



Scale: 5" / 100'  
Measured Depth Log

**Well Name** Ottesen LE 06-311HC

**Location** NWSE SEC 33-T1N-R66W

**State** COLORADO

**County** WELD

**Country** USA

**Rig Number** PRECISION 466

**API Number** 051234433700

**AFE #** 18DC0194

**Geographic Region** DJ BASIN

**Field** WATTENBERG

**Ground Elevation** 5076.5

**K.B. Elevation** 5096.5

**Logged Interval** 6000' MD To 18174' MD

**Total Depth** 18174' MD

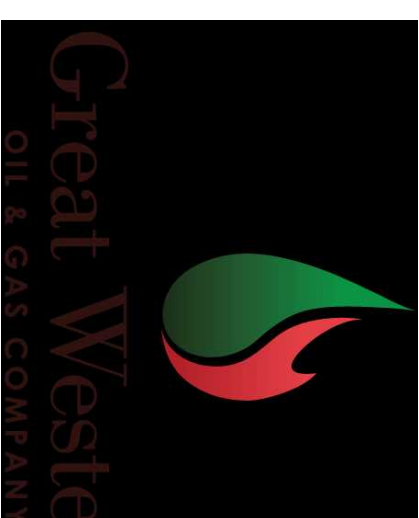
**Formation** CODELL

**Type of Drilling Fluid** OIL BASED MUD

## Operator

**Company** Great Western Oil and Gas

**Address** 1801 Broadway, Ste 500  
Denver, CO 80202



## Geologist

**Name** Gabriel Rubio, Zach Souvall, Wyatt Wicks

**Company** Terra Guidance

**Address** 67 W. Floyd Ave. Ste 105  
Englewood, CO 80110  
(970) 260-5408

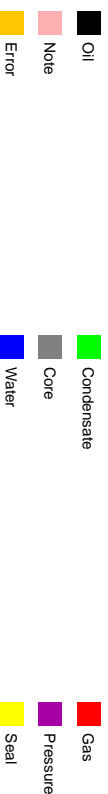


## Other

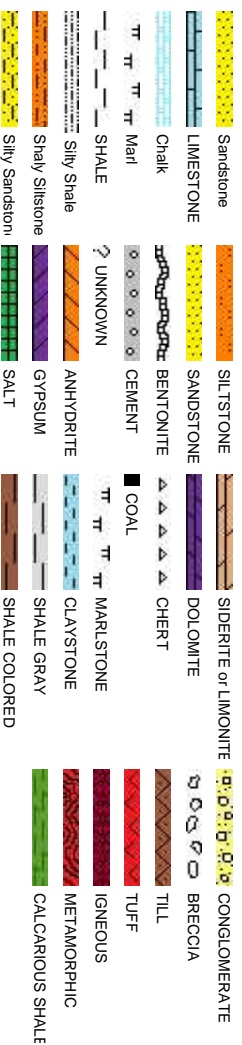
**Began Logging** 12/02/2018

**Finished Logging** 12/06/2018

## Color Coding



## Rock Types



## Fossils

[illegible]

## Minerals

- + FIELDS
- FERR
- ✓ FERR

## Oil Show

**Oil Show**

☐ ORGANIC

☐ PINPOINT

☐ DEAD

























☐ VUGGY

## Engineering















QUESTIONABLE

SPOTTED STAINING BIT











## Porosity

	CASING		
	CONNECTION (LEFT)		
	CONNECTION (RIGHT)		
	CONNECTION GAS		
	CORE - LOST		
	CORE - RECOVERED		
	DST INTERVAL		
	FAULT		








## Accessories

LACEOUS		GLAUCONITE
LITE GRAIN		GYPSIFEROUS
OMITE		HEAVY MINERAL
ENOUS SUBSTANCE		KAOLIN
CIA FRAGMENTS		MARLSTONE
AREOUS		MINERAL CRYSTALS
ONACEOUS FLAKES		NODULES
PHOSPHATE PELLETS		PHOSPHATE PELLETS
THIN BEDS		SALT CAST
MITIC		SANDY
SPAR		SILICEOUS
UGINOUS PELLET		SILTY
UGINOUS		TUFFACEOUS
		SILTSTONE STRINGER









### Stringer

	ANHYDRITE STRINGER
	BENTONITE STRINGER
	COAL STRINGER
	DOLOMITE STRINGER
	GYPSUM STRINGER
	LIMESTONE STRINGER
	MARLSTONE (CALC) STRG
	MARLSTONE (DOL) STRG
	SANDSTONE STRINGER
	SHALE STRINGER




## Other Symbols

	FORMATION TOP
	GAS SHOW
	MN DEPTH
	NORMAL FAULT
	OIL SHOW
	OVERTURNED STRATA
	SUBRND








### Rounding

	LITHOGRAPHIC
	MICROXLN
	ANGULAR
	MUDSTONE
	ROUNDED
	PACKSTONE
	SUBANG
	WACKESTONE

### Sorting

	REVERSE FAULT
	SIDEWALL CORE (LEFT)
	SIDEWALL CORE (RIGHT)
	BOUNDSTONE
	CHALKY
	WELL

### Textures

	MODERATE
	POOR
	CRYPTOXLN
	EARTHY
	CALCARIUS SHALE
	FINELYXLN
	GRAINSTONE

### CALCARIOUS SHALE

TERRA GUIDANCE  
BEGAN LOGGING @ 05:50 MST 12/3/2018  
BLOODHOUND GAS CHROMATOGRAPH #5781  
100' Sample Collection

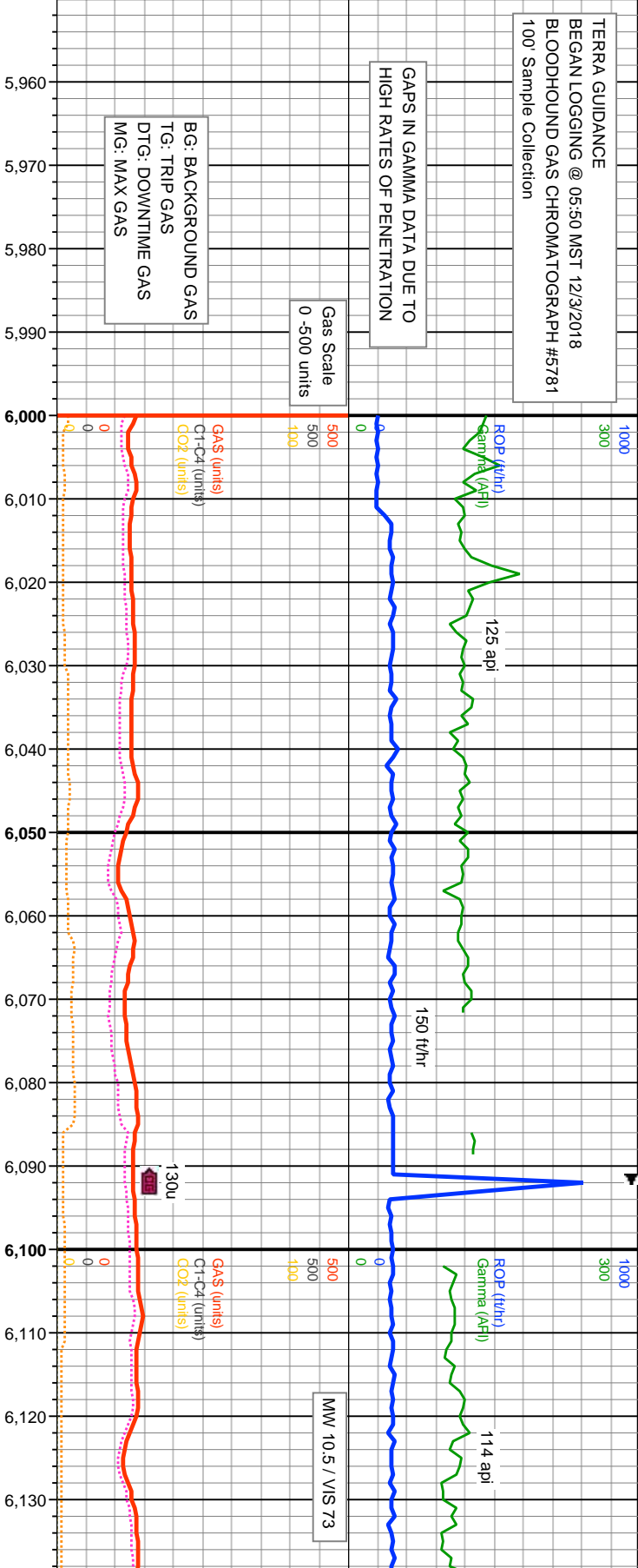
ROP  
ROP  
Gamma

GAPS IN GAMMA DATA DUE TO  
HIGH RATES OF PENETRATION

Gas Scale  
0 - 500 units

BG: BACKGROUND GAS  
TG: TRIP GAS  
DTG: DOWNTIME GAS  
MG: MAX GAS

Total Gas & Chromatograph  
GAS  
C1  
C2  
C3  
C4  
CO2



Images



% Lithology

TVD Scale  
5700' - 9000'

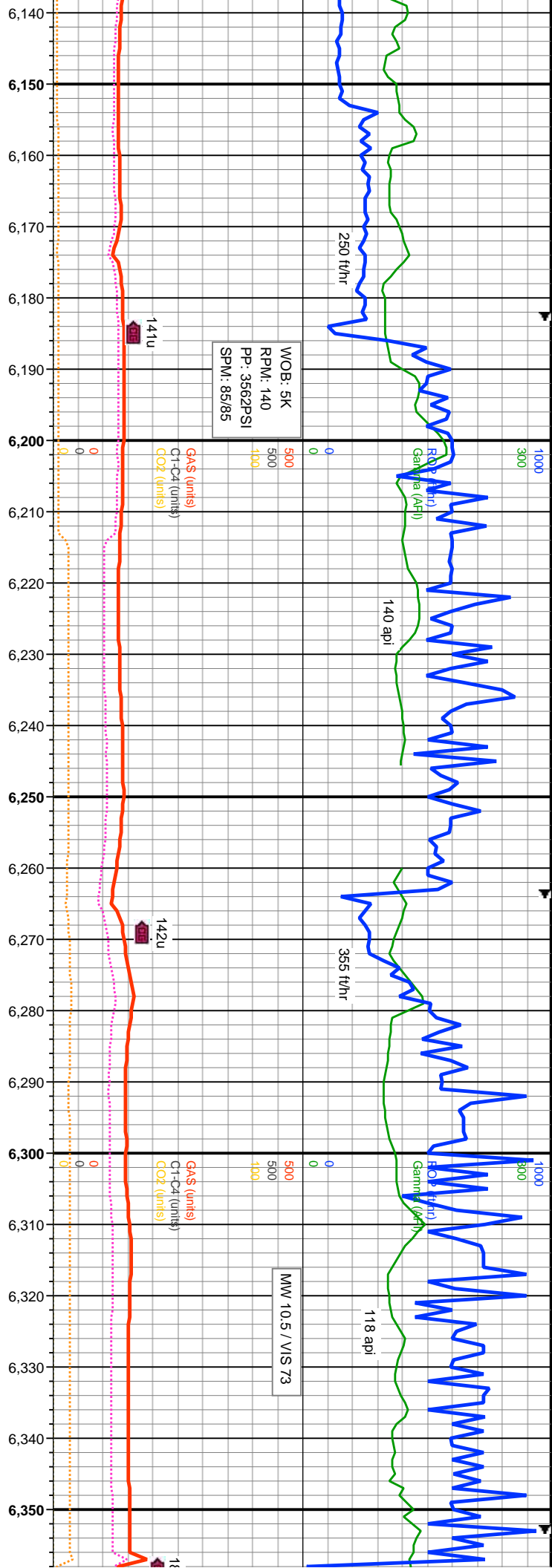
Bit #: 1  
Size: 8.5  
Make: Ulterra  
Model: SPL516  
Depth In: 1786'  
Jets: 4x11, 4x1  
S/N: 44621

Well Bore  
TVD

MD: 6.063'  
INC: 47.49°  
AZM: 214.02°  
TVD: 4,845.49'  
VS: 2,548.8'

100% SHY SLTST: lt-medgy, sme dkr gy, sme gy/shbn, sft-fri, rr frm, sb blk-y-pity, tr fls, arg, silty, rthy, ip cly rch, sl calc.

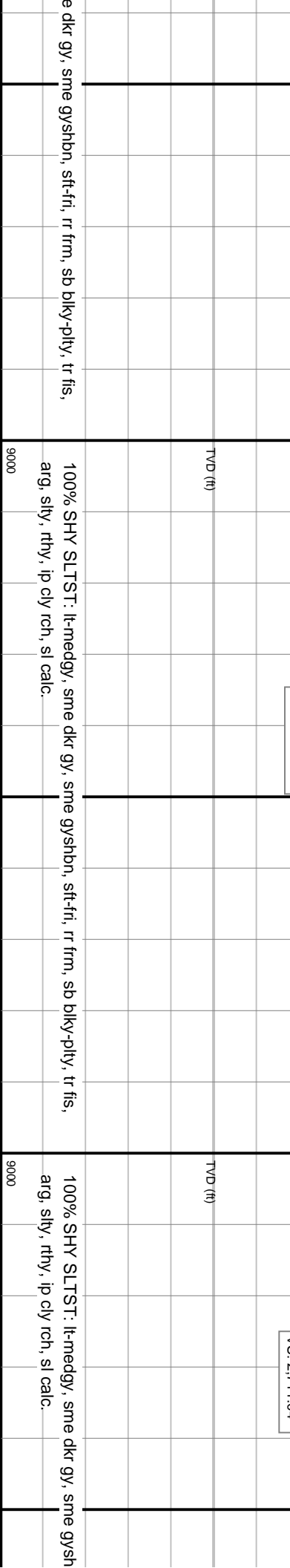
100% SHY SLTST: lt-medgy, sm arg, silty, rthy, ip cly rch, sl calc.



MD: 6,153'  
INC: 47.18°  
AZM: 210.7°  
TVD: 4,906.49'  
VS: 2,604.46'

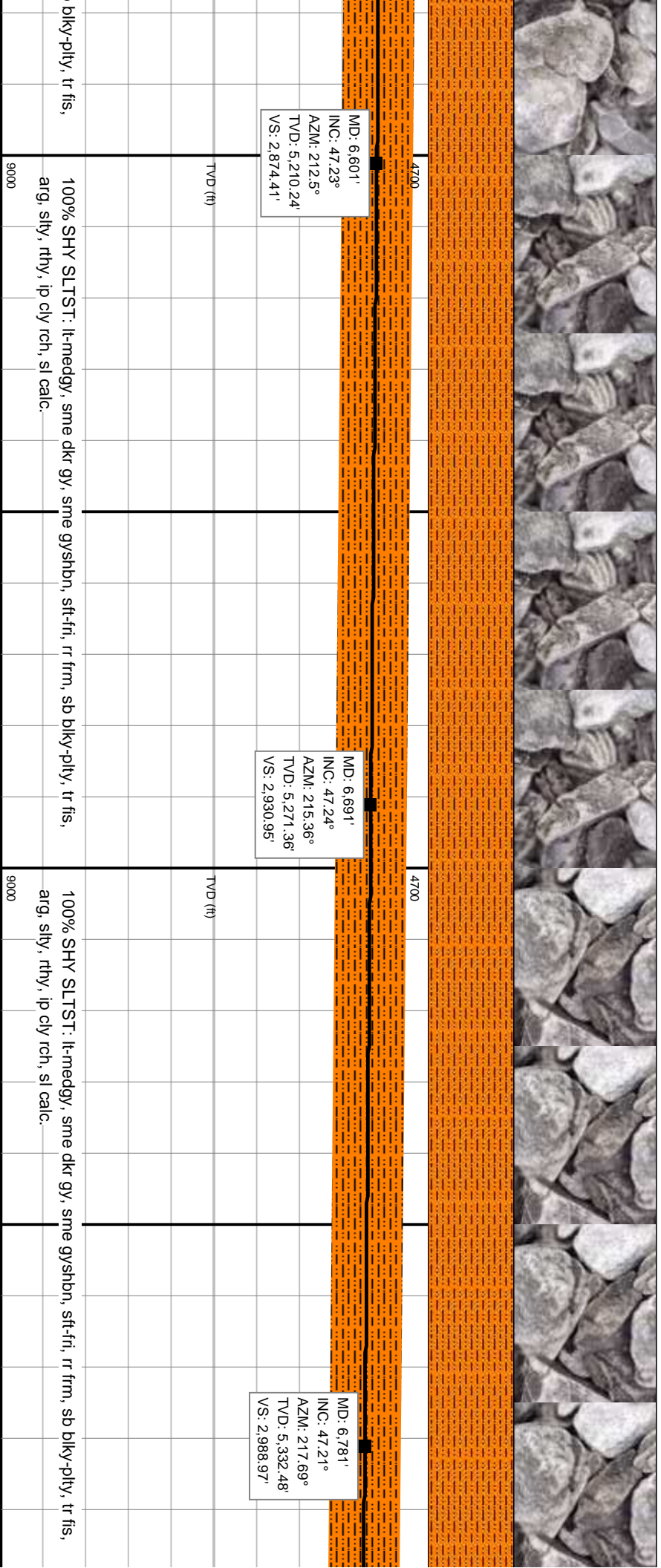
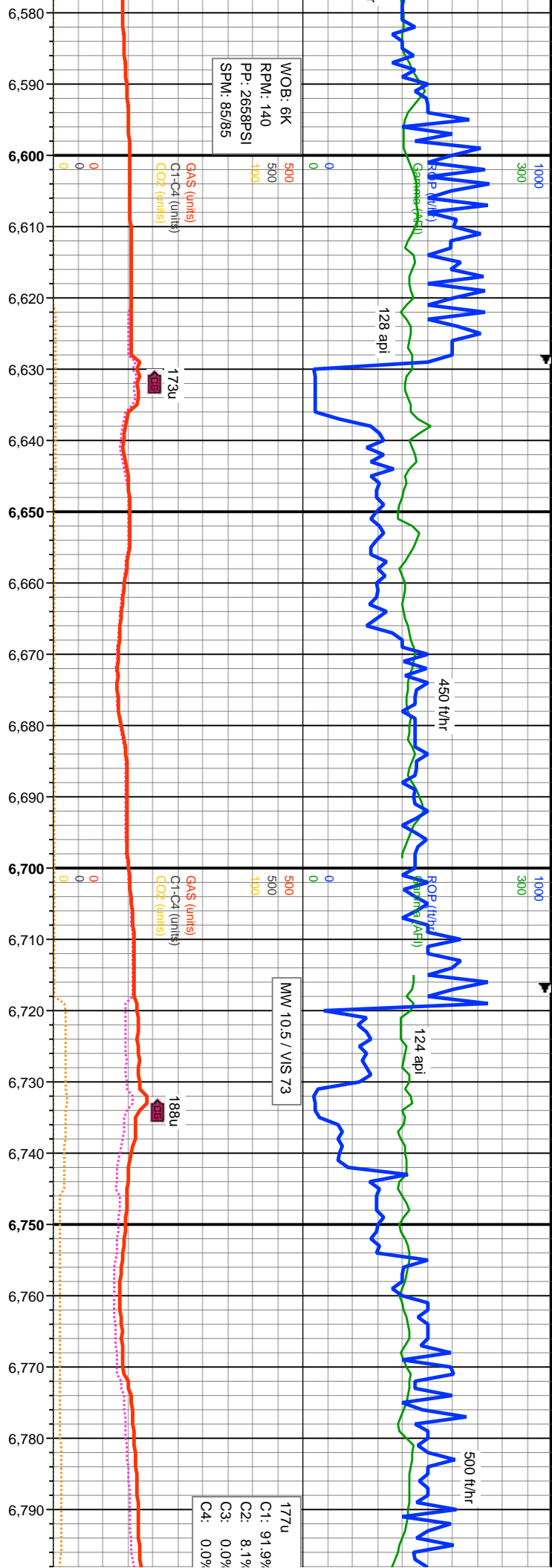
MD: 6,242'  
INC: 47.17°  
AZM: 209.14°  
TVD: 4,966.99'  
VS: 2,657.82'

MD: 6,332'  
INC: 47.47°  
AZM: 208.11°  
TVD: 5,028'  
VS: 2,711.04'

