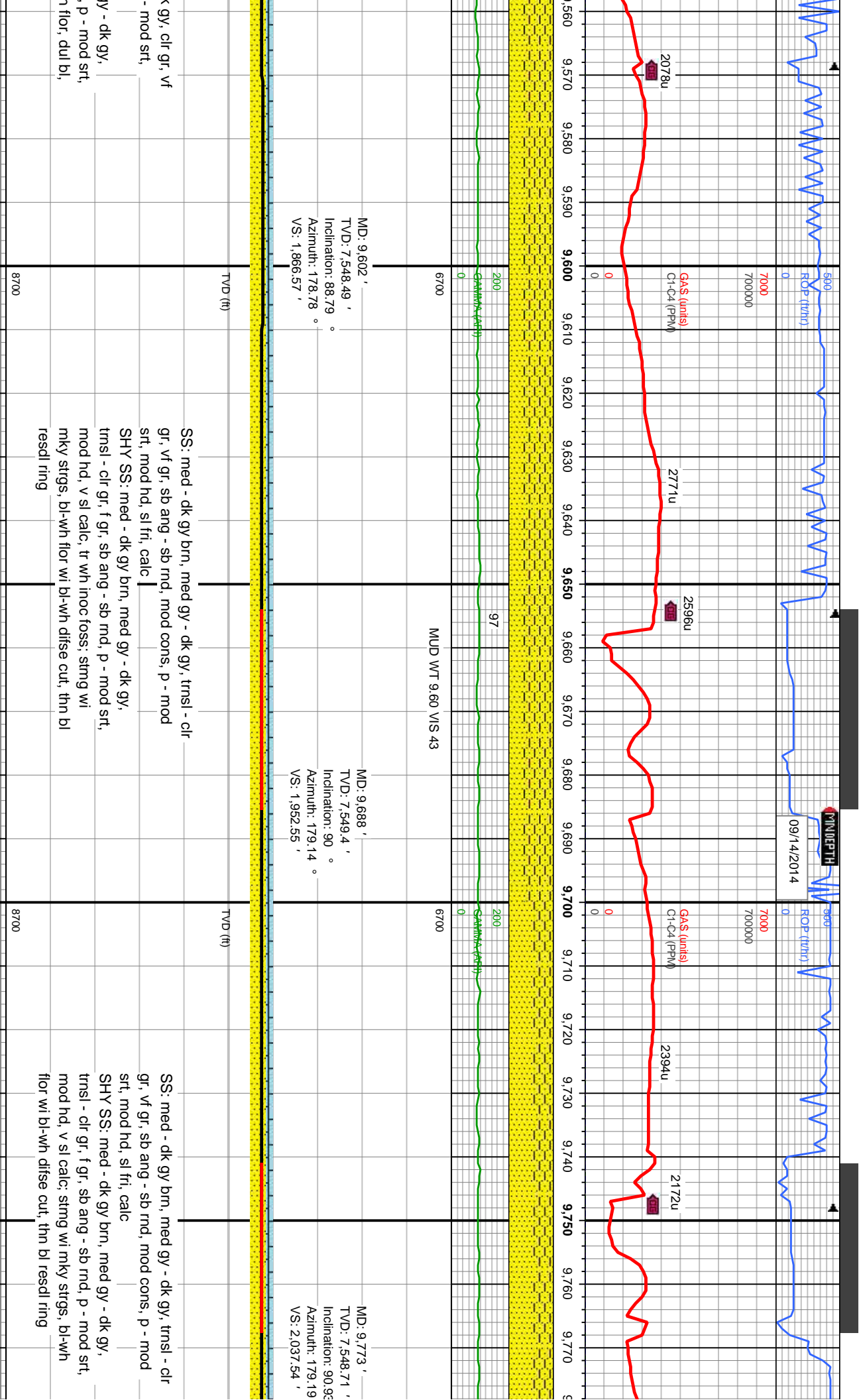






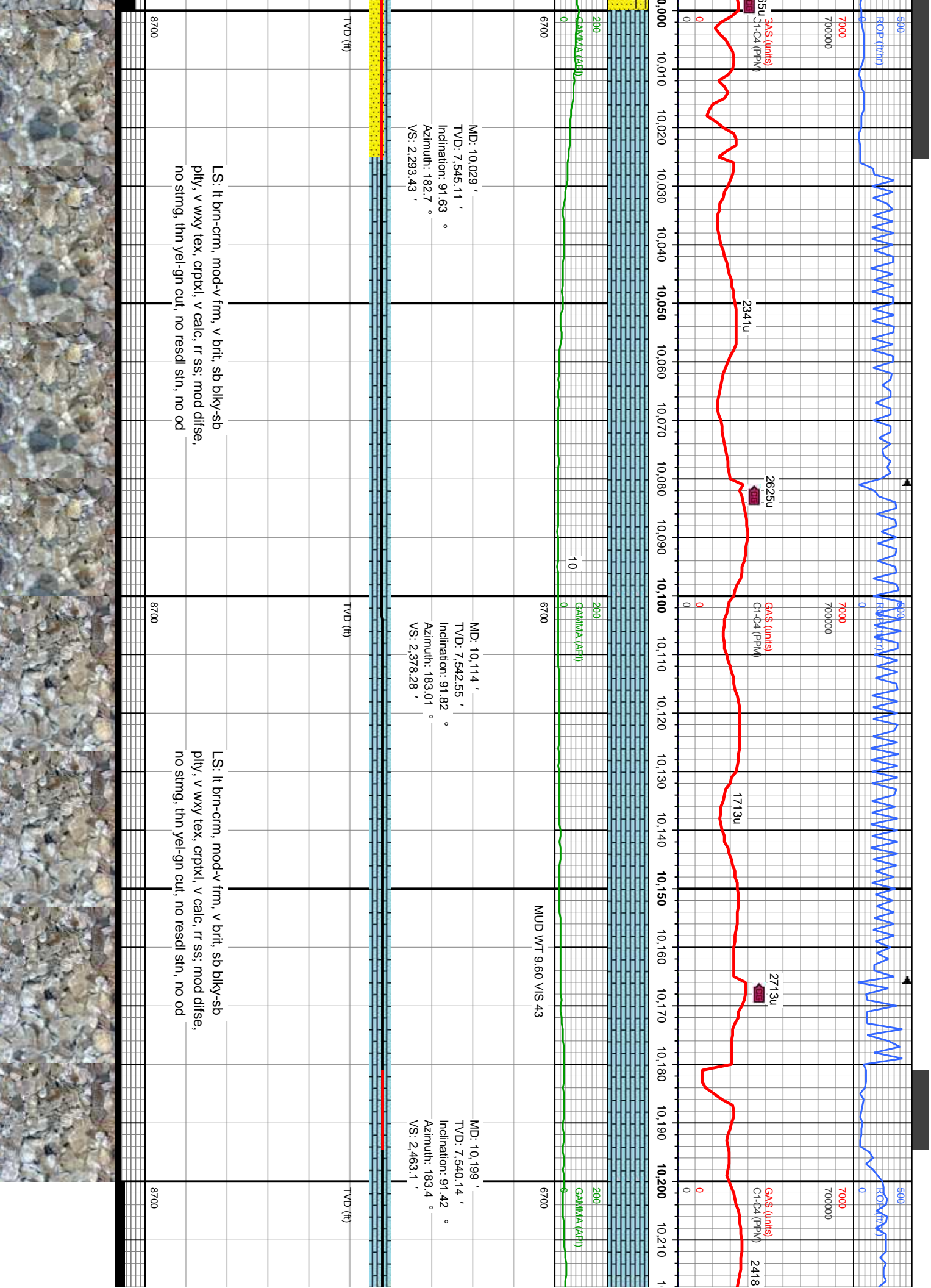




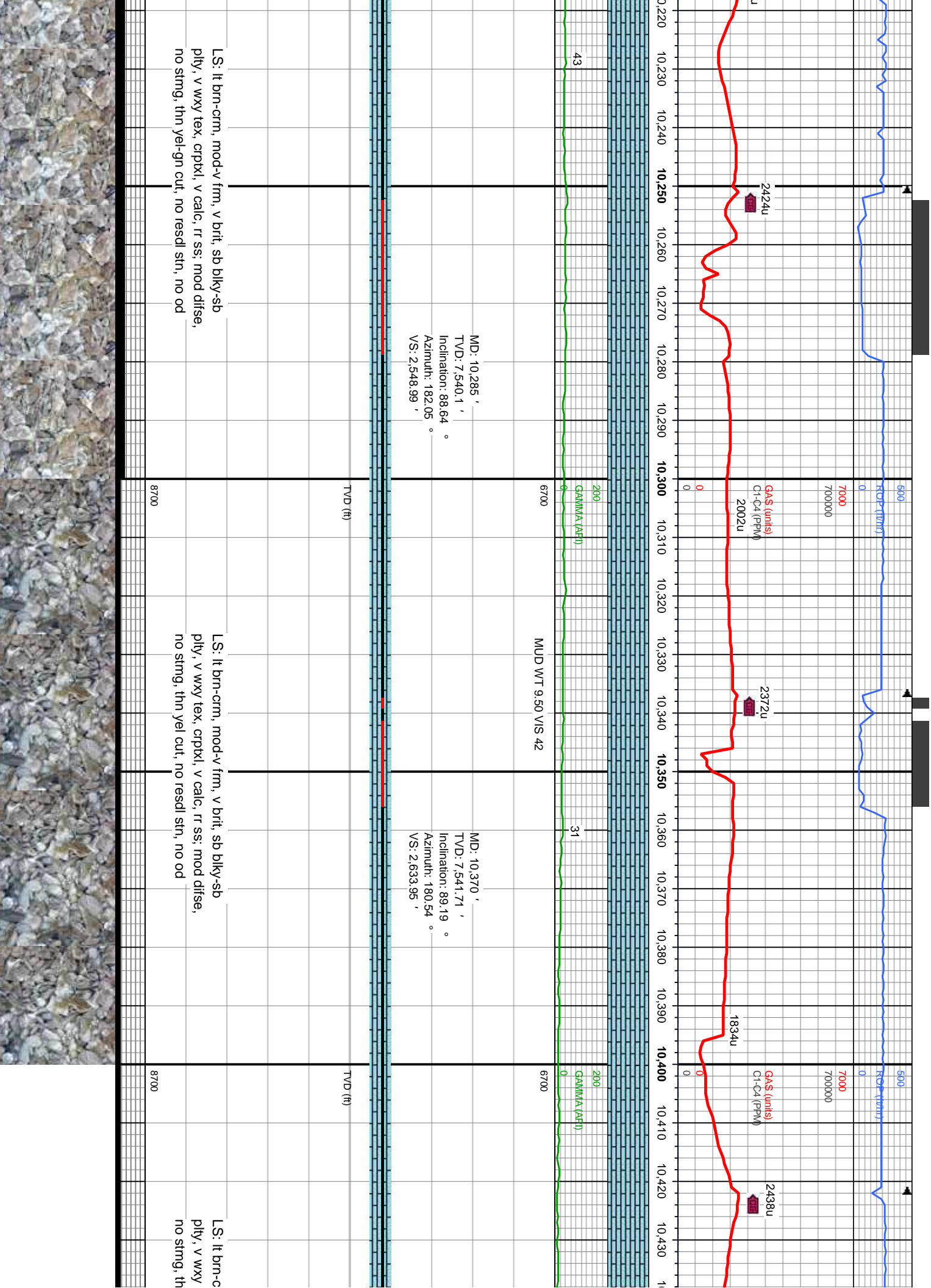


