



Scale: 5' / 100'
Measured Depth Log

Well Name Raindance FC 23-289HNX

Location SECTION 30, T6N, R67W

State COLORADO

Country UNITED STATES

API Number 05123515840000

Geographic Region DJ BASIN

County WELD

Rig Number PD 462

AFE # 20DC0375

Field WATTENBERG

Ground Elevation 4788'

K.B. Elevation 4808'

Logged Interval 6000' To 20590'

Total Depth 20590' MD

Formation NIOBRARA A CHALK

Type of Drilling Fluid OIL BASED MUD

Operator

Company Great Western Operating Company, LLC

Address 1001 17th Street, Suite 2000
Denver, CO 80202



Geologist

Name TODD NAKATA, GERARDO CARPINTERO

Company TERRA GUIDANCE, LLC

Address 67 W FLOYD AVE
STE 105
ENGLEWOOD, CO 80110

Other

MUDLOG START DATE 10/15/2021

MUDLOG END DATE 10/26/2021

Rock Types



LIMESTONE



Marl



Shaly Siltstone



Chalk



Silty Shale



BENTONITE

Accessories

Stringer



BENTONITE STRINGER

Other Symbols

Engineering



CONNECTION (RIGHT)



CONNECTION GAS



FAULT



MIN DEPTH

Onsite Geological Services provided by
Terra **Guidance**

Loggers on Location: 10/15/2021

Logging Depth Reached:

23:18 MT, 10/15/2021

Bloodhound Unit: #5951

Sample Collection/Description Interval:

Curve 50'

Tangent/Lateral 100'

Drilling Data

ROP

GAMMA

Total Gas & Chromatograph

GAS

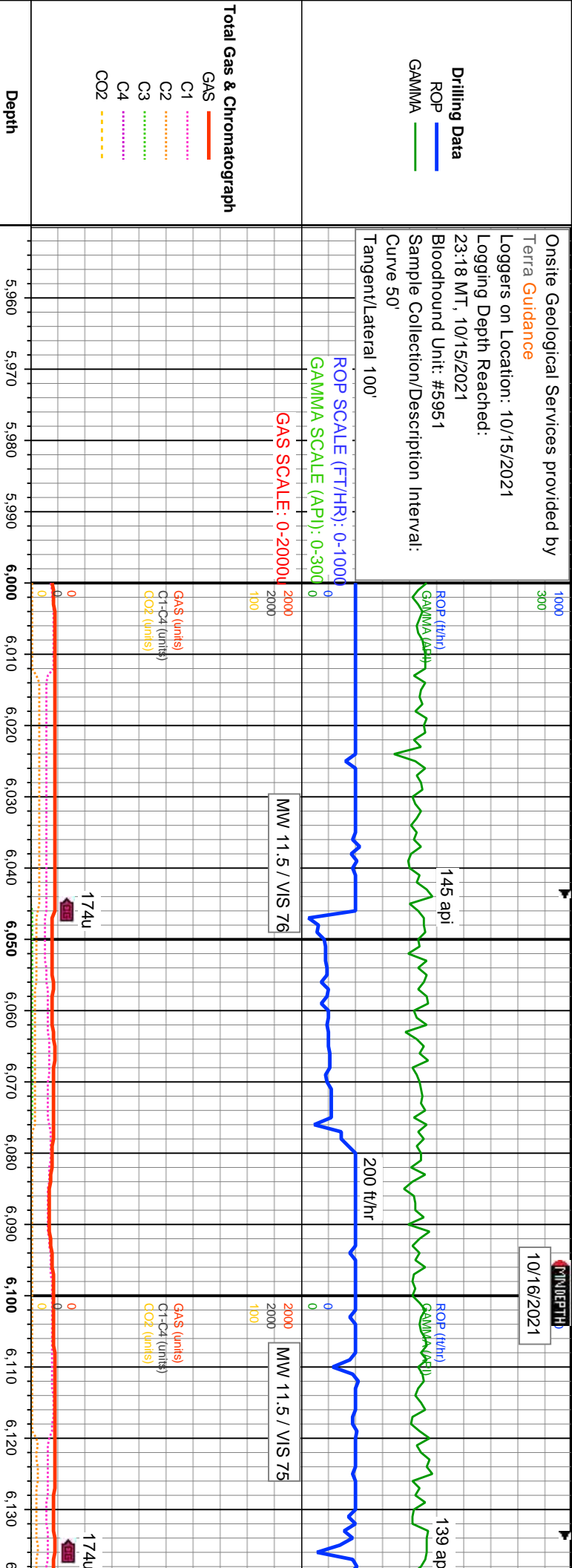
C1

C2

C3

C4

CO2



10/16/2021

10/16/2021

Images



% Lithology

TVD SCALE: 5500' - 8500'

MD: 6.077'
INC: 32.18°
AZM: 26.02°
TVD: 5.636.22'
VS: -407.82'