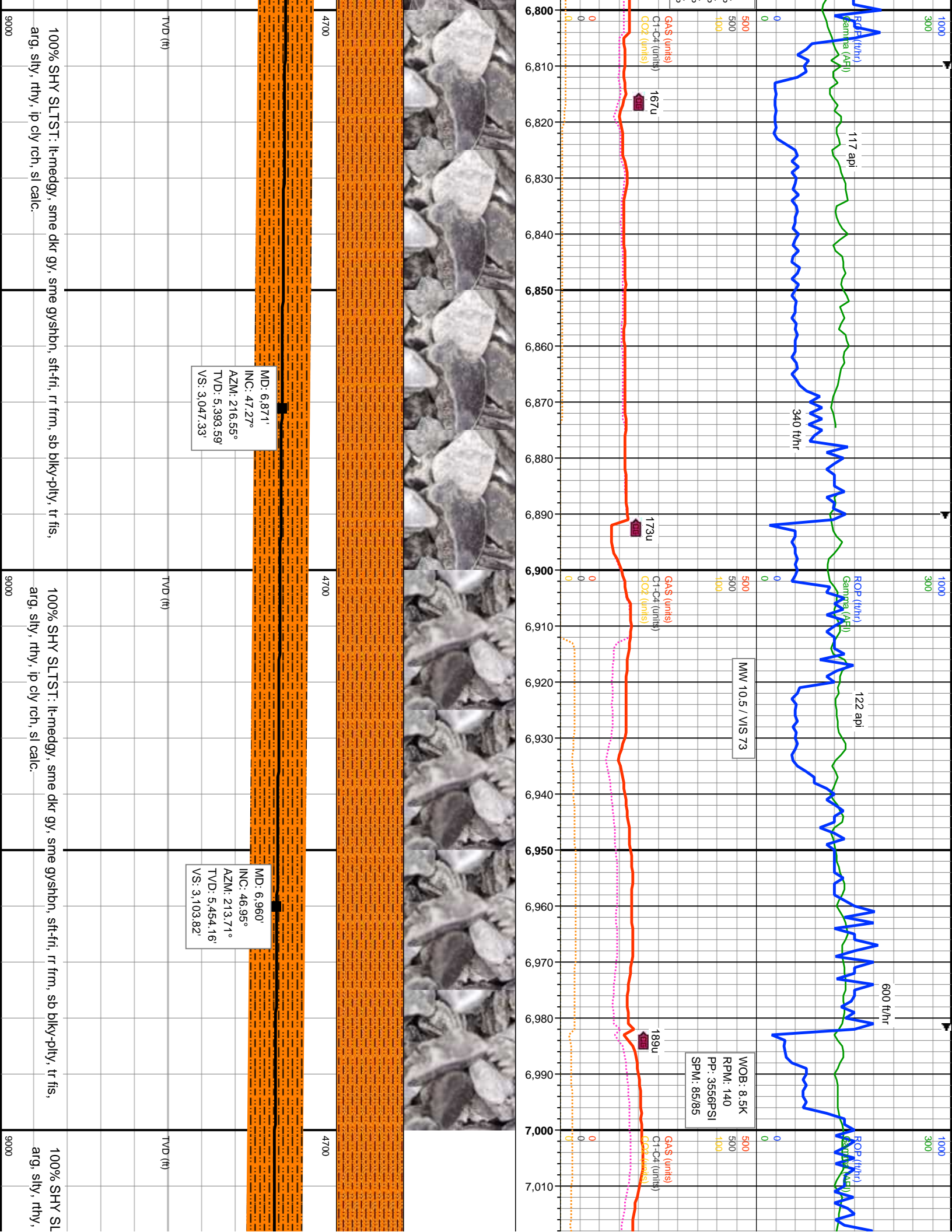




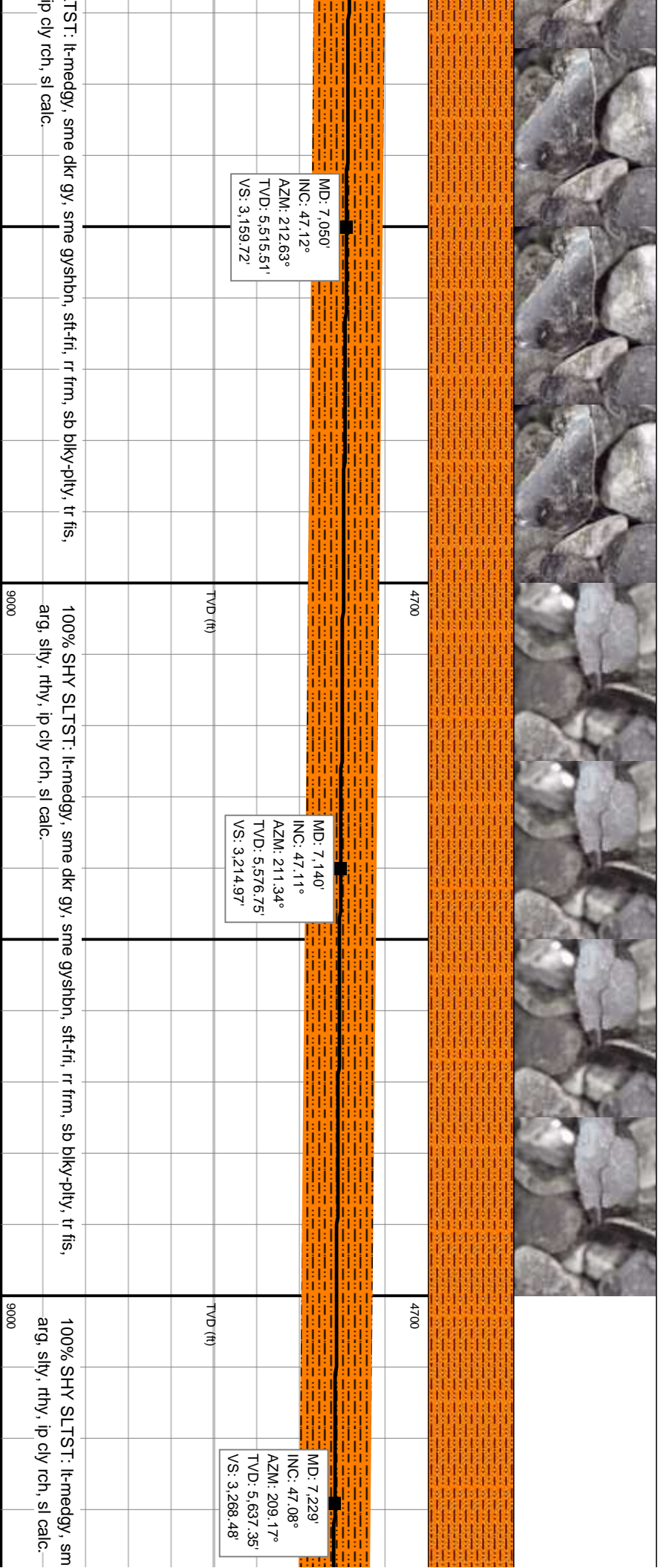
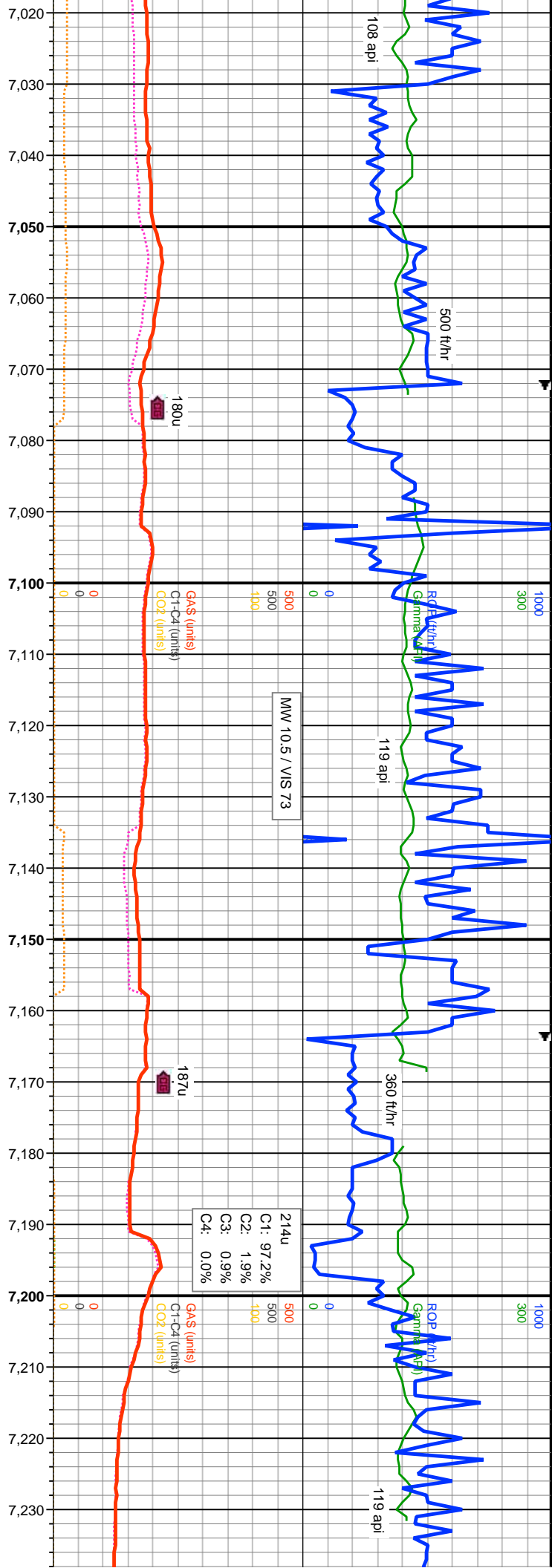


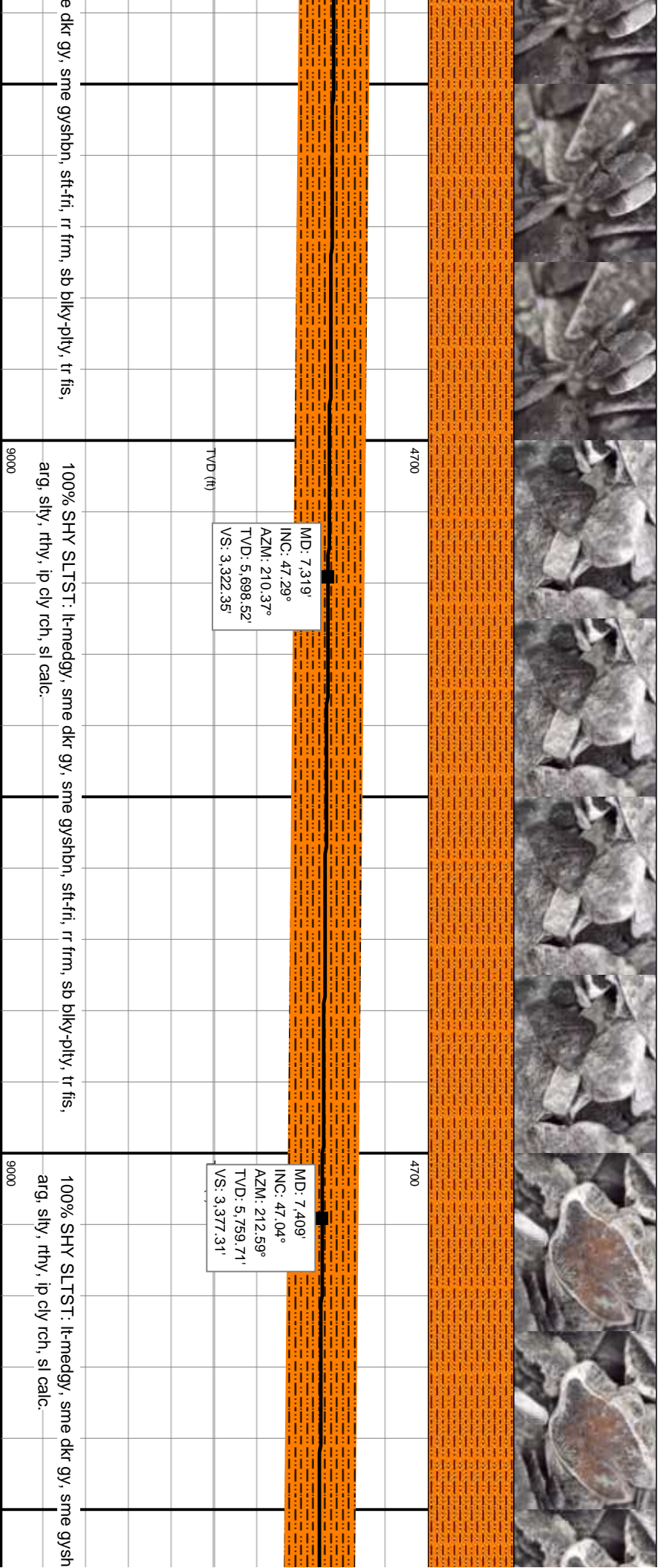
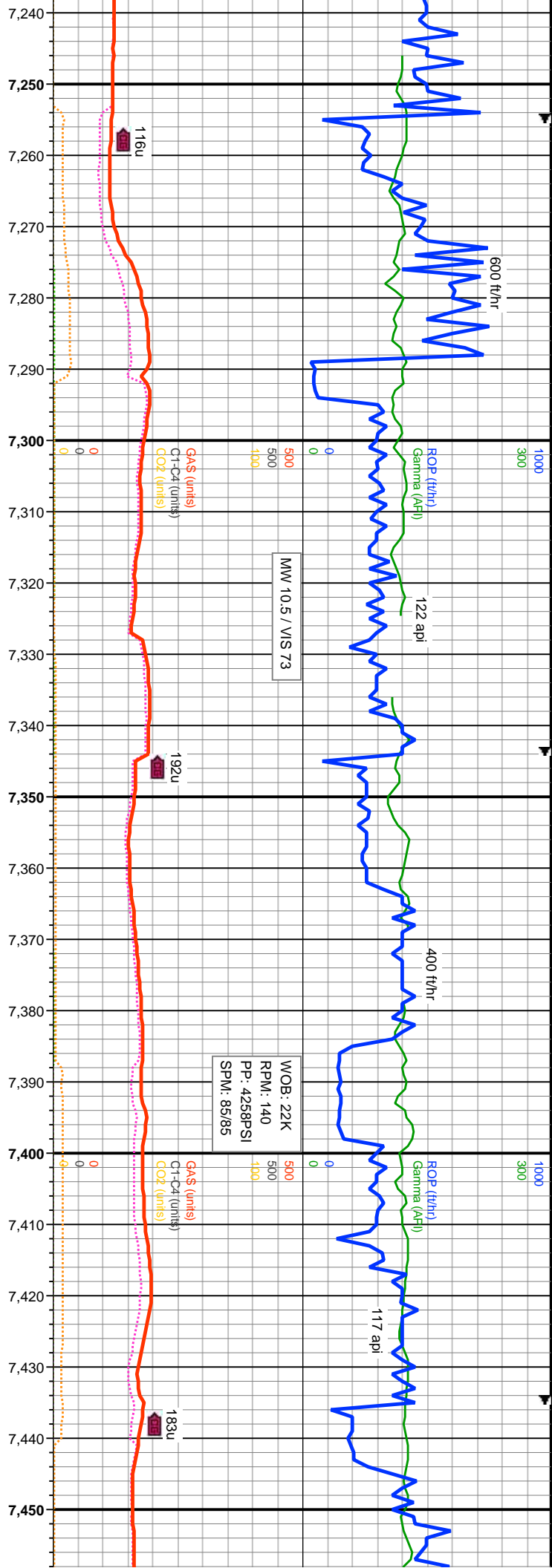




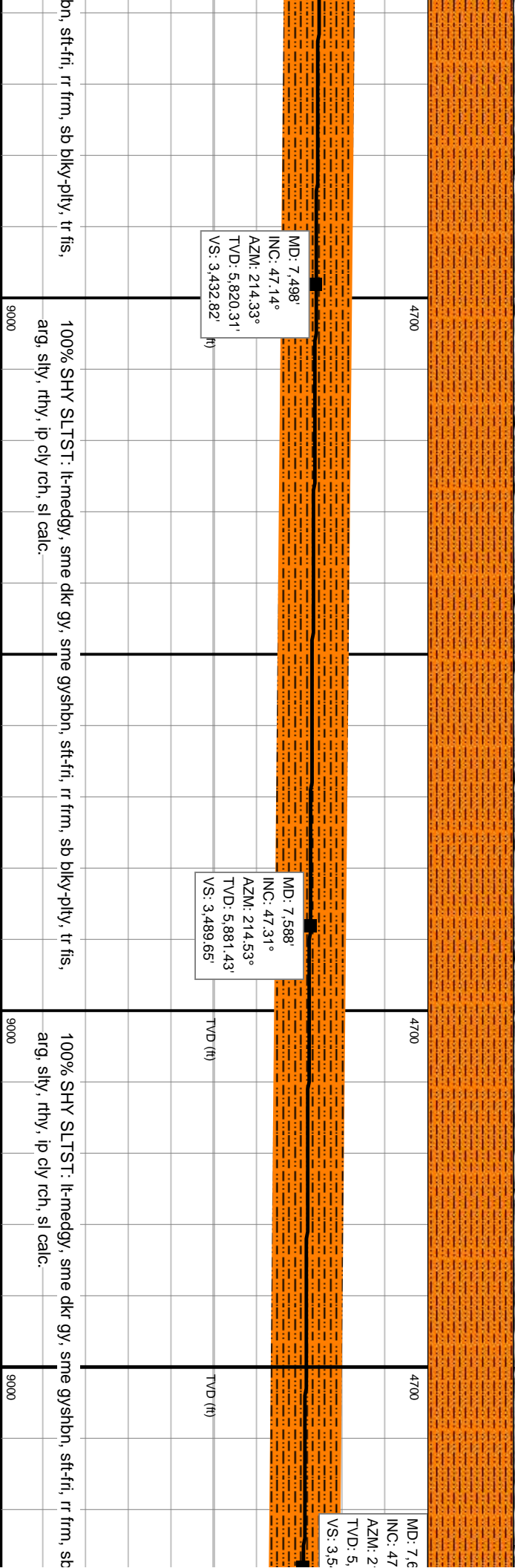
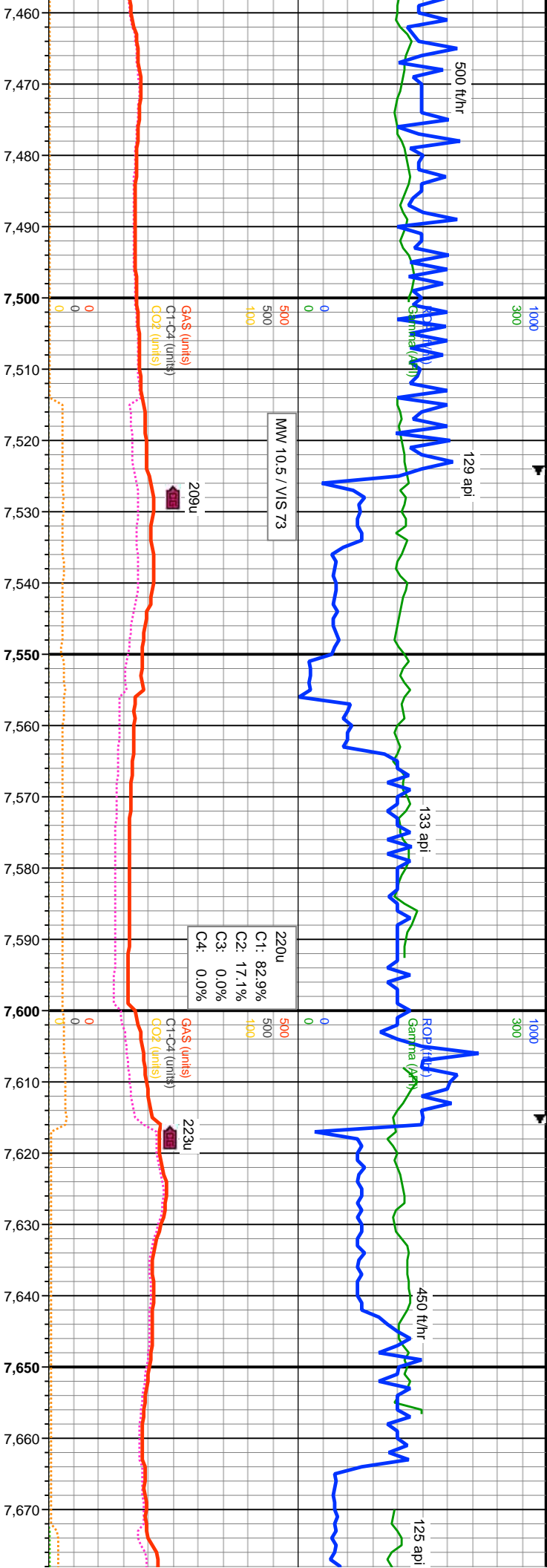


