



Scale: 5" / 100'
Measured Depth Log

Well Name Ottesen LE 06-351HN

Location SEC.33, T1N, R66W

State COLORADO

Country USA

API Number 051234434700

Geographic Region DJ BASIN

County WELD

Rig Number PRECISION 466

AFE # 18DC0191

Field WATTENBERG

Ground Elevation 5076.5'

K.B. Elevation 5096.5'

Logged Interval 6000' MD To 18170' MD

Total Depth 18170' MD

Formation NIOBRARA C CHALK

Type of Drilling Fluid OIL BASED MUD

Operator

Company Great Western Oil and Gas

Address 1801 Broadway, Ste 500
Denver, CO 80202



Geologist

Name Zach Souvall, Gabriel Rubio, Wyatt Wicks

Company Terra Guidance

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

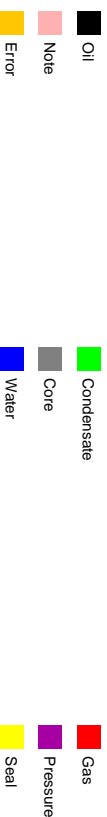


Other

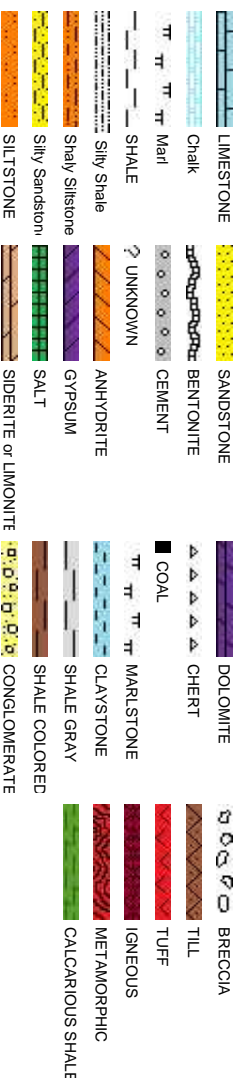
Mudlog Start Date 12/28/2018

Mudlog End Date 01/02/2019

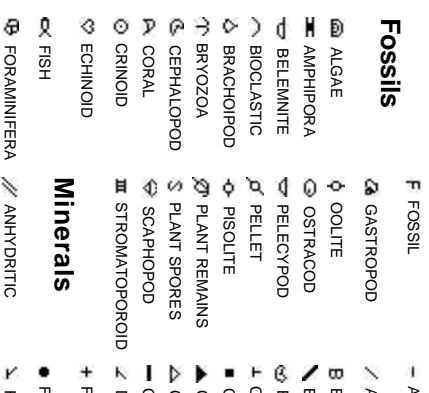
Color Coding



Rock Types



Fossils



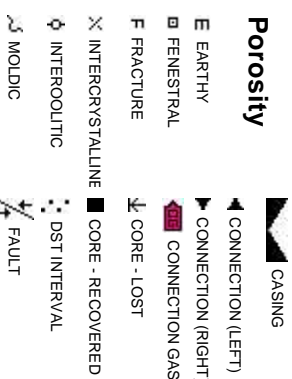
Minerals



Oil Show



Porosity



Accessories

RGILLACEOUS	GLAUCONITE
RGILLITE GRAIN	GYPSIFEROUS
RENTONITE	HEAVY MINERAL
ITUMENOUS SUBSTANCE	KAOLIN
ARECCIA FRAGMENTS	MARLSTONE
ALCAREOUS	MINERAL CRYSTALS
CARBONACEOUS FLAKES	NODULES
HTDK	PHOSPHATE PELLETS
HTLT	PYRITE
COAL - THIN BEDS	SALT CAST
DOLOMITIC	SANDY
ELDSPAR	SILICEOUS
ERRUGINOUS PELLET	SILTY
ERRUGINOUS	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	L LITHOGRAPHIC
GAS SHOW	MICROXLN
MINDEPTH	MIN DEPTH
MINDEPTH	ANGULAR
NORMAL FAULT	ROUNDED
OIL SHOW	SUBANG
OVERTURNED STRATA	SUBRND
REVERSE FAULT	
SIDEWALL CORE (LEFT)	Textures
SIDEWALL CORE (RIGHT)	BOUNDSTONE
SLIDE	CHALKY
SURVEY	CRYPTOXLN
TRIP GAS	E EARTHY
WIRELINE TESTED - LEFT	FINELYXLN
WIRELINE TESTED - RT	GRAINSTONE
	CALCARIOUS SHALE
	CALCARIOUS SHALE

ROP
ROP
Gamma

TERRA GUIDANCE
BEGAN LOGGING @ 03:44 MDT 12/28/2018
BLOODHOUND GAS CHROMATOGRAPH #5781
100' Sample Collection

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

Depth

5,960 5,970 5,980 5,990 6,000 6,010 6,020 6,030 6,040 6,050 6,060 6,070 6,080 6,090 6,100 6,110 6,120 6,130

Images



% Lithology

TVD Scale
4500' - 9000'

MD: 6,015'
INC: 47.27°
AZM: 213.64°
TVD: 4,680.98'
VS: 2,737.31'

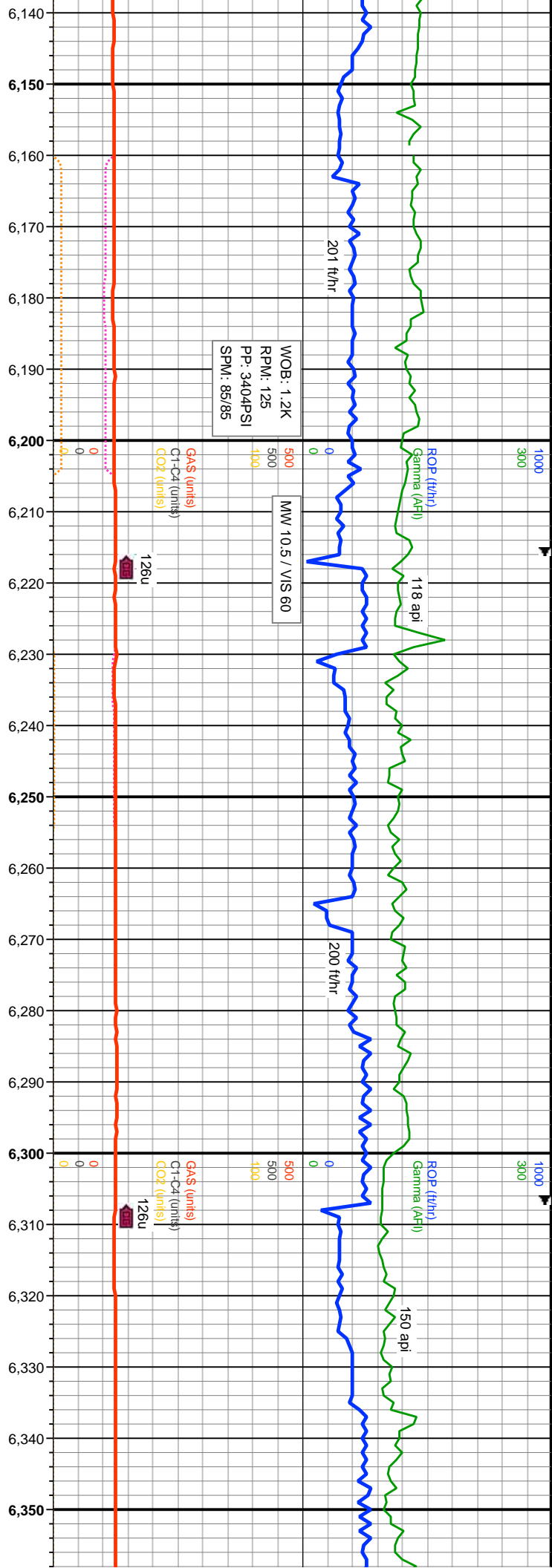
MD: 6,105'
INC: 47.41°
AZM: 213.88°
TVD: 4,741.97'
VS: 2,794.79'

Bit #: 2
Size: 8.5
Make: Ulterra
Model: SPL516
Depth In: 1,818
Jets: 4x11, 4x12
S/N: 44737

Well Bore
TVD

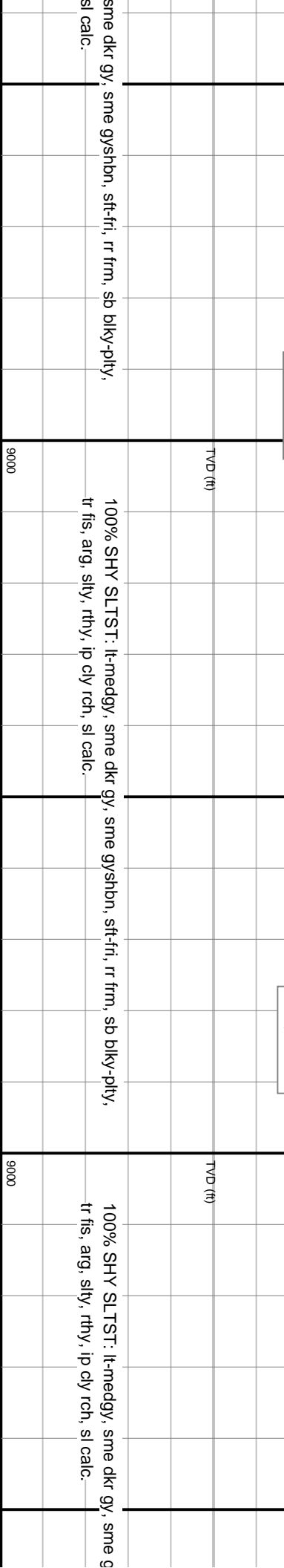
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bkly-pty, tr fis, arg, slty, rthy, ip cly rch, sl calc.

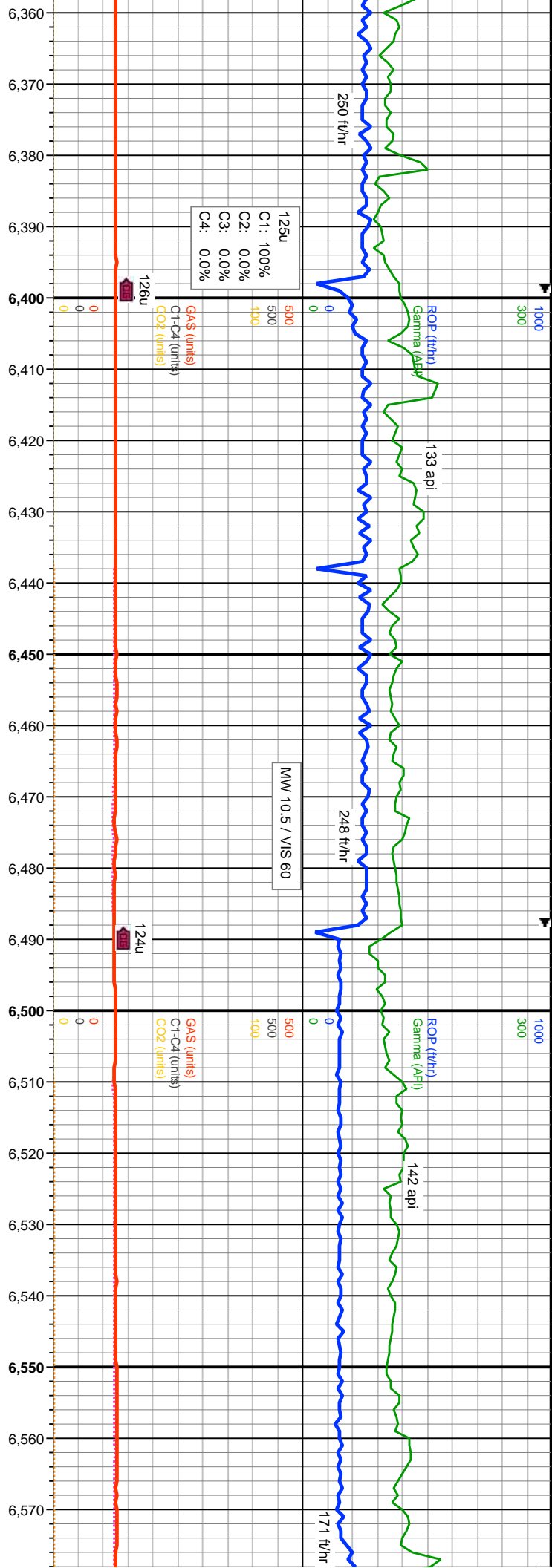
100% SHY SLTST: lt-medgy, :
tr fis, arg, slty, rthy, ip cly rch, :



MD: 6,195'
INC: 47.51°
AZM: 212.32°
TVD: 4,802.82'
VS: 2.852'

MD: 6,284'
INC: 47.55°
AZM: 209.84°
TVD: 4,862.92'
VS: 2,907.43'

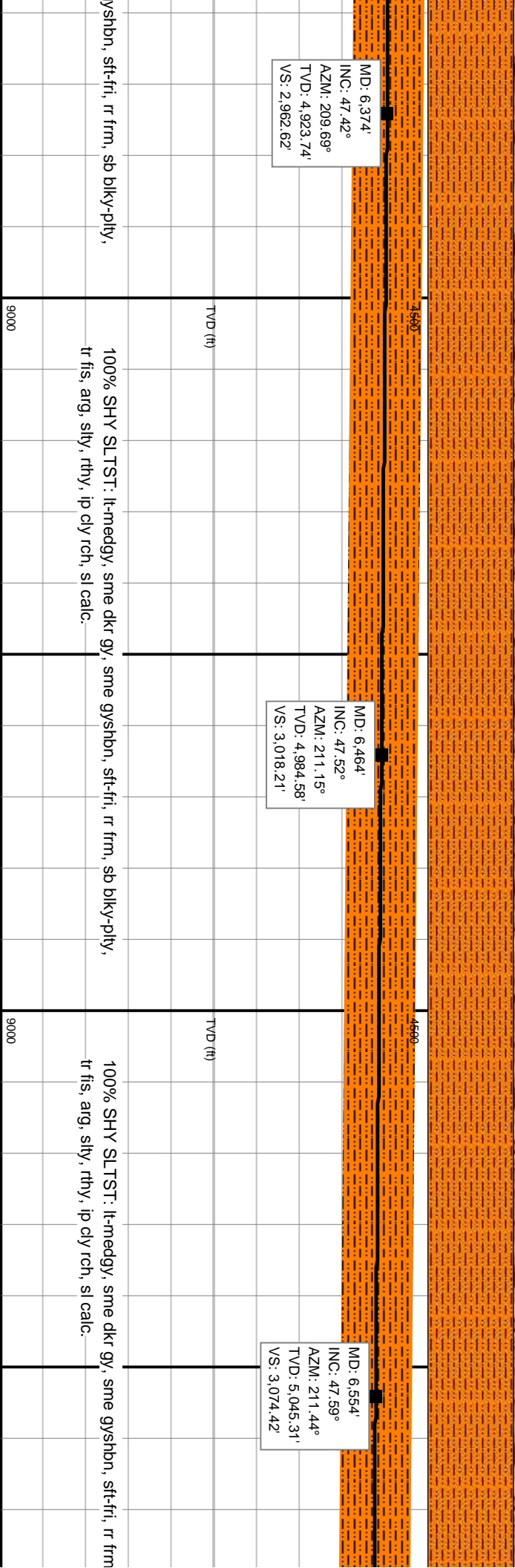


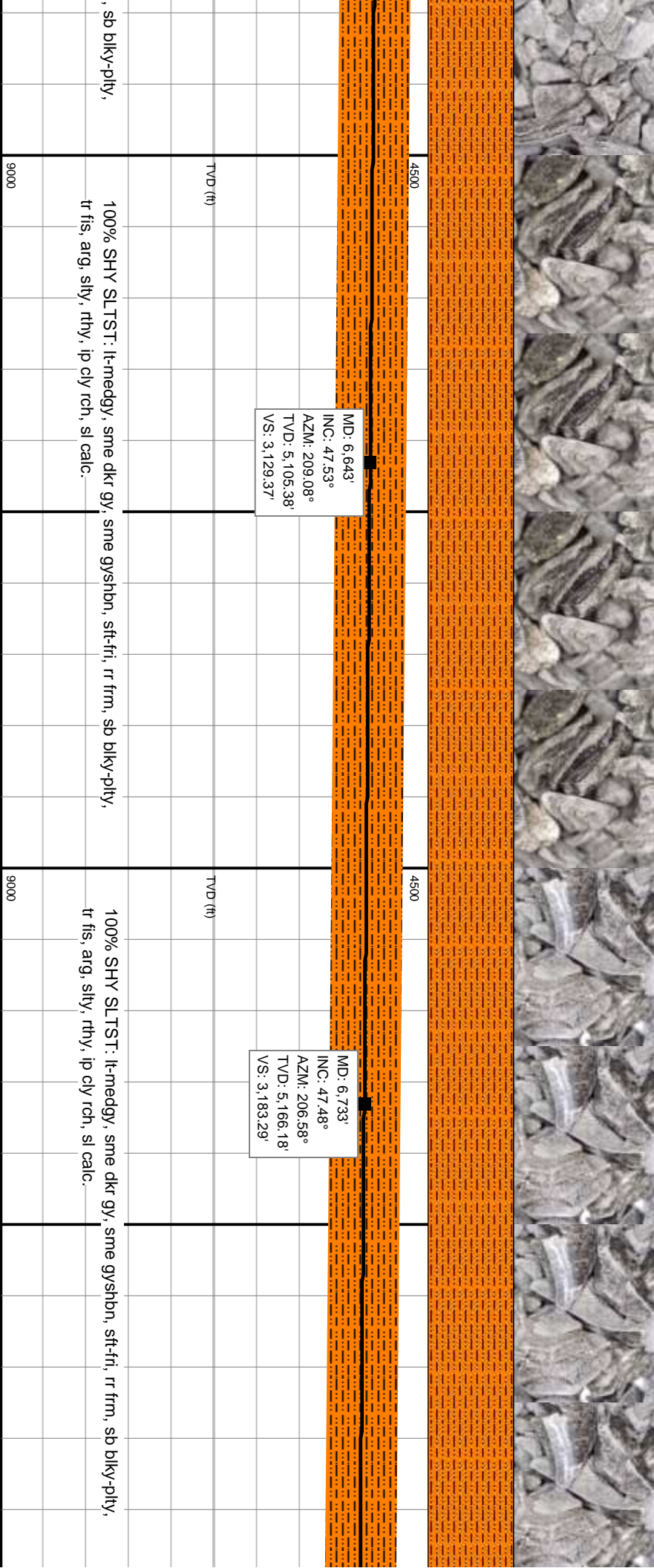
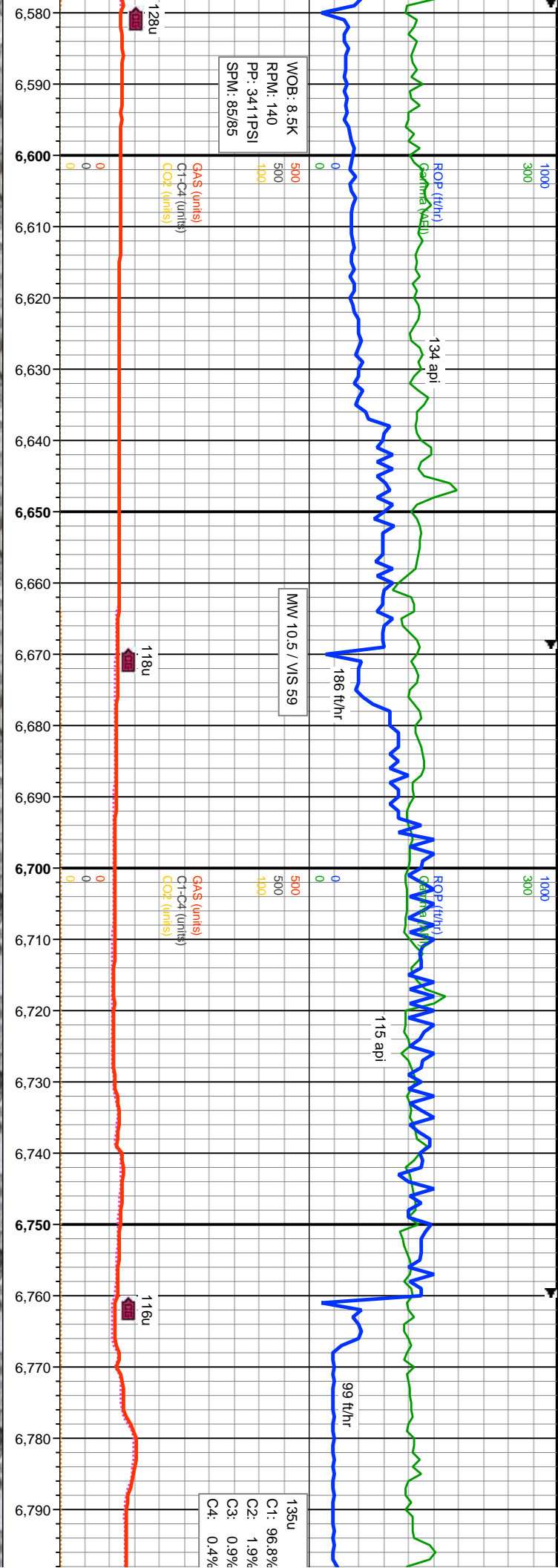


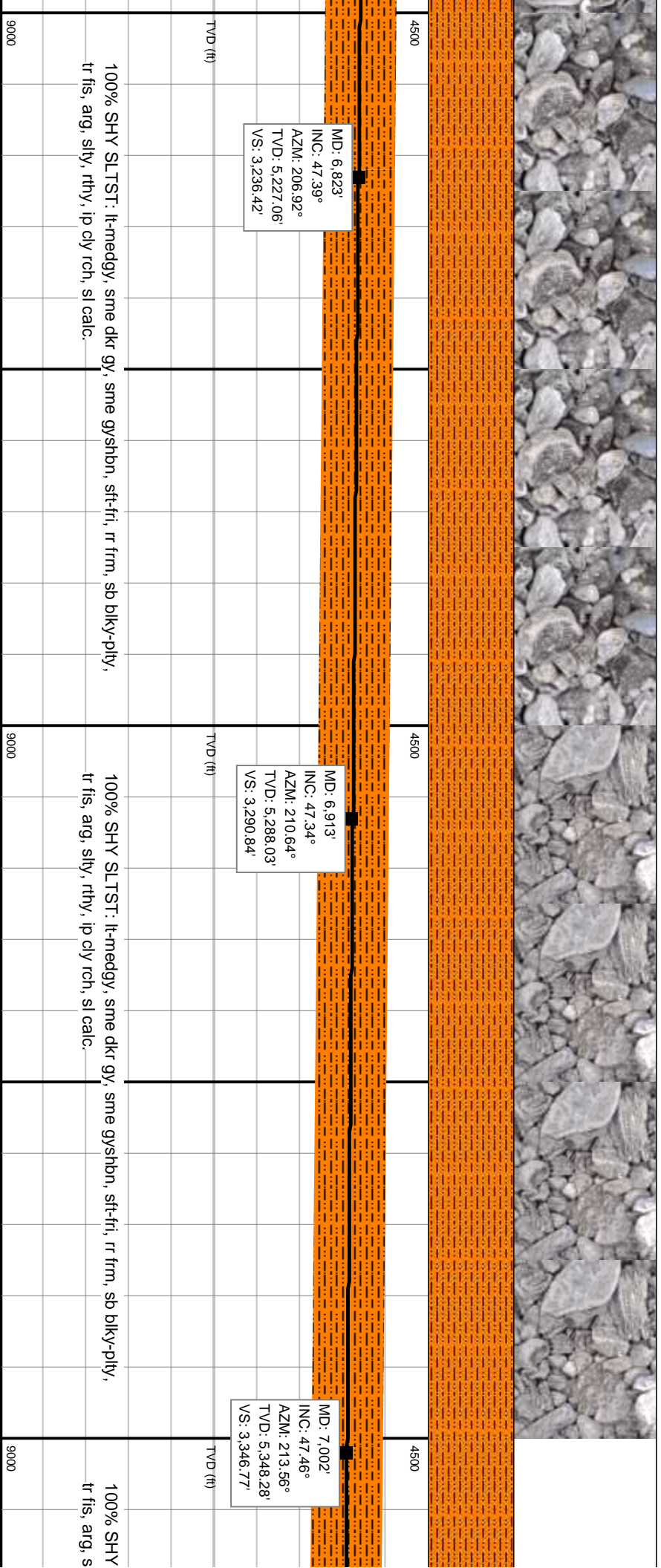
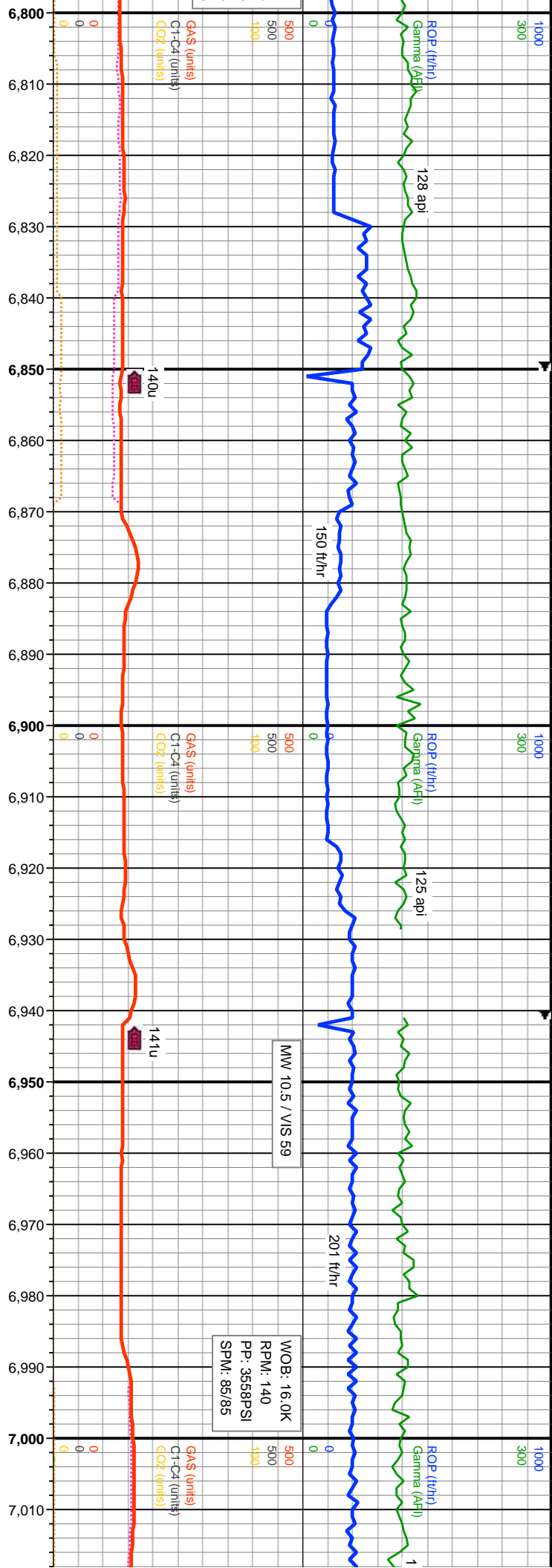
MD: 6,374'
INC: 47.42°
AZM: 209.69°
TVD: 4,923.74'
VS: 2,962.62'