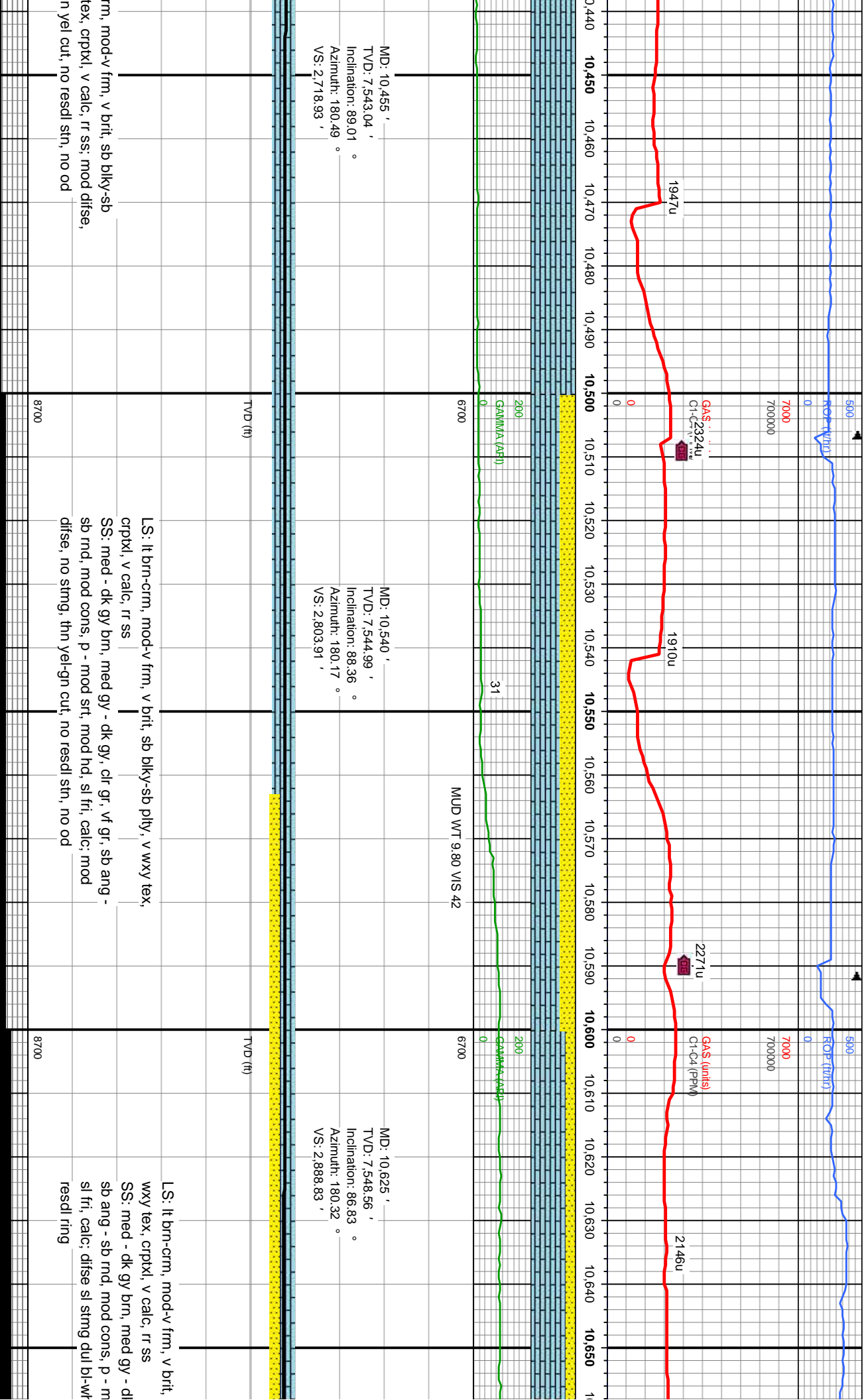












MD: 10,455 '   
 TVD: 7,543.04 '   
 Inclination: 89.01 °   
 Azimuth: 180.49 °   
 VS: 2,718.93 '   
 5

MD: 10,540 ' —  
TVD: 7,544.99 ' —  
Inclination: 88.36 ° —  
Azimuth: 180.17 ° —  
VS: 2,803.91 ' —