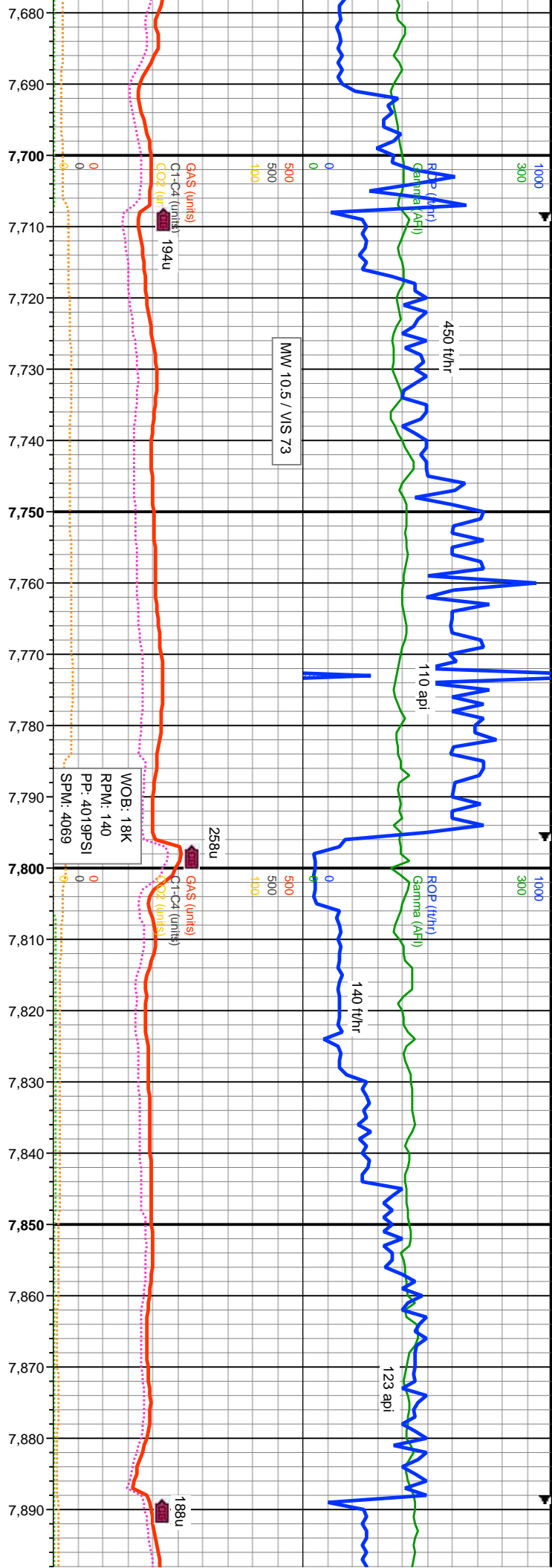




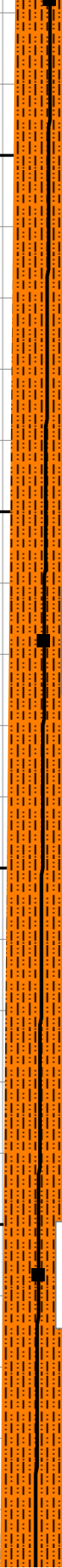








78'	4700	MD: 7.768'
37°		INC: 46.82°
12.98°		AZM: 213.26°
942.42'		TVD: 6,003.69'
46.19'		VS: 3,602.12'

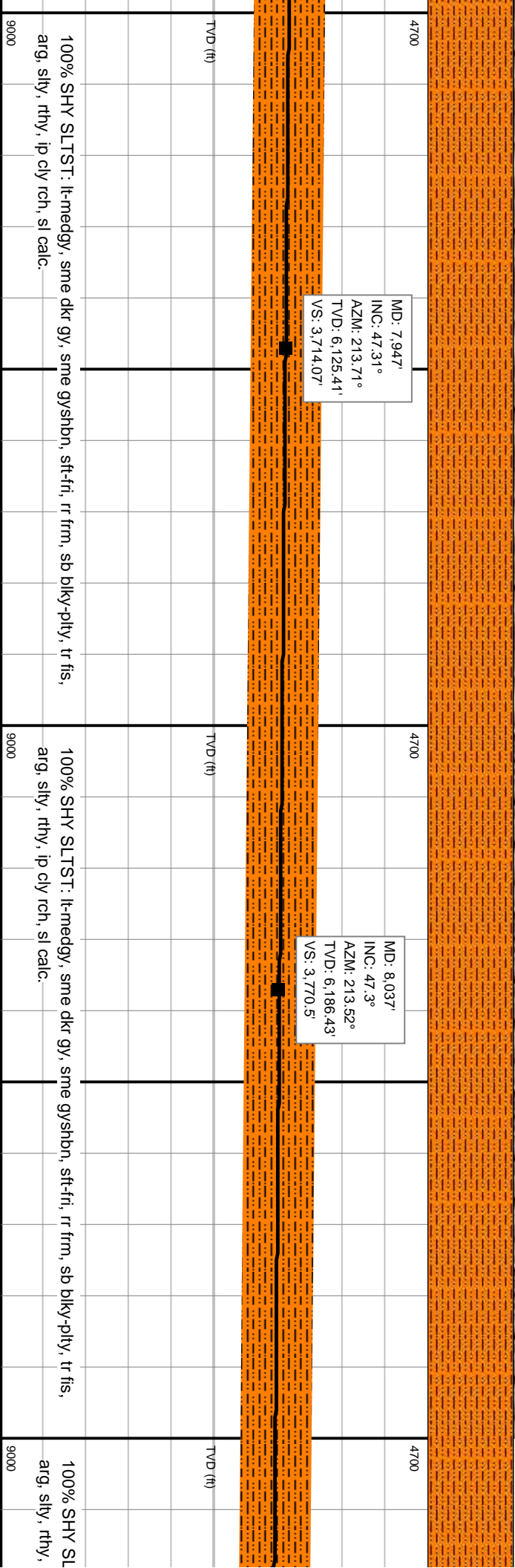
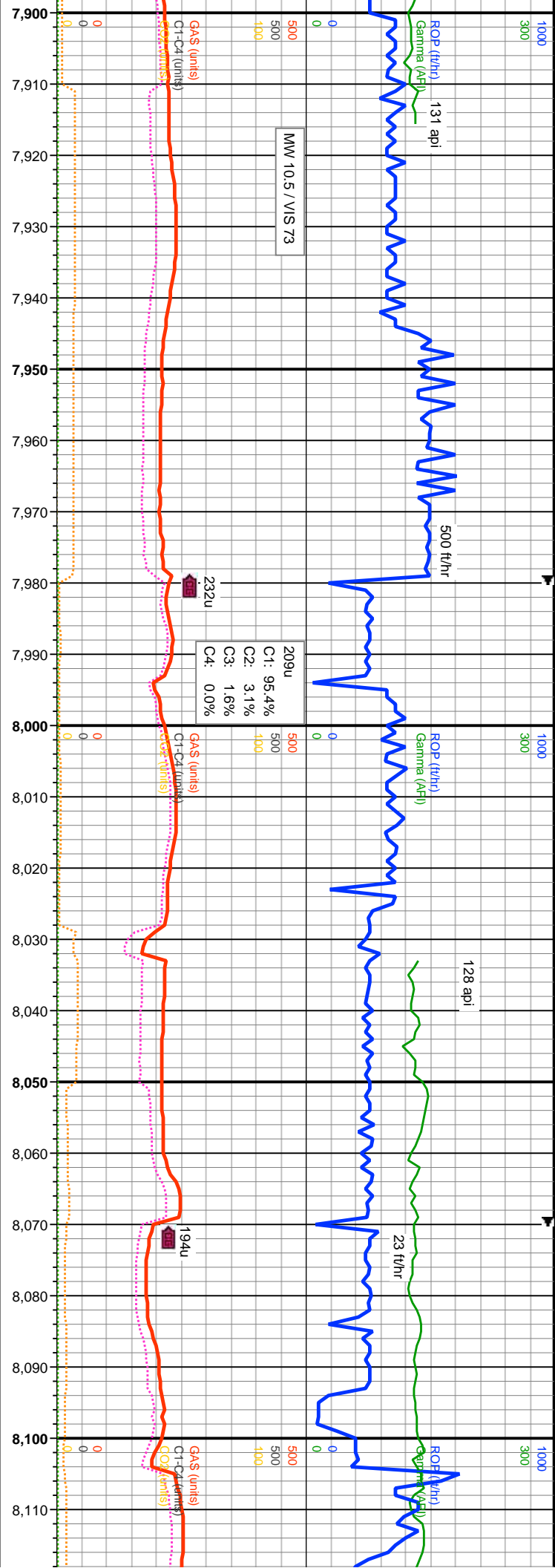


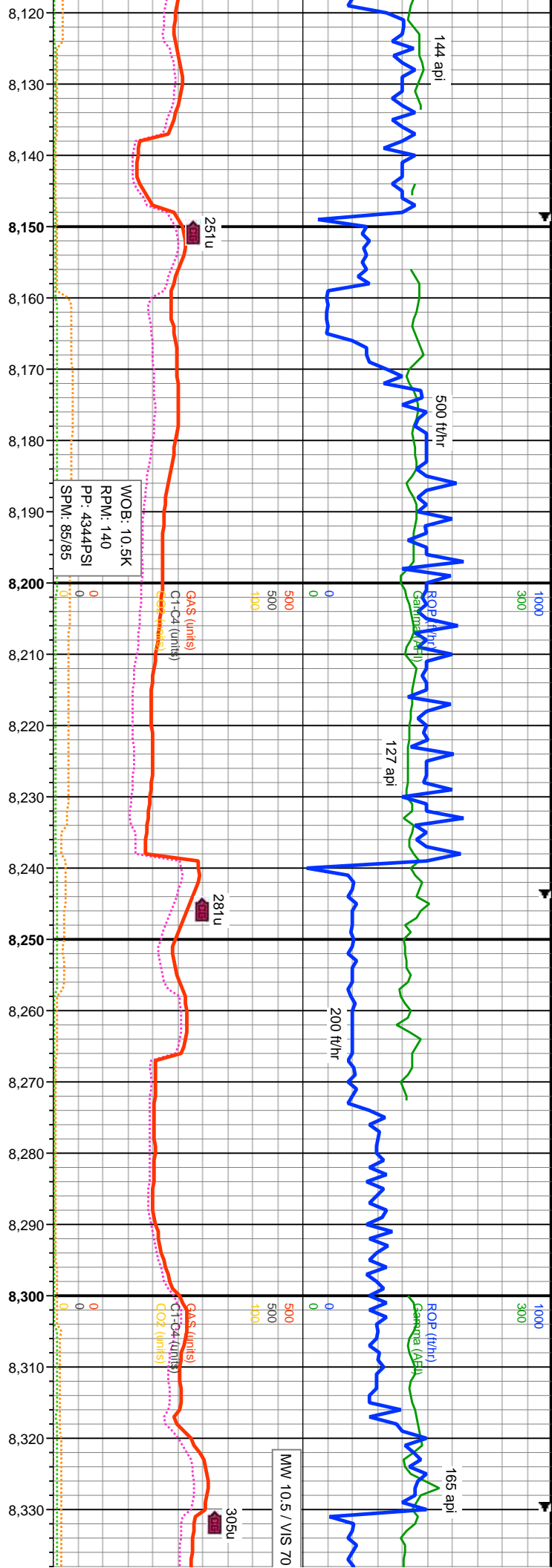
78'	4700	MD: 7.857'
37°		INC: 47.25°
12.98°		AZM: 213.76°
942.42'		TVD: 6,064.35'
46.19'		VS: 3,657.6'

blky-ply, tr fis,	100% SHY SLTST: lt-medgy, sme dkr gy, sme gyshbn, sft-fri, rr frm, sb blky-ply, tr fis,
arg, silty, rthy, ip cly rch, sl calc.	arg, silty, rthy, ip cly rch, sl calc.
9000	9000

blky-ply, tr fis,	100% SHY SLTST: lt-medgy, sme dkr gy, sme gyshbn, sft-fri, rr frm, sb blky-ply, tr fis,
arg, silty, rthy, ip cly rch, sl calc.	arg, silty, rthy, ip cly rch, sl calc.
9000	9000



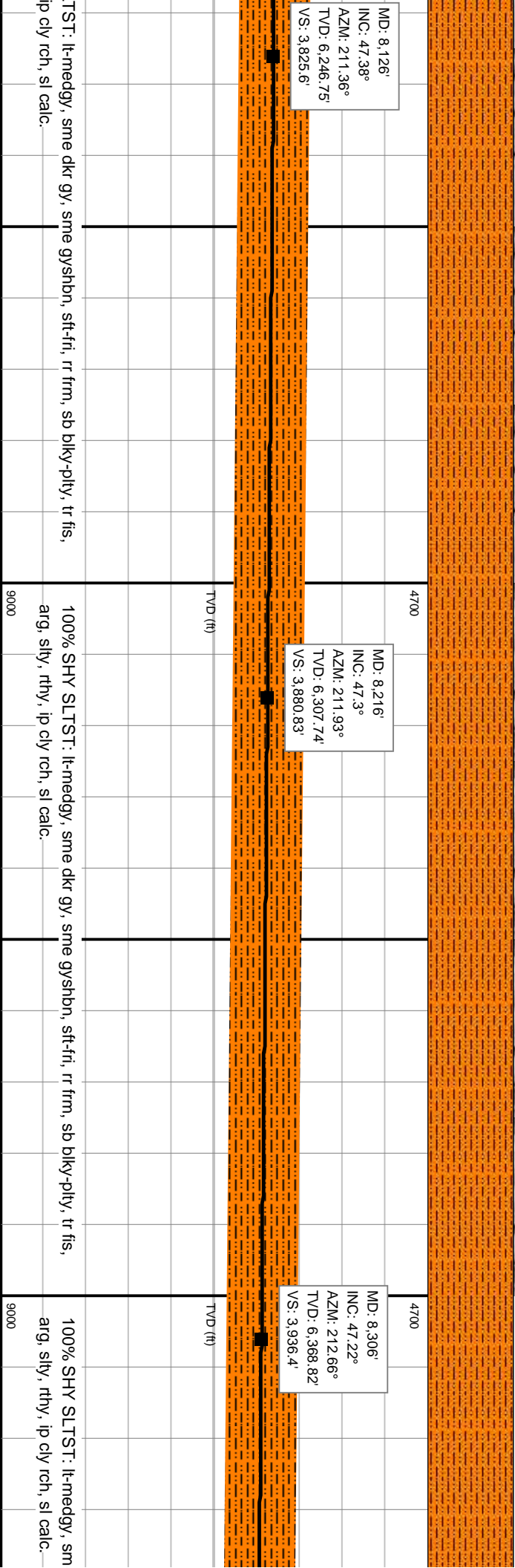




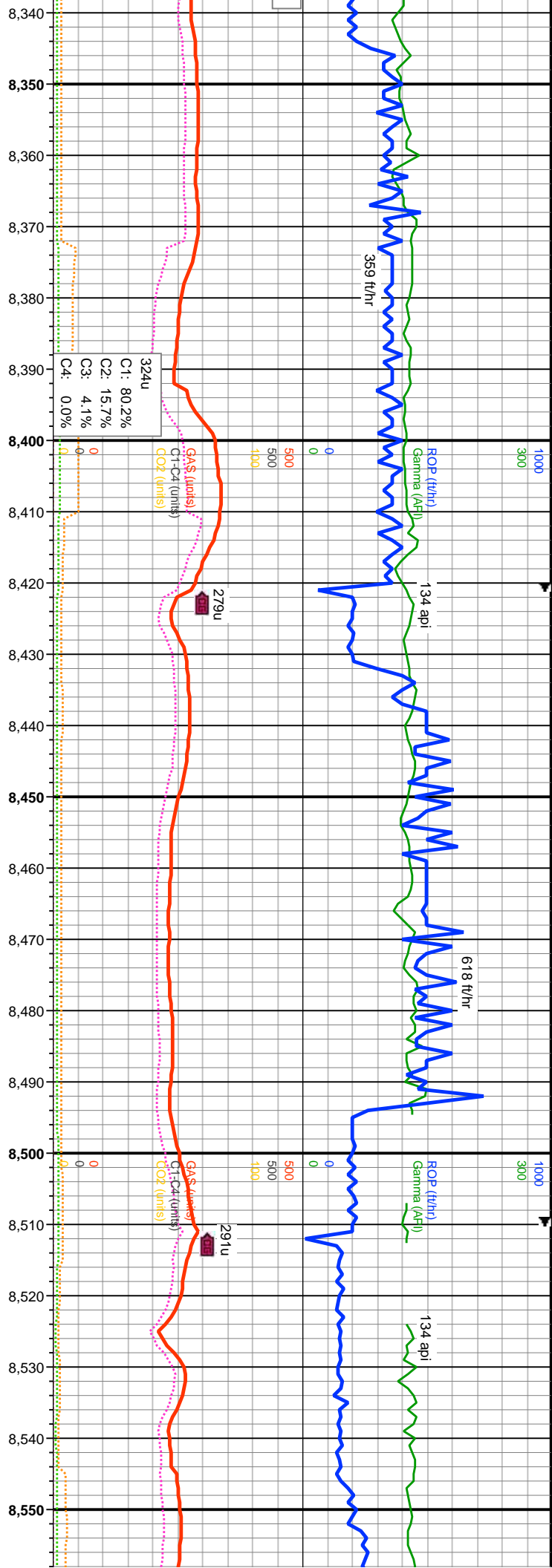
MD: 8.126'  
INC: 47.38°  
AZM: 211.36°  
TVD: 6,246.75'  
VS: 3,825.6'

MD: 8.216'  
INC: 47.3°  
AZM: 211.93°  
TVD: 6,307.74'  
VS: 3,880.83'

MD: 8.306'  
INC: 47.22°  
AZM: 212.66°  
TVD: 6,368.82'  
VS: 3,936.4'







MD: 8,396'  
INC: 47.26°  
AZM: 212.48°  
TVD: 6,429.92'  
VS: 3.992.13'

MD: 8,485'  
INC: 47.24°  
AZM: 213.72°  
TVD: 6,490.34'  
VS: 4.047.56'

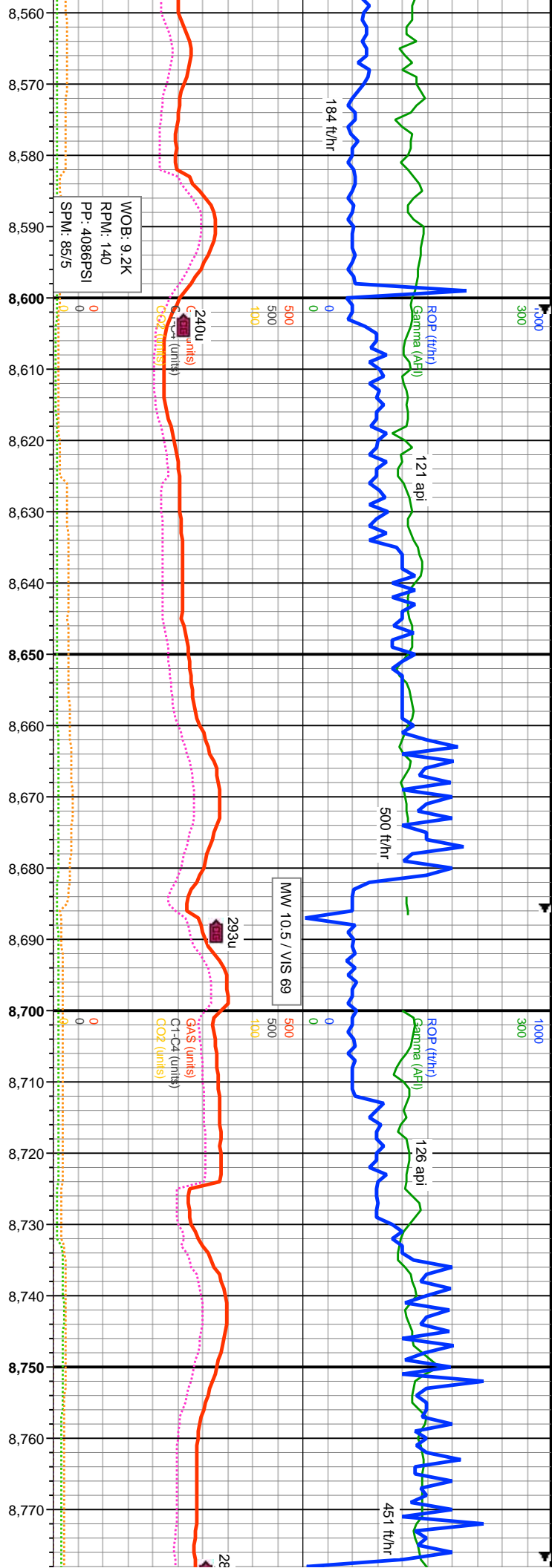
TVD (ft)

TVD (ft)

dkr gy, sme gysbhn, sft-fri, rr frm, sb blk-pity, tr fis,

100% SHY SLTST: lt-medgy, sme dkr gy, sme gysbhn, sft-fri, rr frm, sb blk-pity, tr fis, arg, slty, rthy, ip cly rch, sl calc.