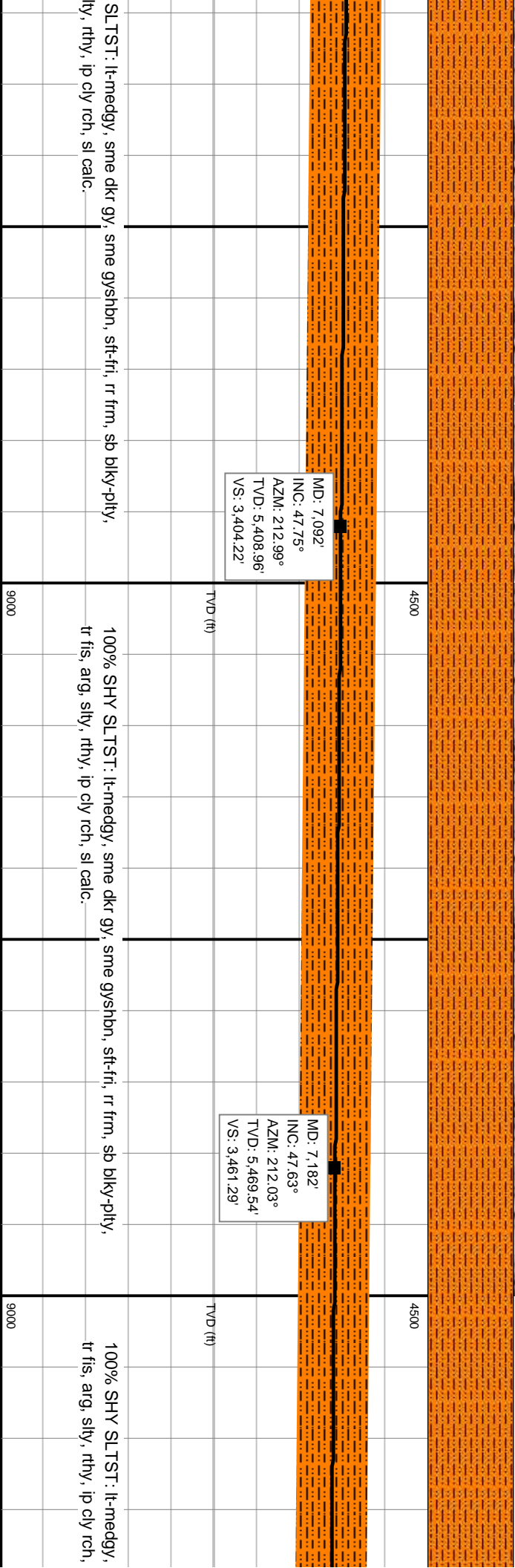
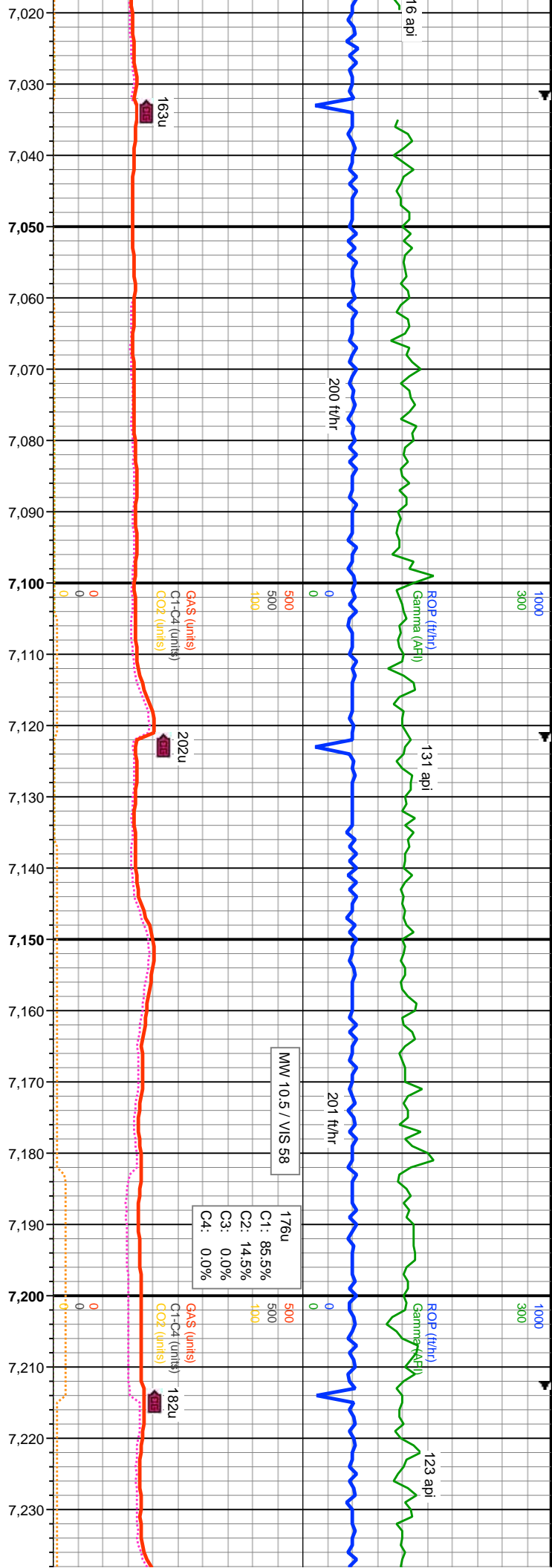
MD: 6,464'
INC: 47.52°
AZM: 211.15°
TVD: 4,984.58'
VS: 3,018.21'

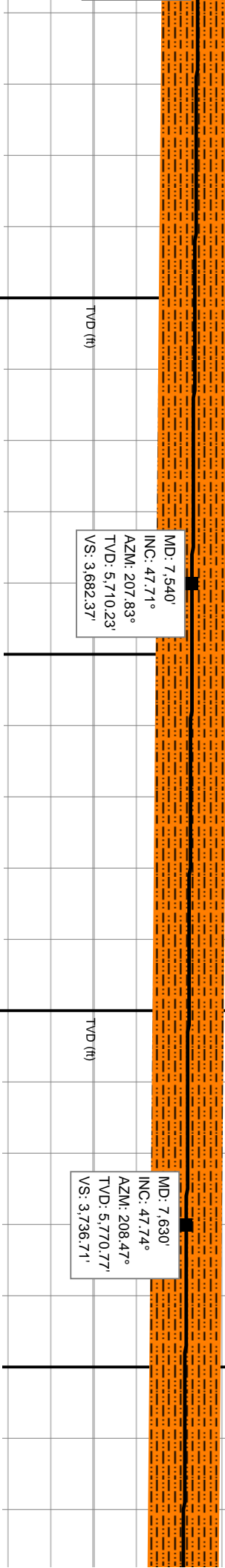
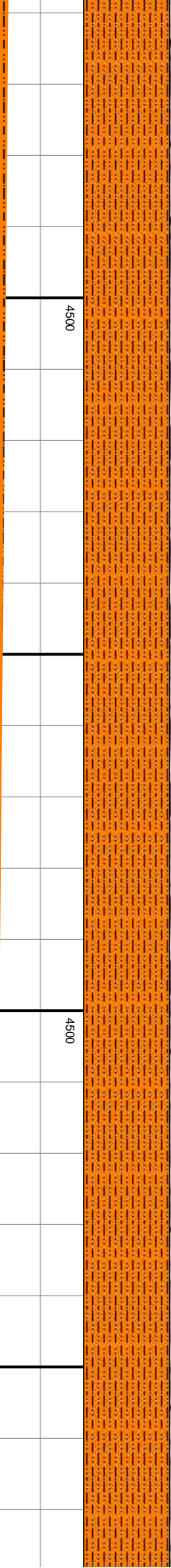
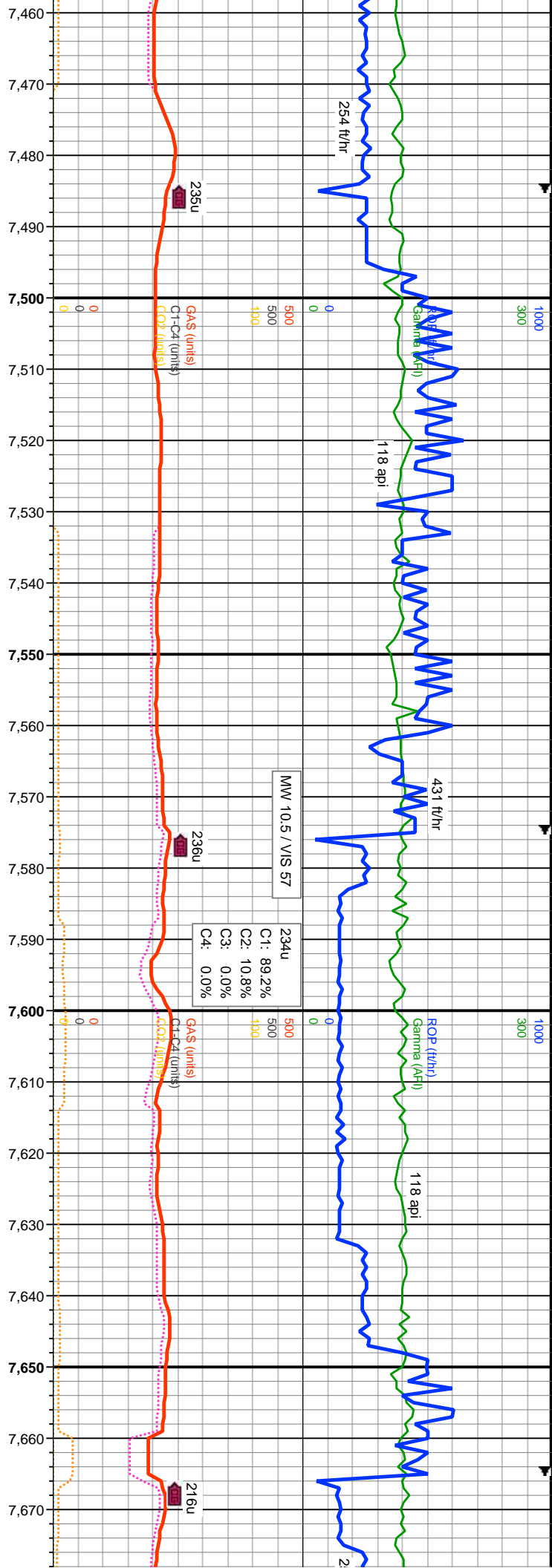
MD: 6,554'
INC: 47.59°
AZM: 211.44°
TVD: 5,045.31'
VS: 3,074.42'





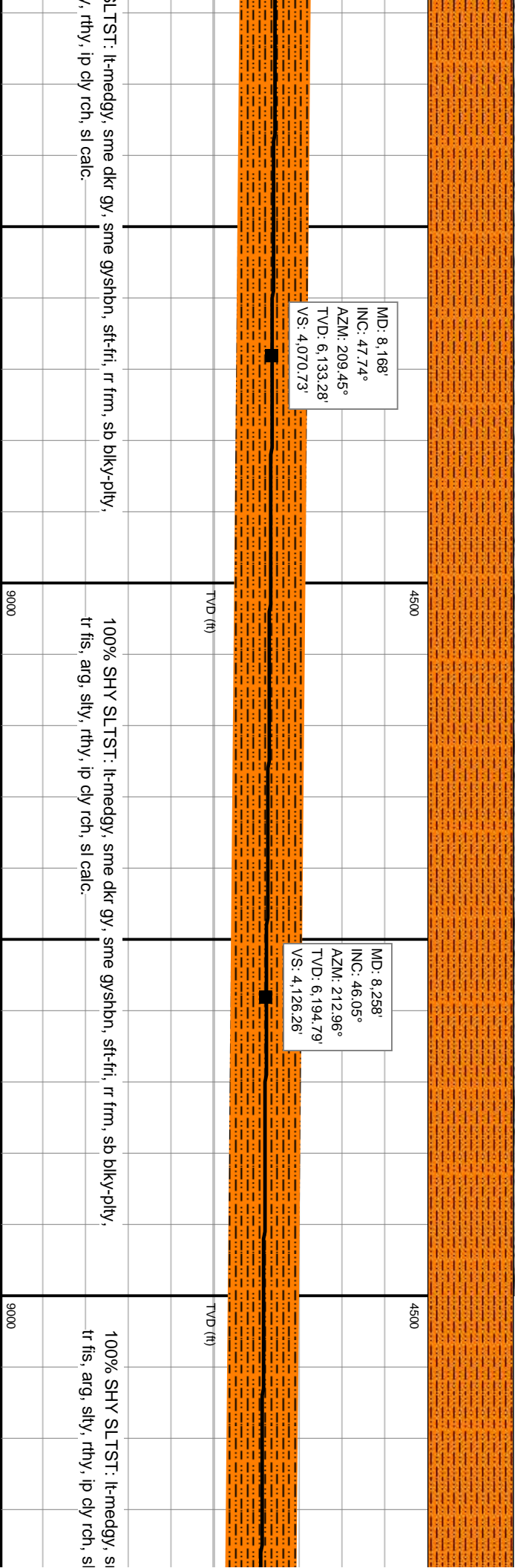
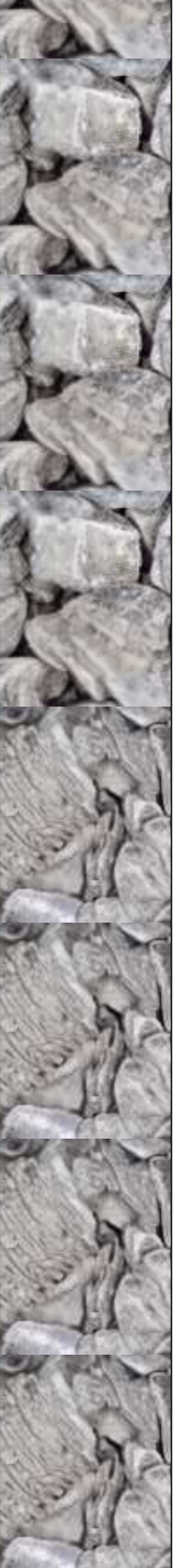
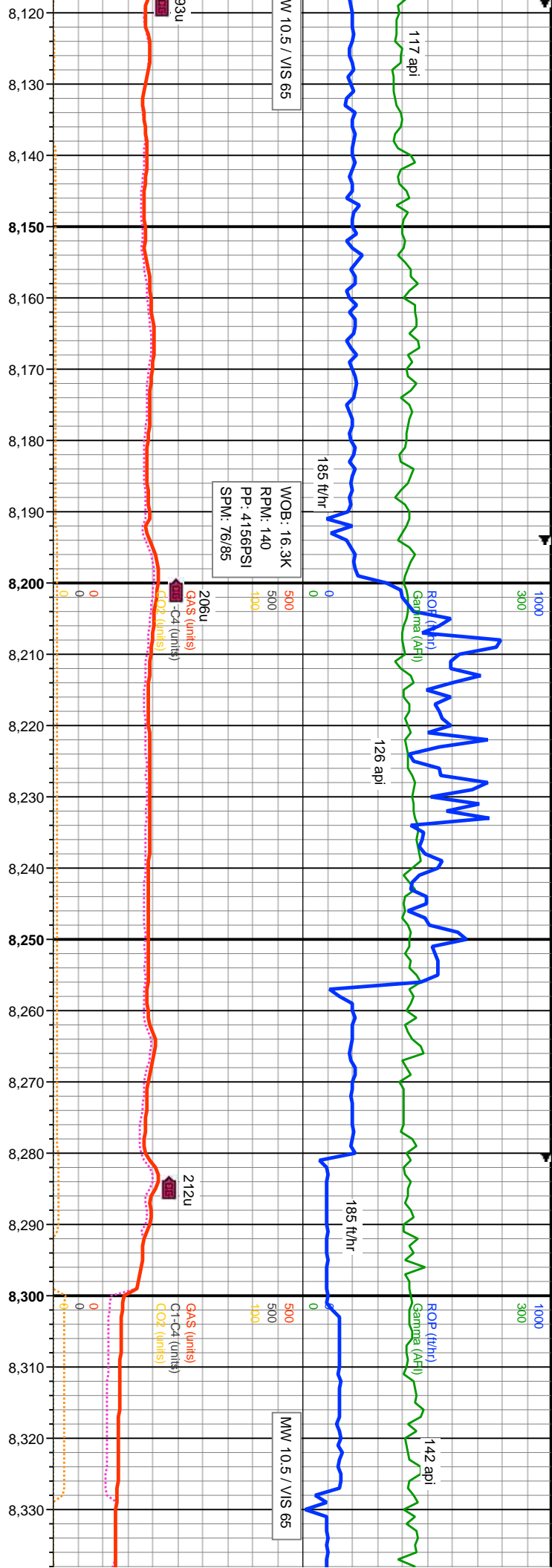


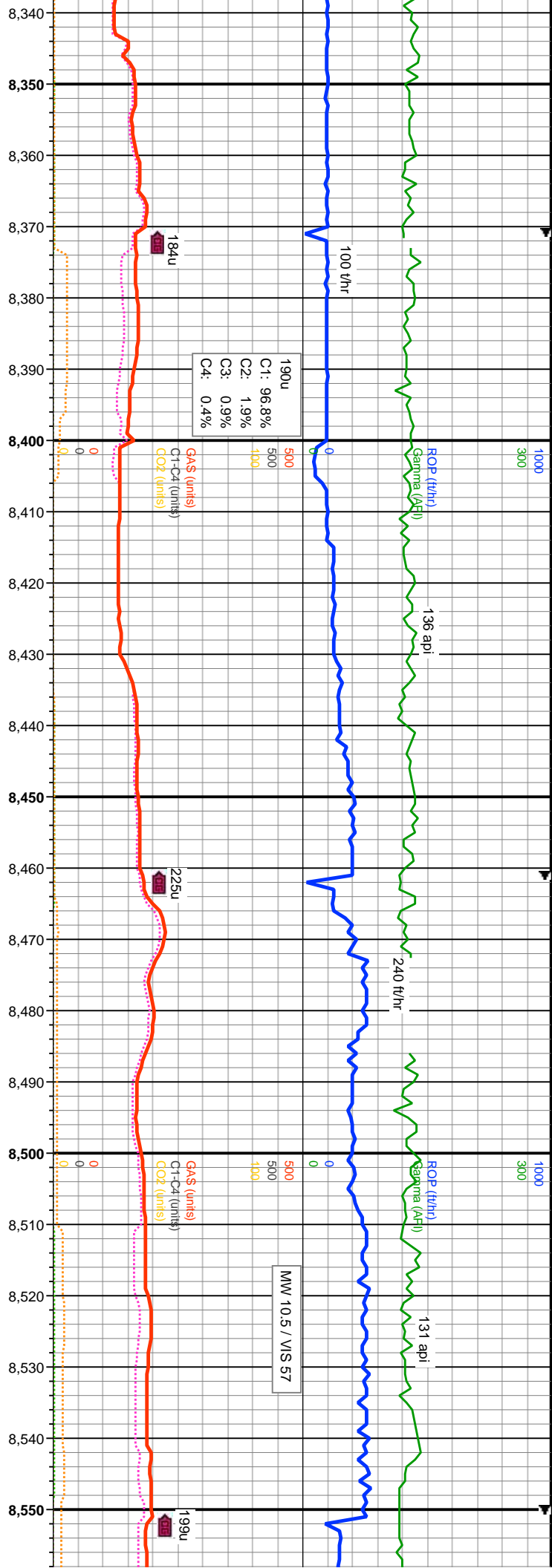




100% SHY SLTST: lt-medgy, sme dkr gy, sme gyshbn, sft-fri, rr frm, sb blkvy-ply, tr fis, arg, slty, rthy, ip cly rch, sl calc.