MD: 10,625 ' °
TVD: 7,548.56 ' °
Inclination: 86.83 ' °
Azimuth: 180.32 ' °
VS: 2,888.83 ' °

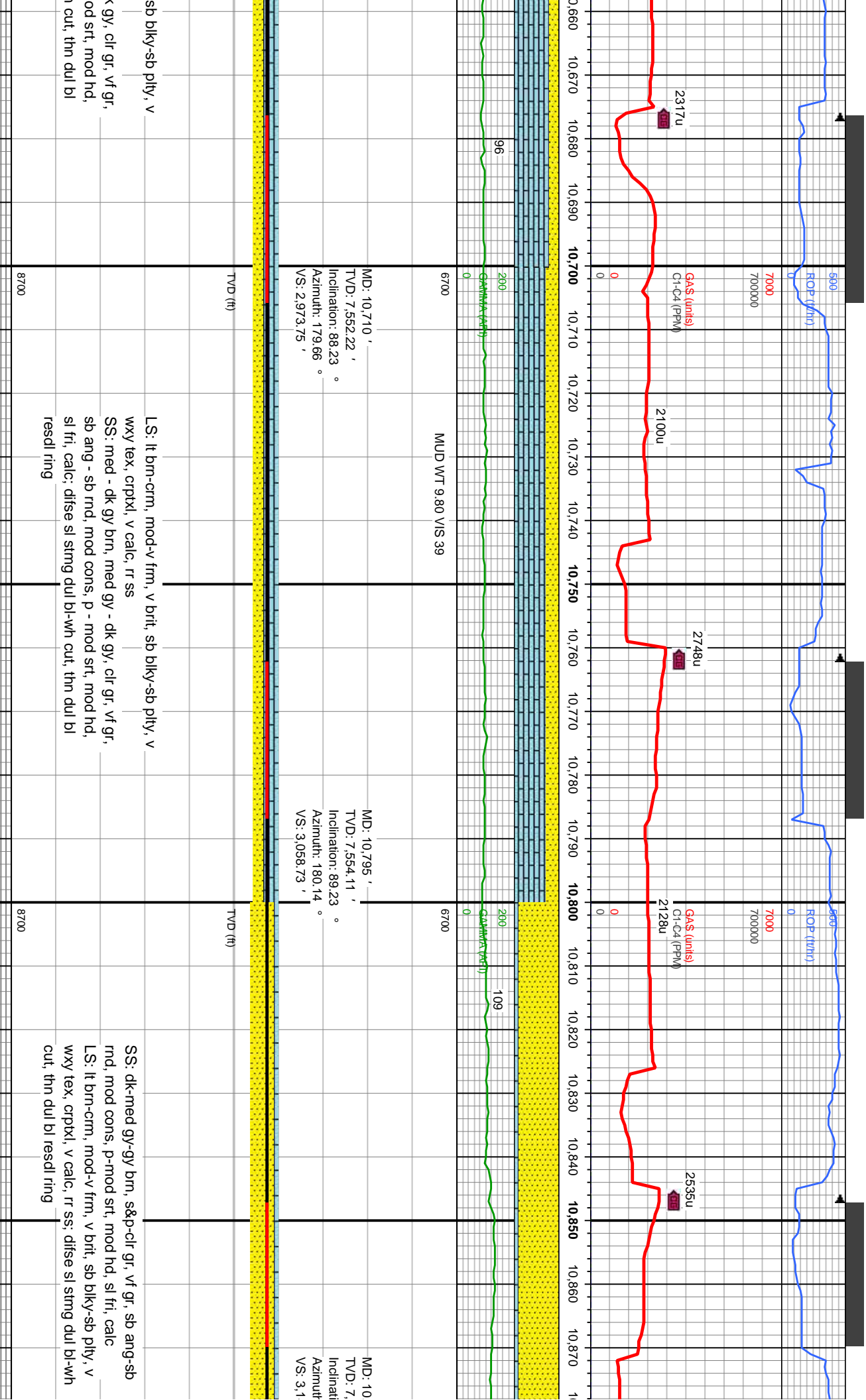
firm, mod-v frm, v brit, sb blkly-sb  
tex, crptxl, v calc, rr ss; mod difse,  
n yel cut, no resdl stn, no od

LS: lt brn-cm, mod-v frn, v brt, sb blk-y-sb ply, v wxy tex, cpxtl, v calc, r r ss

SS: med - dk gy brn, med gy - dk gy, clr gr, v fr gr, sb ang - sb rnd, mod com, p - mod strf, mod hd, sl frt, calc: mod difse, no stmg, thn yel-gn cut, no resdl stn, no od

LS: It brn-crm, mod-v fm, v brit, wxy tex, crippl, v calc, rr ss	
SS: med - dk gy brn, med gy - dl sb ang - sb rmd, mod cons, p - m sl frt, calc; dfise sl strng dul bl-wr	
resdl ring	





MD: 10,710 '  
TVD: 7,552.22 '  
Inclination: 88.23 °  
Azimuth: 179.66 °  
VS: 2,973.75 '

MD: 10,795 '  
TVD: 7,554.11 '  
Inclination: 89.23 °  
Azimuth: 180.14 °  
VS: 3,058.73 '