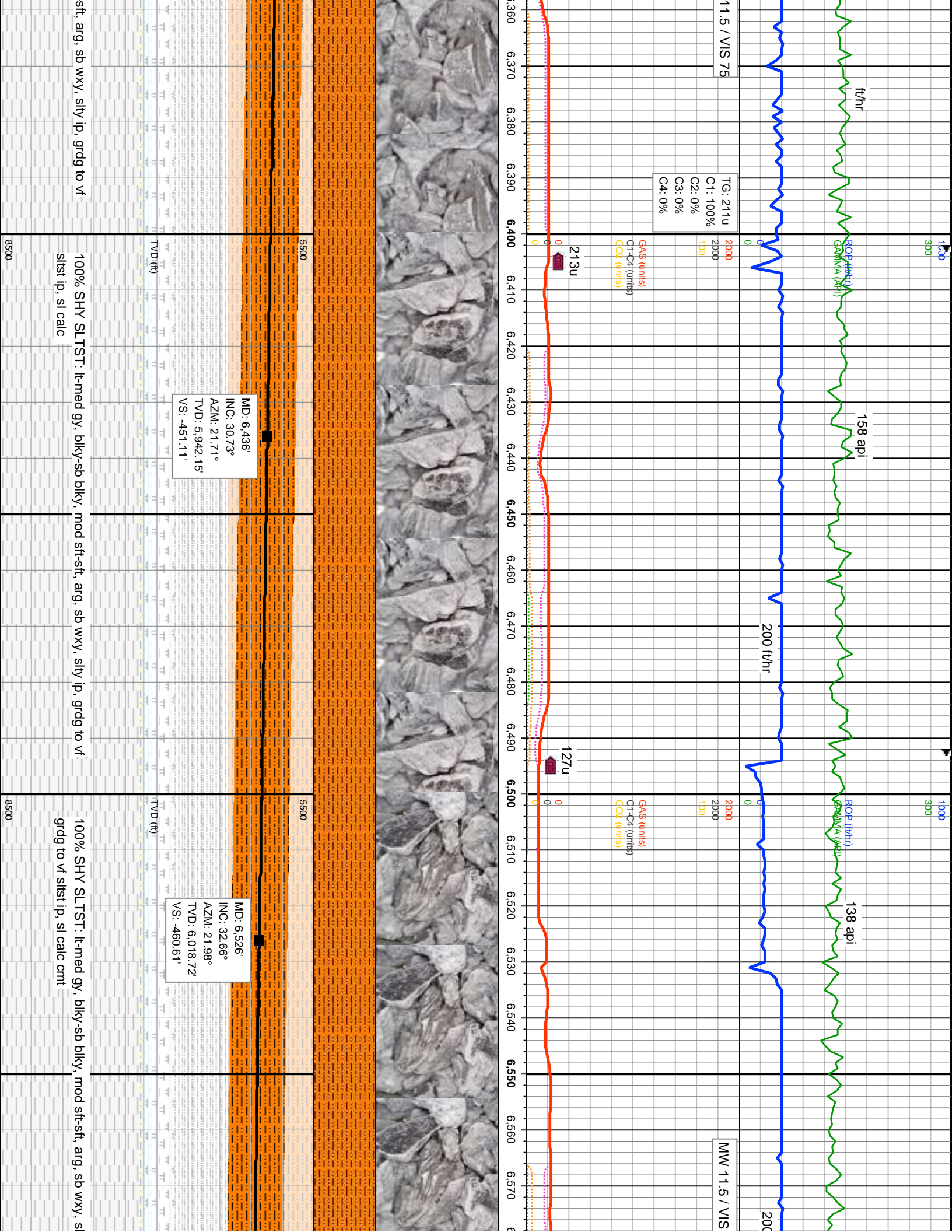
Well Bore

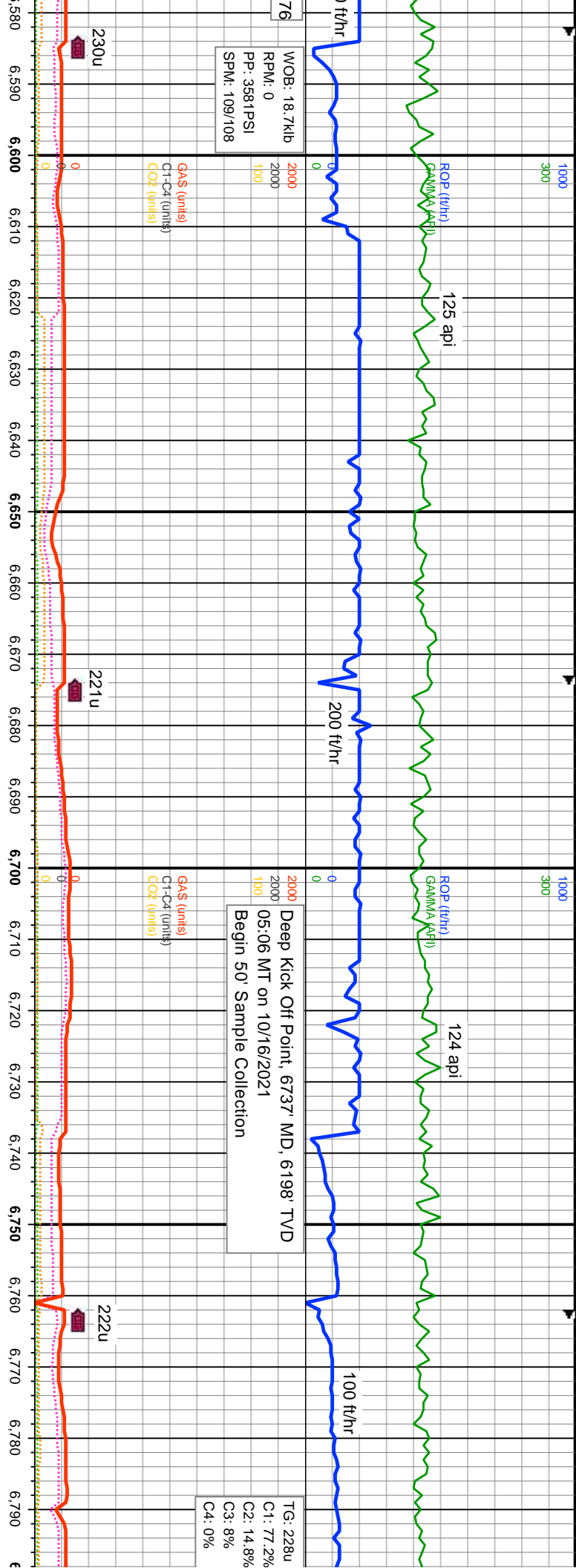
TVD

Bit #: 1
Size: 8.5"
Make: Ulterra
Model: SPL516
Jets: 4x13s 3x12s
S/N: 52513
Depth In: 2.063'

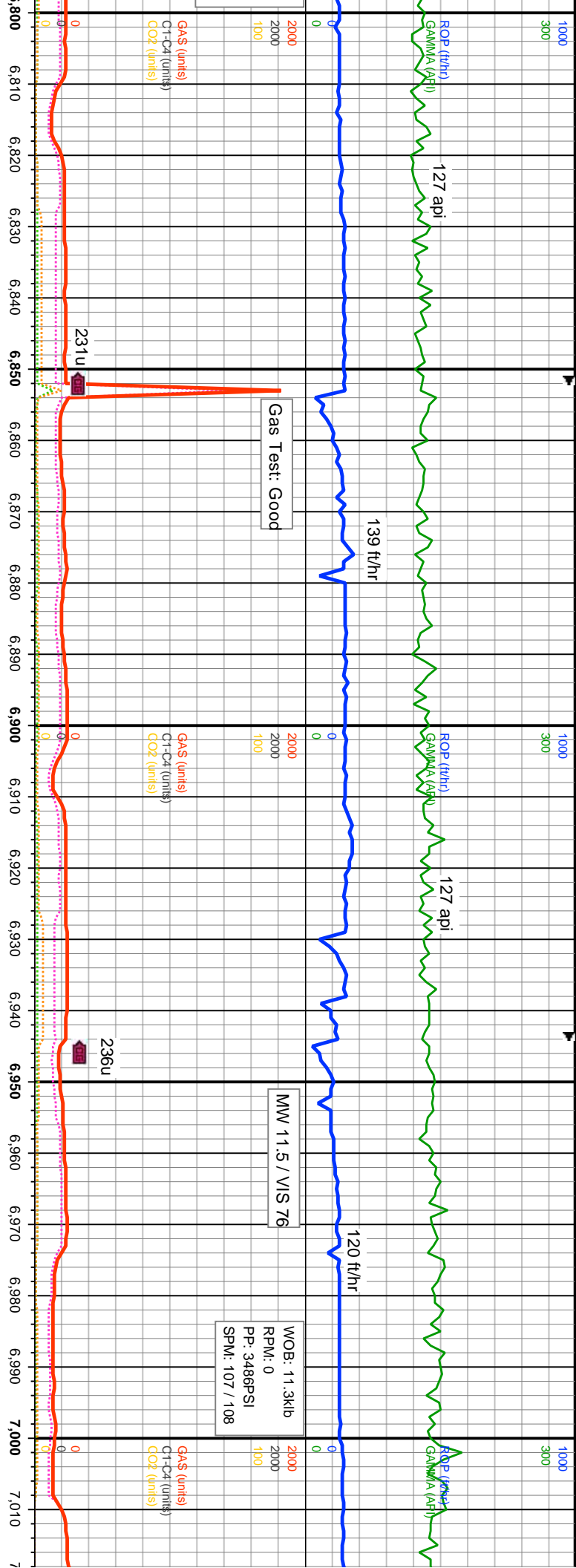
100% SHY SLTST: lt-med gy, blk-y-sb pty, mod sft-fri, arg, slty, rthy, grdy to vf siltst ip, sl calc cmf, mod calc