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





MD: 8,348'
INC: 47.85°
AZM: 213.28°
TVD: 6,256.23'
VS: 4,183.01'

MD: 8,438'
INC: 47.68°
AZM: 209.25°
TVD: 6,316.73'
VS: 4,239.37'

MD: 8,527'
INC: 47.72°
AZM: 210.99°
TVD: 6,376.64'
VS: 4,294.36'

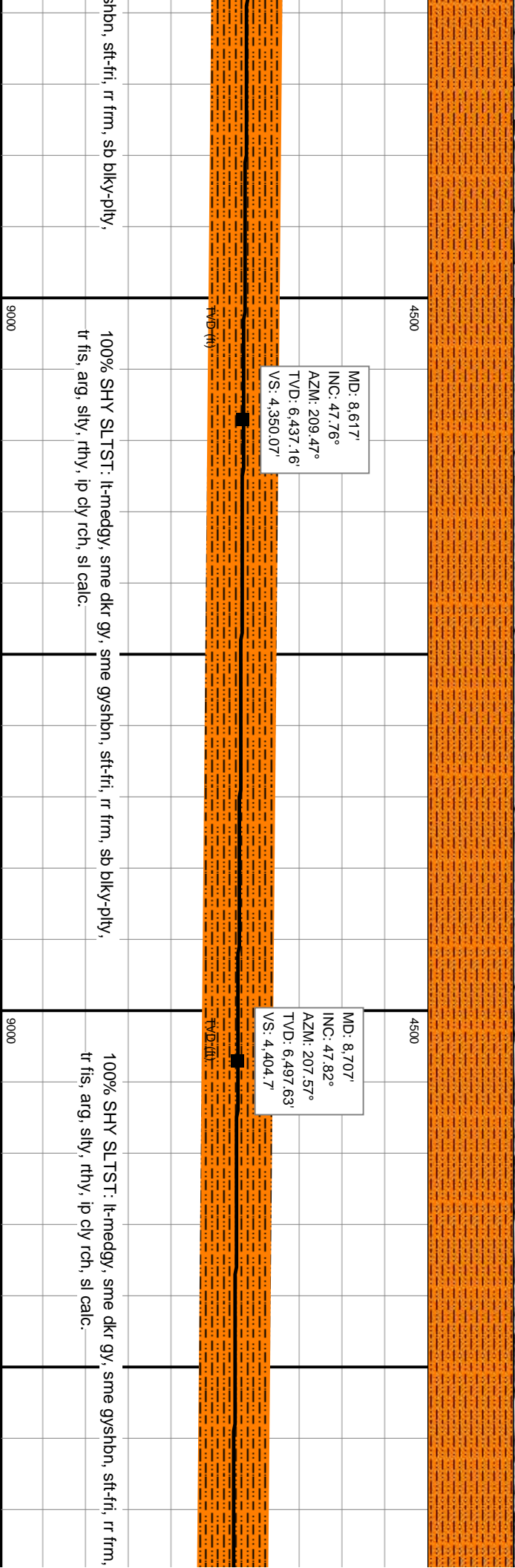
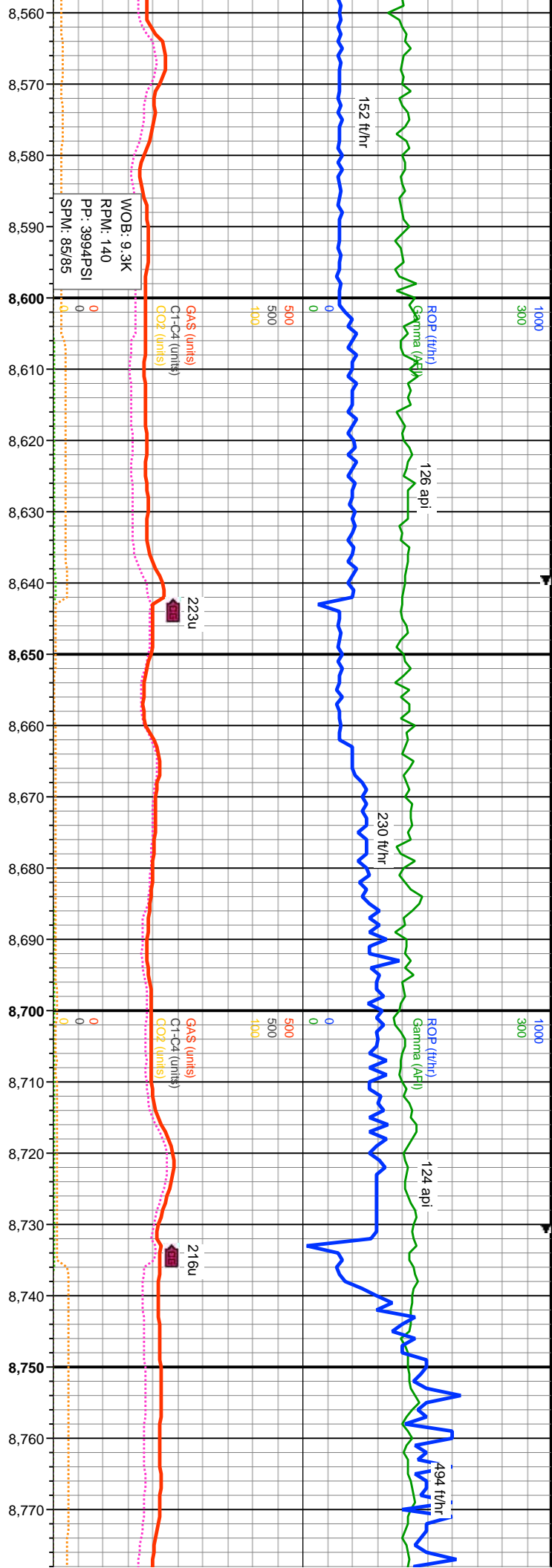
TVD (ft)

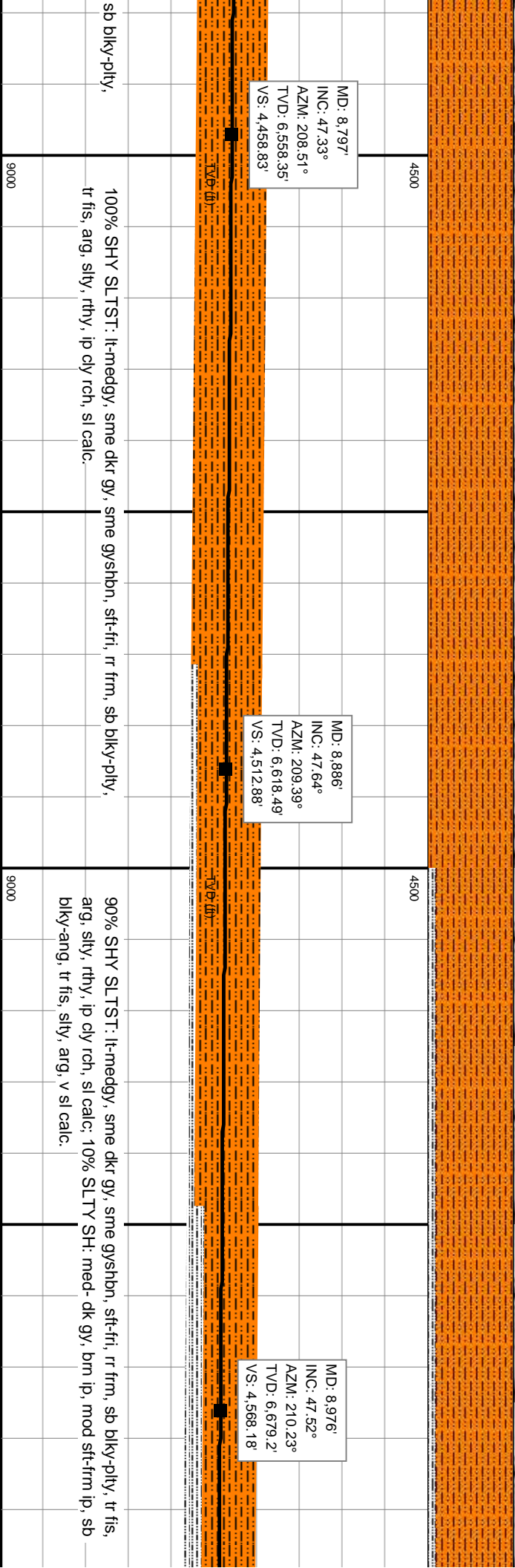
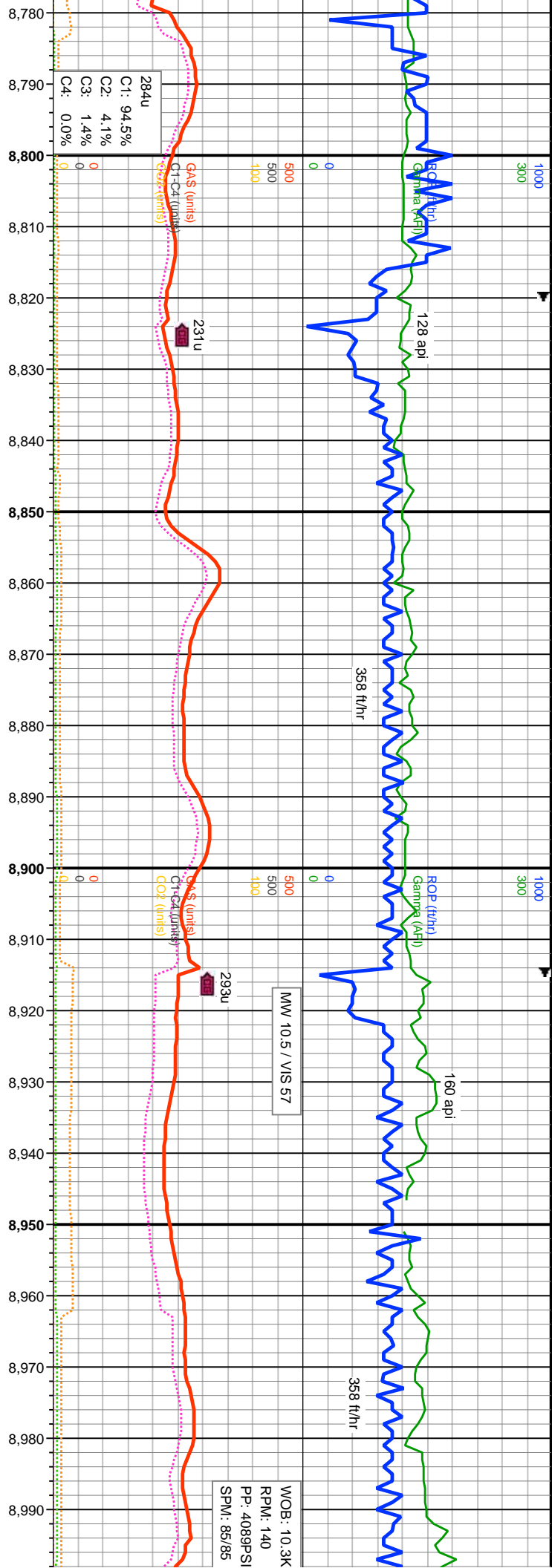
TVD (ft)

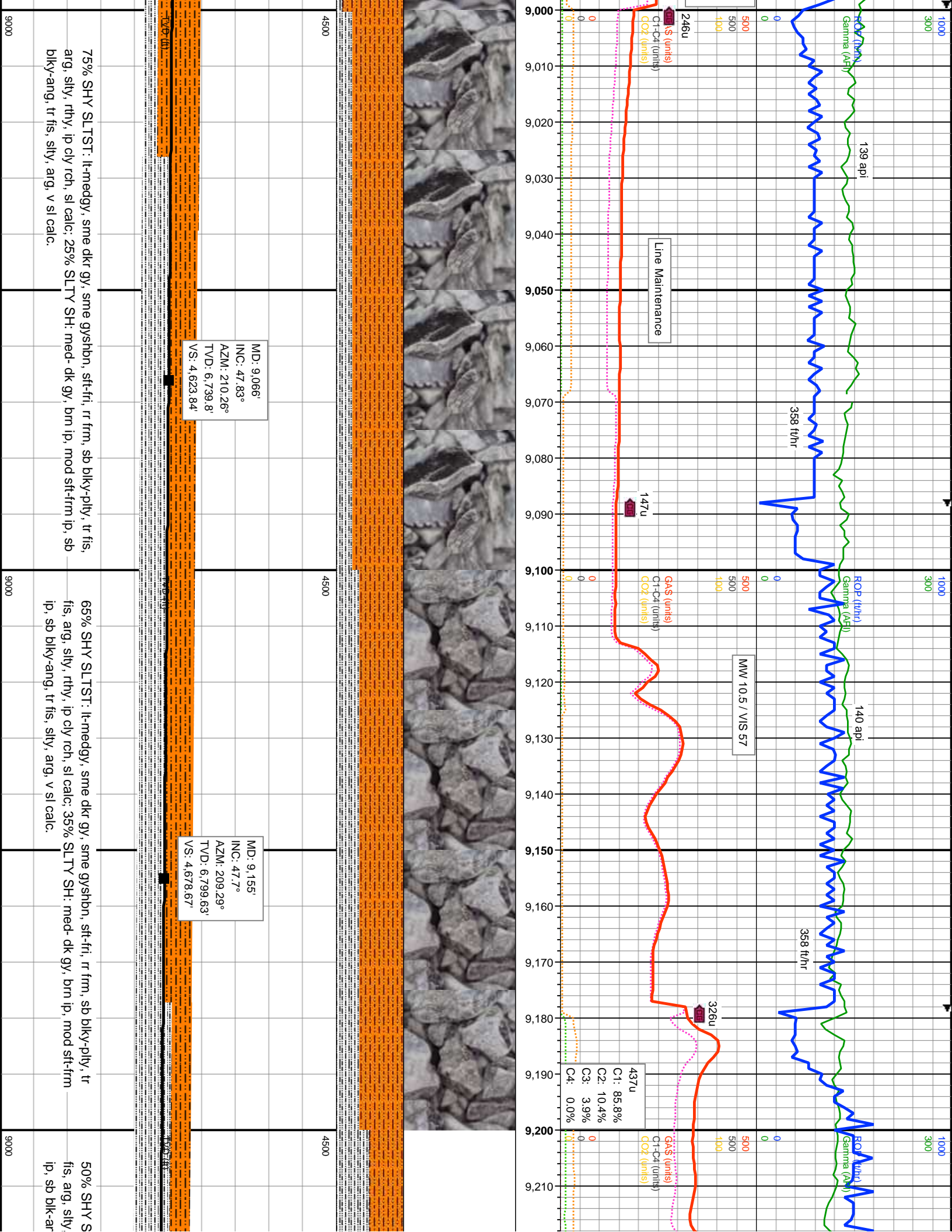
ne drk gy, sme gysbhn, sft-fri, rr frm, sb blk-ply, calc.

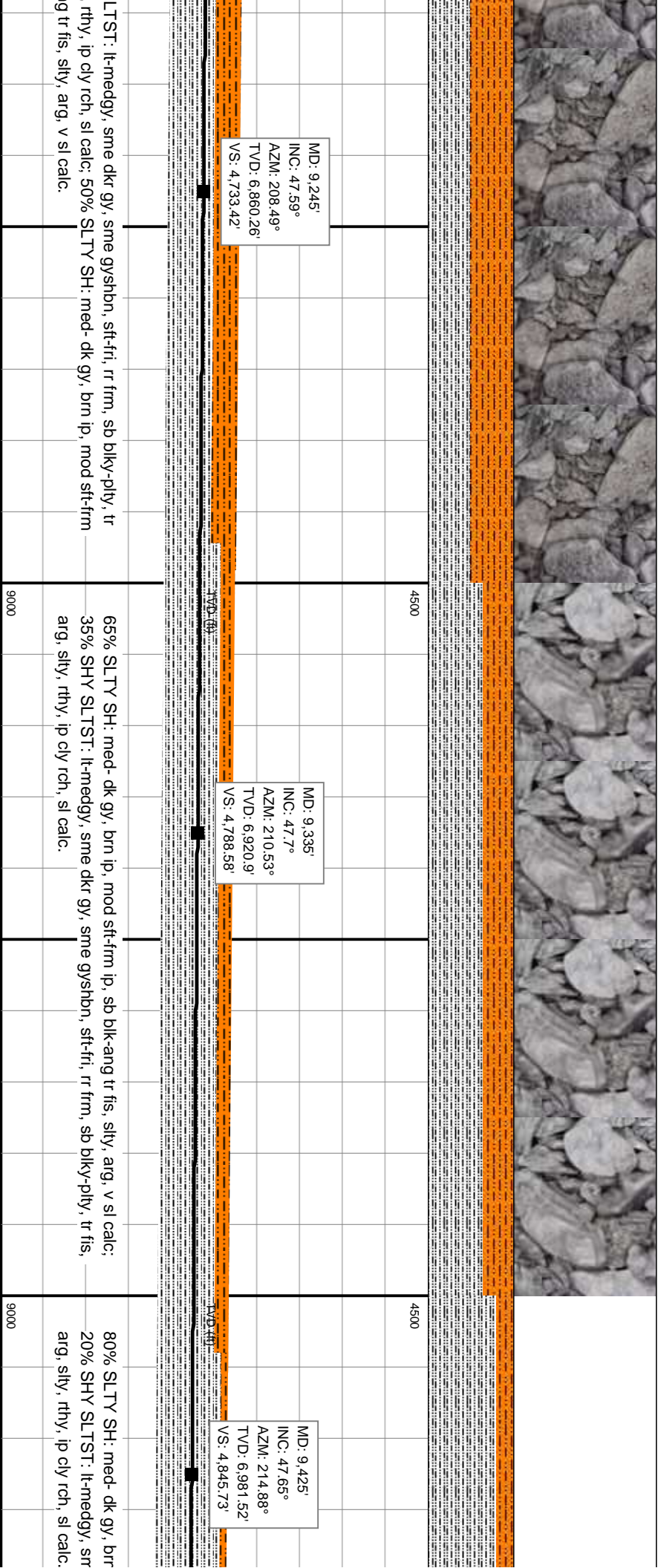
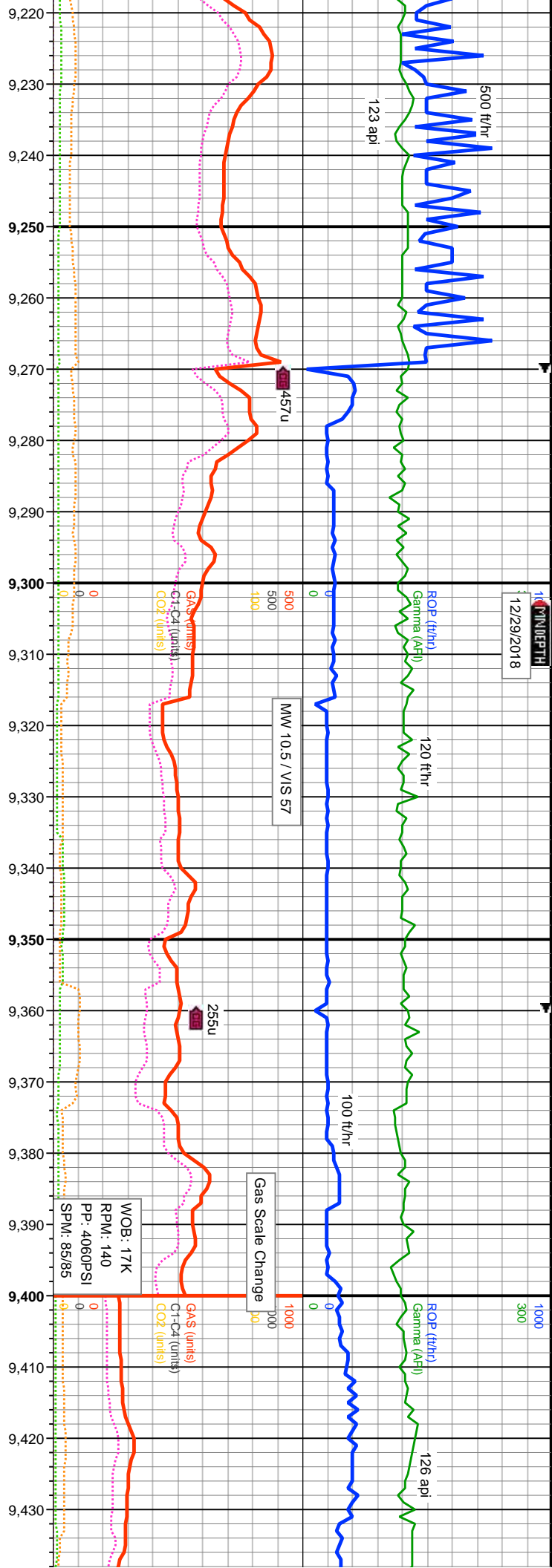
100% SHY SLTST: lt-medgy, sme drk gy, sme gysbhn, sft-fri, rr frm, sb blk-ply, tr fis, arg, silty, rthy, ip cly rch, sl calc.

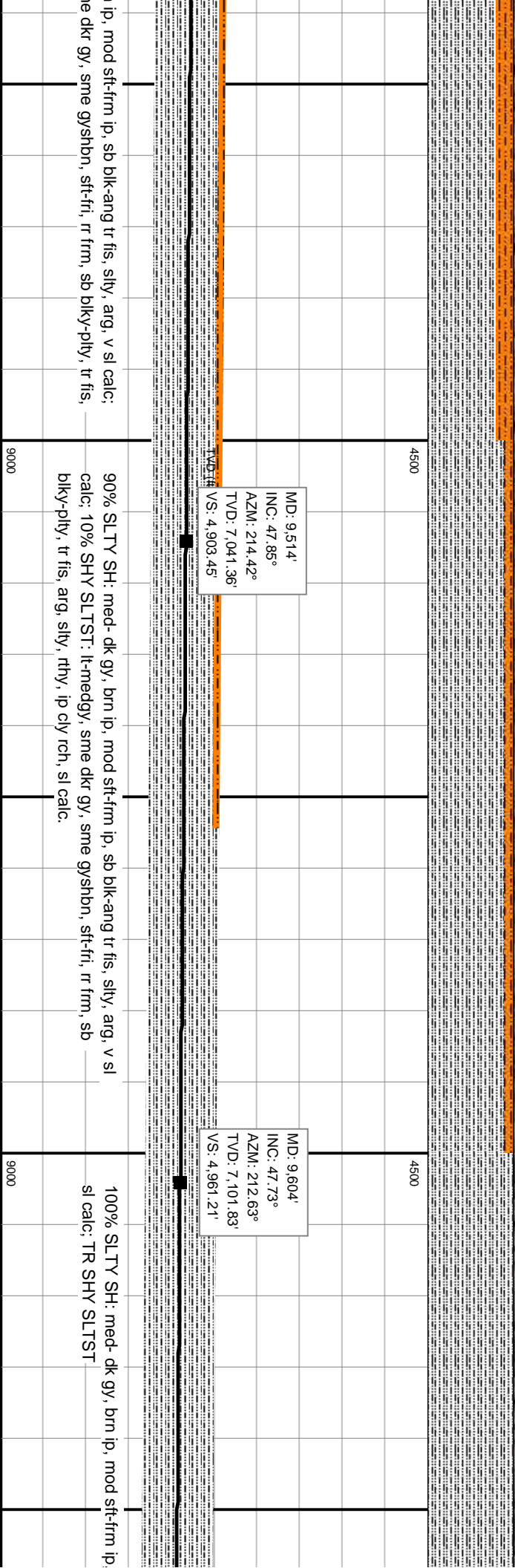
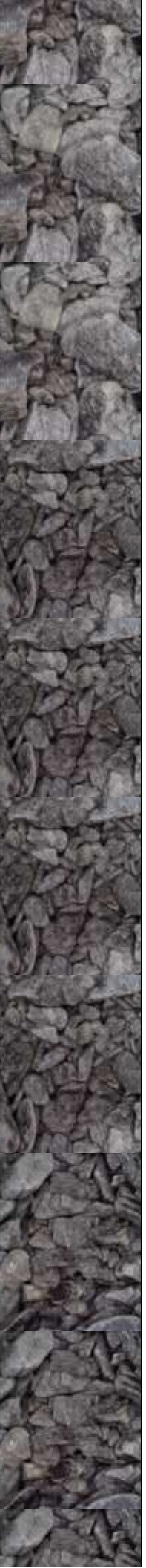
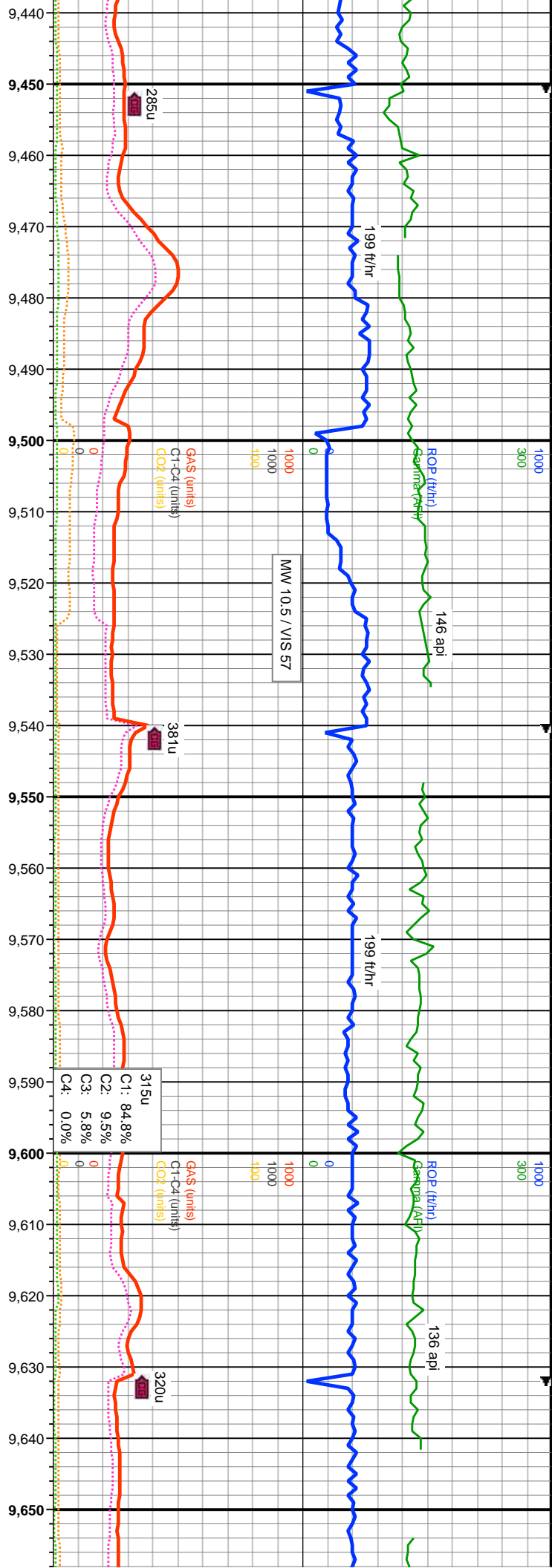
100% SHY SLTST: lt-medgy, sme drk gy, sme gysbhn, sft-fri, rr frm, sb blk-ply, tr fis, arg, silty, rthy, ip cly rch, sl calc.