MD: 10  
TVD: 7  
Inclination:  
Azimuth:  
VS: 3.1

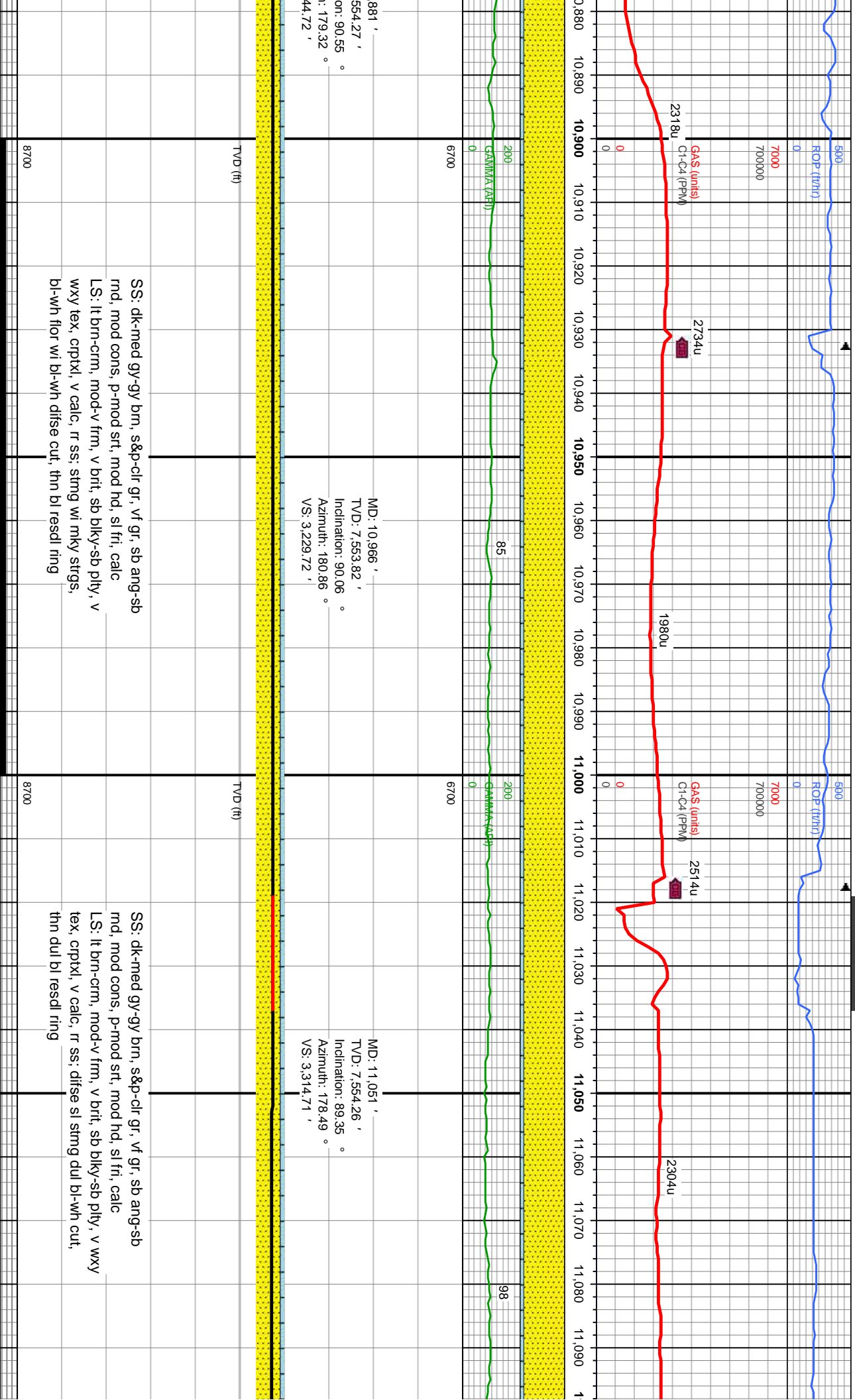
sb blk-y-sb pily, v  
k gy, clr gr, vf gr,  
od srt, mod hd,  
cut, thn dul bl