100% SHY SLTST: lt-medgy, sme dkr gy, sme gysbhn, sft-fri, rr frm, sb blk-pity, tr fis, arg, slty, rthy, ip cly rch, sl calc.



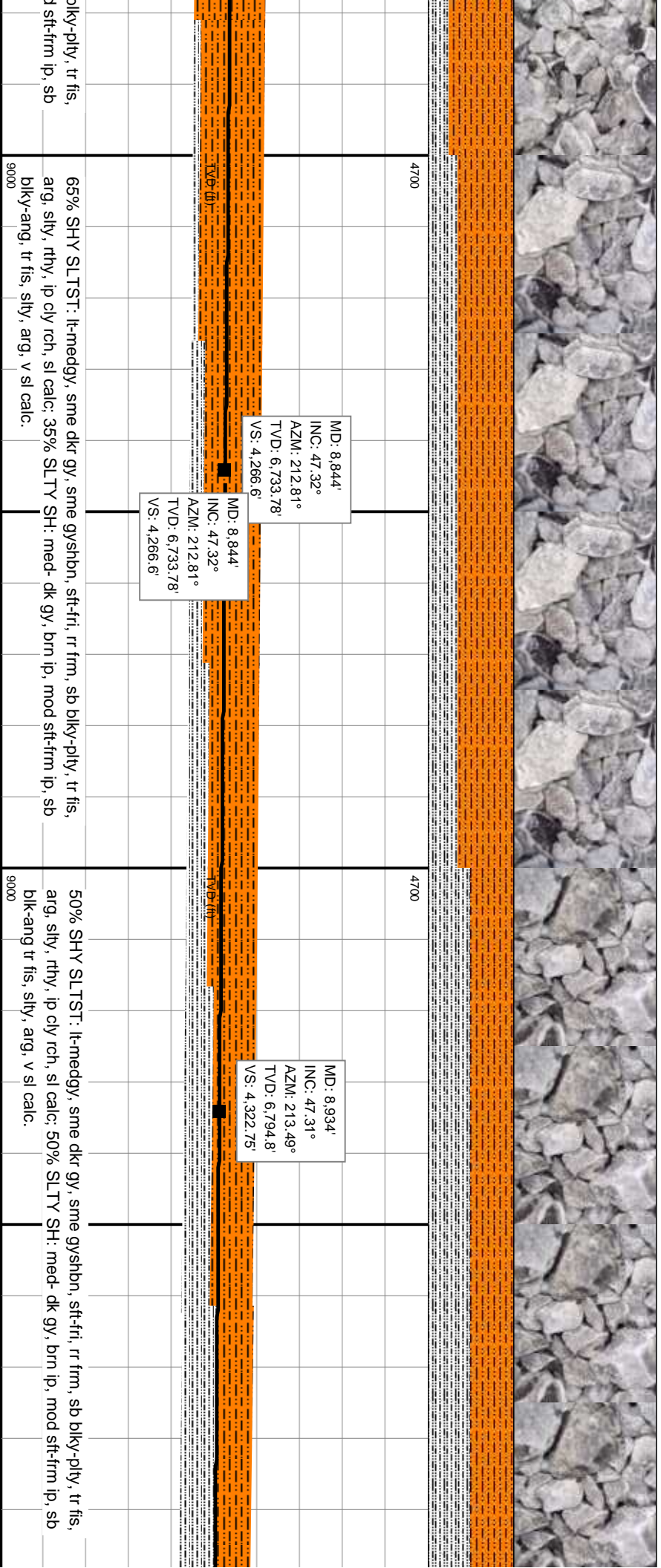
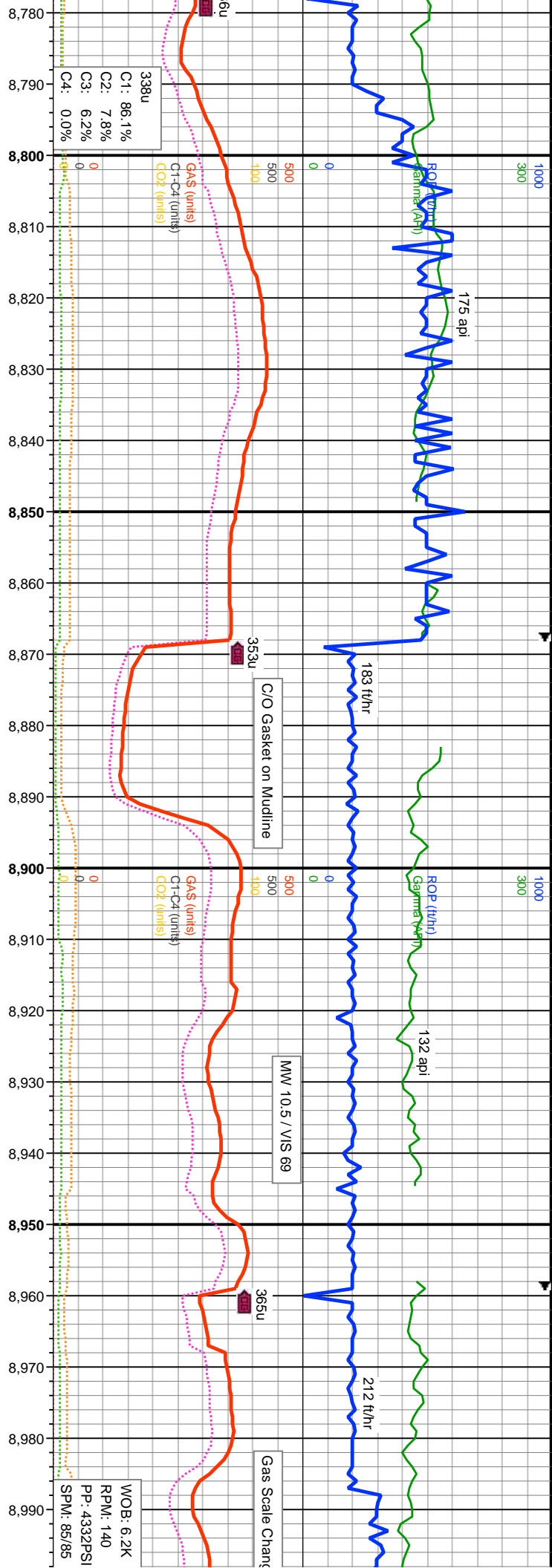
MD: 8,575'  
INC: 47.52°  
AZM: 211.73°  
TVD: 6,551.28'  
VS: 4,103.5'

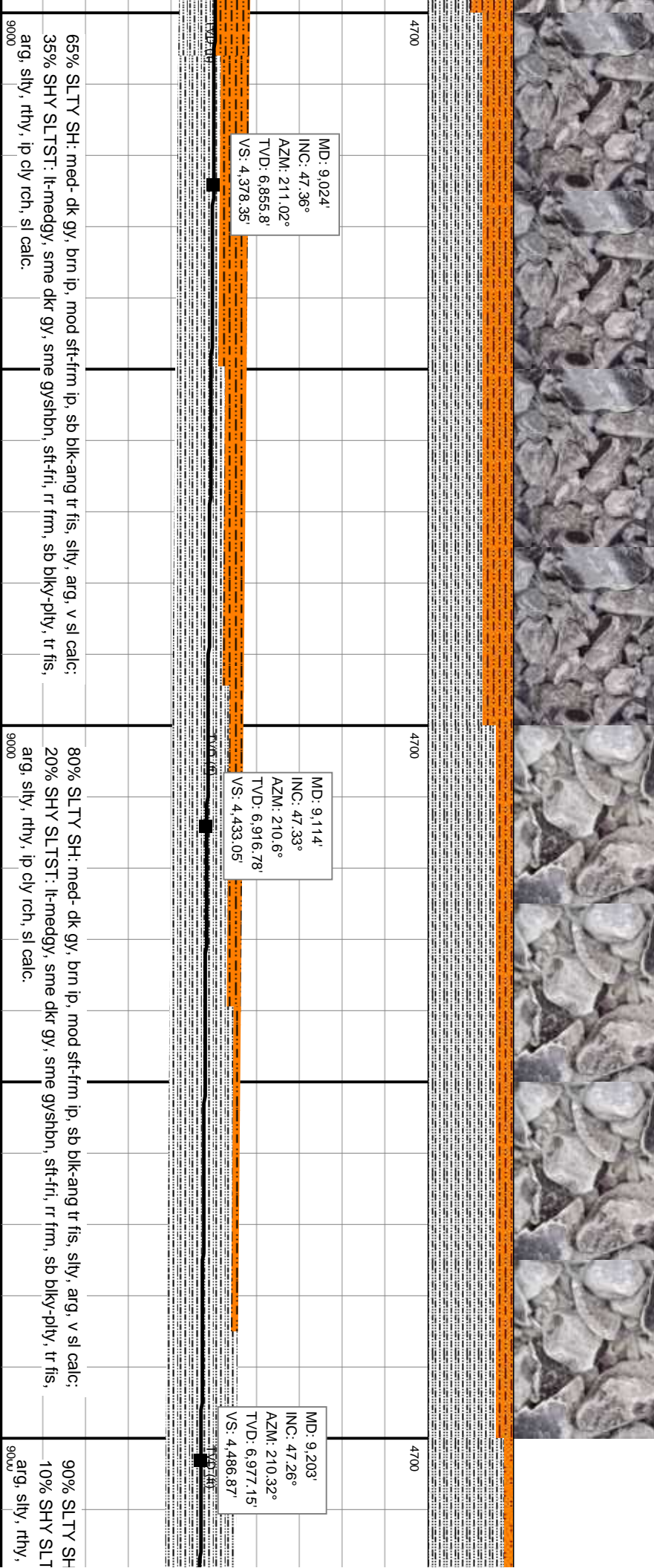
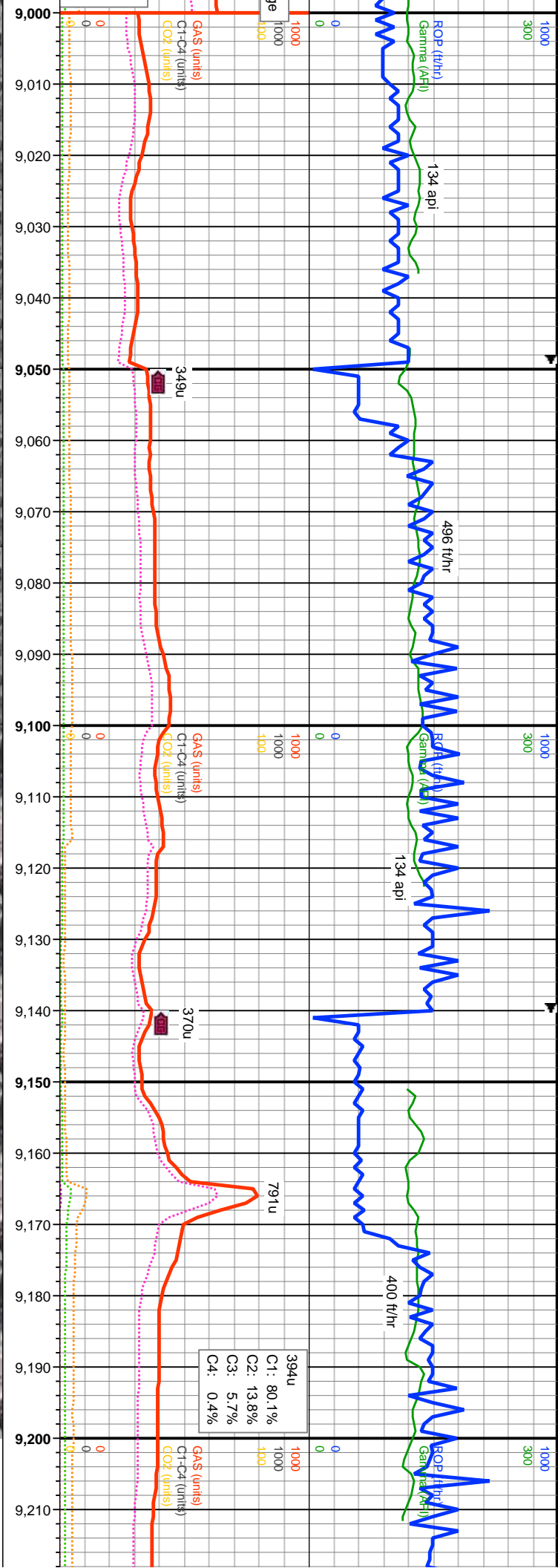
MD: 8,665'  
INC: 47.3°  
AZM: 210.12°  
TVD: 6,612.19'  
VS: 4,158.33'

MD: 8,755'  
INC: 47.12°  
AZM: 209.74°  
TVD: 6,673.33'  
VS: 4,212.33'

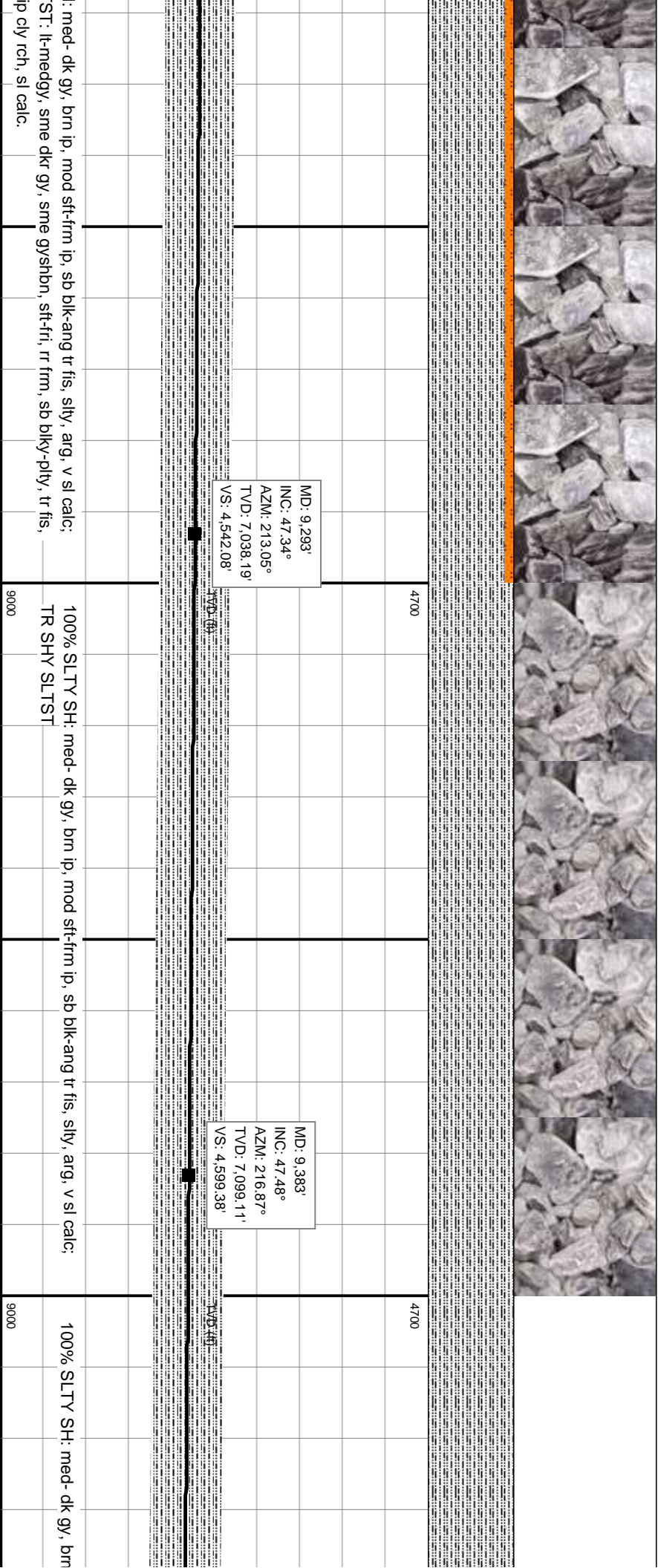
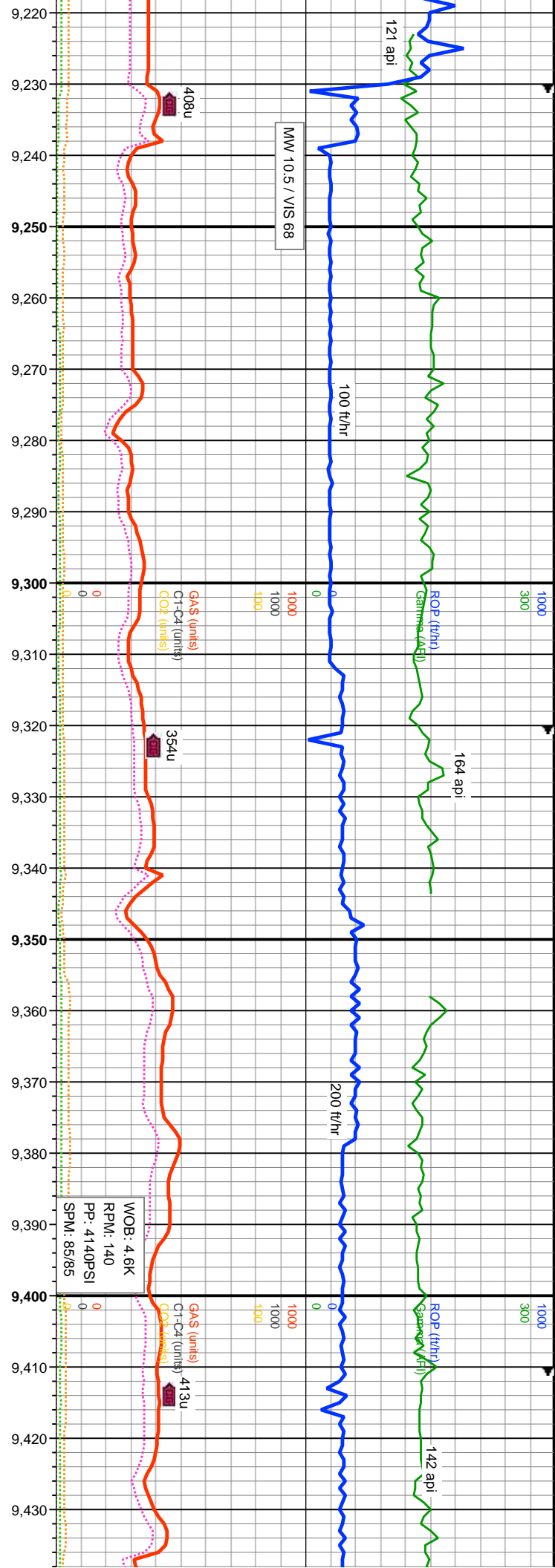
bn, sft-fri, rr frm, sb blk-pity, tr fis,	90% SHY SLTST: lt-medgy, sme dkr gy, sme gysbhn, sft-fri, rr frm, sb blk-pity, tr fis, arg, silty, rthy, ip cly rch, sl calc: 10% SLTY SH: med- dk gy, brn ip, mod sft-frm ip, sb blk-ang, tr fis, silty, arg, v sl calc.	75% SHY SLTST: lt-medgy, sme dkr gy, sme gysbhn, sft-fri, rr frm, sb blk-ang, tr fis, silty, arg, v sl calc.
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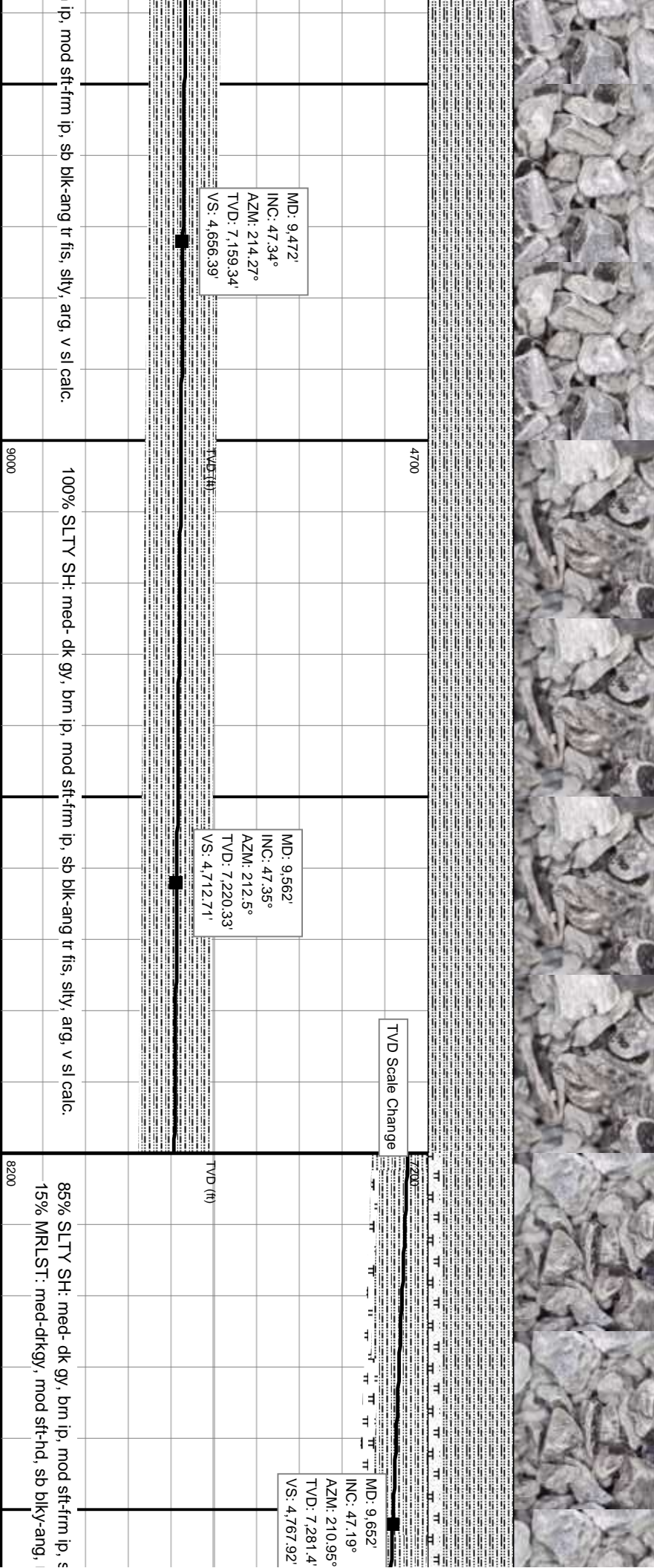
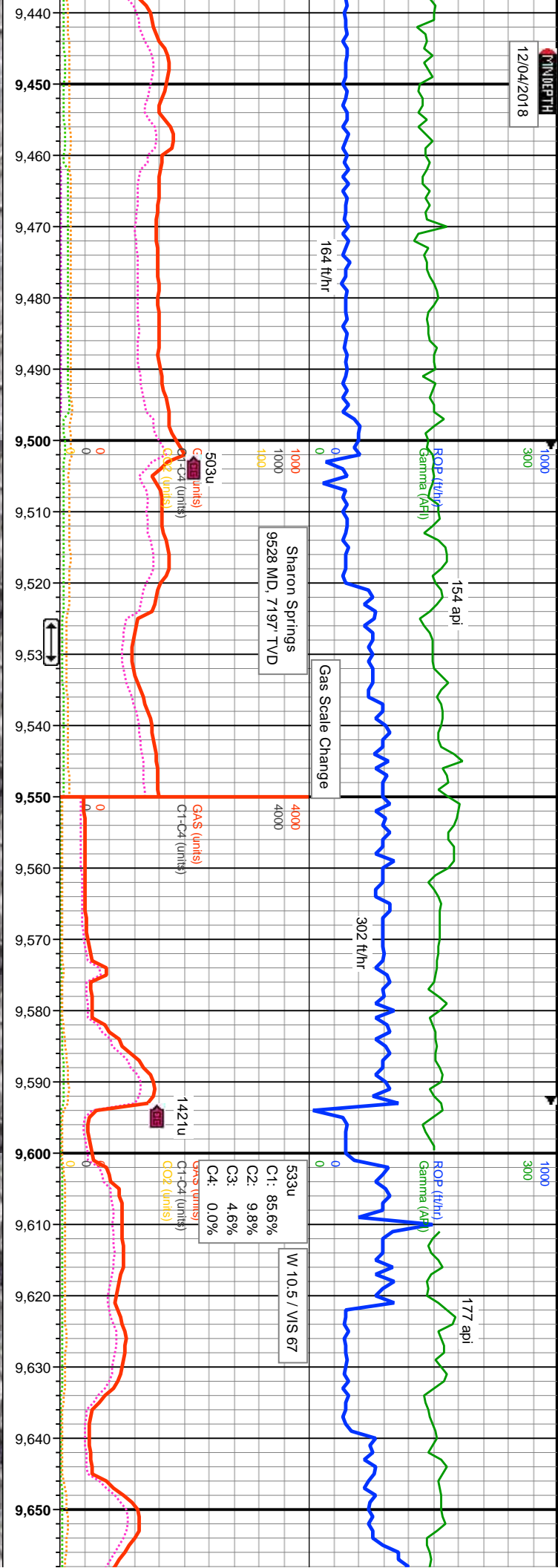