100% SHY SLTST: lt-med gy, blk-y-sb pty, mod sft-fri, arg, slty, rthy, grdy to vf siltst ip, sl calc cmf, mod calc

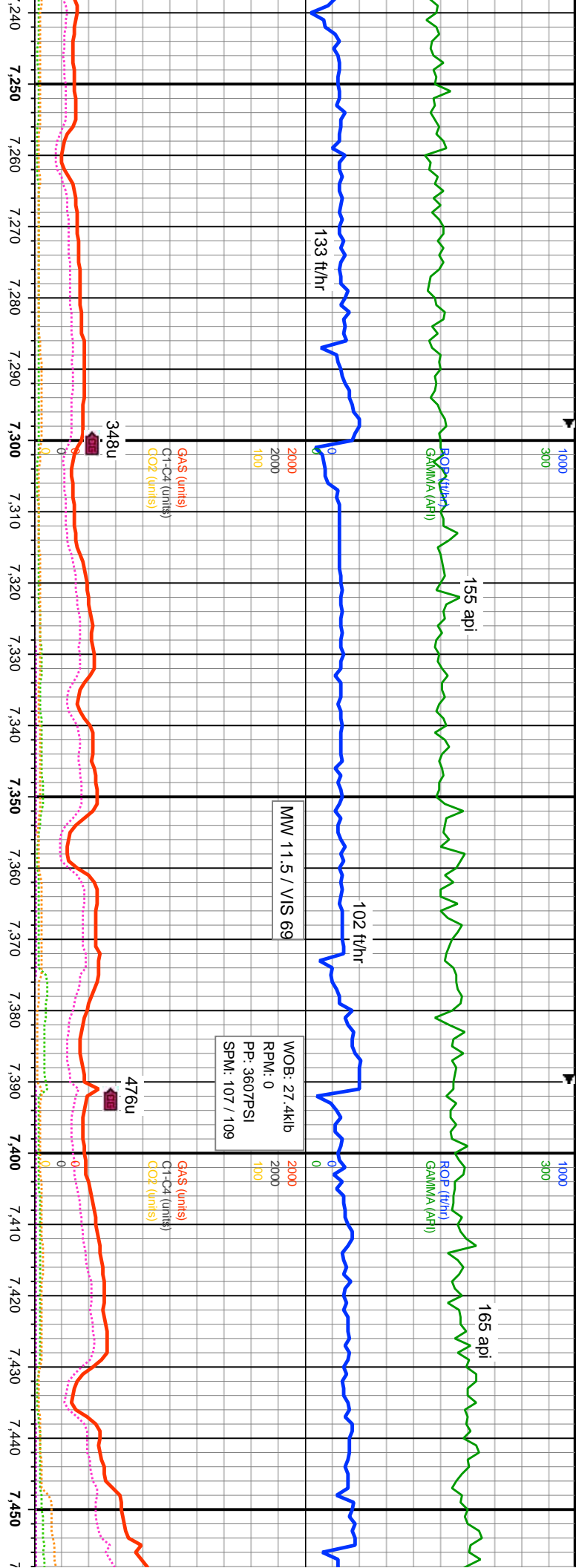




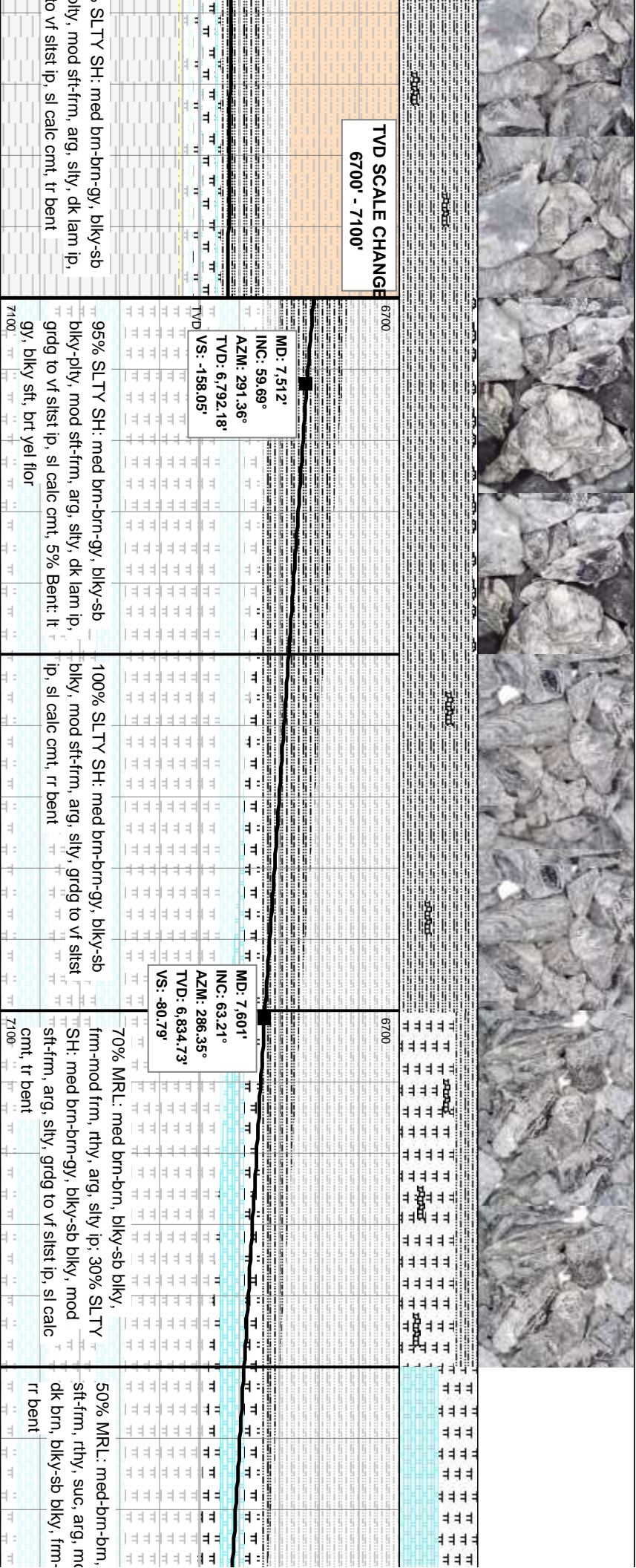
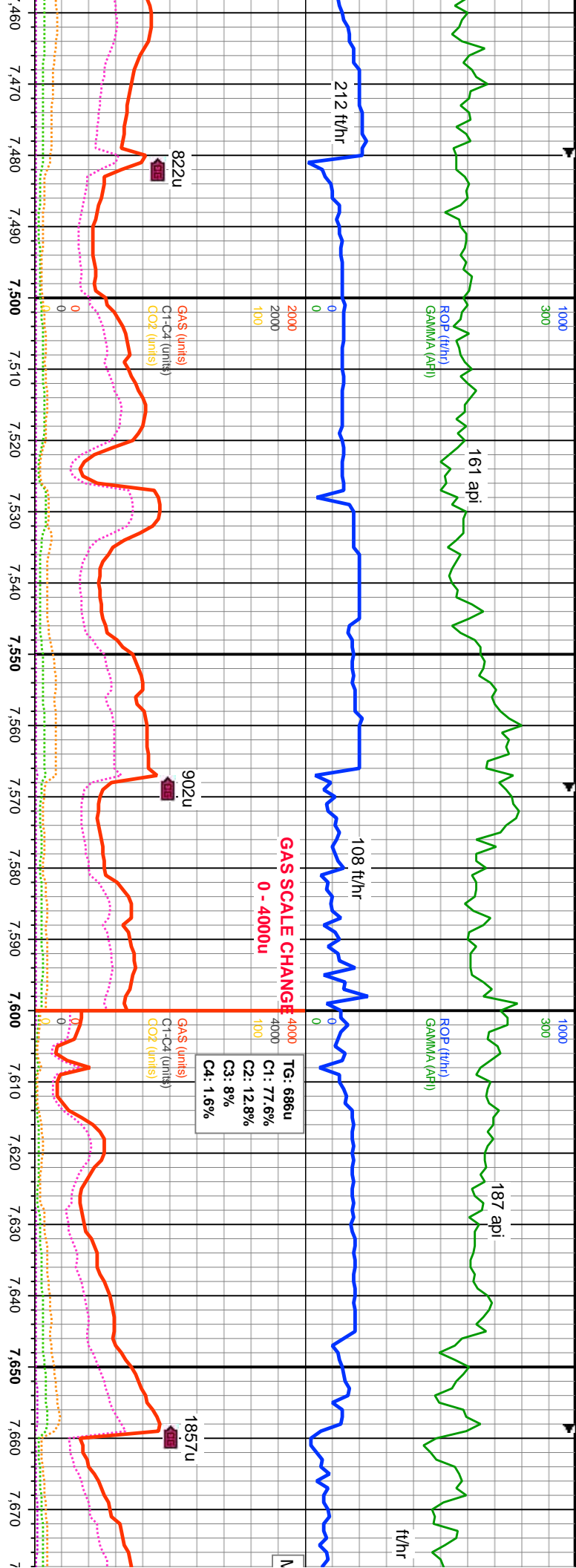
ty ip, fnt org lam,		100% SHY SLTST: lt-med gy, blkly-sb blkly, mod sft-sft, arg, sb wxy, silty ip, fnt org lam, grdg to vf slst ip, sl calc cmt		50% SLTY SH: med gy-brn, sb blkly-blky, mod sft-fri, arg, v sl calc: 50% SHY SLTST: lt brn-brn, gy ip, sb blkly-blky, mod sft-sft, arg, silty, sb wxy, grdg to vf slst		70% SLTY SH: med gy-brn, sb blkly-blky, mod sft-fri, arg, v sl calc: 30% SHY SLTST: lt brn-brn, gy ip, sb blkly-blky, mod sft-sft, arg, silty, sb wxy, grdg to vf slst	
8500		8500		8500		8500	
MD: 6,615'		MD: 6,705'		MD: 6,794'		MD: 6,794'	
INC: 33.06°		INC: 30.07°		INC: 28.92°		INC: 28.92°	
AZM: 23.21°		AZM: 22.15°		AZM: 5.45°		AZM: 5.45°	
TVD: 6,093.48'		TVD: 6,170.16'		TVD: 6,247'		TVD: 6,247'	
VS: -470.93'		VS: -481.08'		VS: -483.87'		VS: -483.87'	
TVD (ft)		TVD (ft)		TVD (ft)		TVD (ft)	