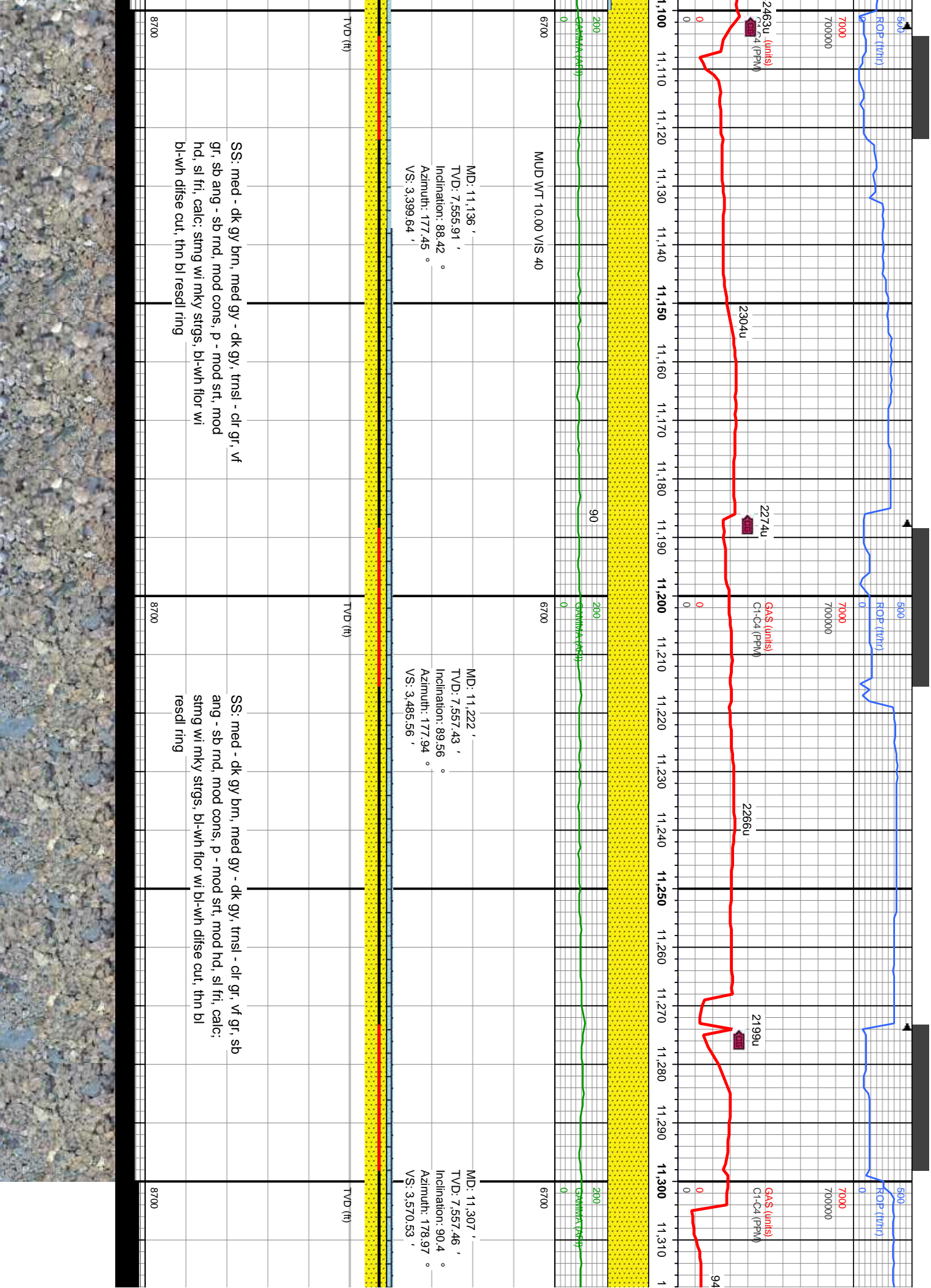
LS: lt brn-crm, mod-v frm, v brit, sb blk-y-sb pily, v  
wxy tex, crptxl, v calc, rr ss  
SS: med - dk gy brn, med gy - dk gy, clr gr, vf gr,  
sb ang - sb rnd, mod cons, p - mod srt, mod hd,  
sl fri, calc; difse sl sting dul bl-wh cut, thn dul bl  
resdl ring

SS: dk-med gy-gy brn, s&p-clr gr, vf gr, sb ang-sb  
rnd, mod cons, p-mod srt, mod hd, sl fri, calc  
LS: lt brn-crm, mod-v frm, v brit, sb blk-y-sb pily, v  
wxy tex, crptxl, v calc, rr ss; difse sl sting dul bl-wh  
cut, thn dul bl resdl ring