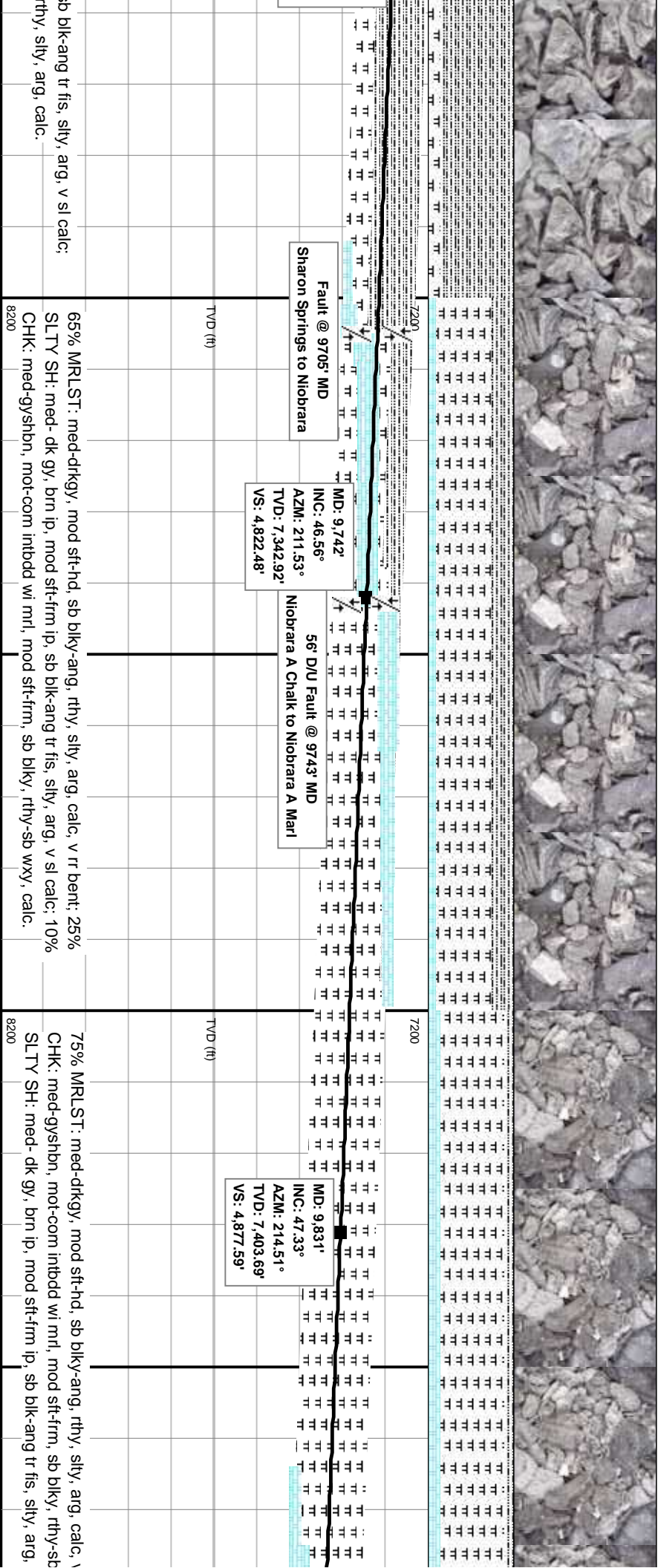
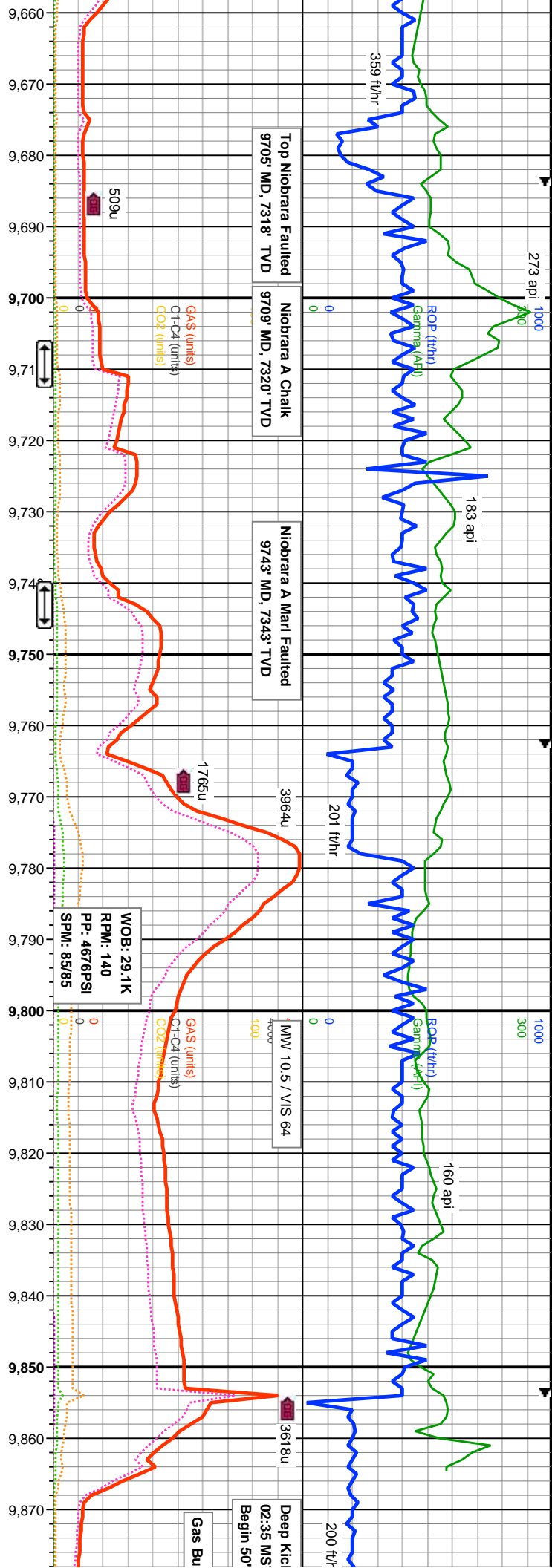






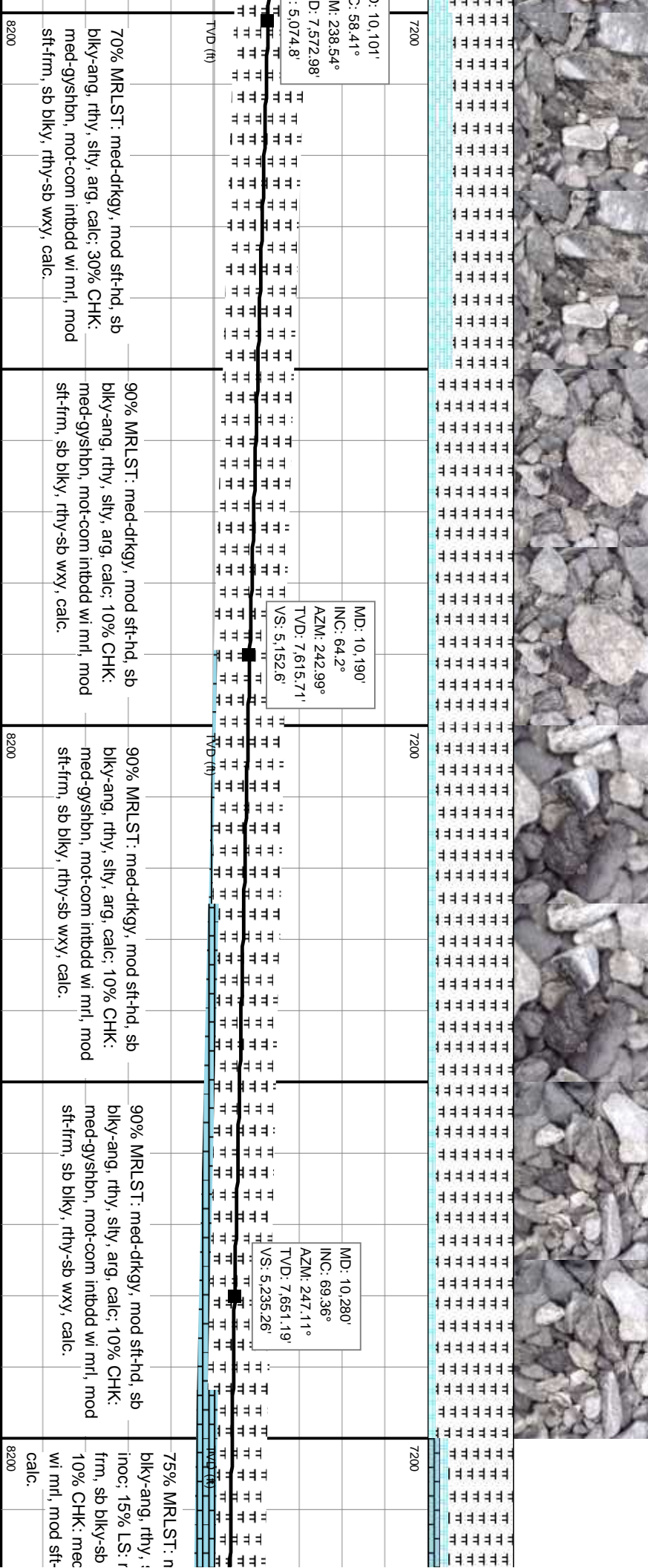
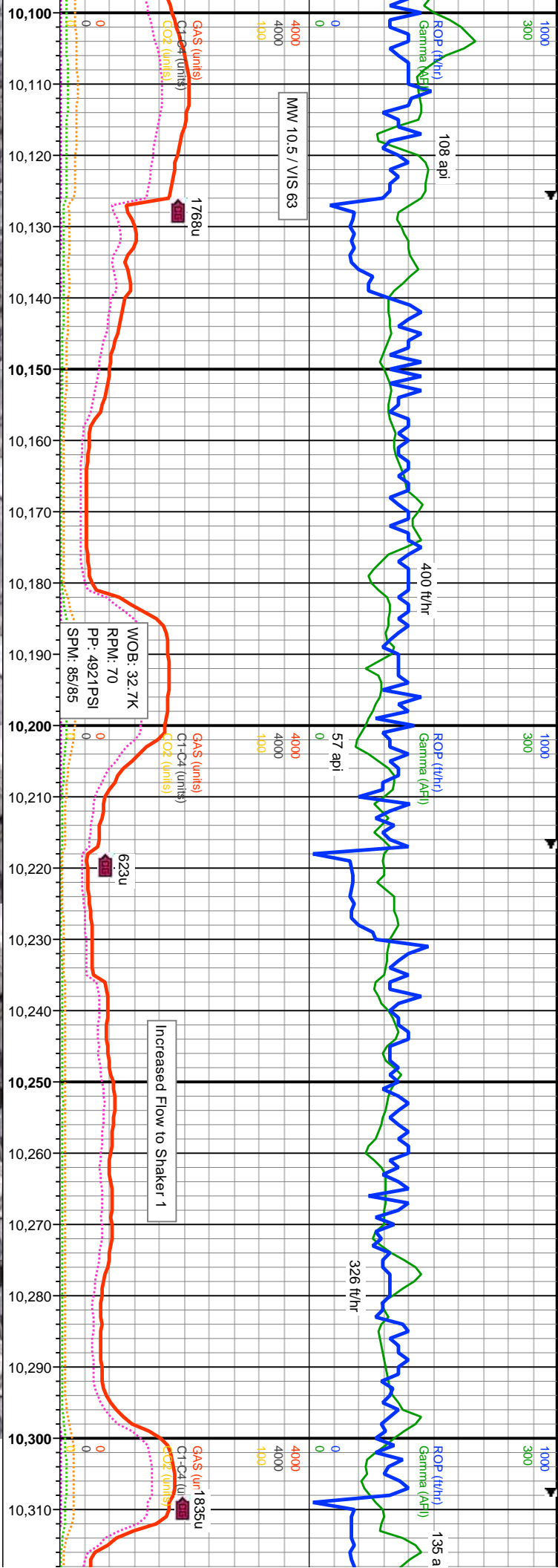