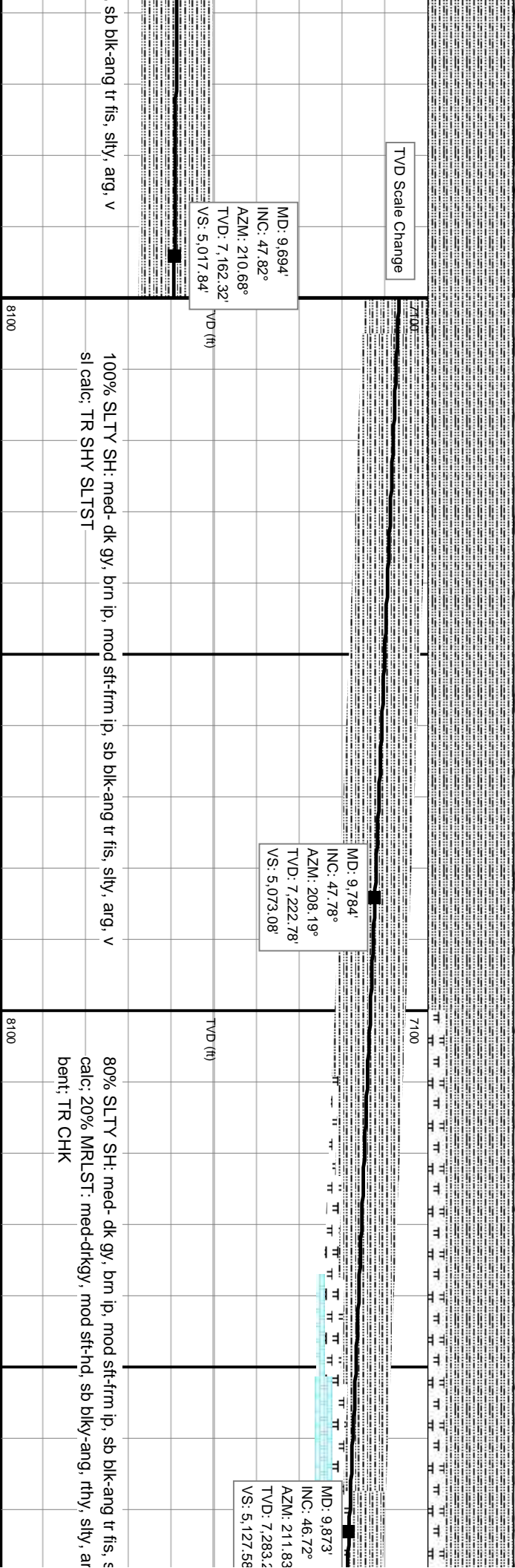
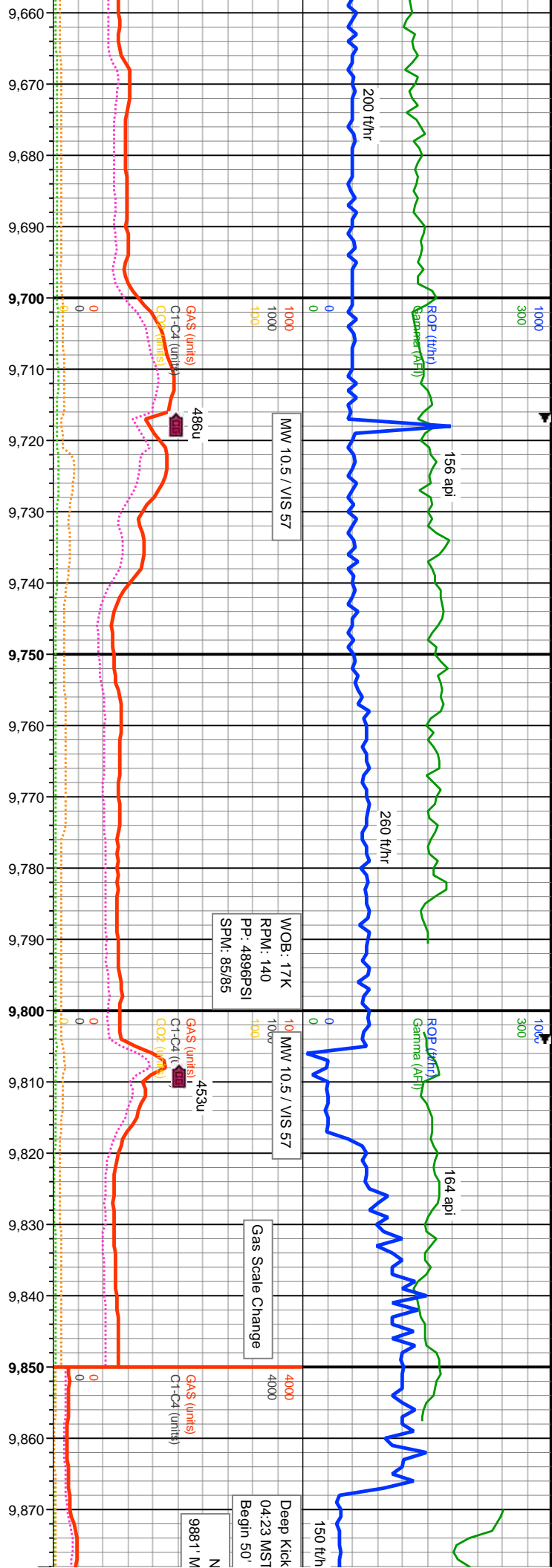


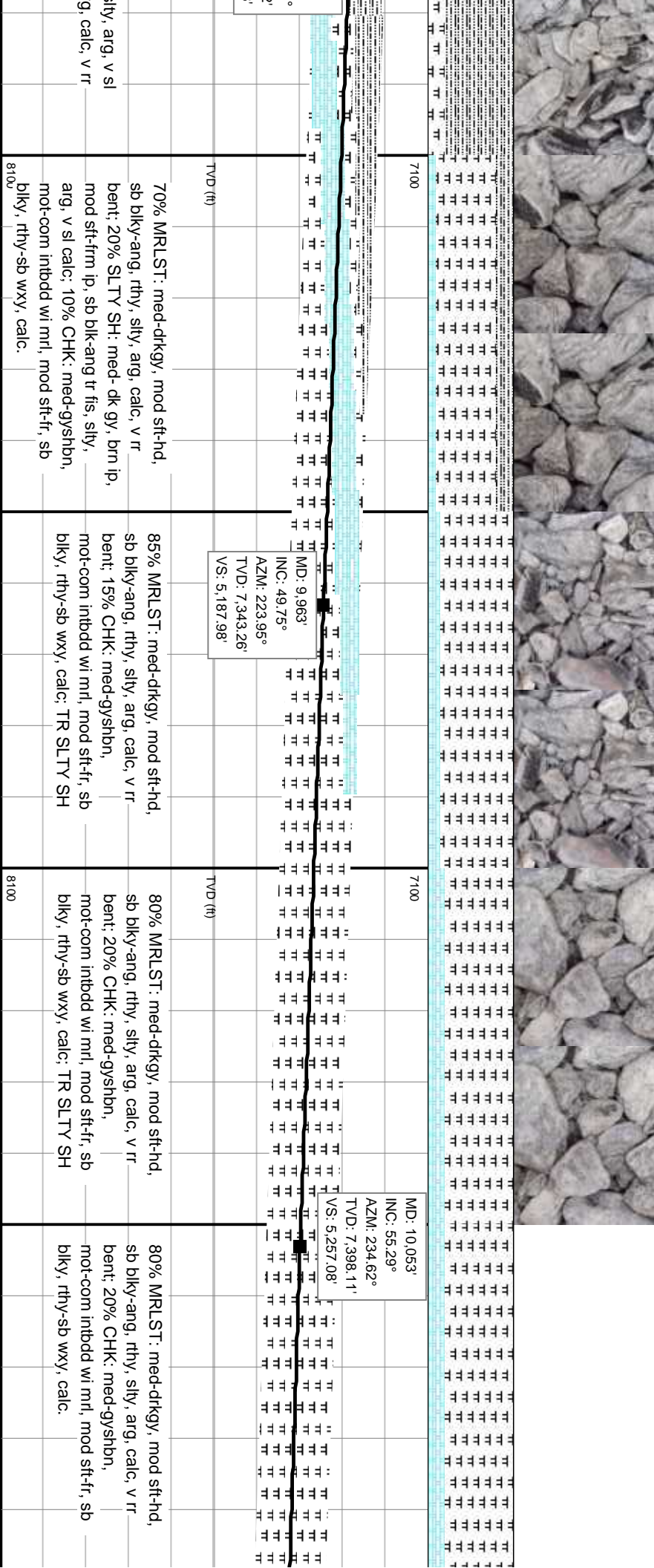
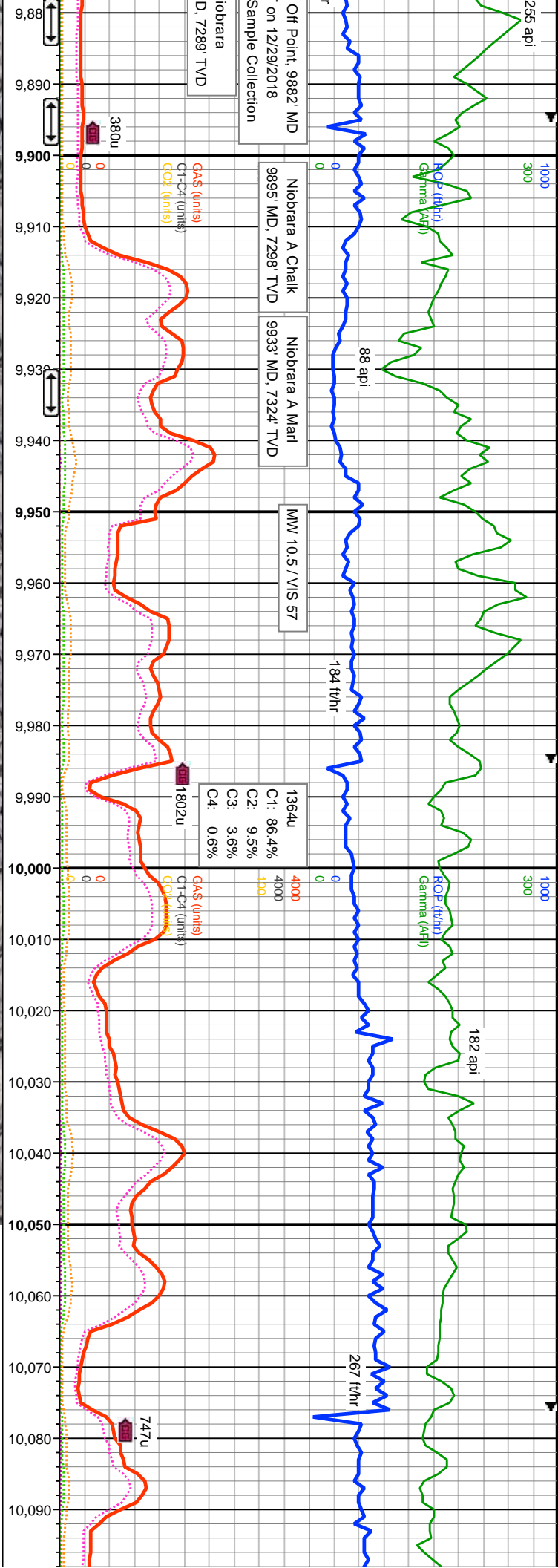


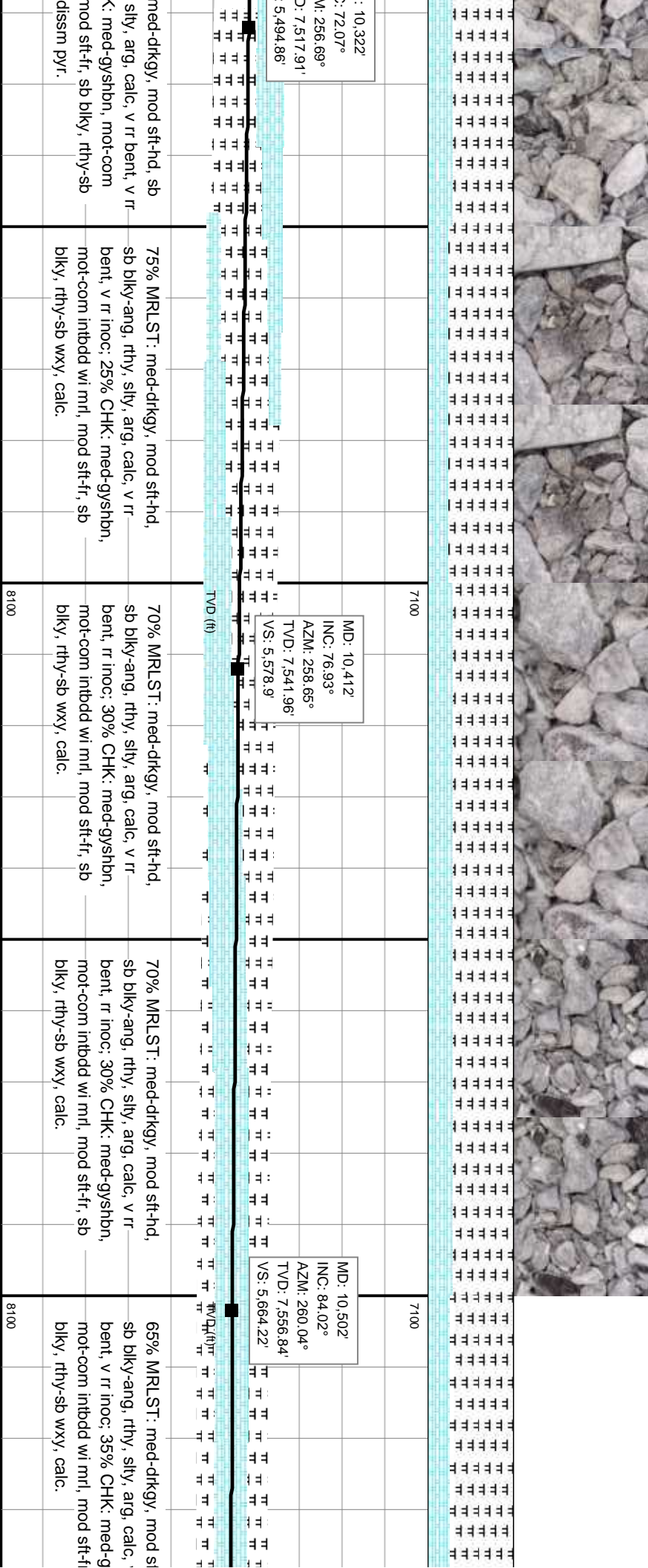
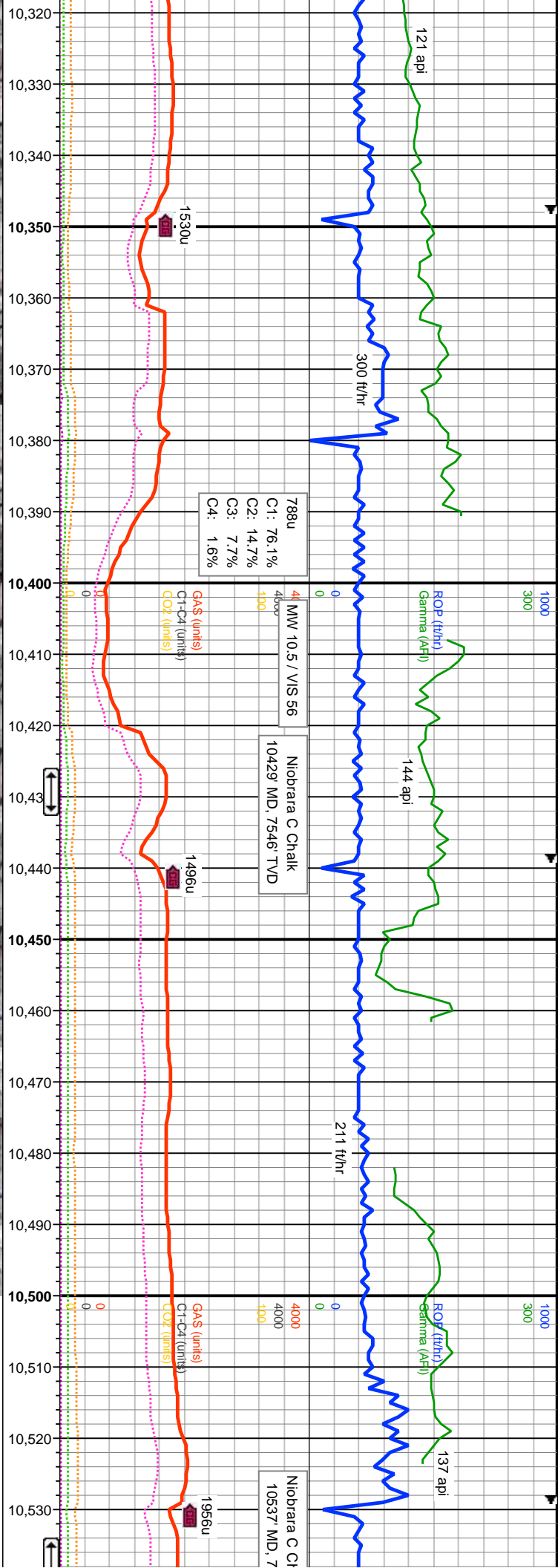


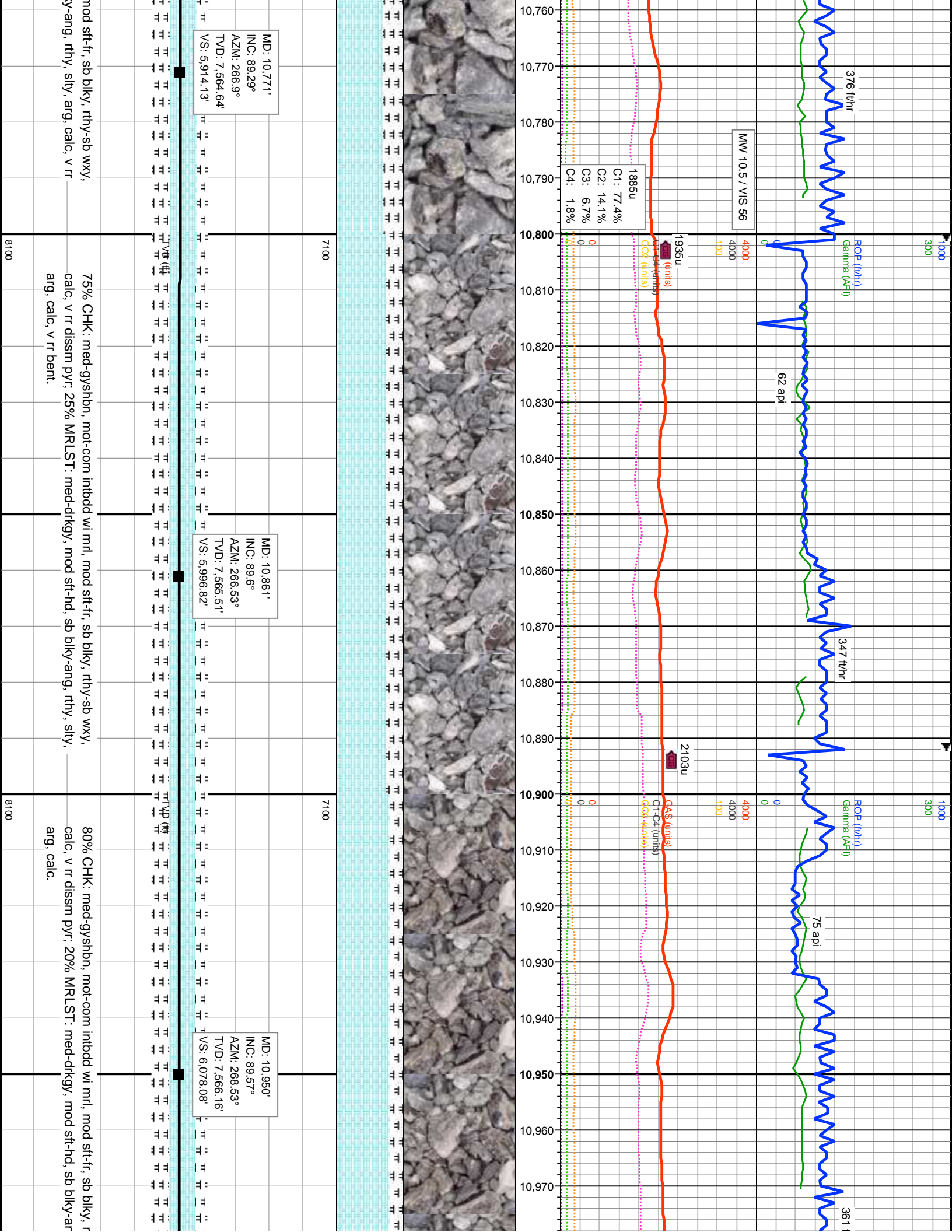


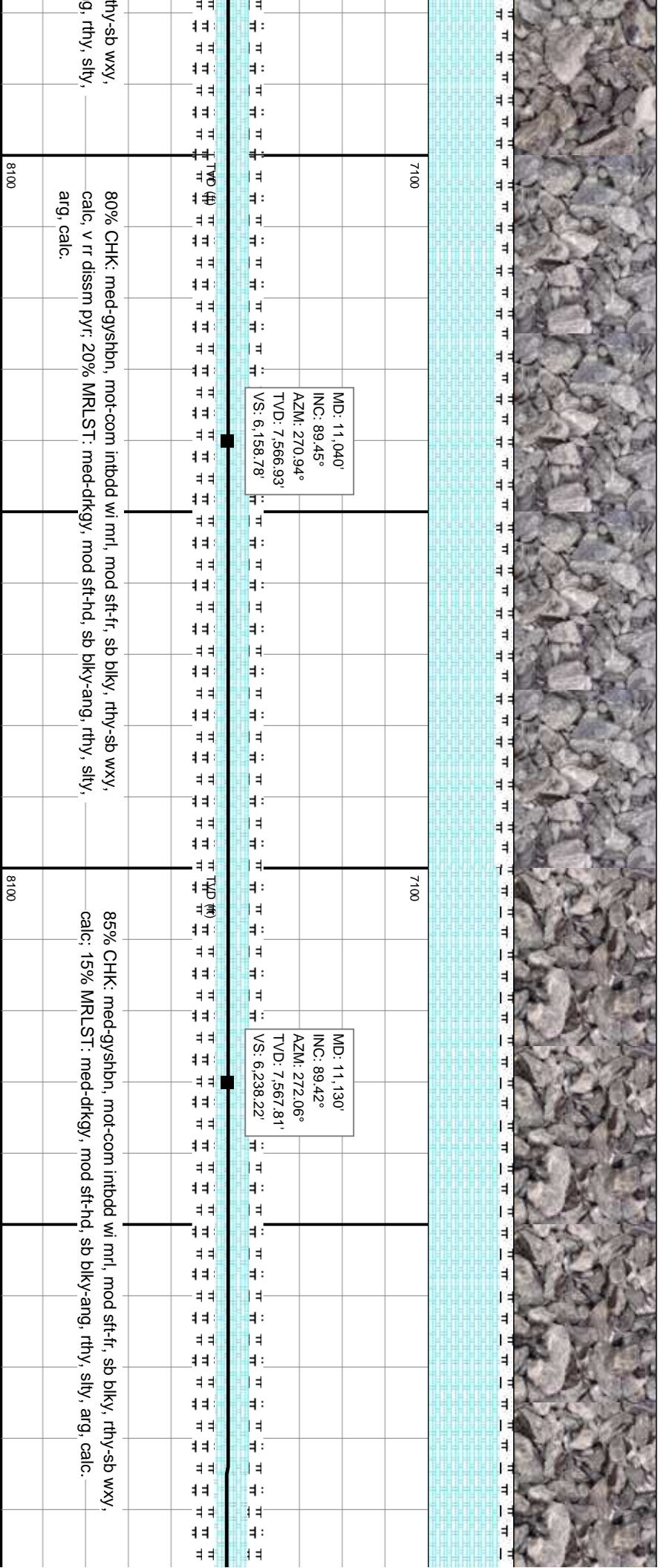
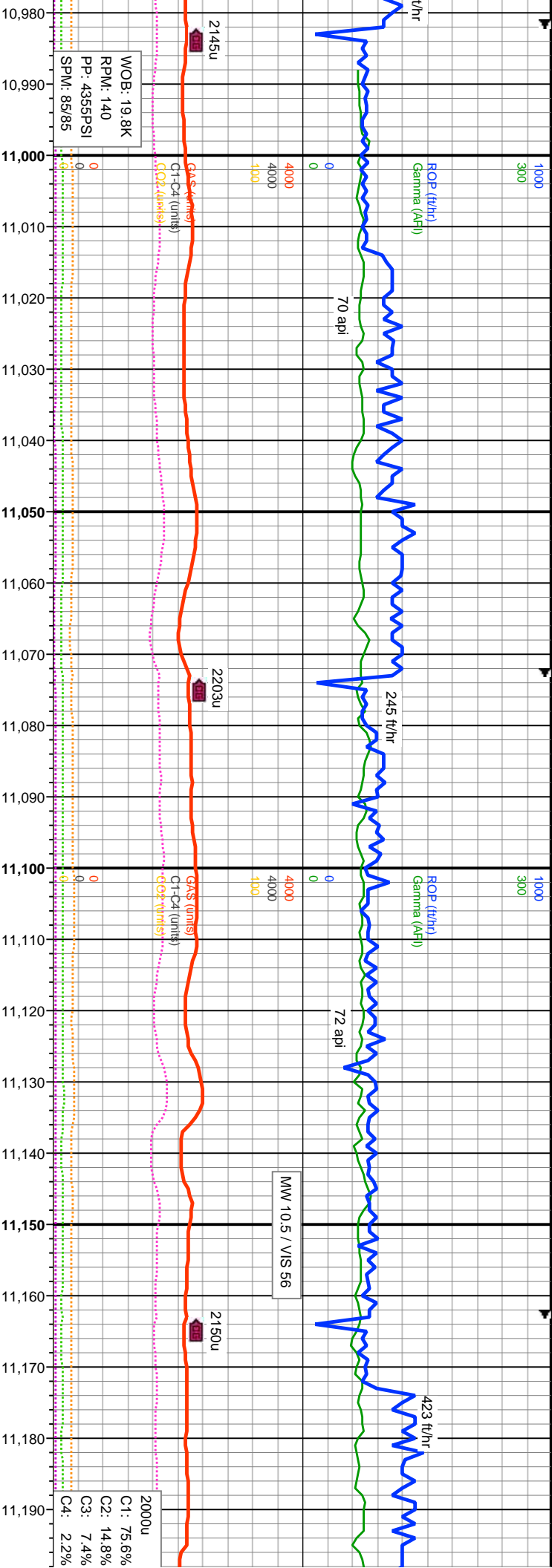