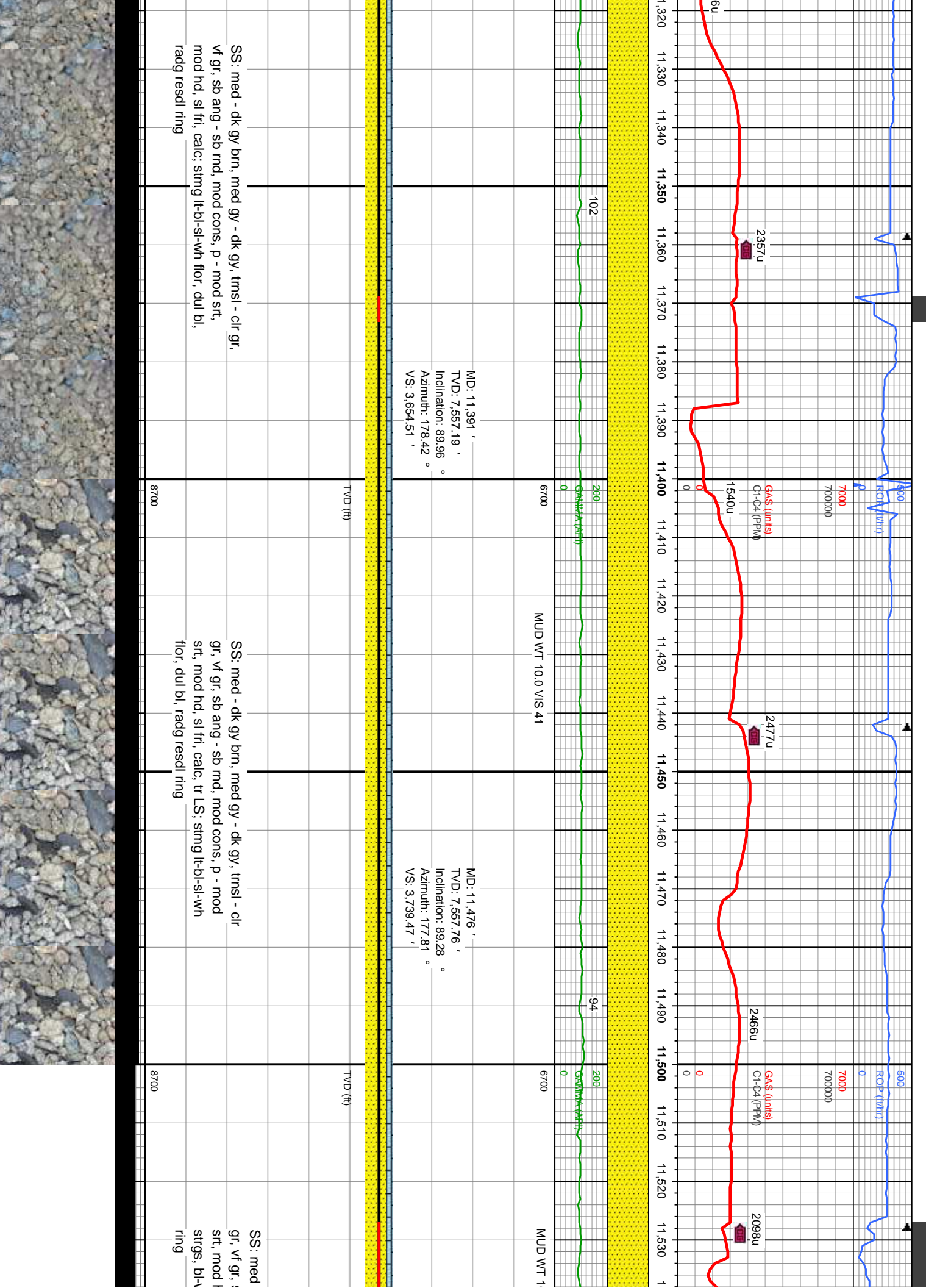


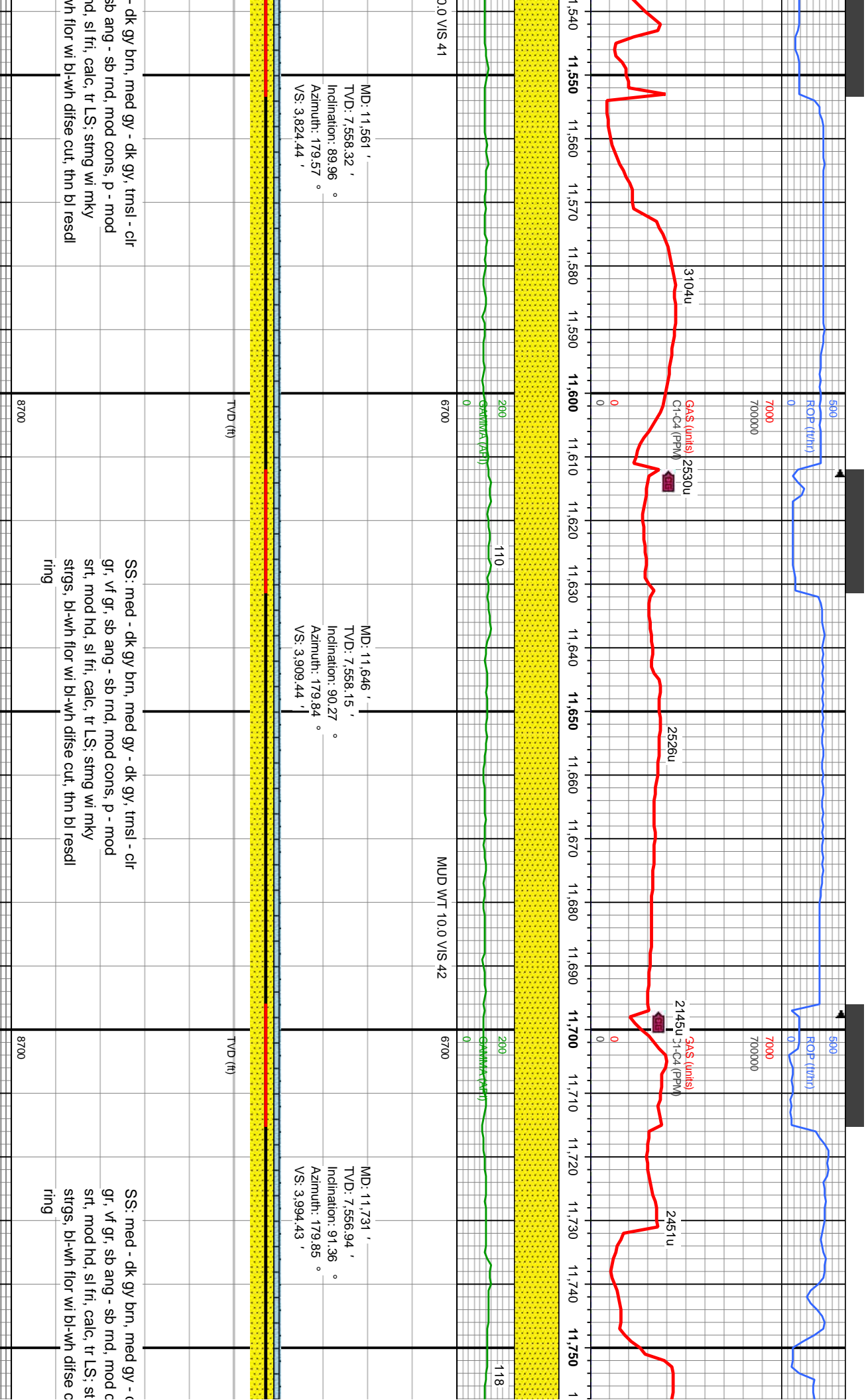




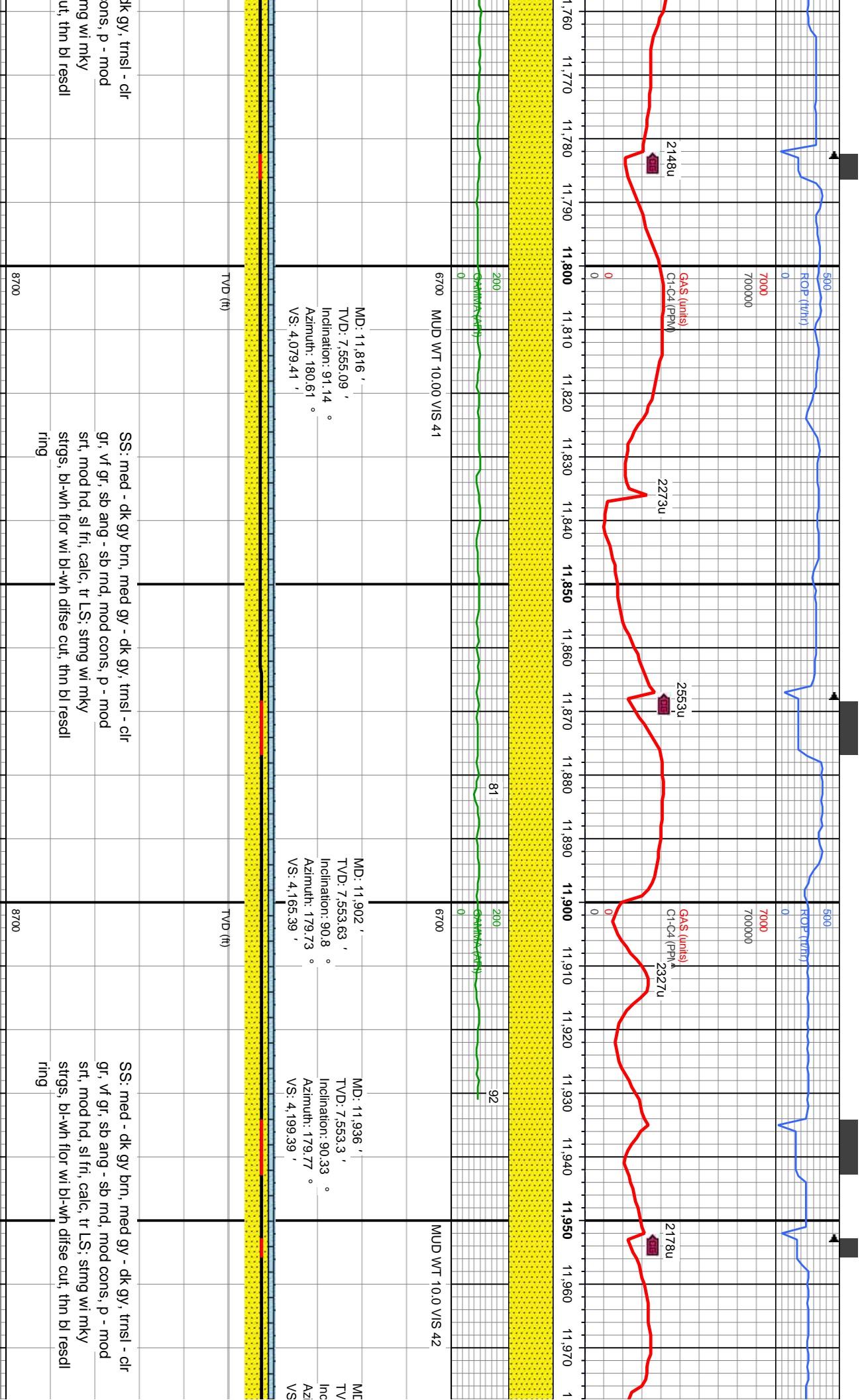


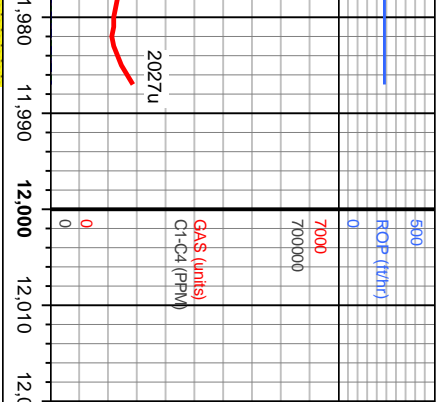












THANK YOU FOR USING  
COLUMBINE LOGGING INC.

D: 11,987 '  
D: 7,553 '  
Inclination: 90.33 °  
muth: 179.33 °  
: 4,250.39 '

REACHED TD AT 11,987' MD  
19:38 ON 9/14/2014.

8700