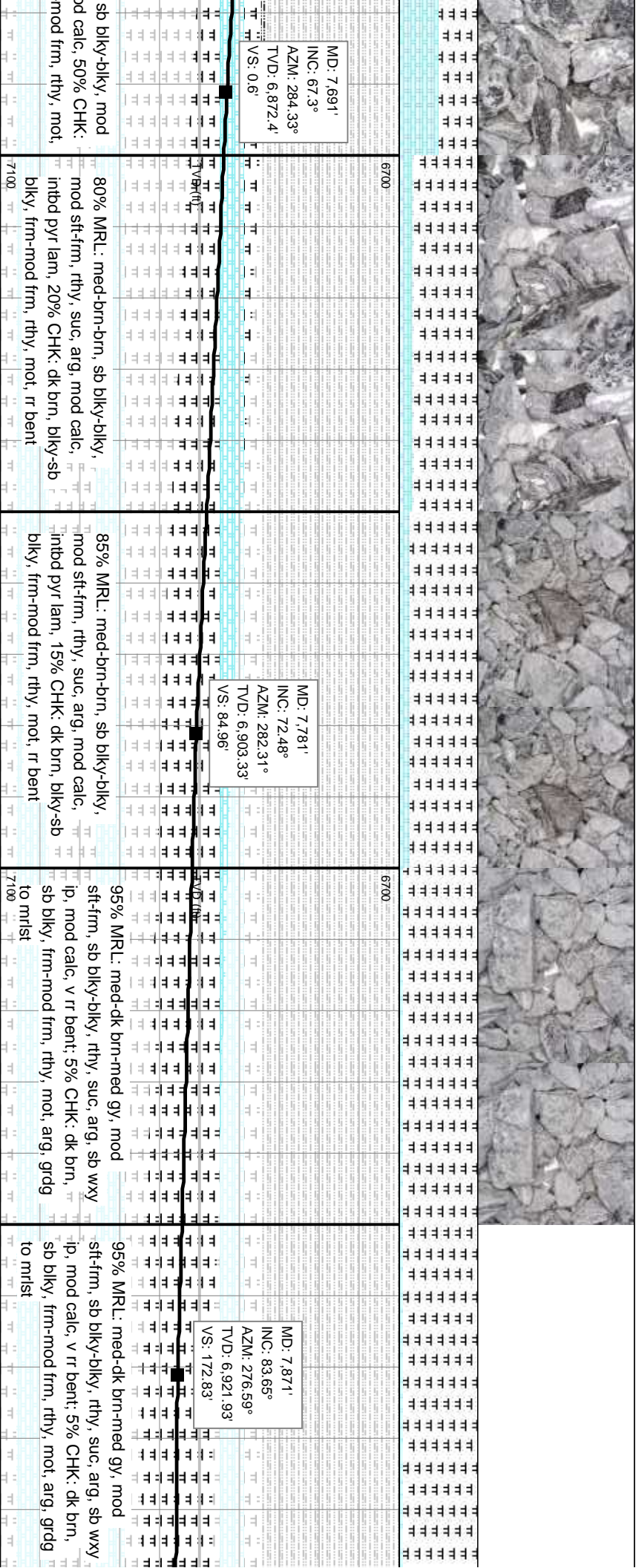
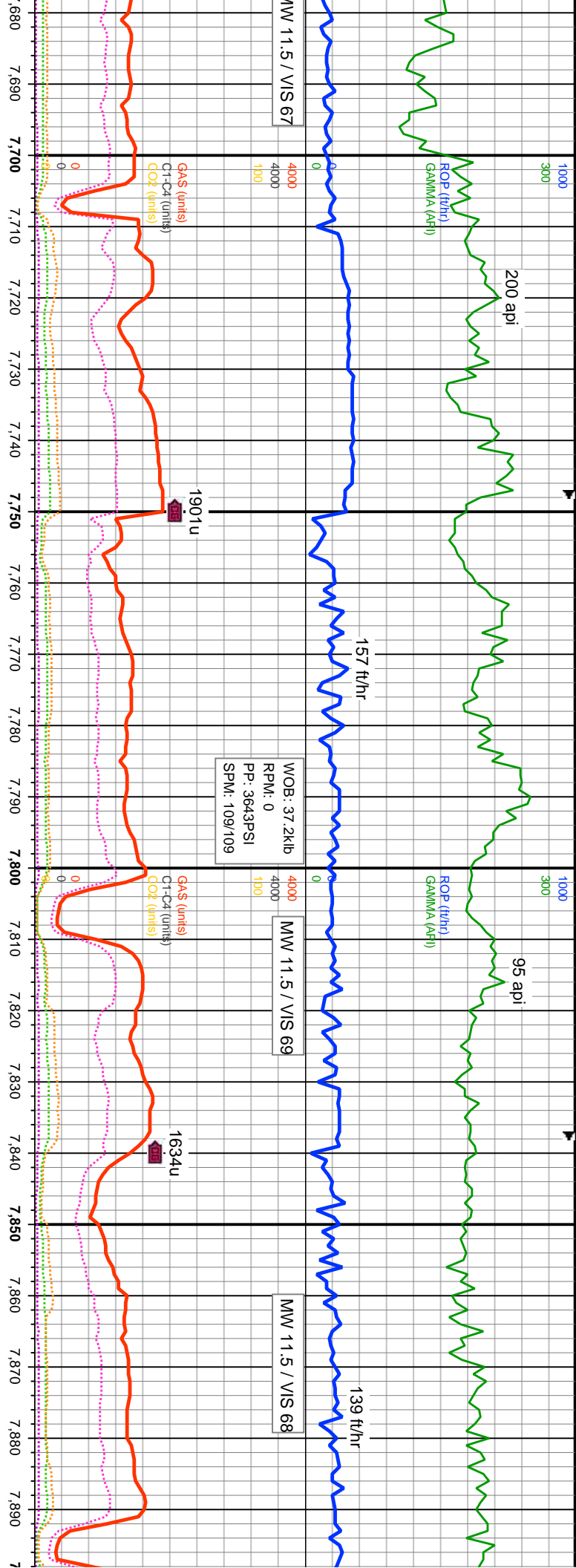