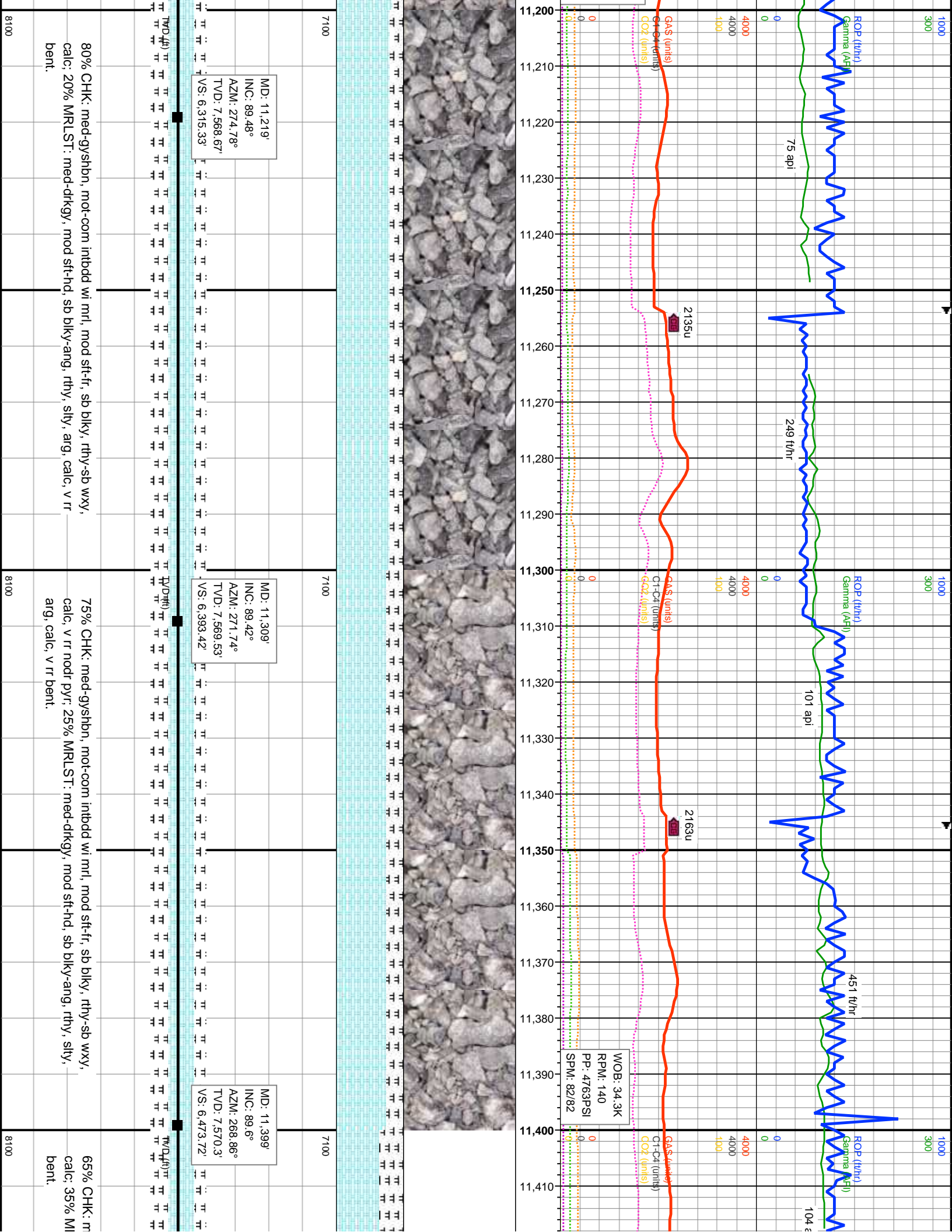


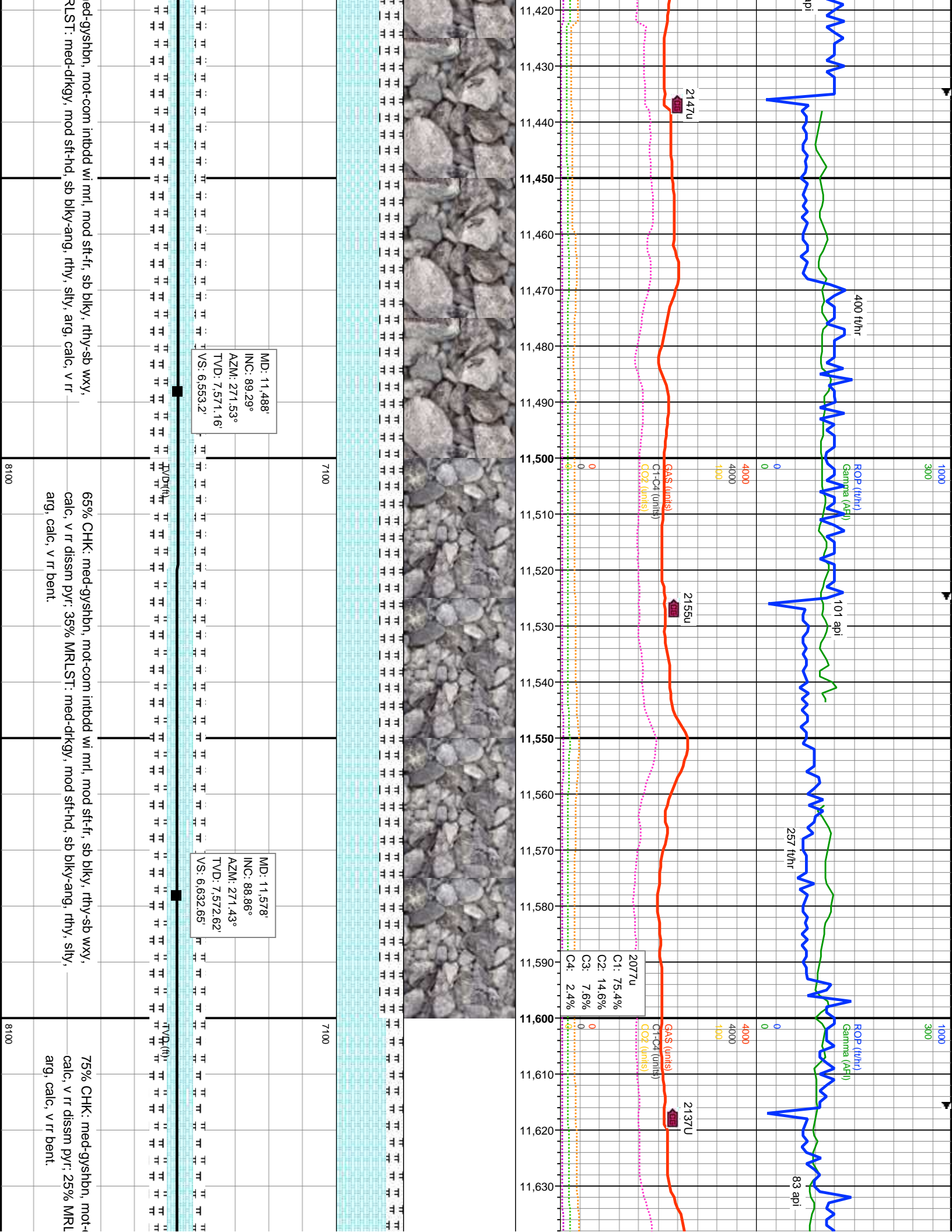


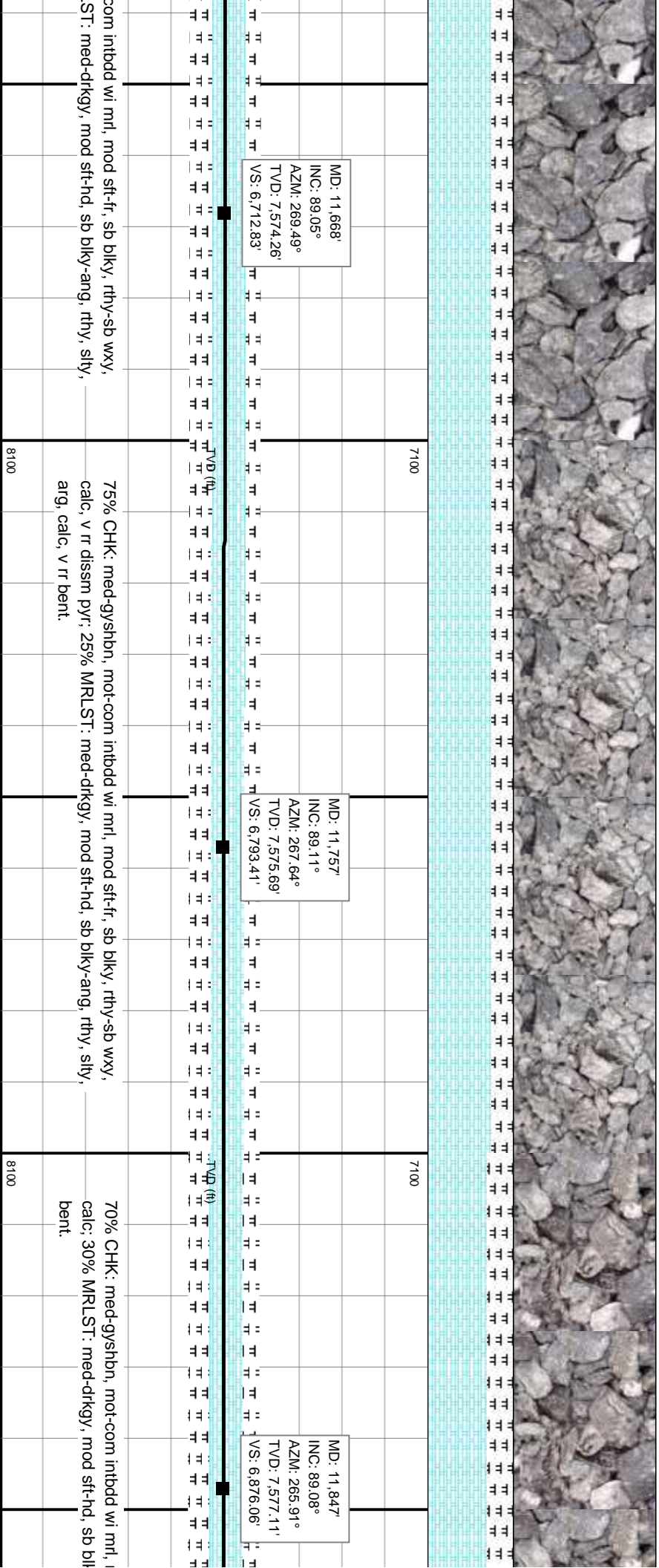
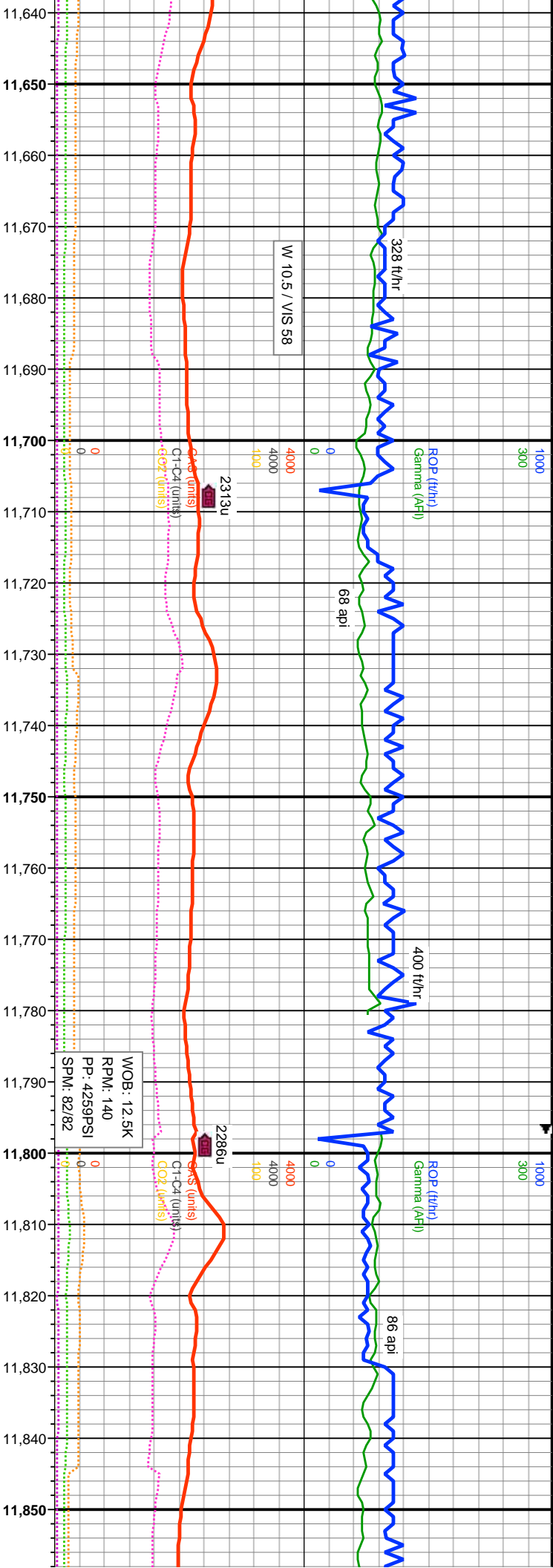


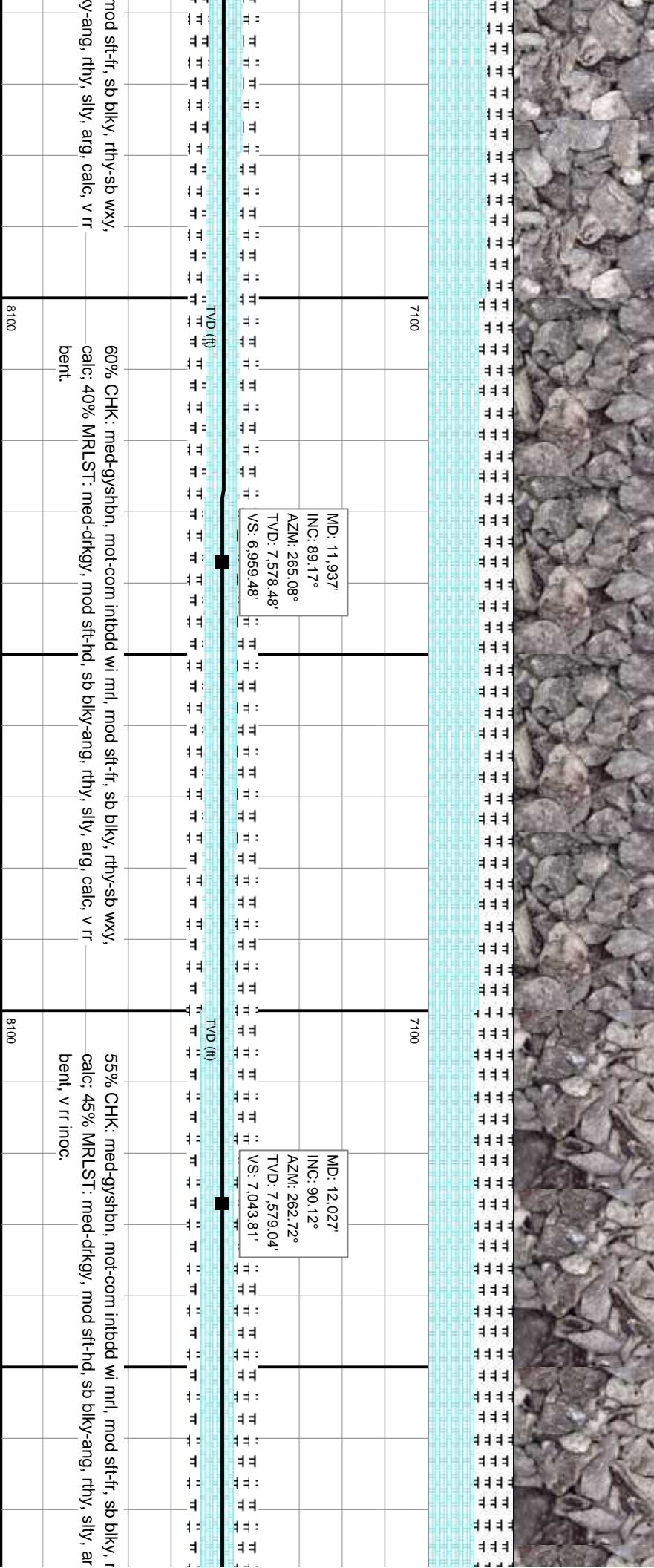
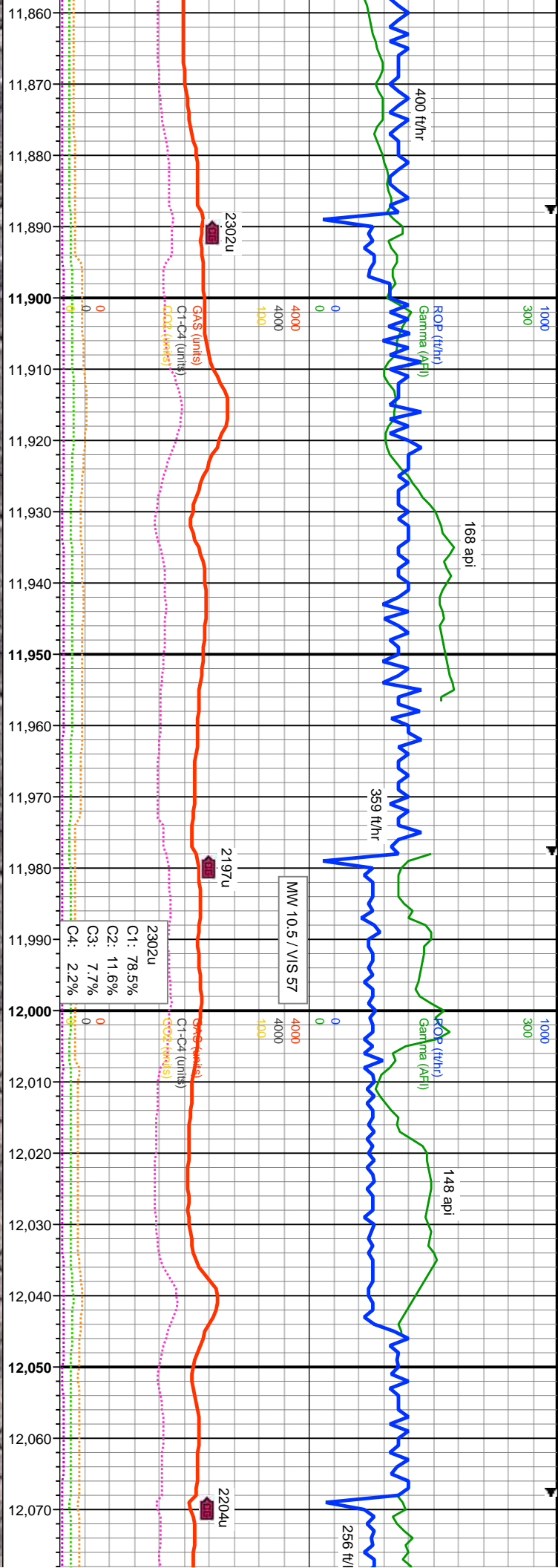