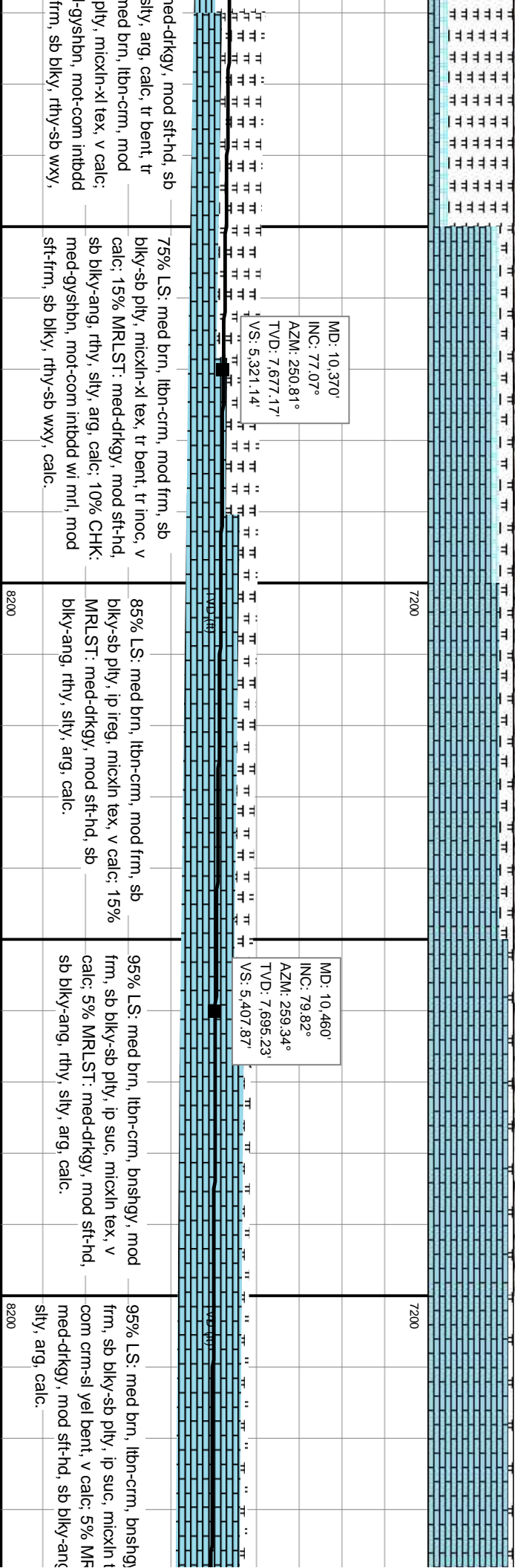
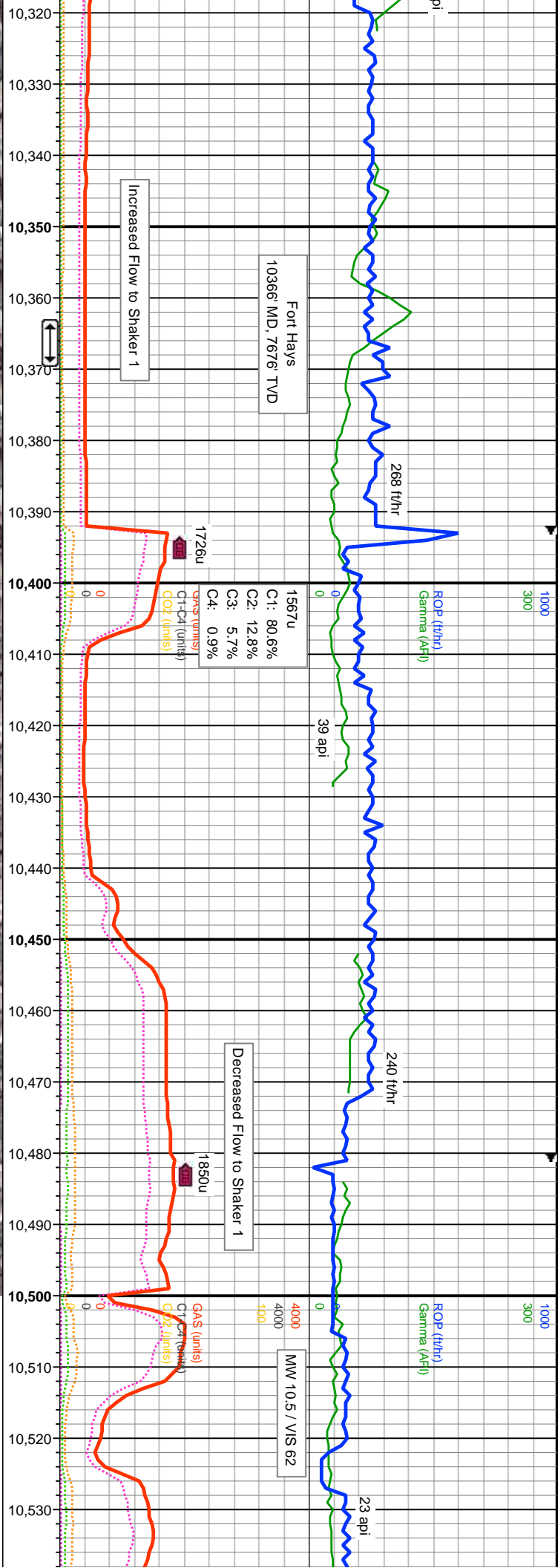




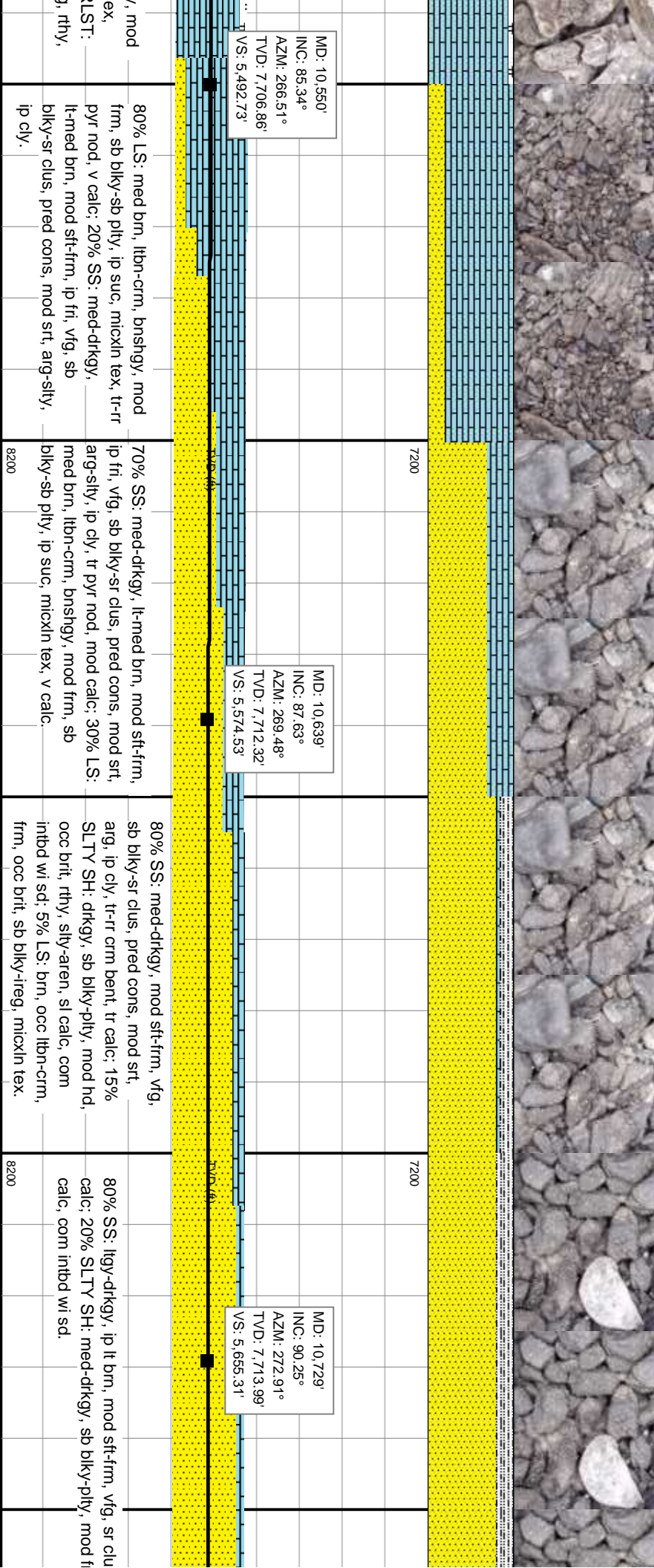
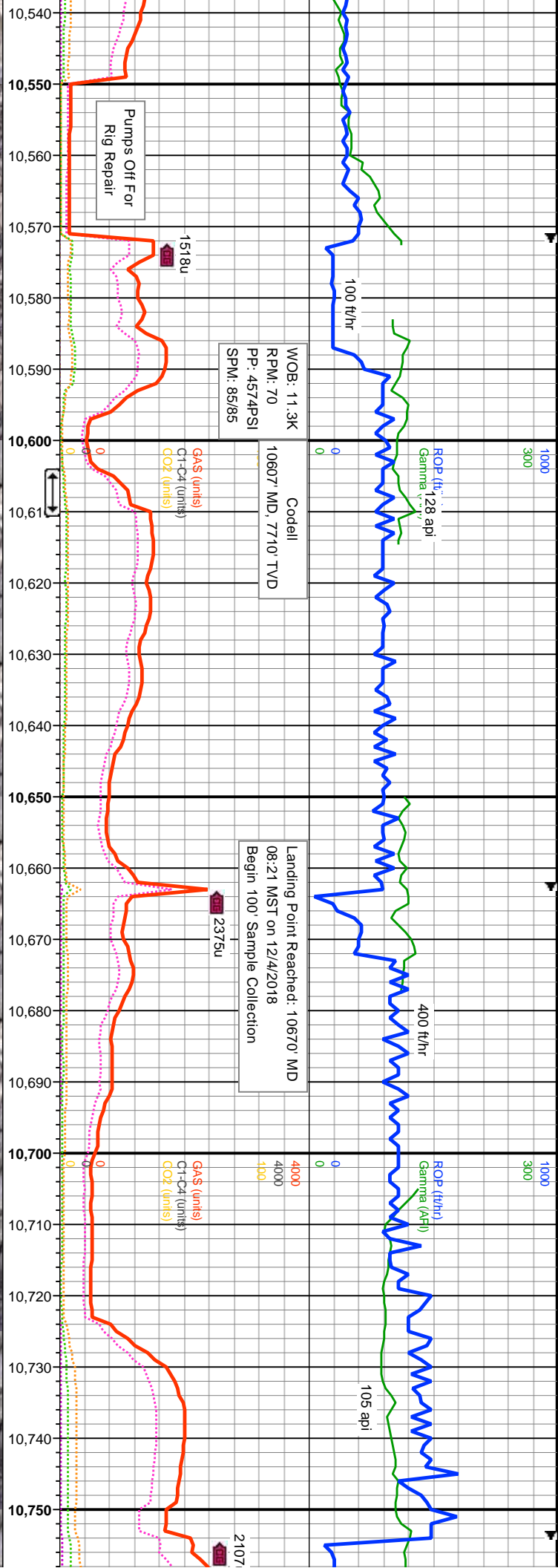






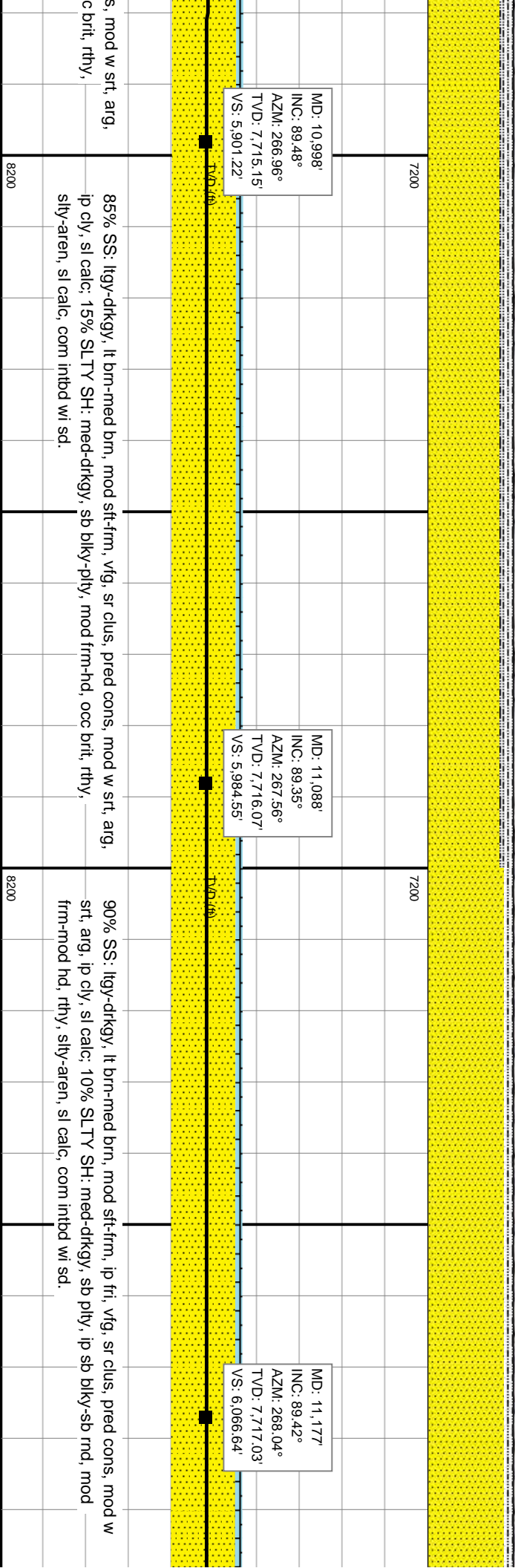
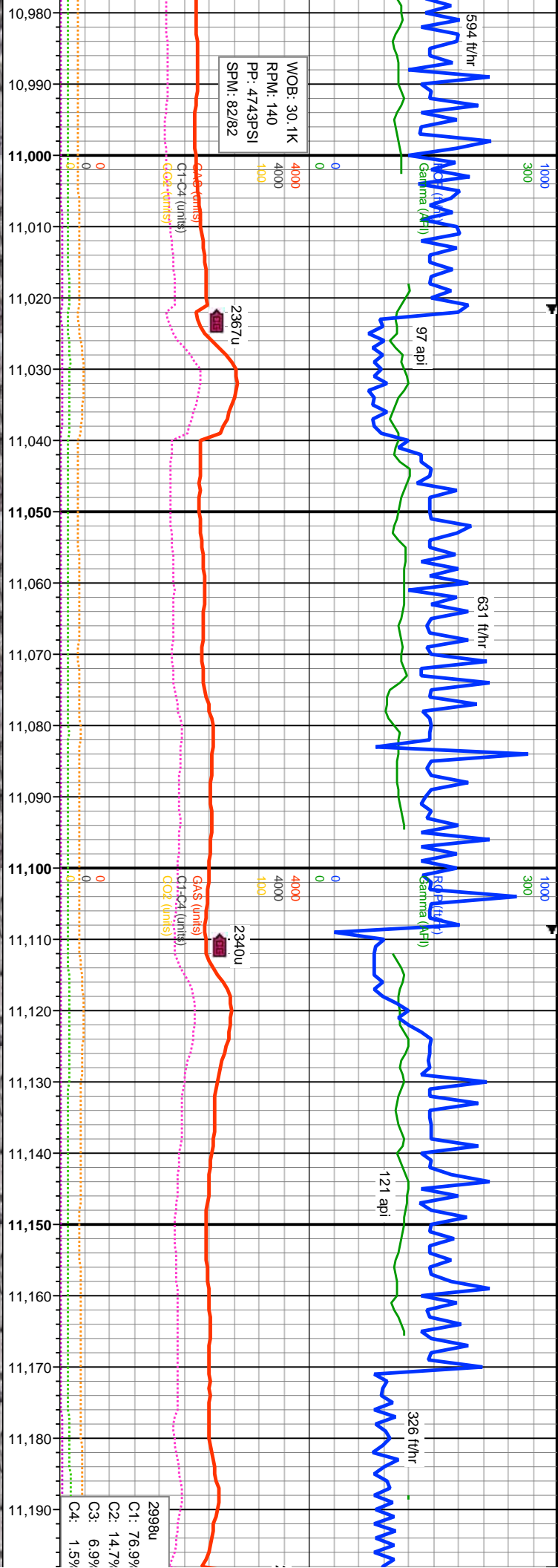