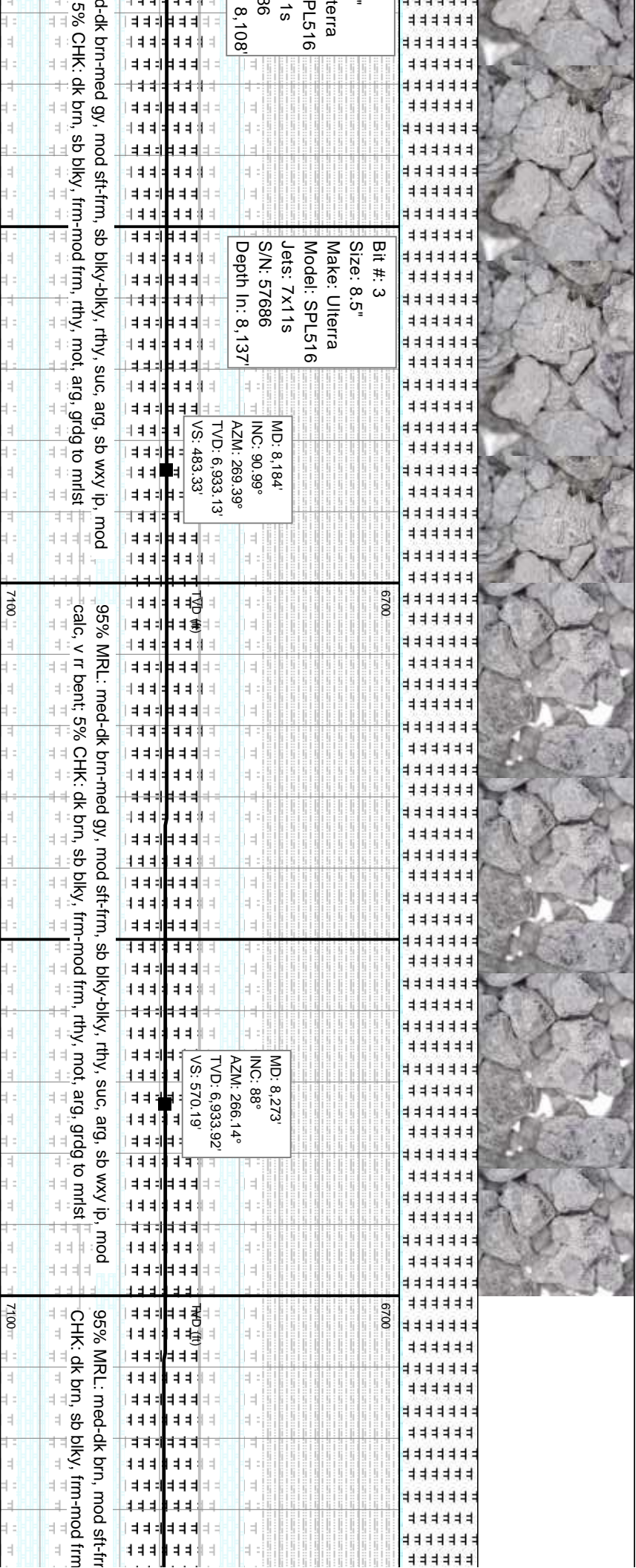
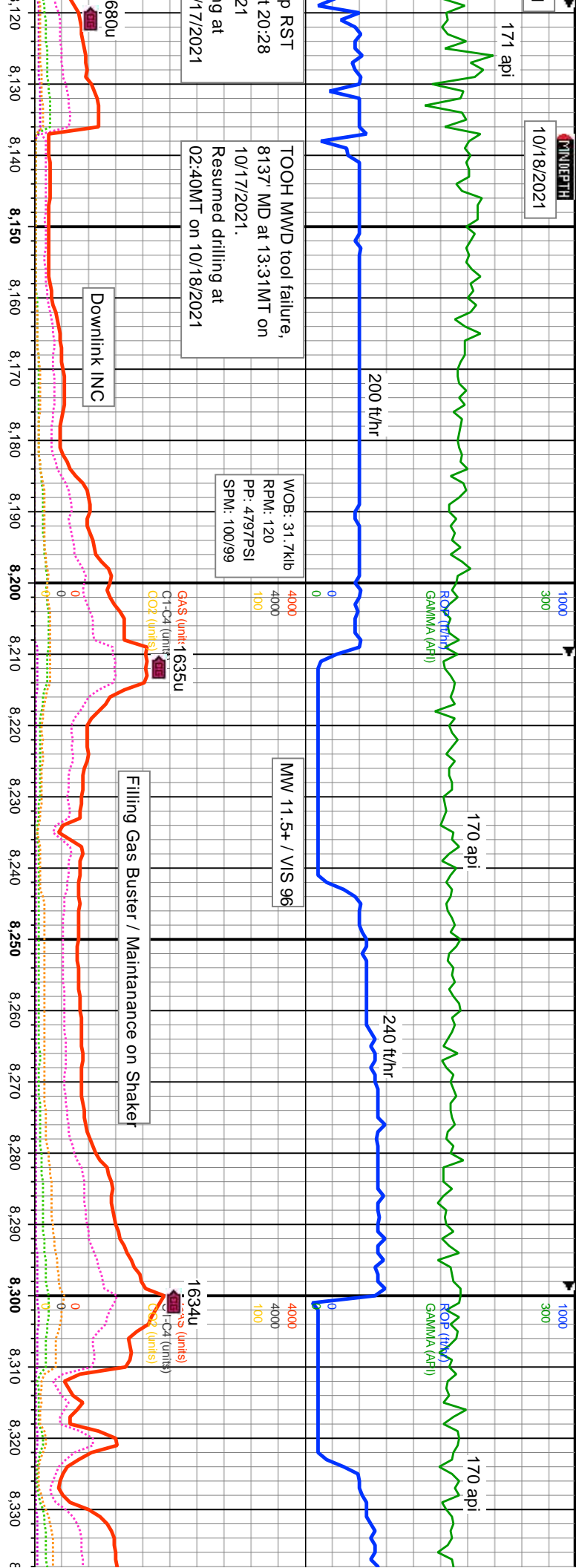
<p>70% SLTY SH: med gy-brn, blk-y-sb blk-y, mod sft-fm, arg, sl calc; 30% SHY SLTST: brn-gy, sb blk-y-blk-y, mod sft-sft, arg, silty, sb wxy, grdg to vf slst</p>	<p>80% SLTY SH: med brn-brn, gy ip, blk-y-sb blk-y, mod sft-fm, suc ip, dk lam ip, sl calc; 20% SHY SLTST: brn-gy, sb blk-y-blk-y, mod sft-hd, arg, silty, sb wxy, grdg to vf slst</p>	<p>80% SLTY SH: med brn-brn, blk-y-sb blk-y, mod sft-sft, arg, suc ip, dk lam ip, sl calc; 20% SHY SLTST: brn-gy, sb blk-y-blk-y, mod sft-hd, arg, silty, sb wxy, grdg to vf slst</p>	<p>90% SLTY SH: med brn-brn, blk-y-sb blk-y, mod sft-sft, arg, dk lam ip, sl calc; 10% SHY SLTST: brn-med brn, sb blk-y-blk-y, mod sft-hd, arg, silty, grdg to vf slst</p>	<p>90% SLTY SH: mod sft-fm, arg SLTST: brn, sb grdg to silty sh</p>
<p>MD: 6,884' INC: 31.56° AZM: 352.09° TVD: 6,325.59' VS: -474.69'</p>	<p>MD: 6,974' INC: 28.57° AZM: 341.11° TVD: 6,403.53' VS: -456.84'</p>			