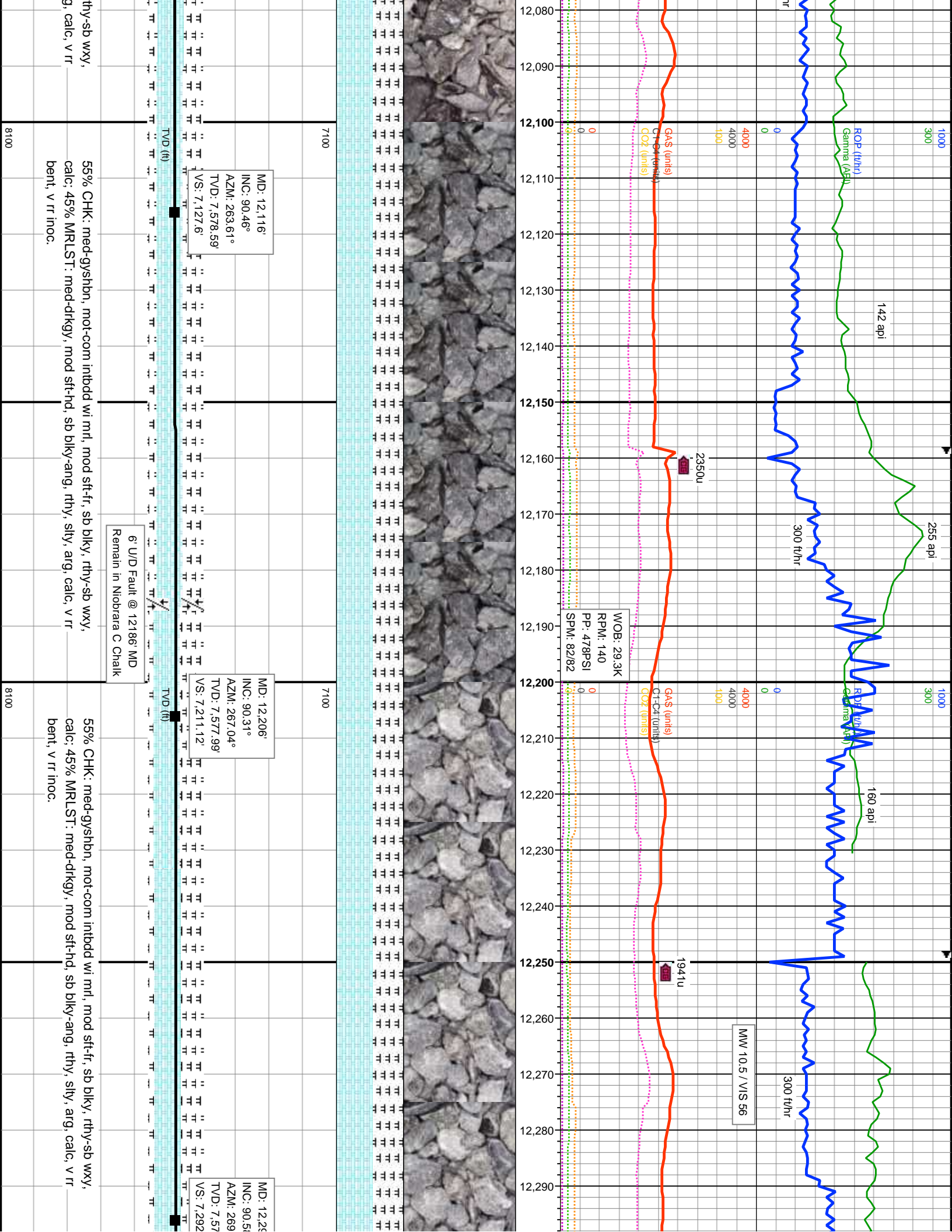


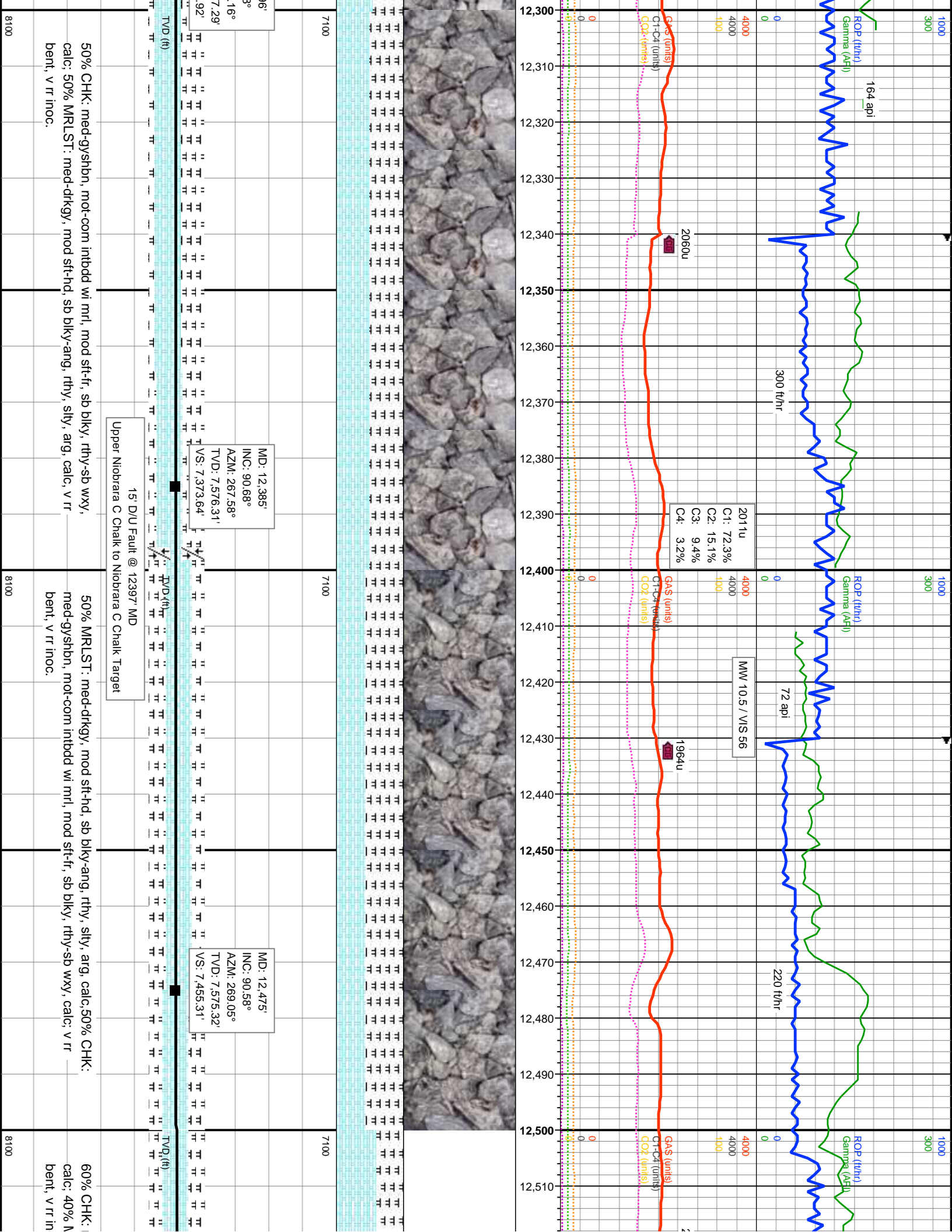


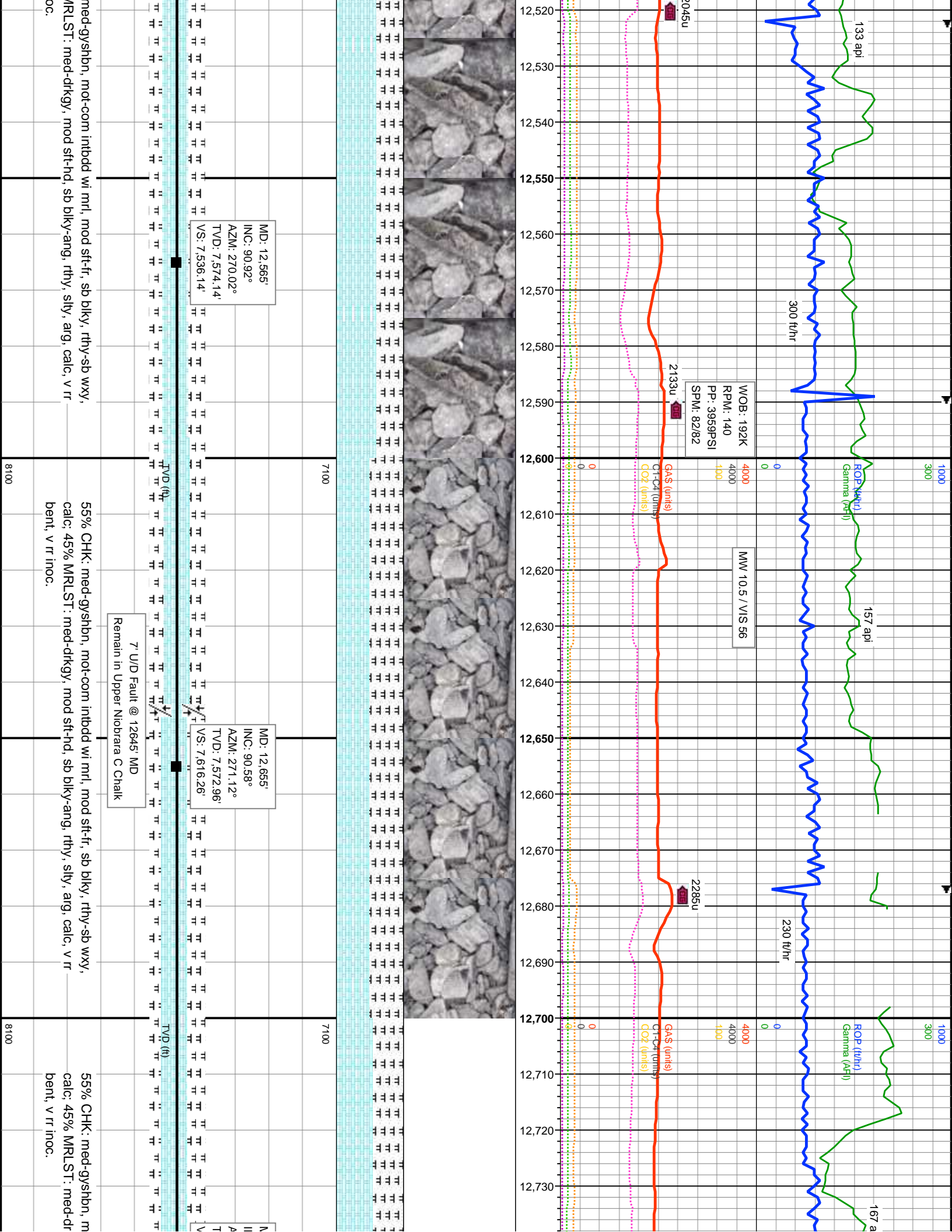


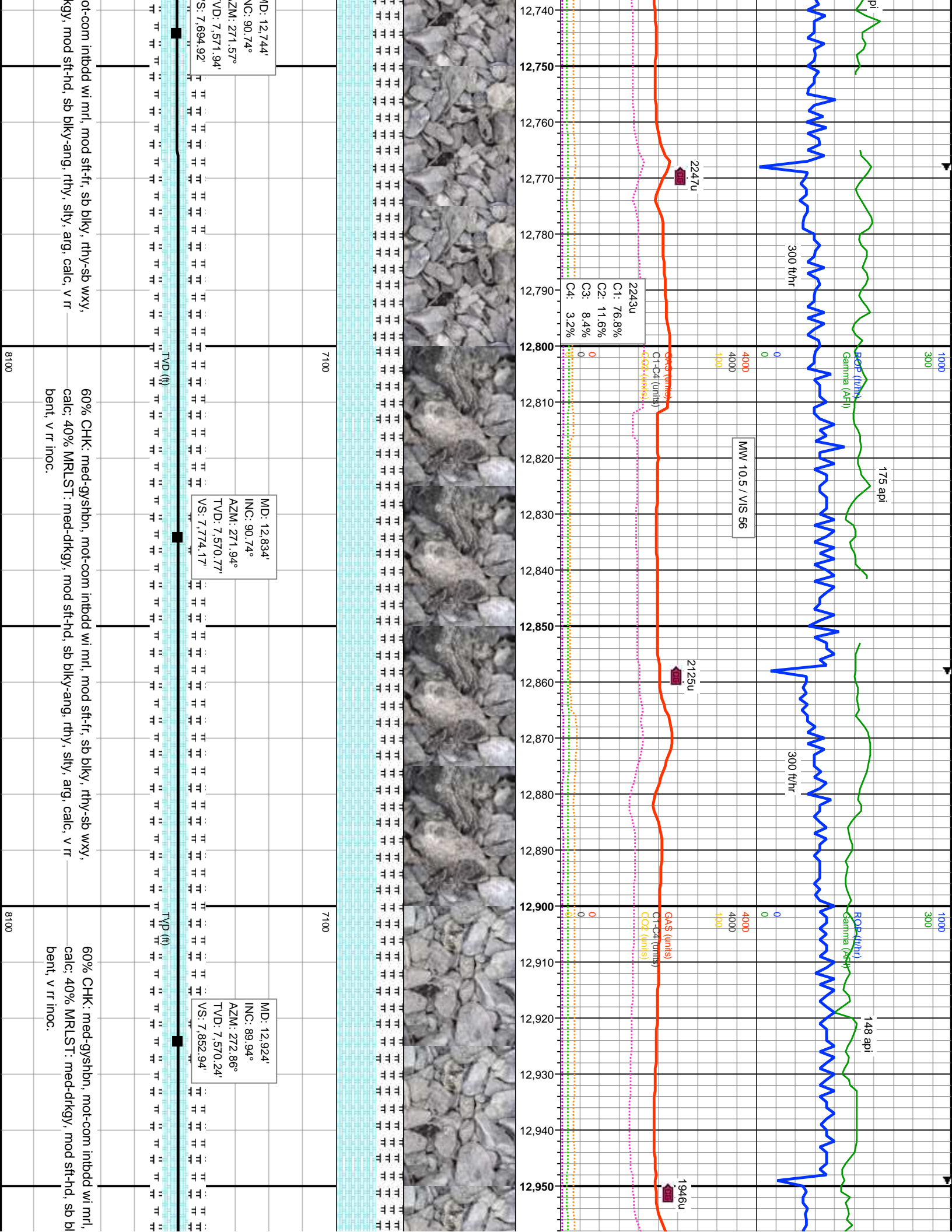


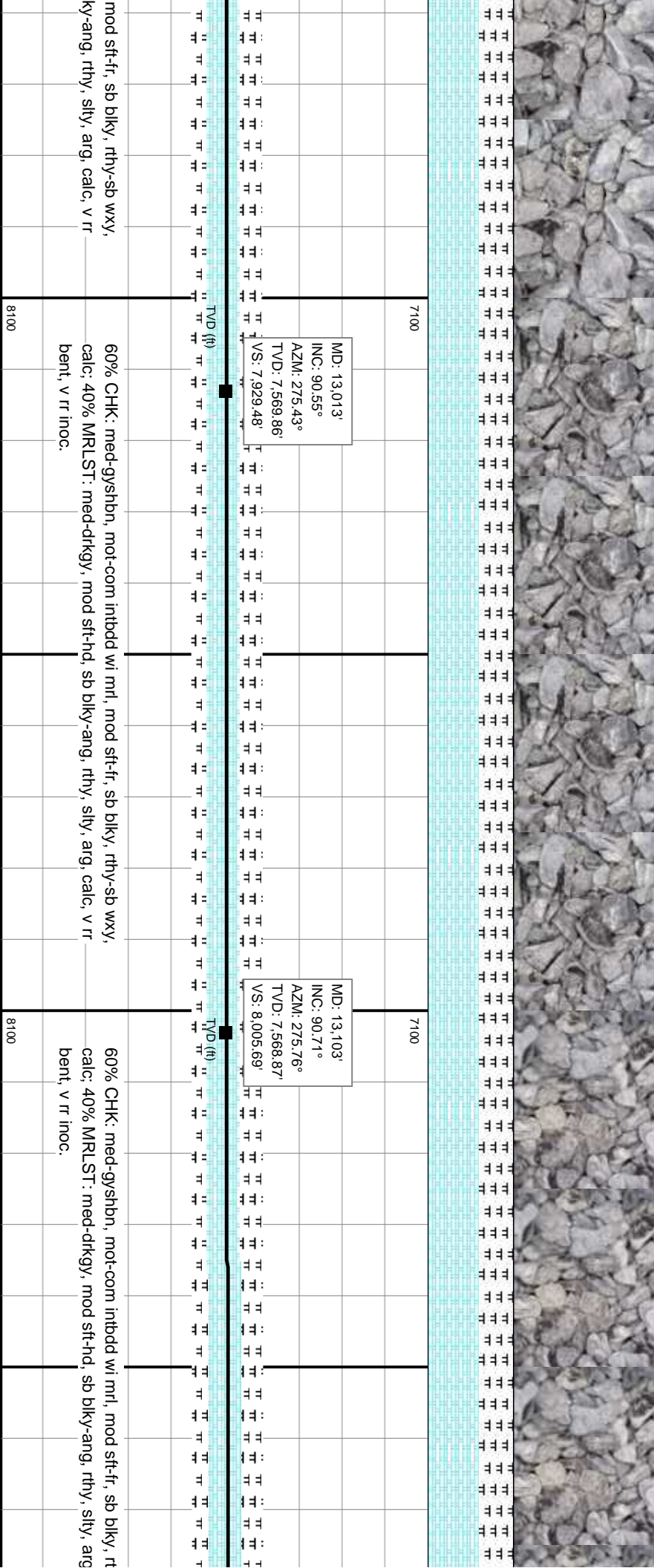
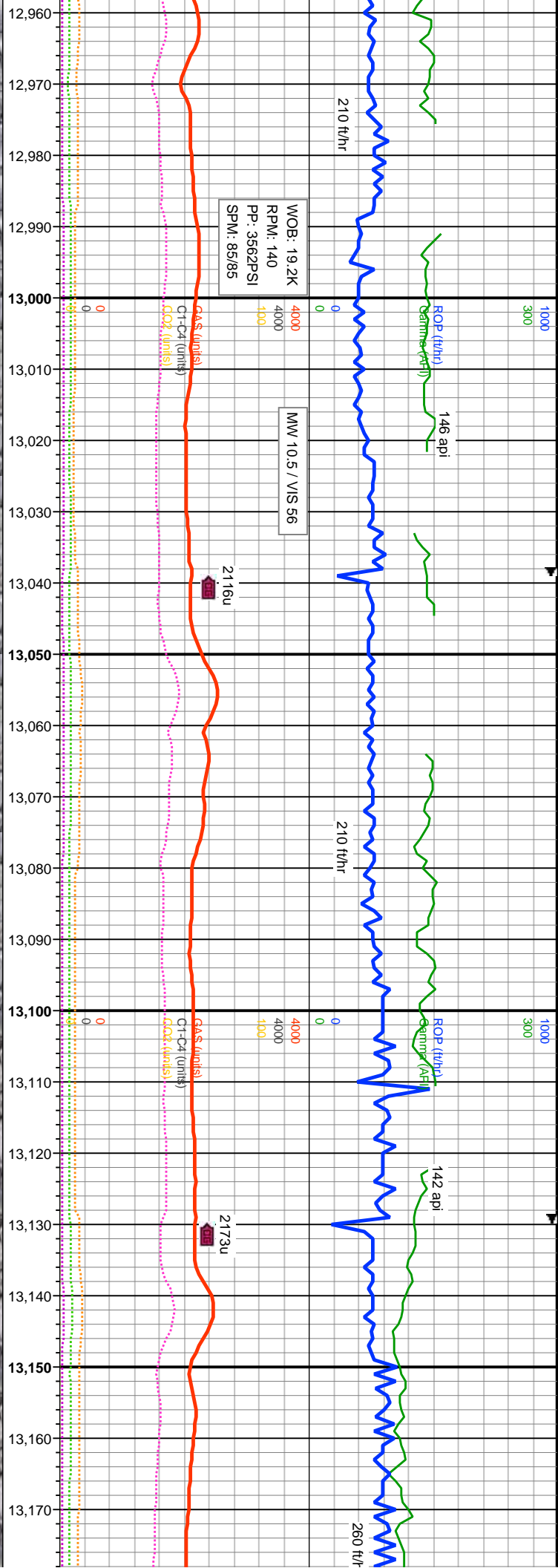


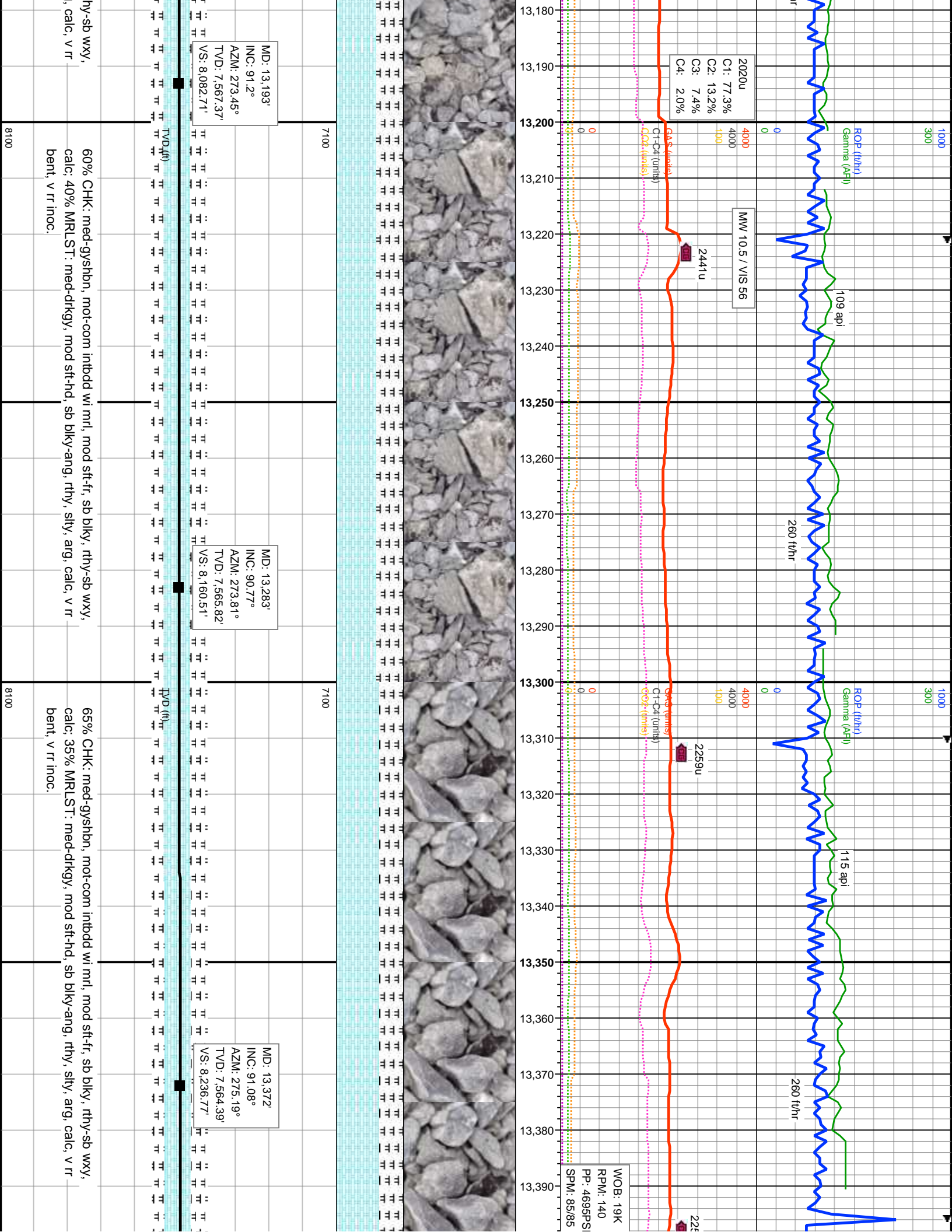


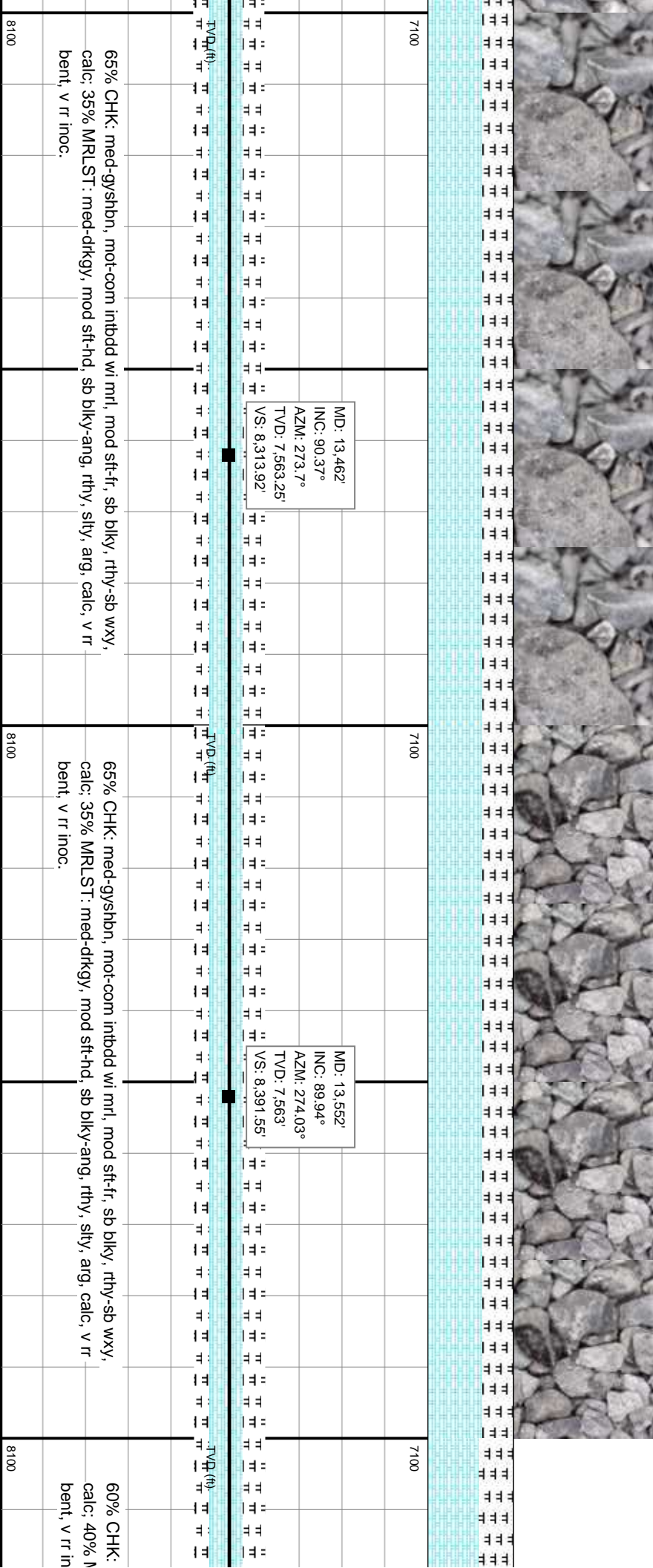
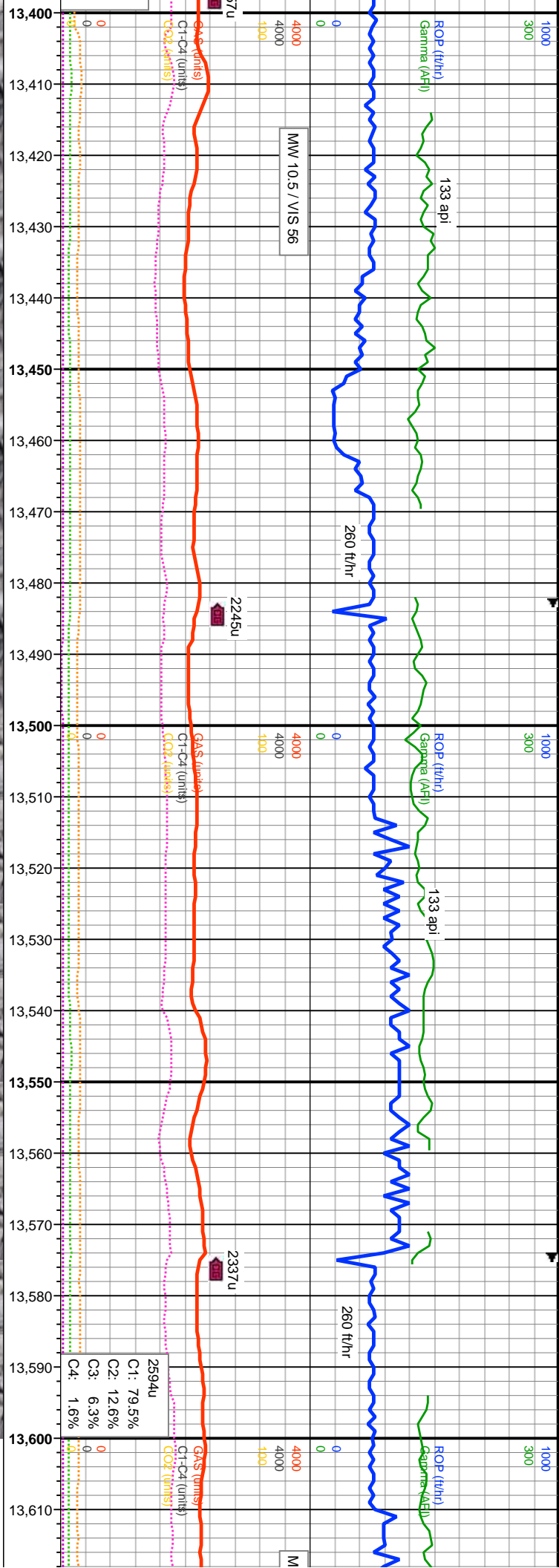