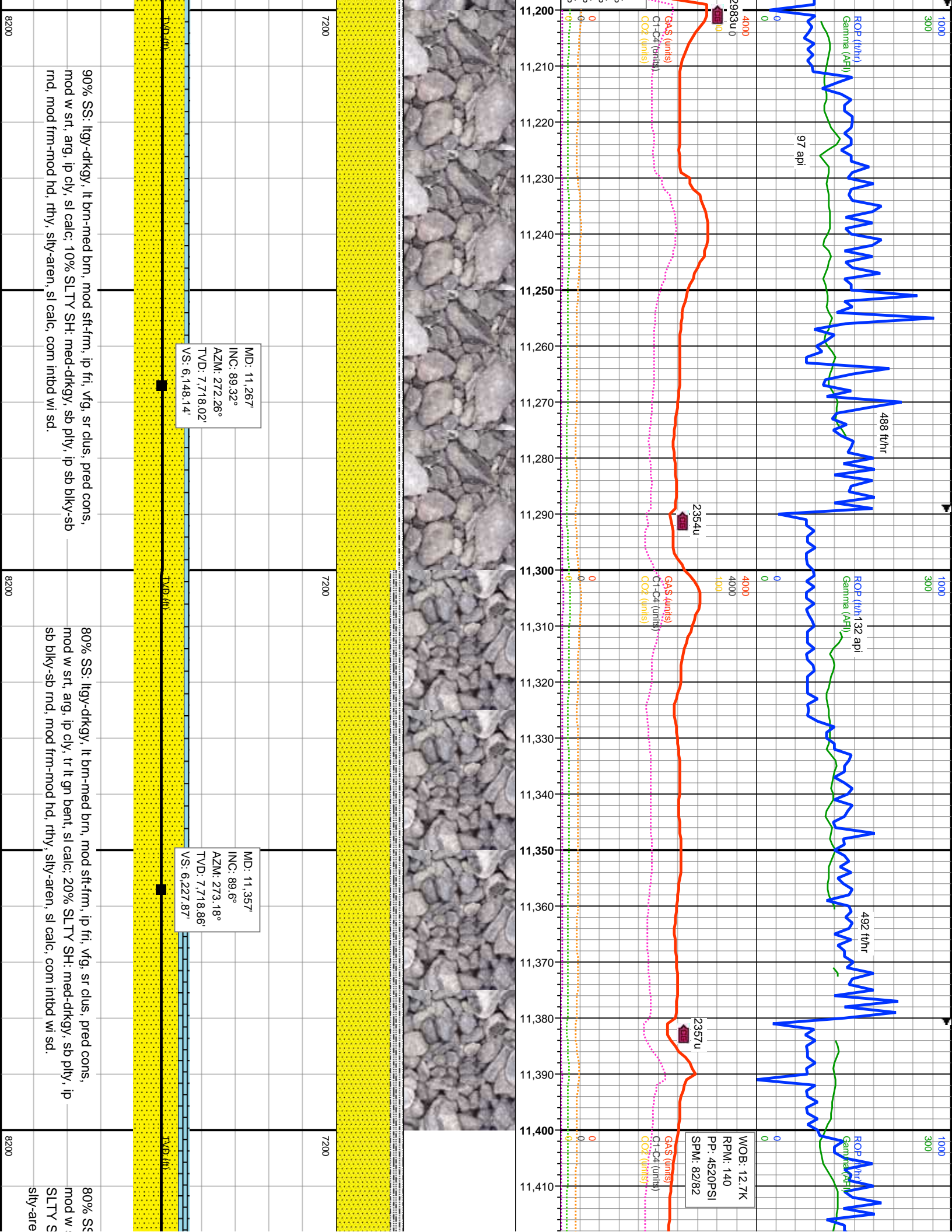






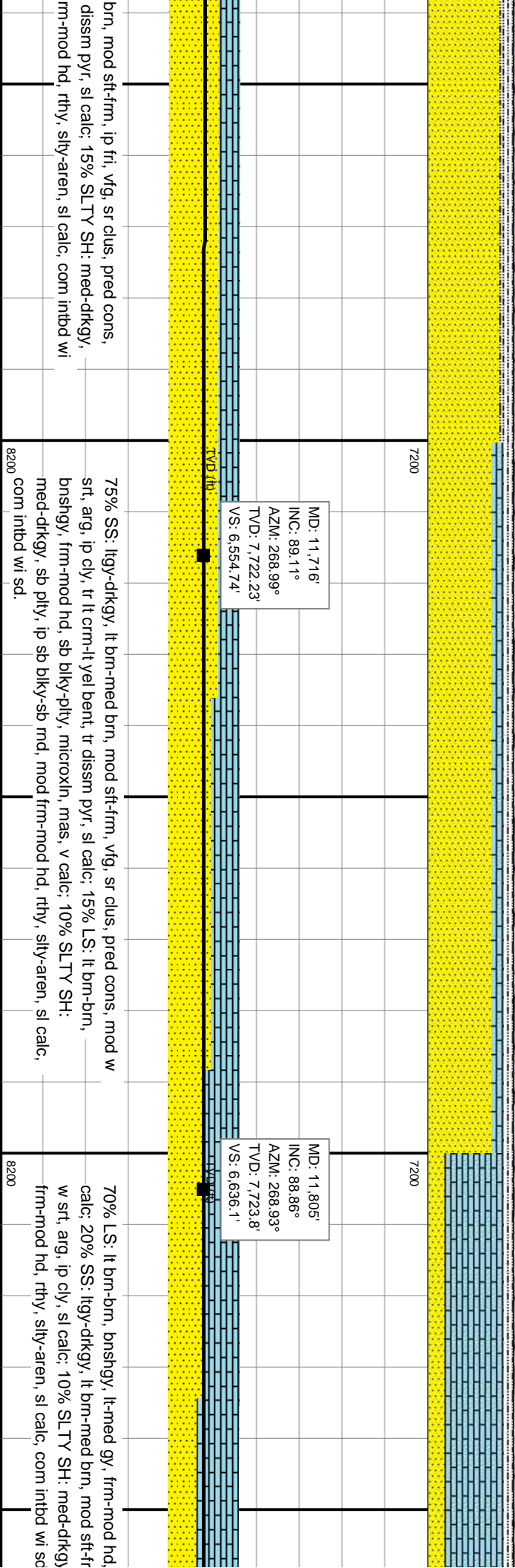
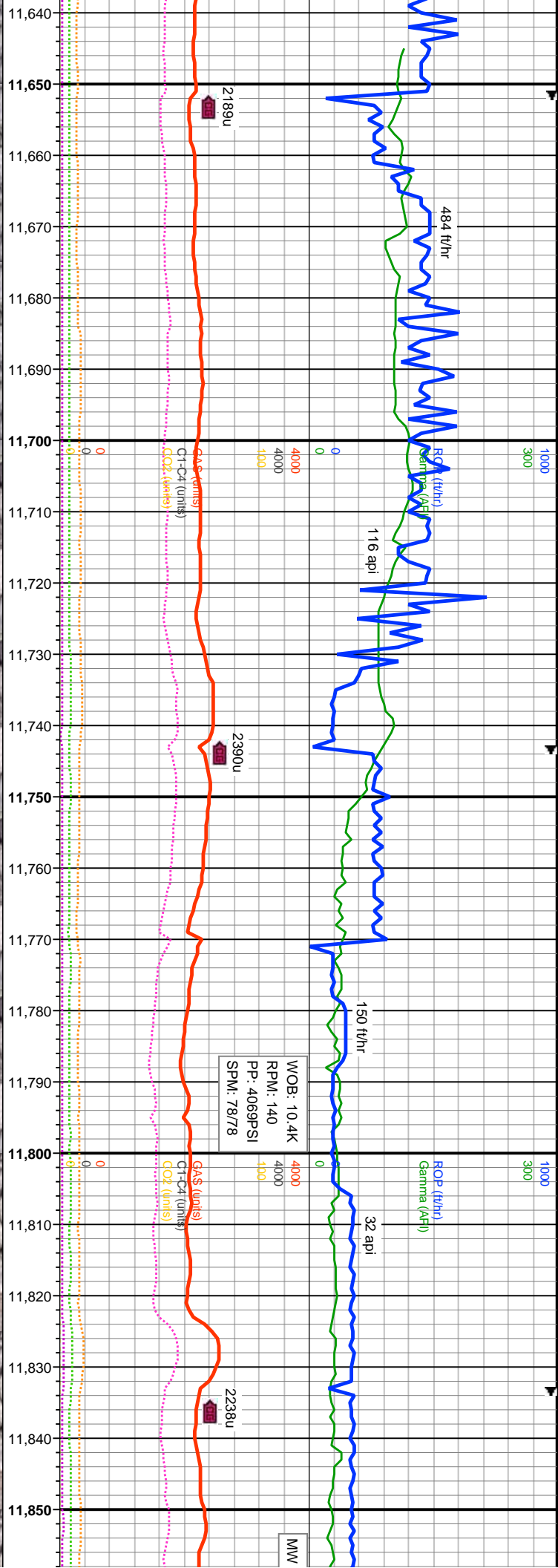




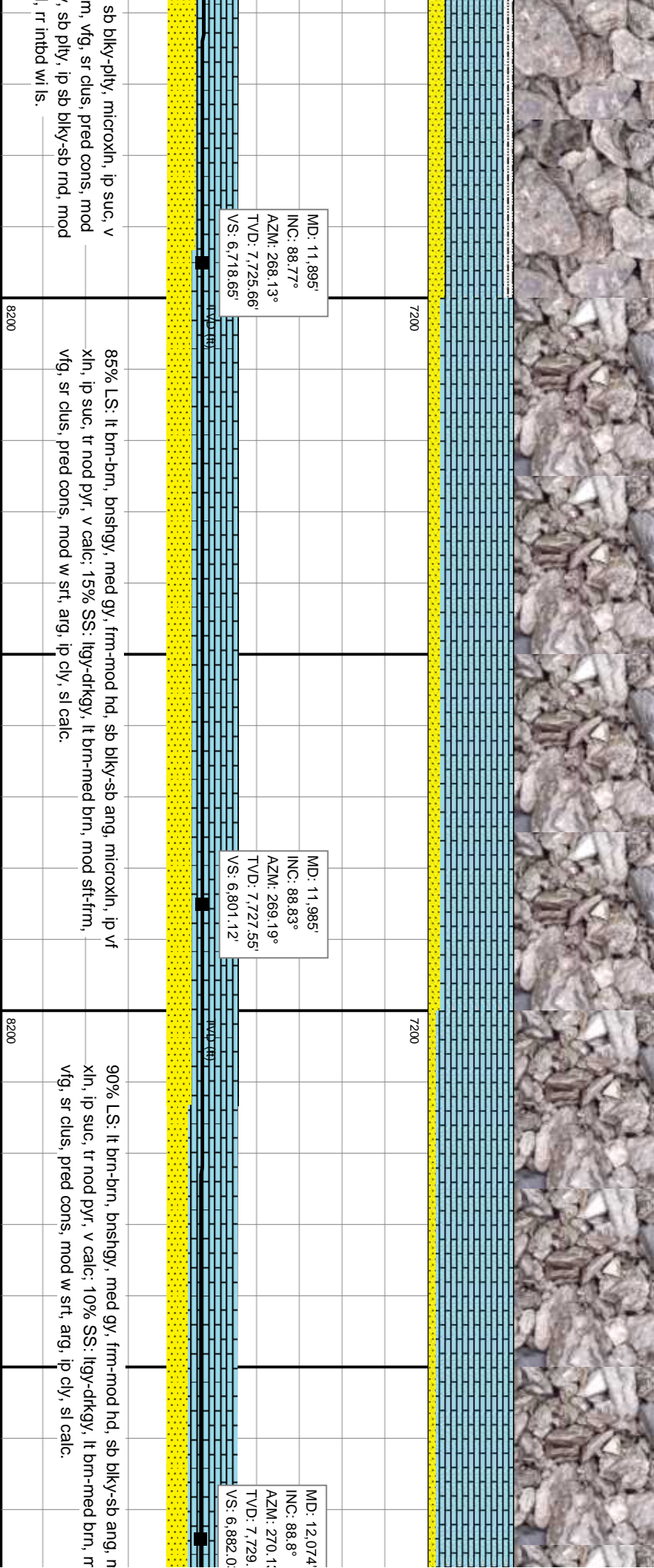
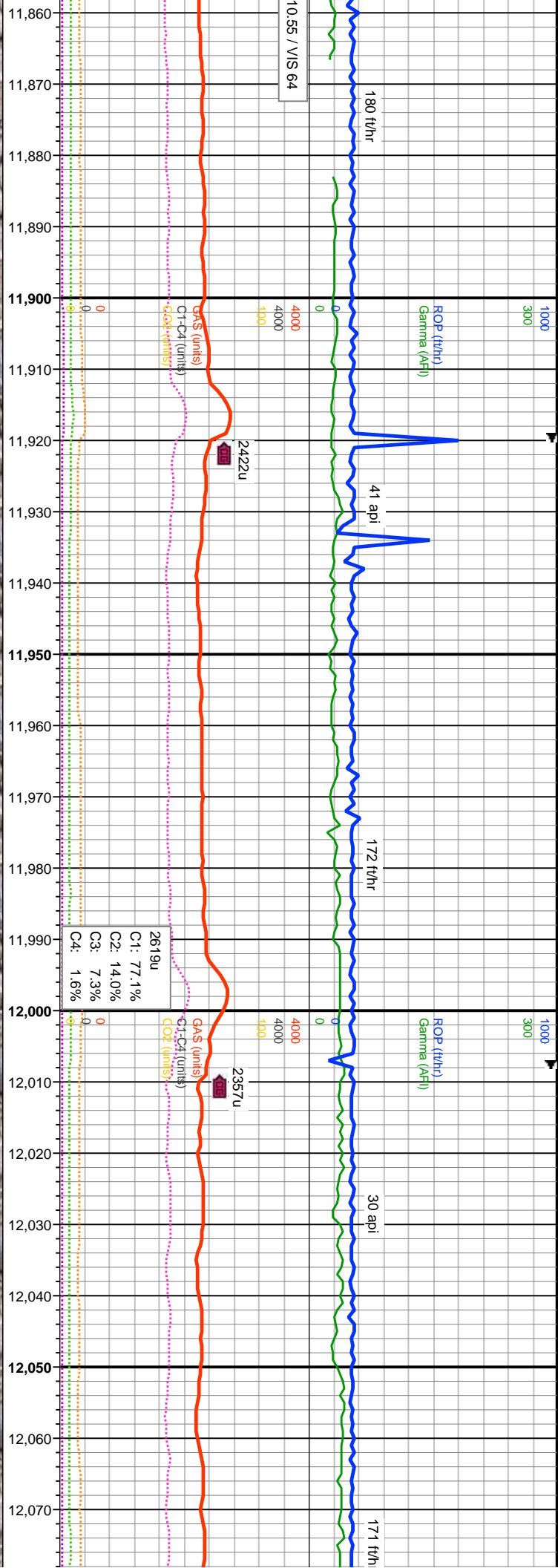


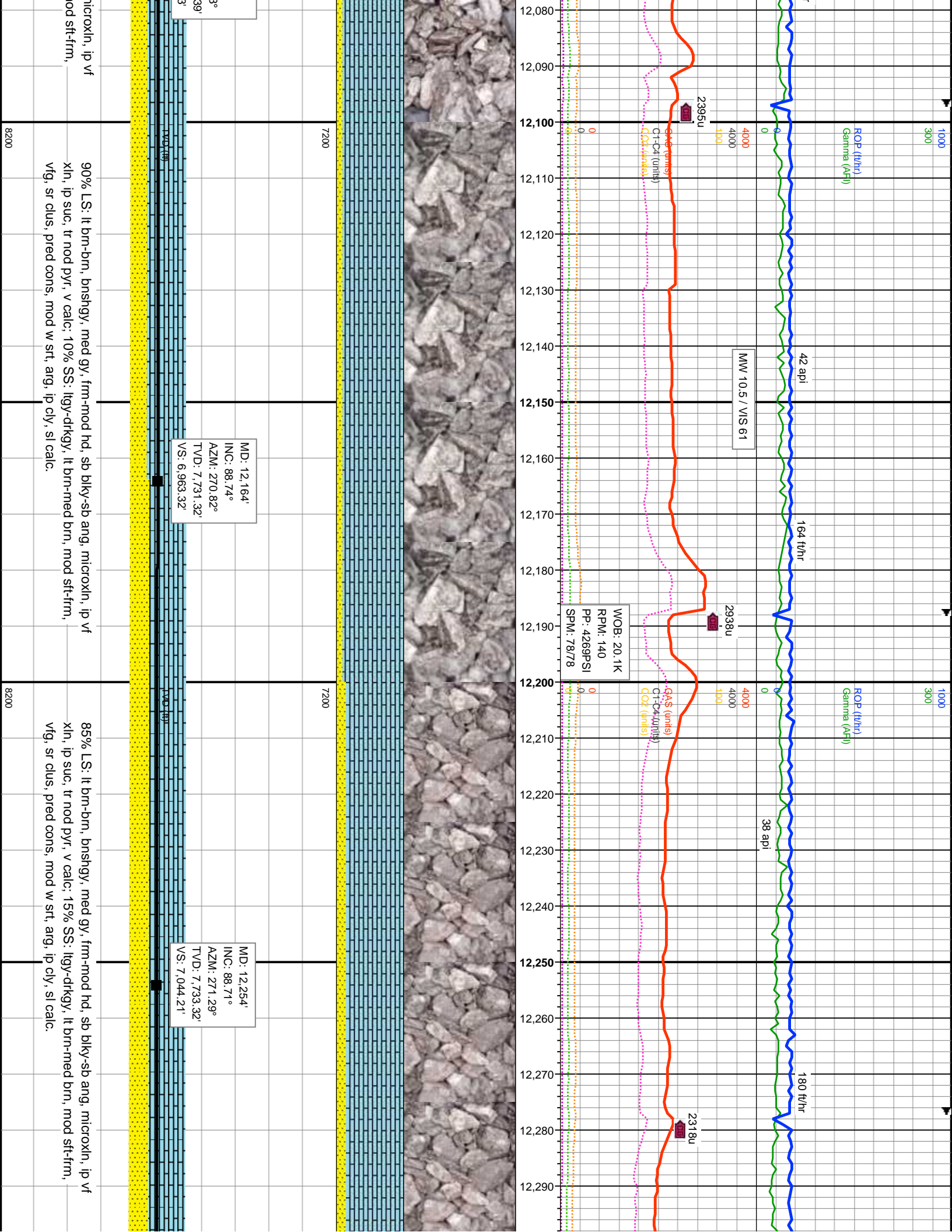




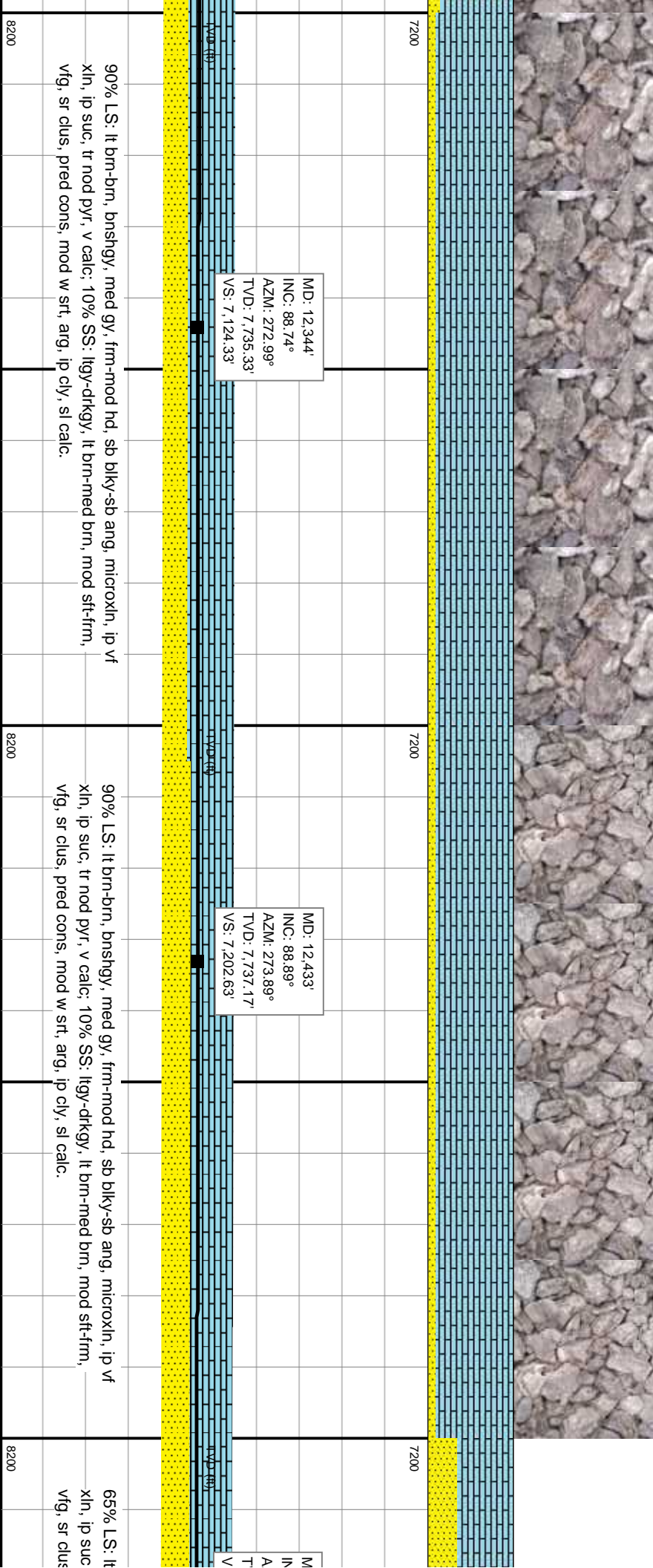
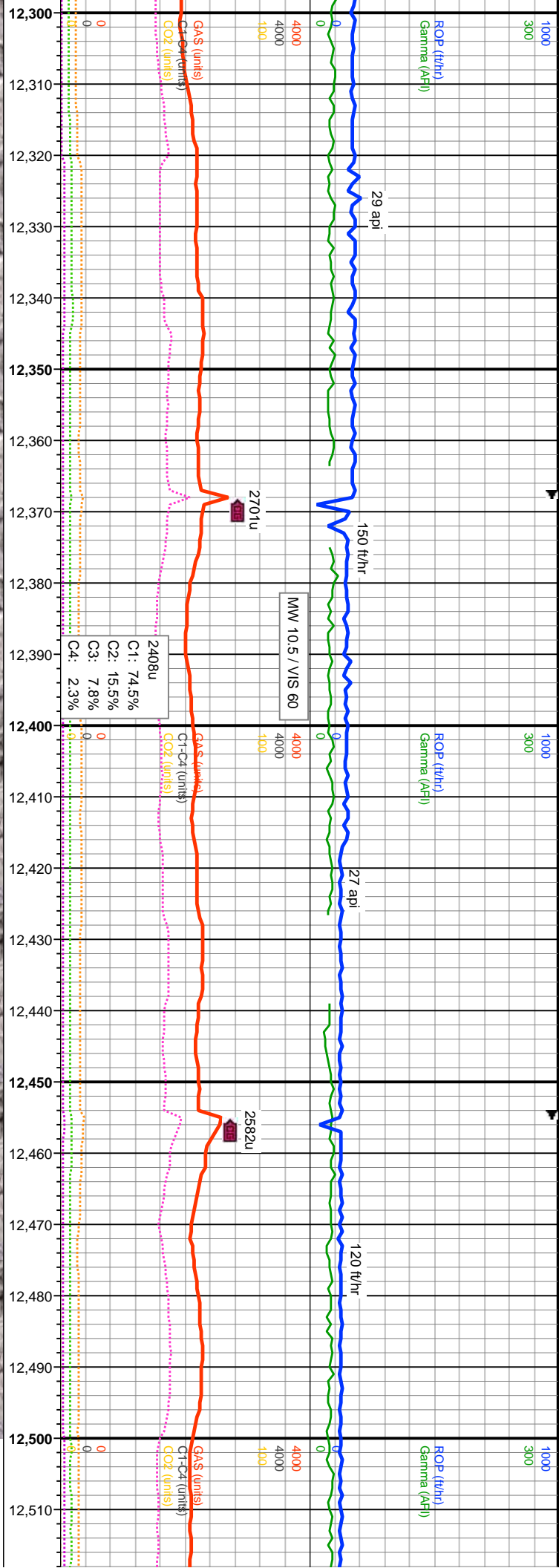