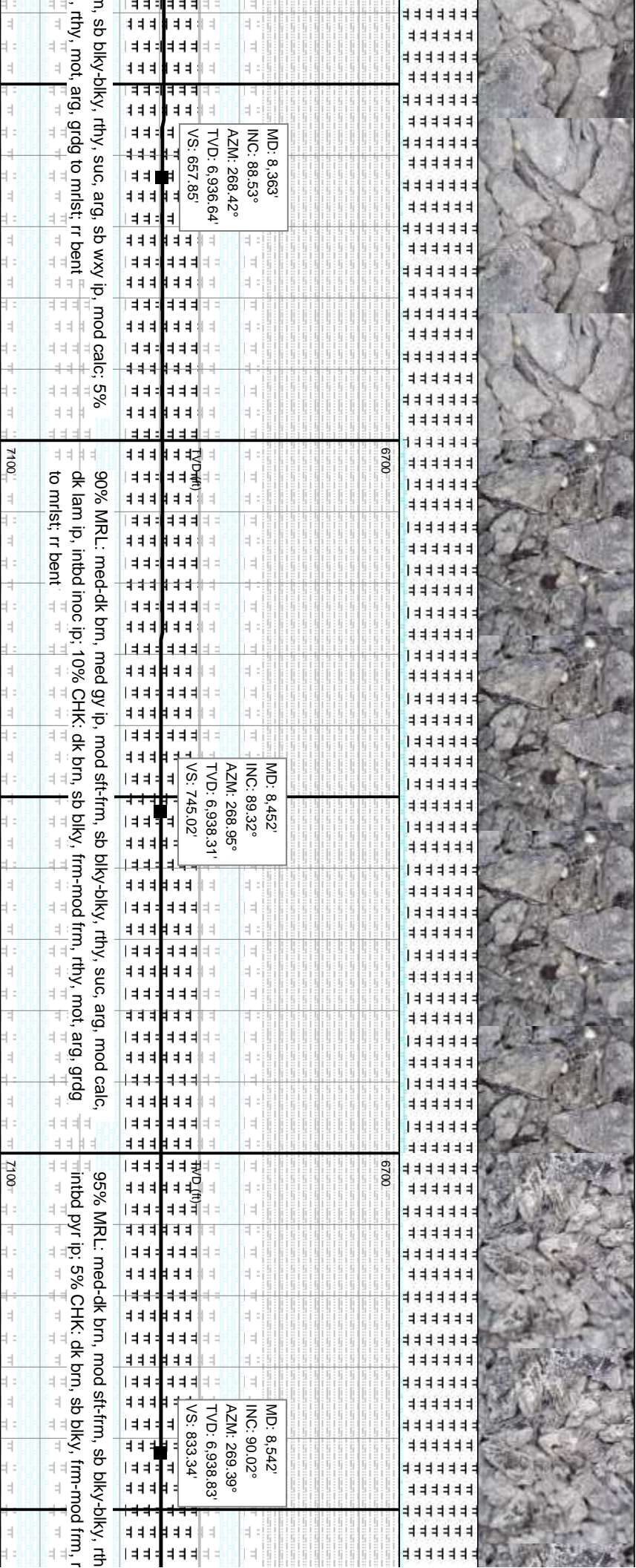
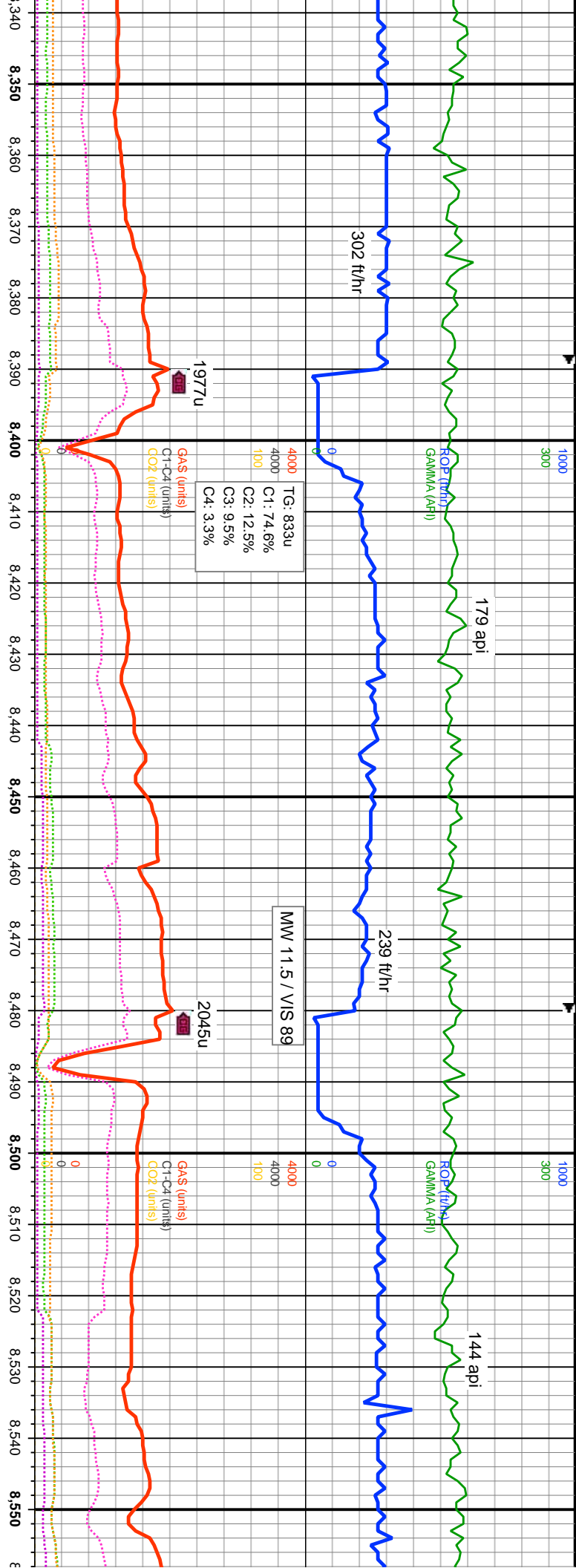