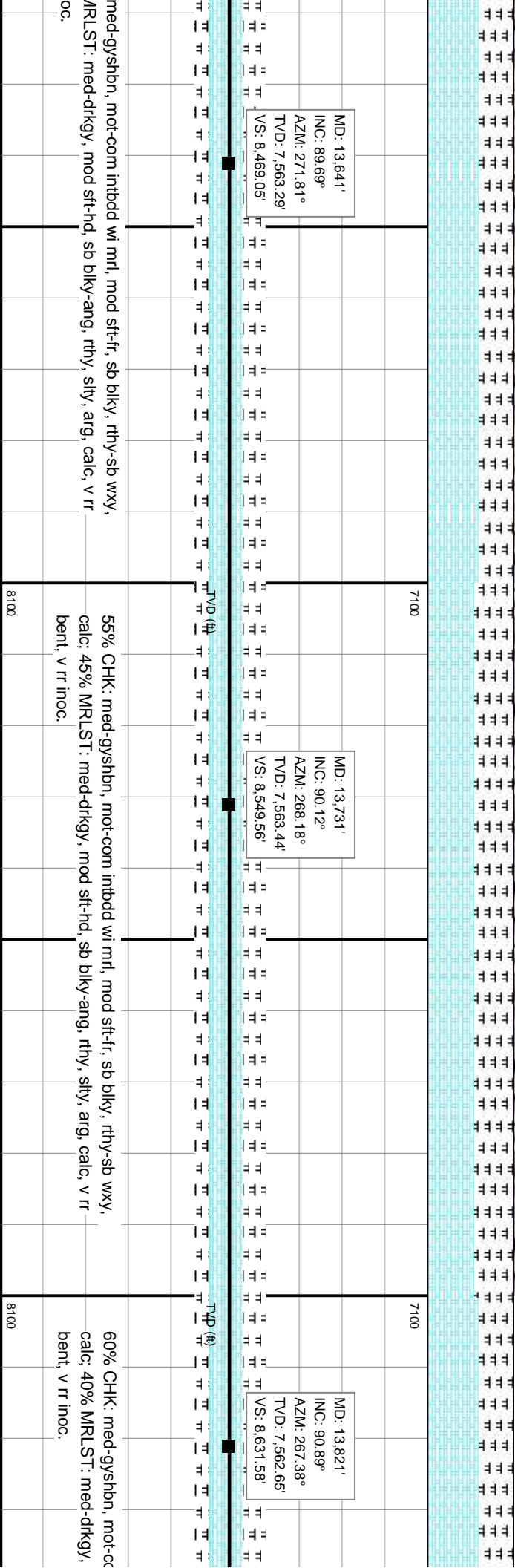
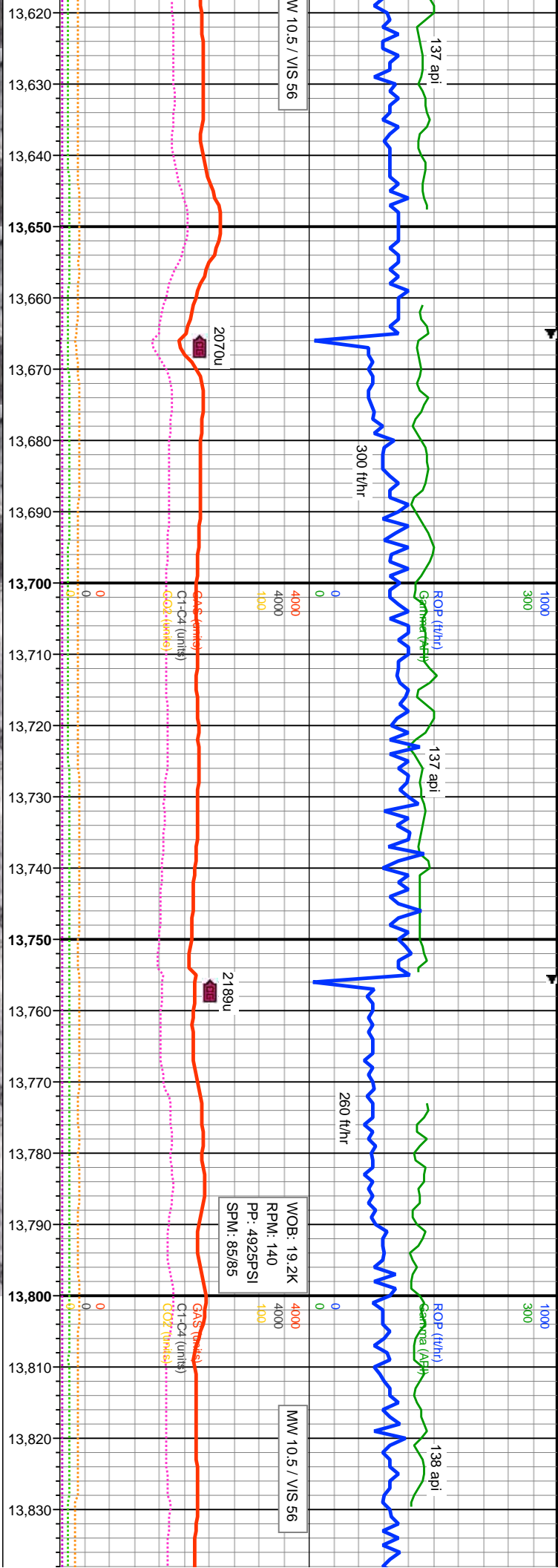


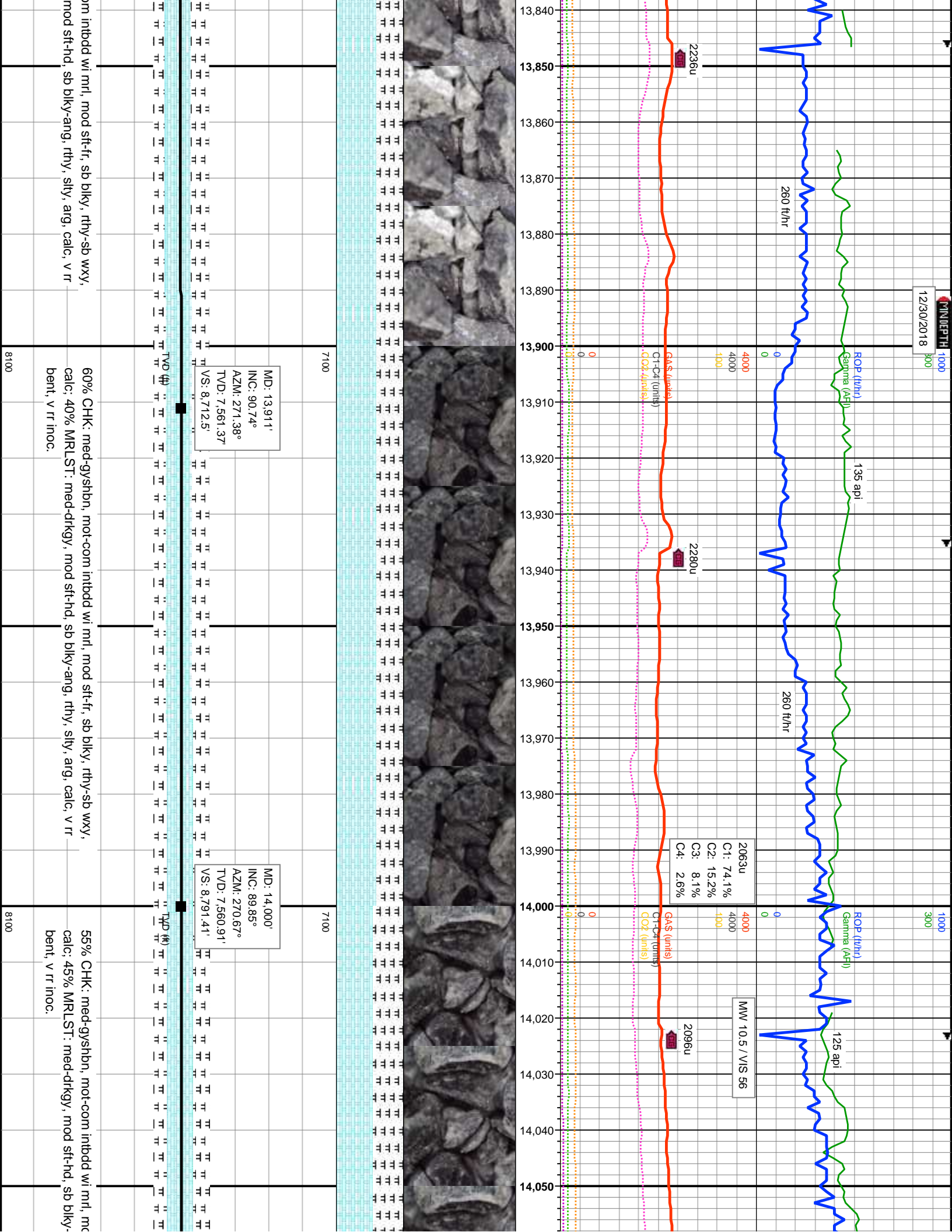


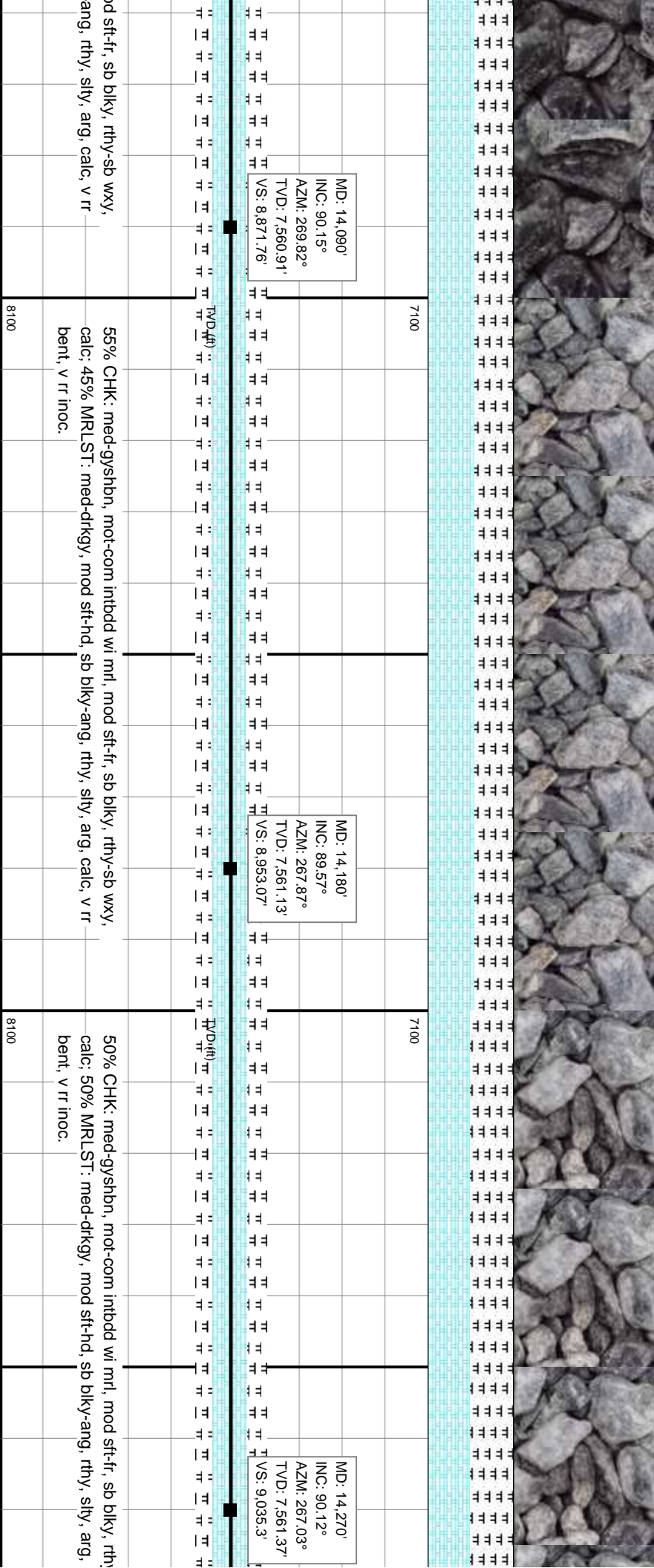
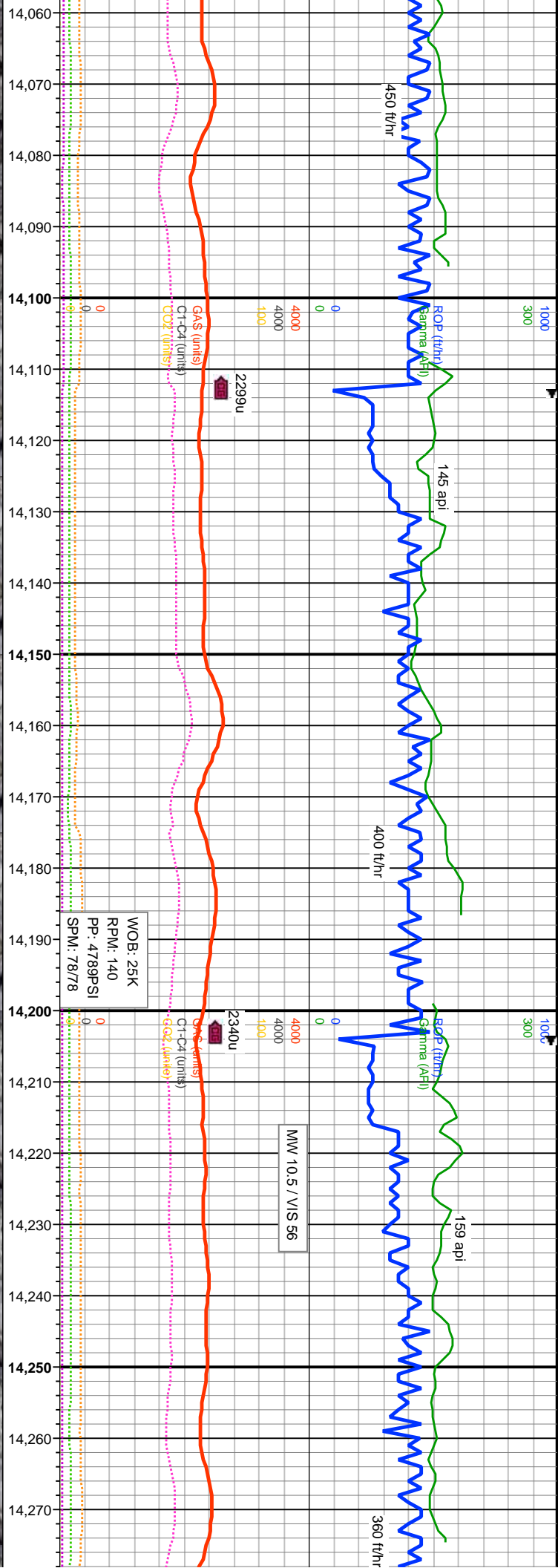


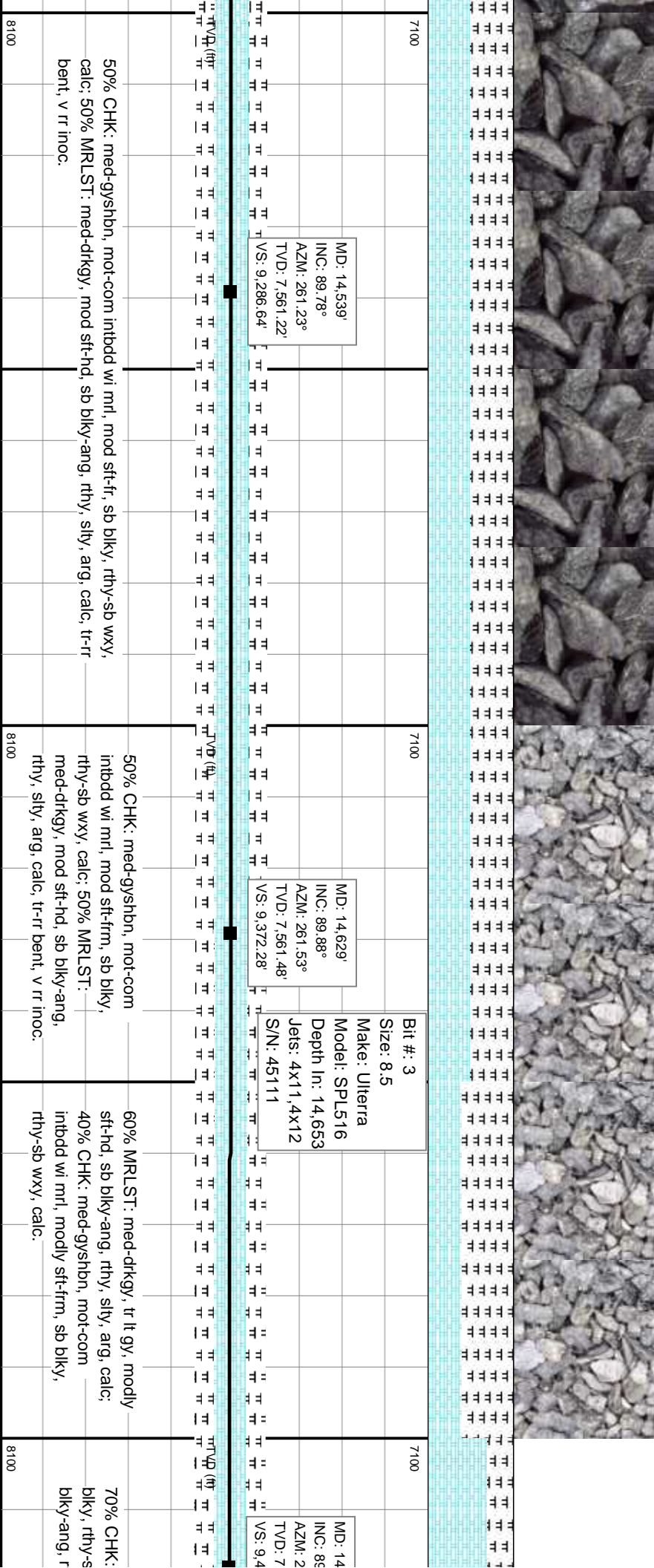
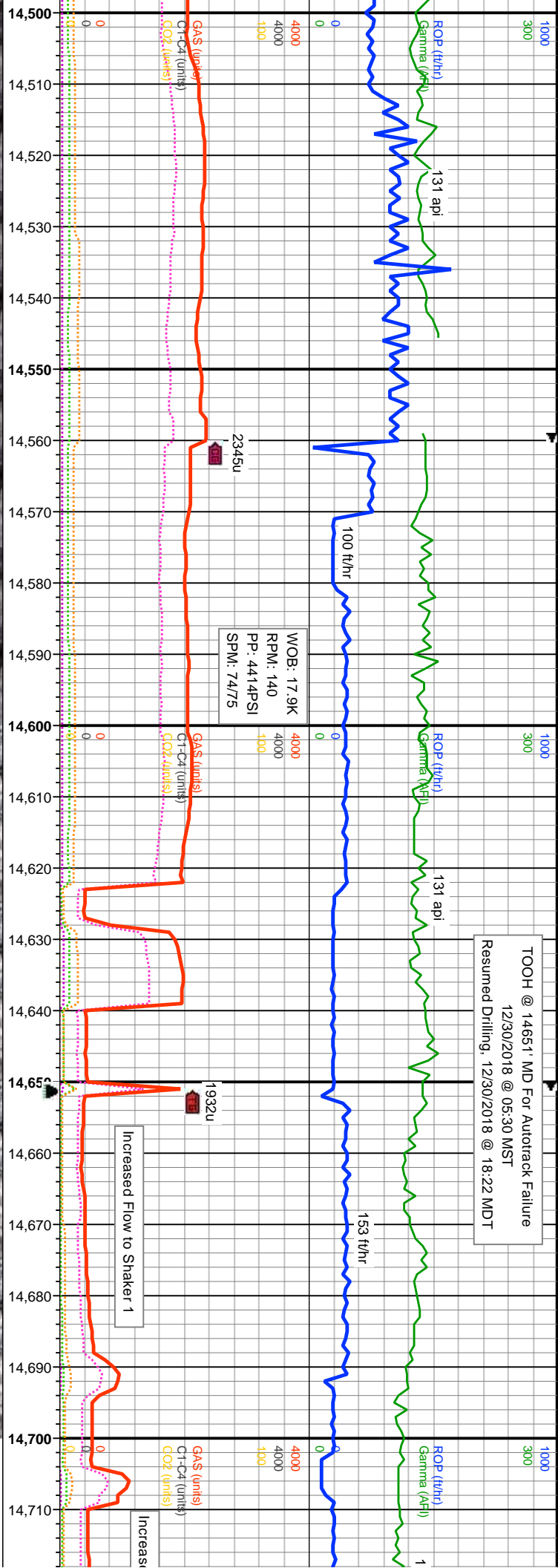