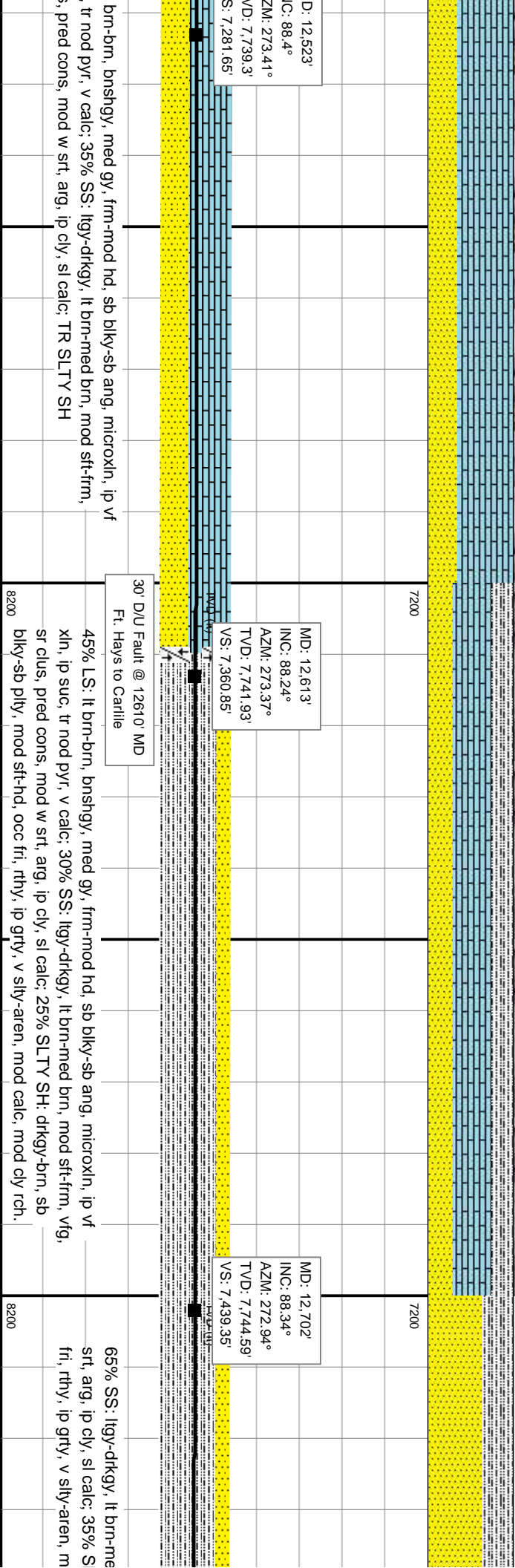
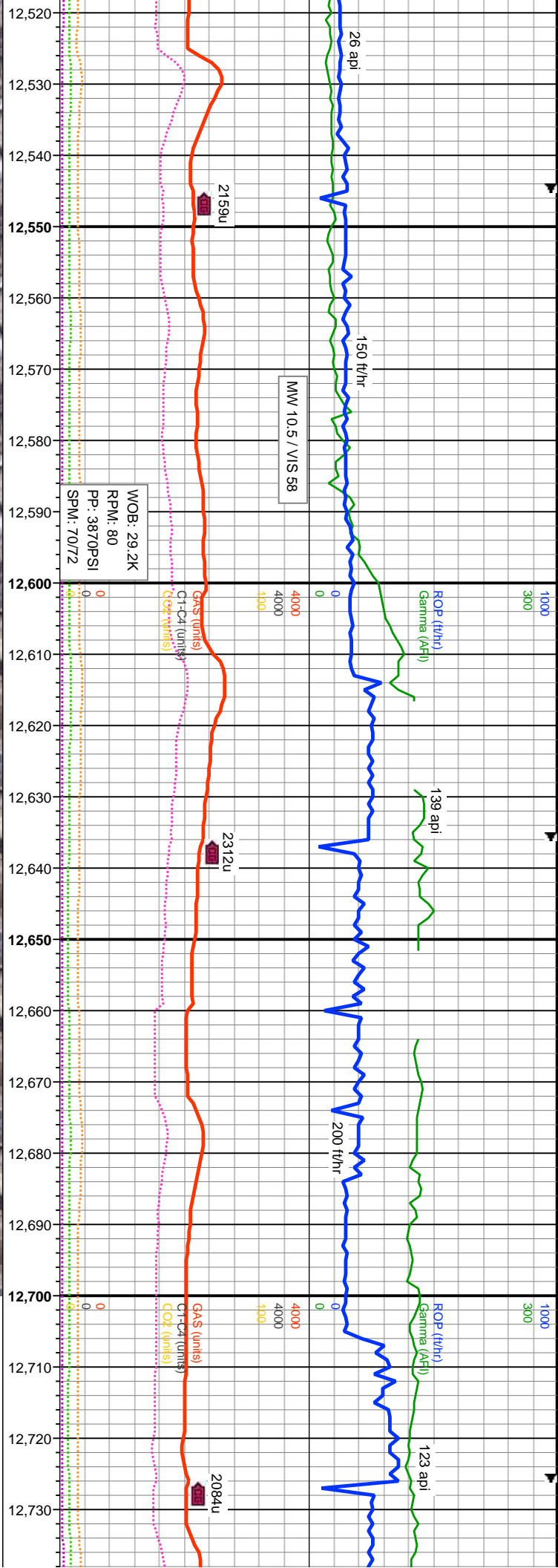


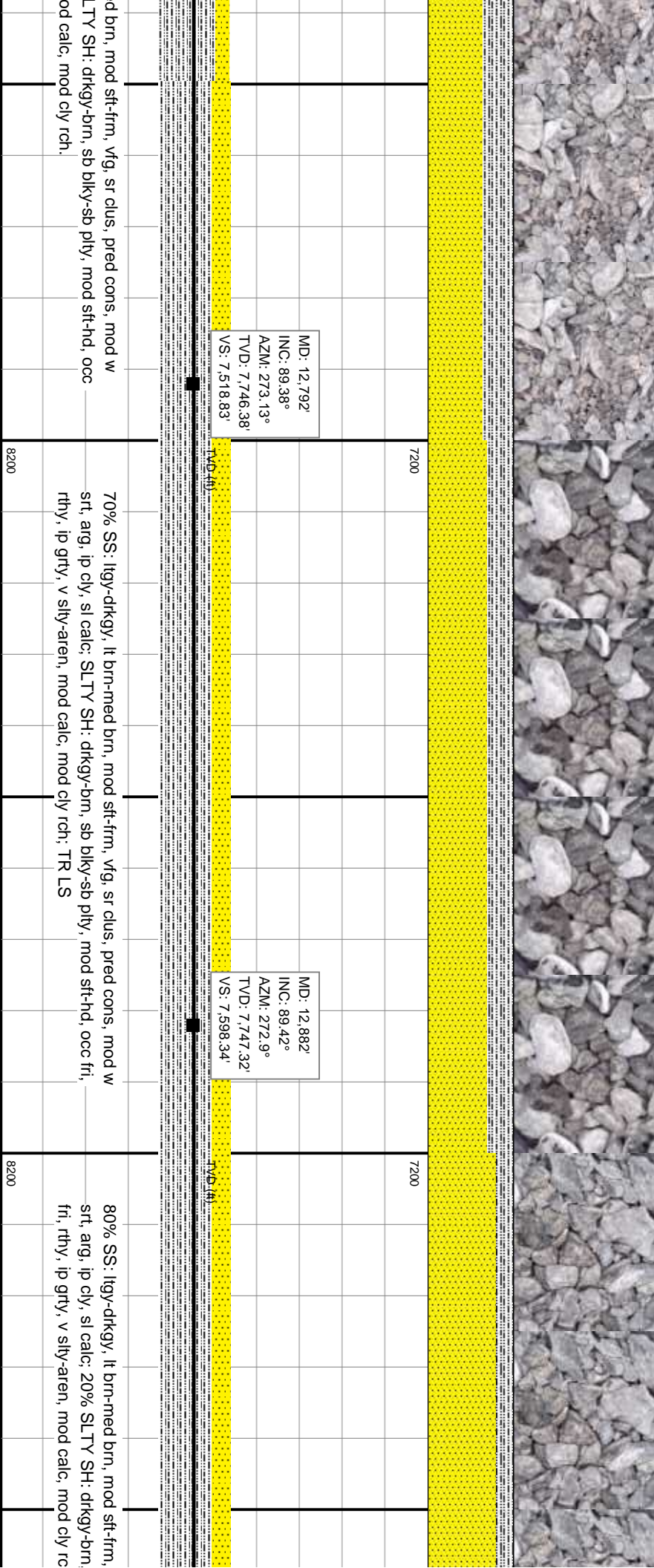
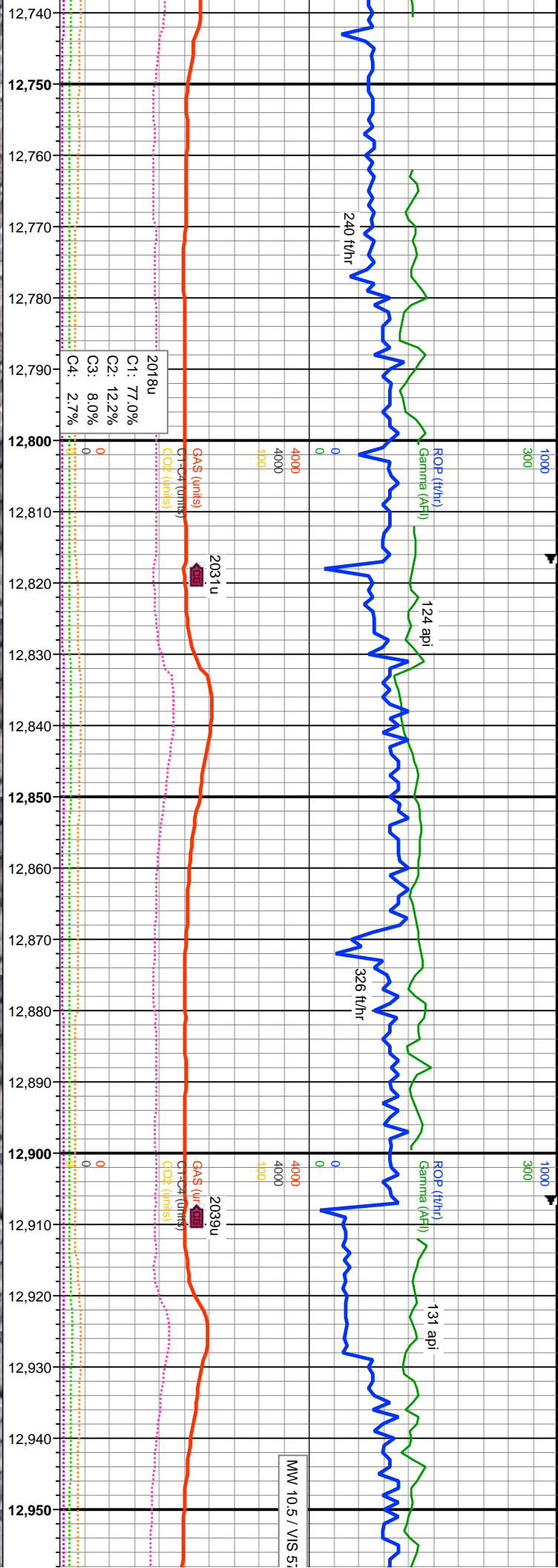




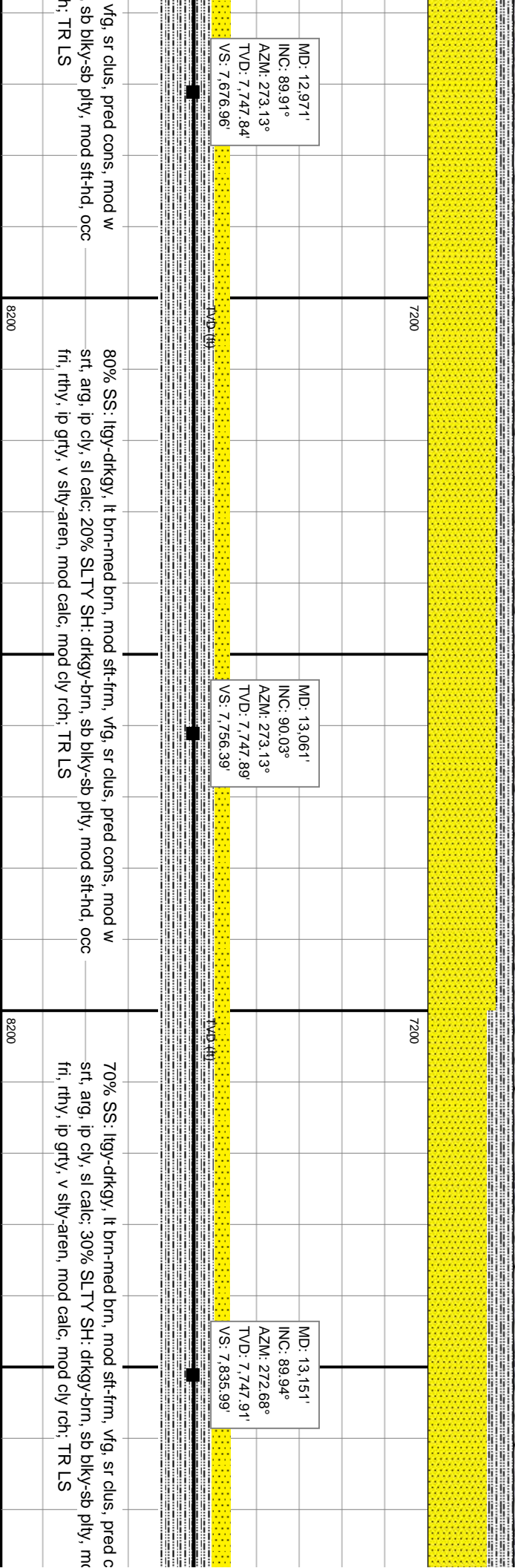
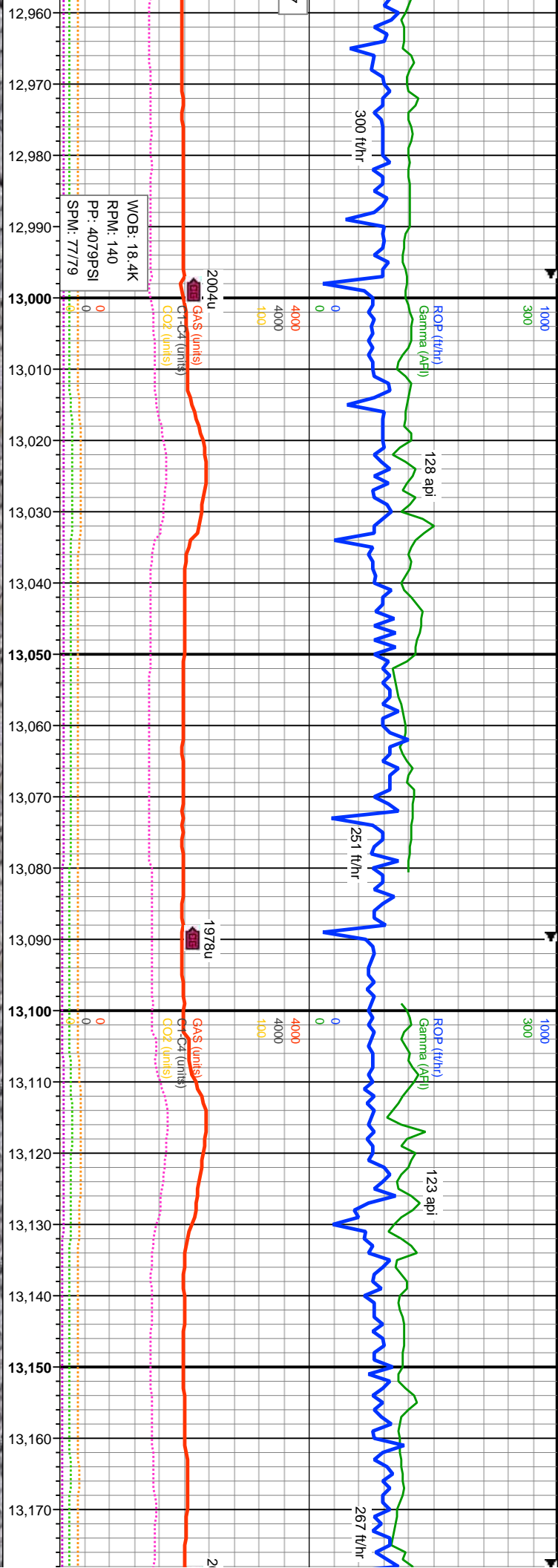




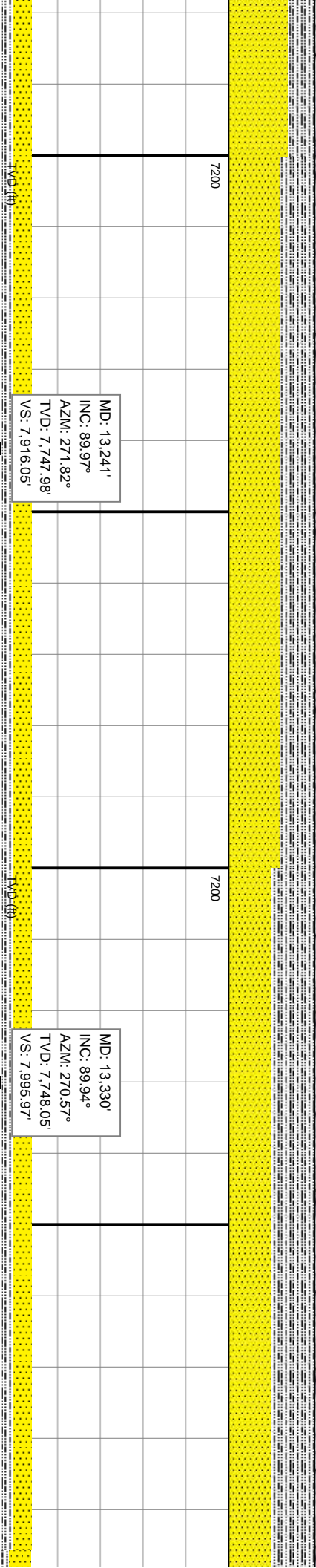
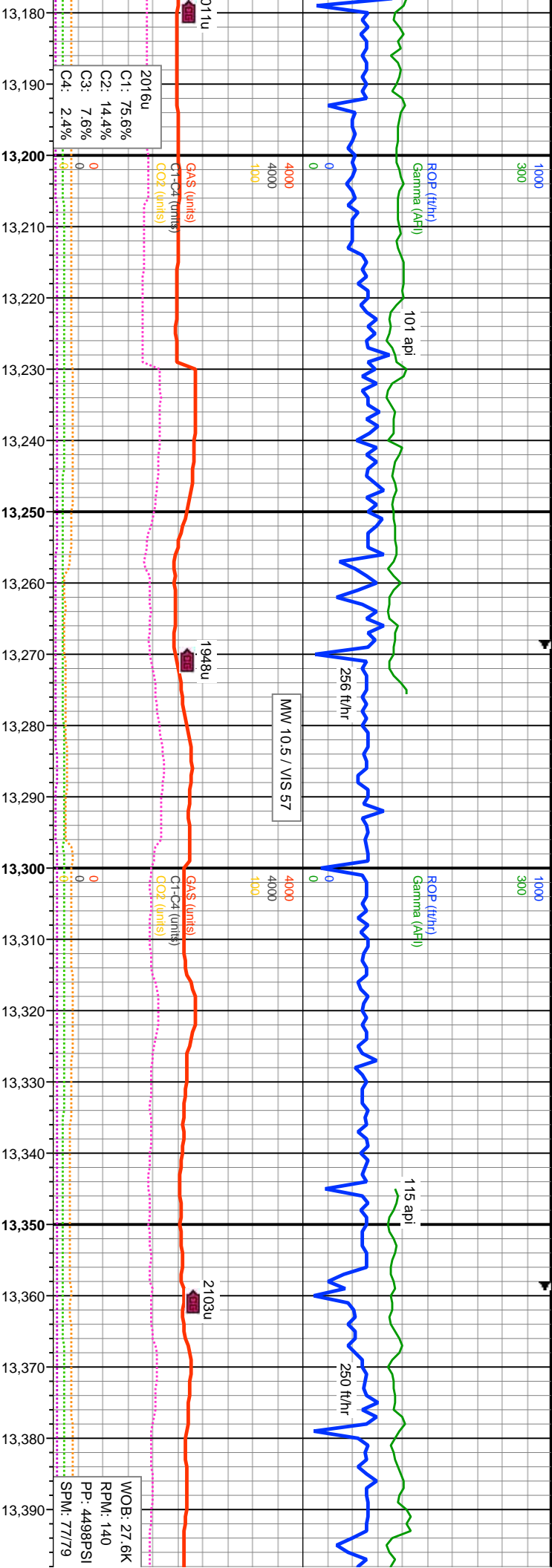












ons, mod w  
od sft-hd, occ

60% SS: lgy-dkgy, lt brn-med brn, mod sft-firm, vfg, sr clus, pred cons, mod w  
srt, arg, ip cly, sl calc; 40% SLTY SH: dkgy-brn, sb blk-y-sb ply, mod sft-hd, occ  
fri, rthy, ip grty, v silty-aren, mod calc, mod cly rch; TR LS

50% SS: lgy-dkgy, lt brn-med brn, mod sft-firm, vfg, sr clus, pred cons, mod w  
srt, arg, ip cly, sl calc; 50% SLTY SH: dkgy-brn, sb blk-y-sb ply, mod sft-hd, occ  
fri, rthy, ip grty, v silty-aren, mod calc, mod cly rch.