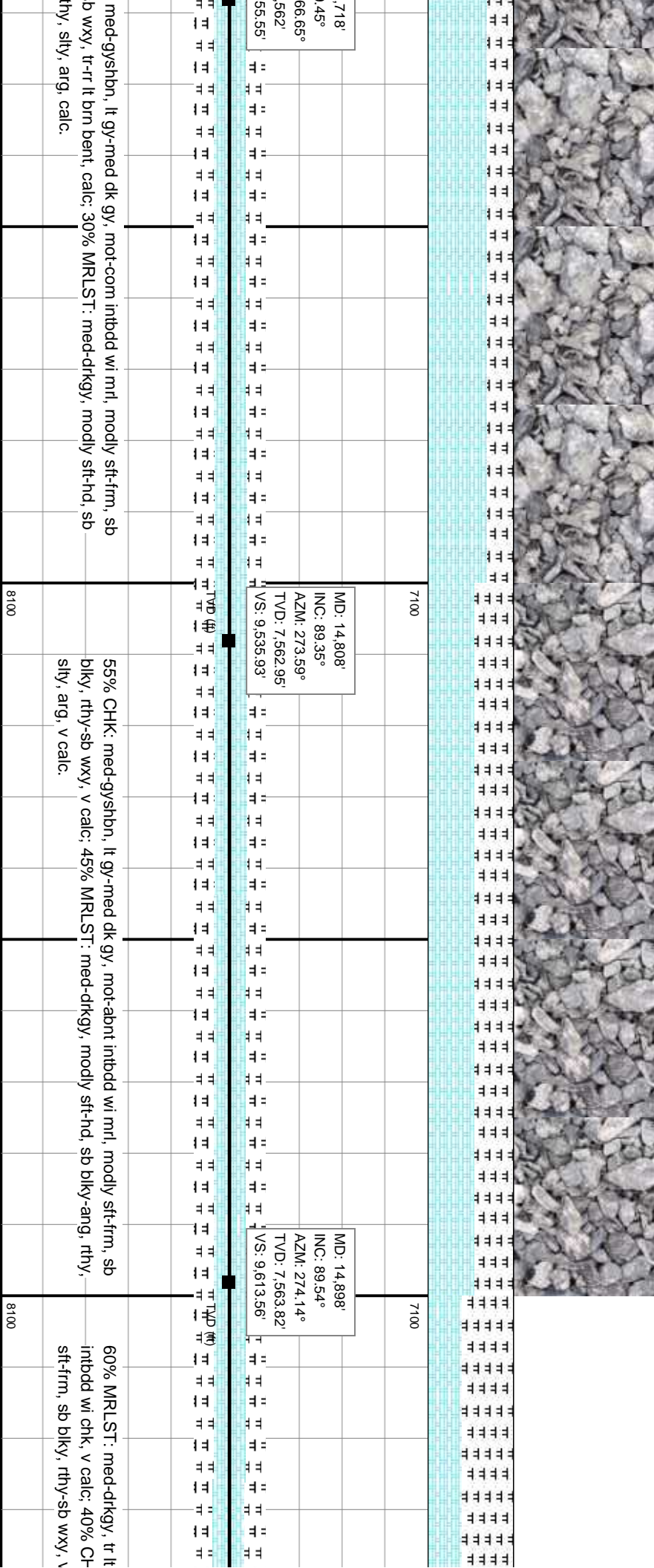
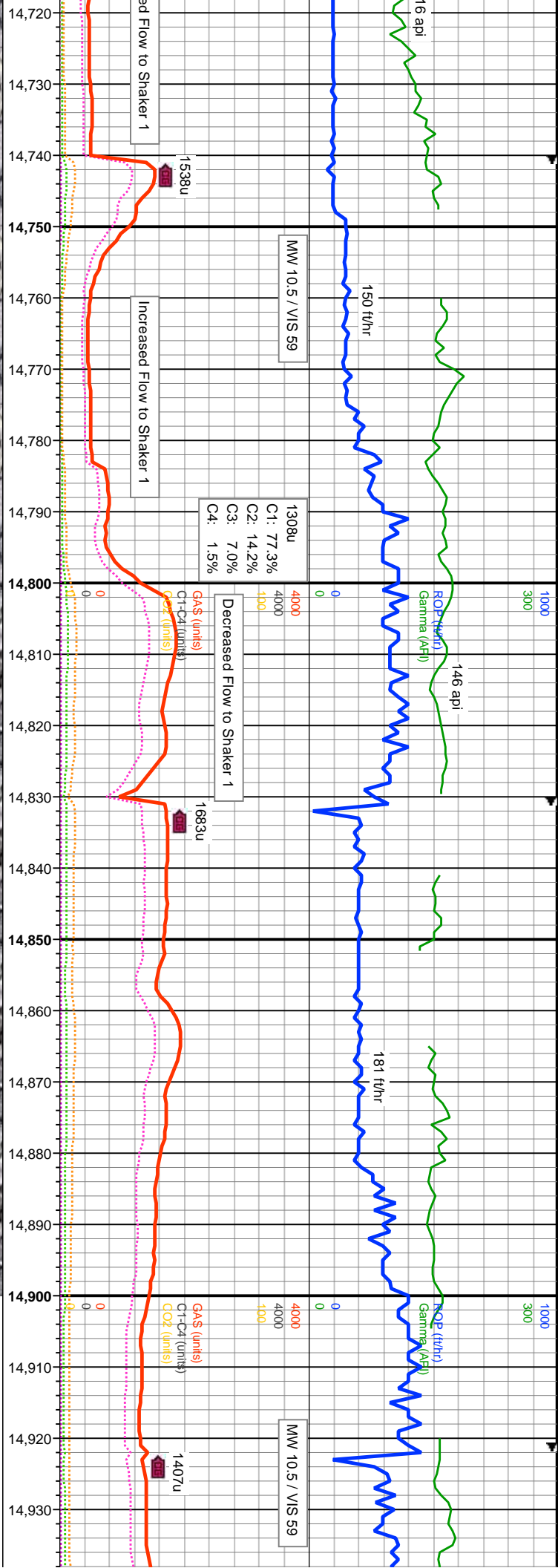


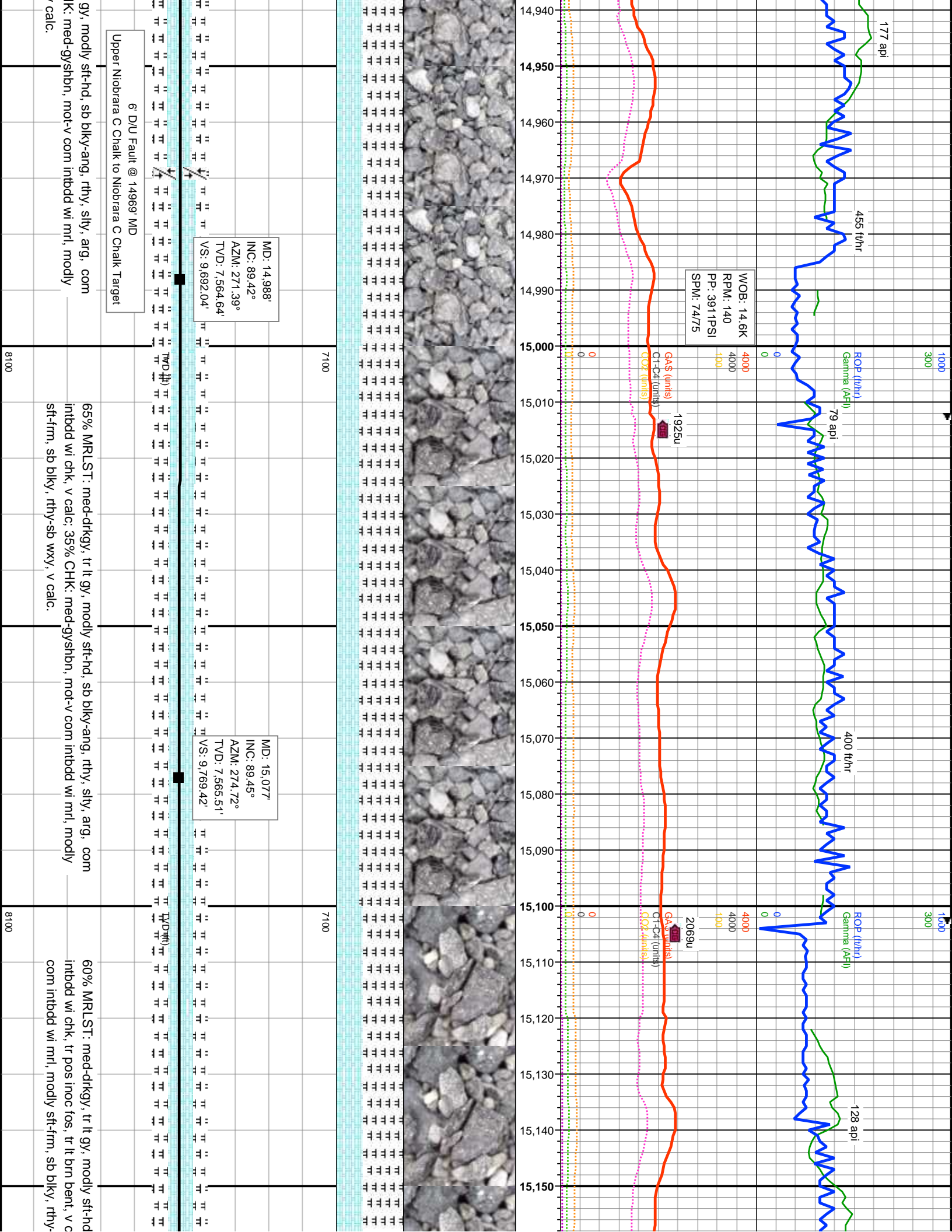


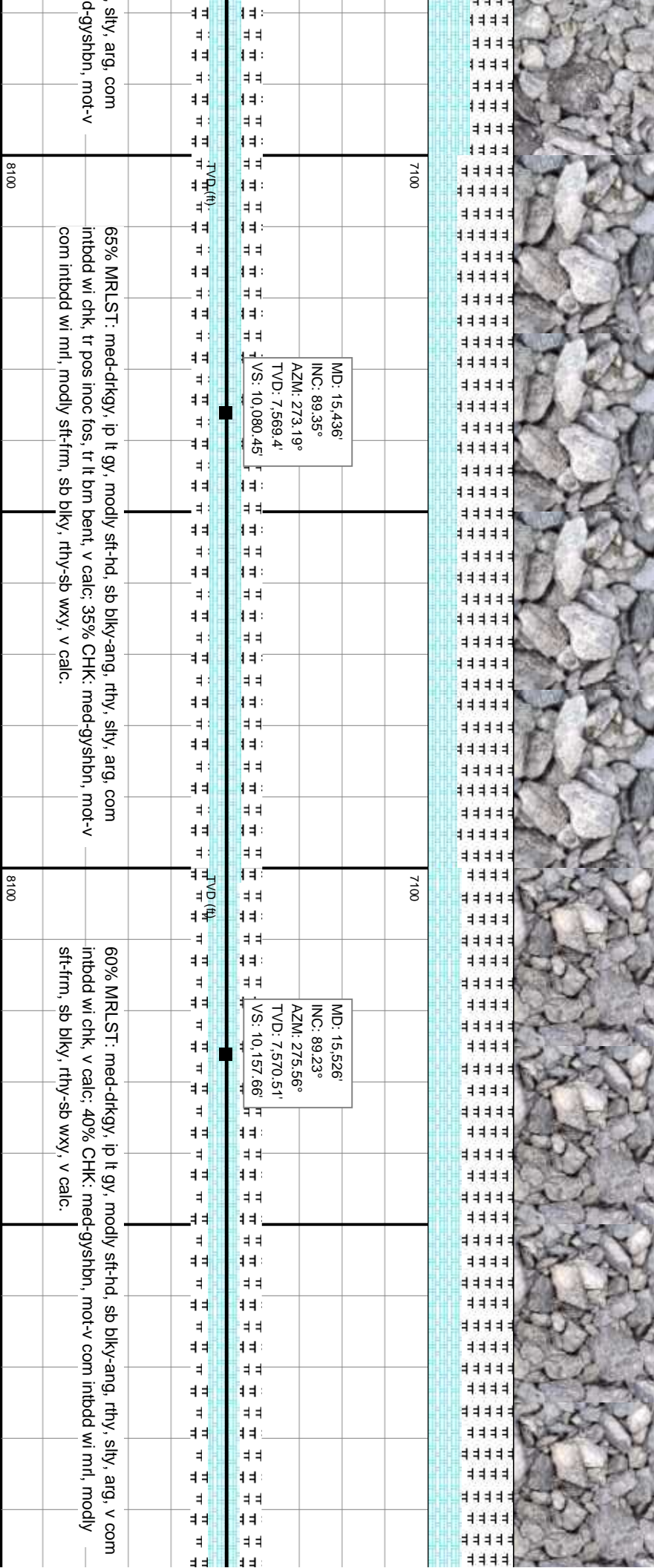
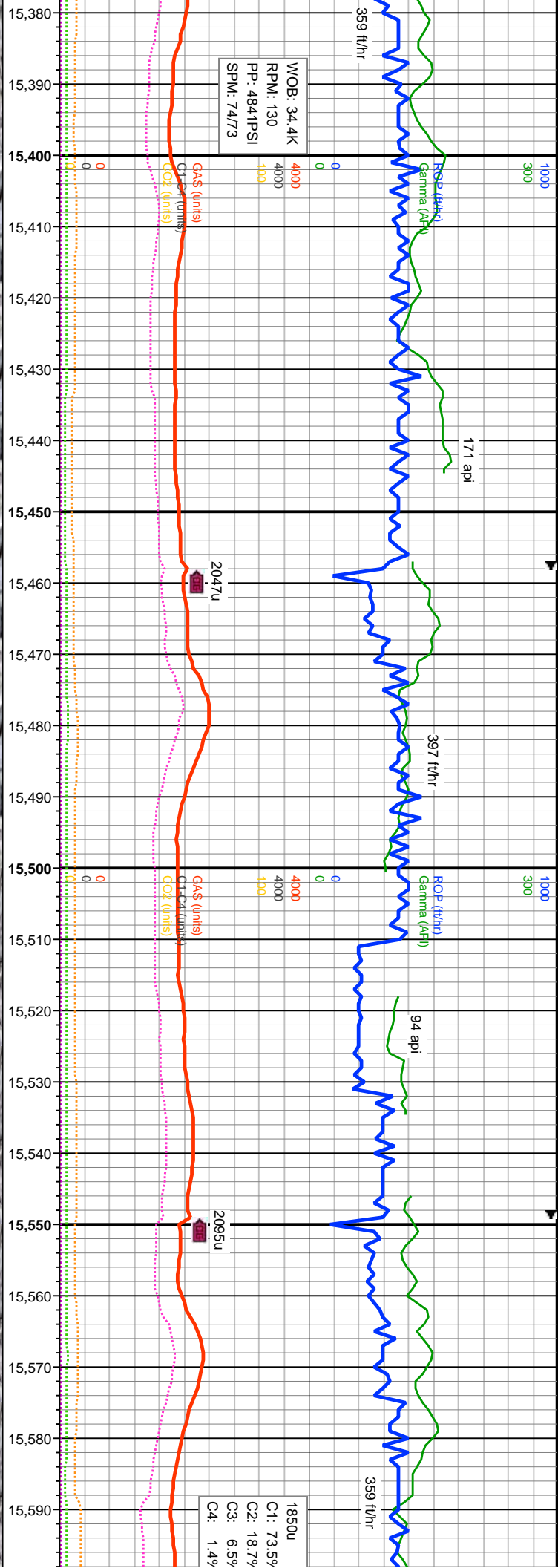


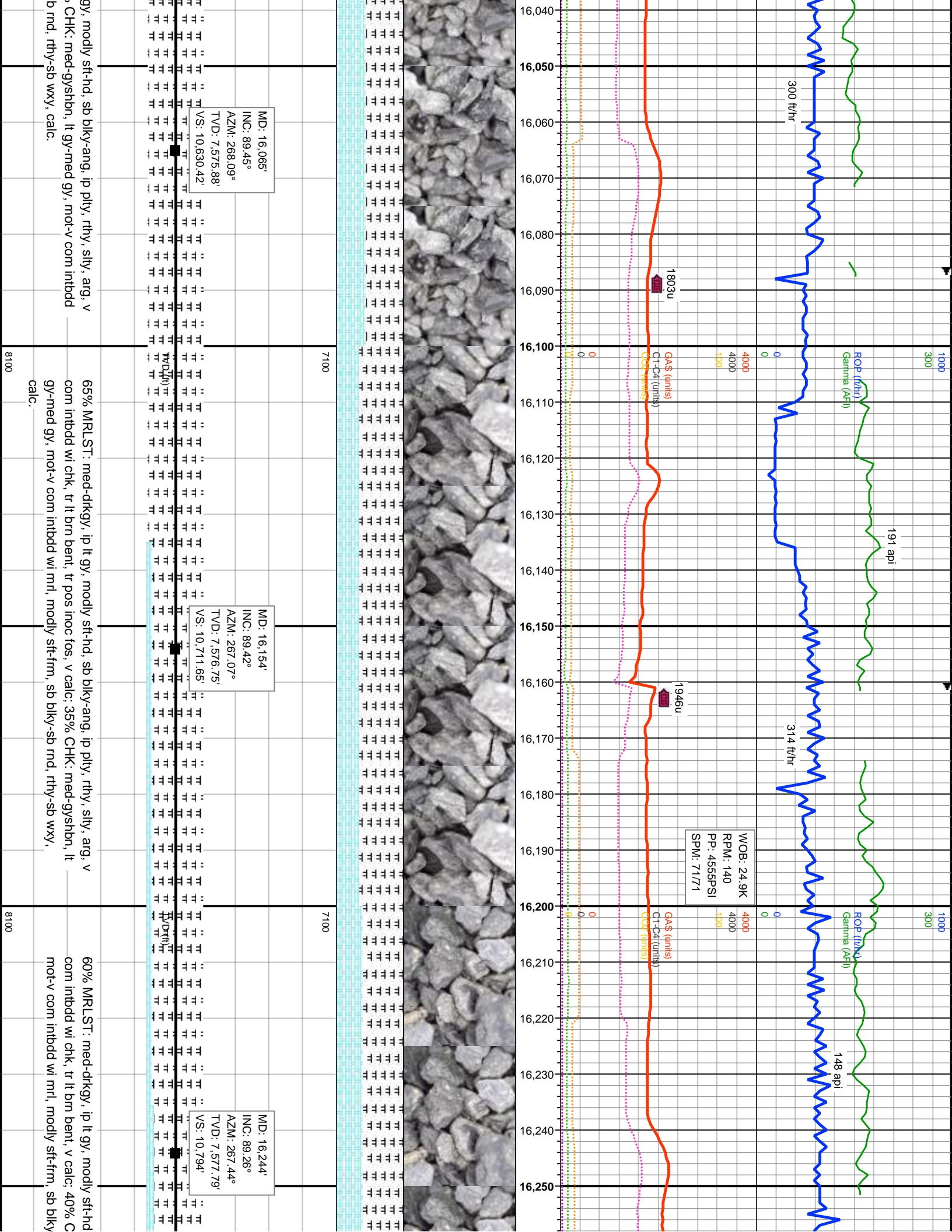


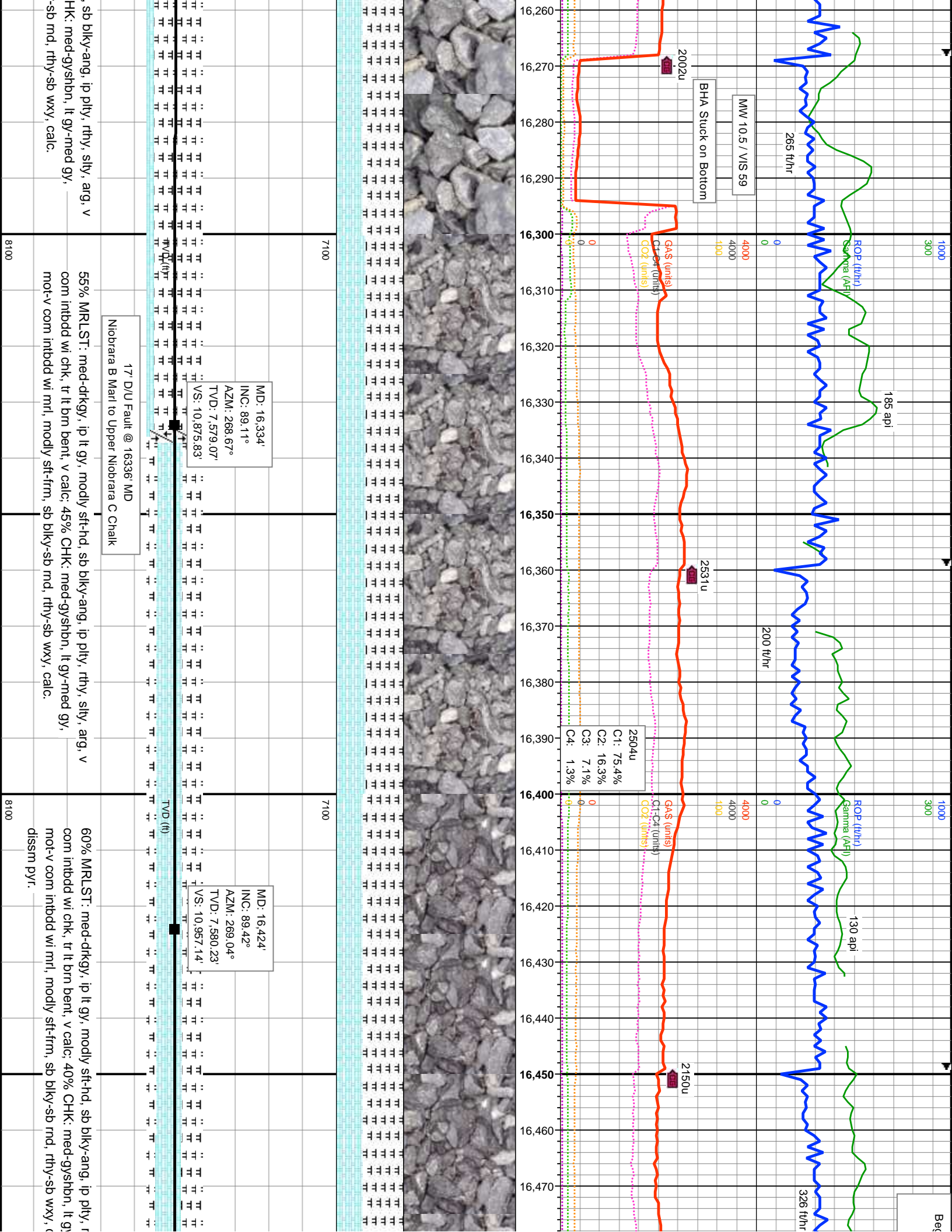




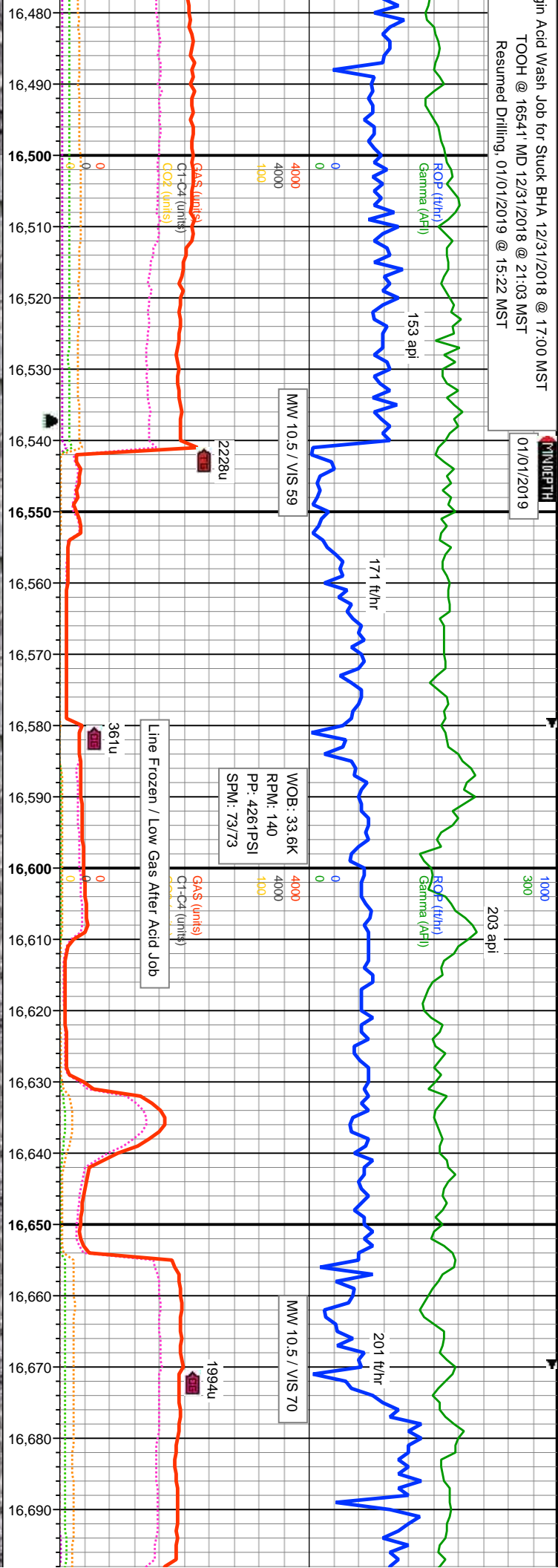








MINDEPTH
01/01/2019



7100		Bit #: 4 Size: 8.5 Make: Ulterra Model: SPL516 Depth In: 16,537 Jets: 4x11, 4x12 S/N: 45073		MD: 16,558' INC: 89.32° AZM: 268.61° TVD: 7,581.74' VS: 11,077.96'		7100		MD: 16,648' INC: 89.32° AZM: 268.69° TVD: 7,582.81' VS: 11,159.4'	
8100		60% MRLST: med-dkgy, ip lt gy, modly sft-hd, sb blk-y-ang, ip pty, rthy, slty, arg, v com intbdd wi chk, v calc; 30% CHK: med-gyshbn, lt gy-med gy, mot-v com intbdd wi mtl, modly sft-firm, sb blk-y-sb rnd, rthy-sb wxy, calc; 10% BENT: crm, tn, lt brn-brn, modly frm, flb-wxy-sb pty, non-calc, lt orng flr.		8100		60% MRLST: med-dkgy, ip lt gy, modly sft-hd, sb blk-y-ang, ip pty, rthy, slty, arg, v com intbdd wi chk, v calc; 25% CHK: med-gyshbn, lt gy-med gy, mot-v com intbdd wi mtl, modly sft-firm, sb blk-y-sb rnd, rthy-sb wxy, calc; 15% BENT: crm, tn, lt brn-brn, lt gy, modly frm, sb ang-sb pty, ip wxy, ip flb, tr calc, lt orng-lt yel flr.		8100	