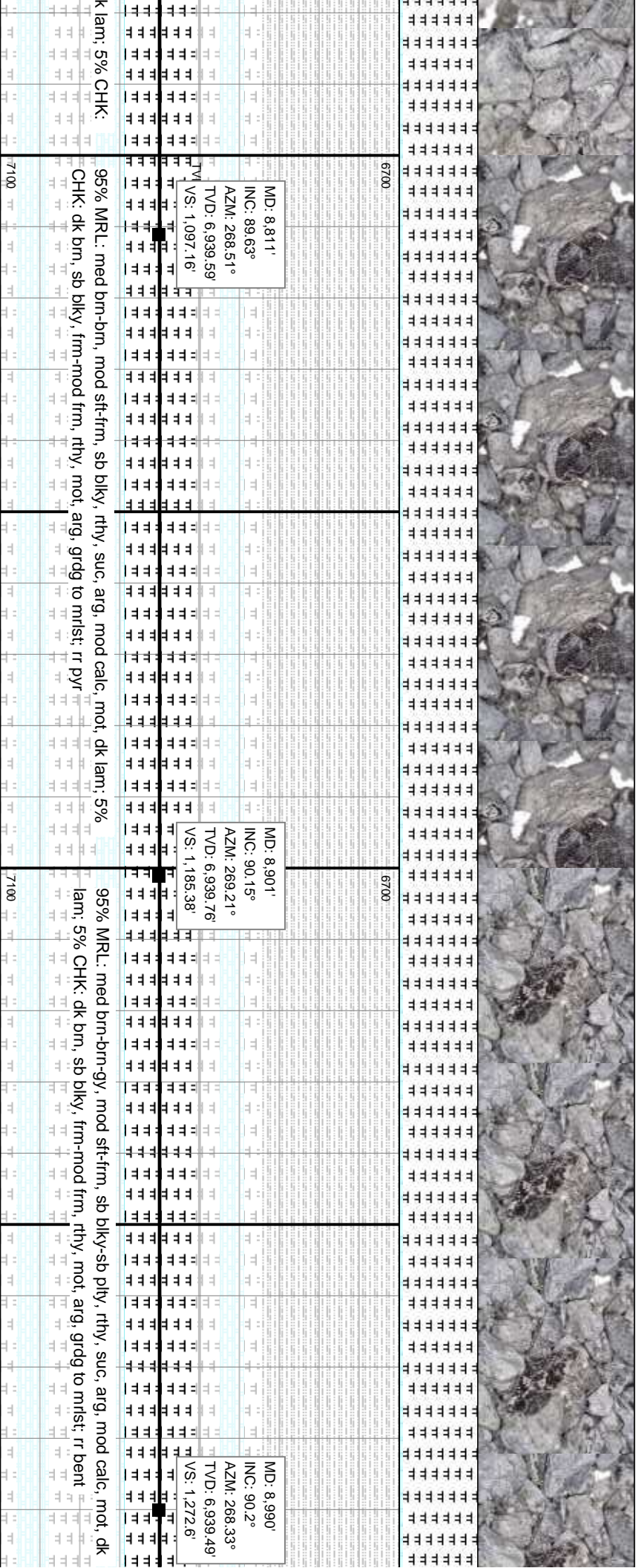
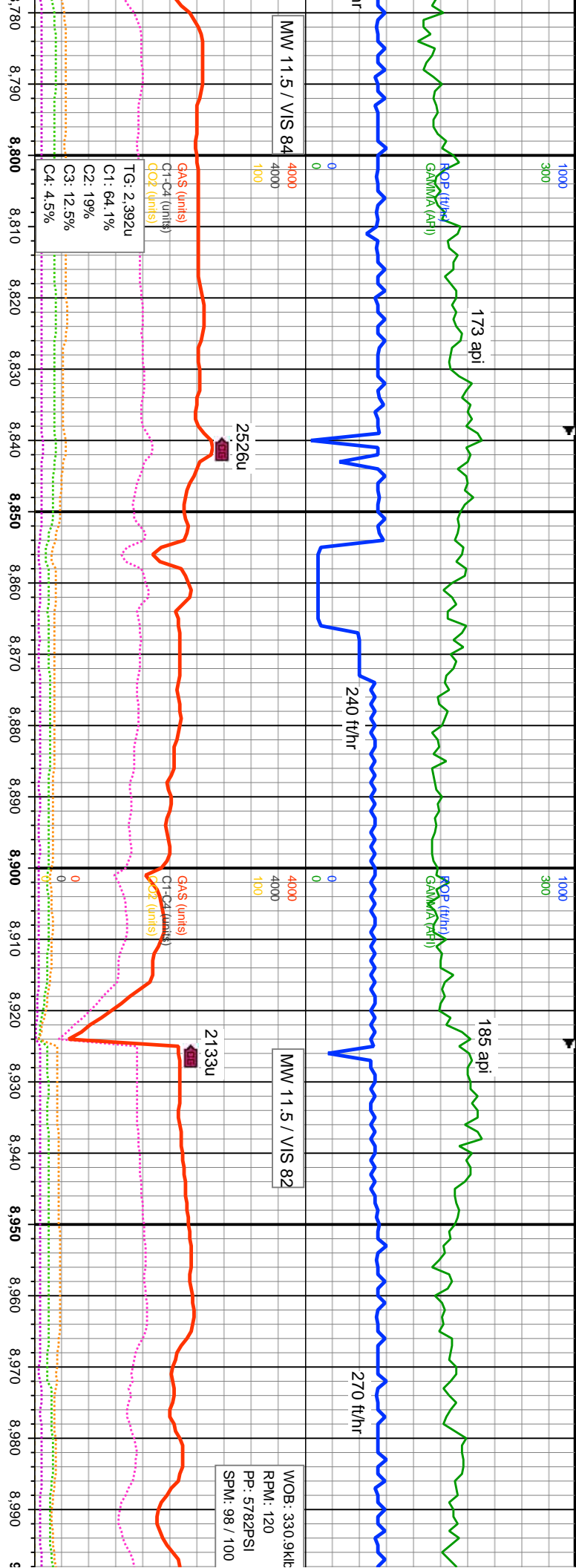
AD: 7.243' INC: 43.91° AZM: 315.97° VD: 6.623.98' S: -348.99'	100% SLTY SH: med brn-brn, blk-y-sb blk-y-pty, mod sft-firm, arg, silty, dk lam, grdg to vf slst ip, sl calc cmt	5500 MD: 7.332' INC: 48.53° AZM: 308.32° TVD: 6.685.59' VS: -294.44'	100% SLTY SH: med brn-brn-gy, blk-y-sb blk-y-pty, mod sft-firm, arg, silty, dk lam ip, grdg to vf slst ip, sl calc cmt	5500 MD: 7.422' INC: 53.23° AZM: 299.09° TVD: 6.742.43' VS: -230.45'	100% SLTY SH: med brn-brn-gy, blk-y-sb blk-y-pty, mod sft-firm, arg, silty, dk lam ip, grdg to vf slst ip, sl calc cmt
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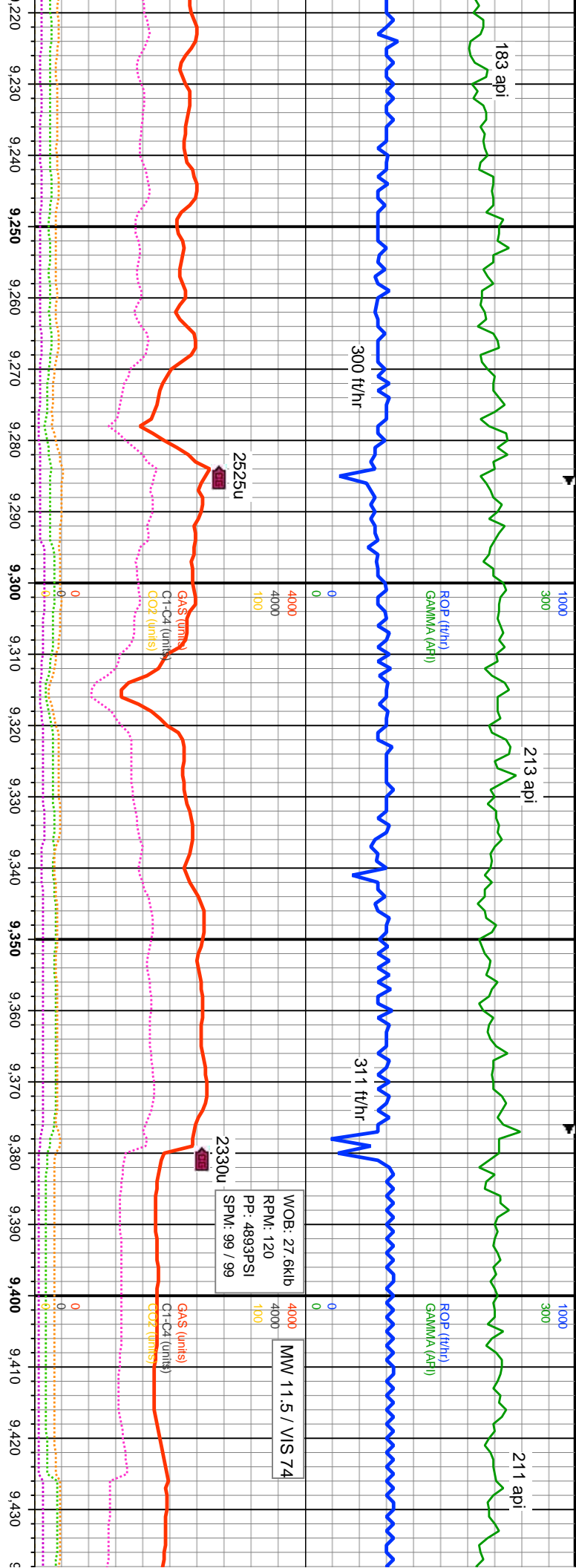




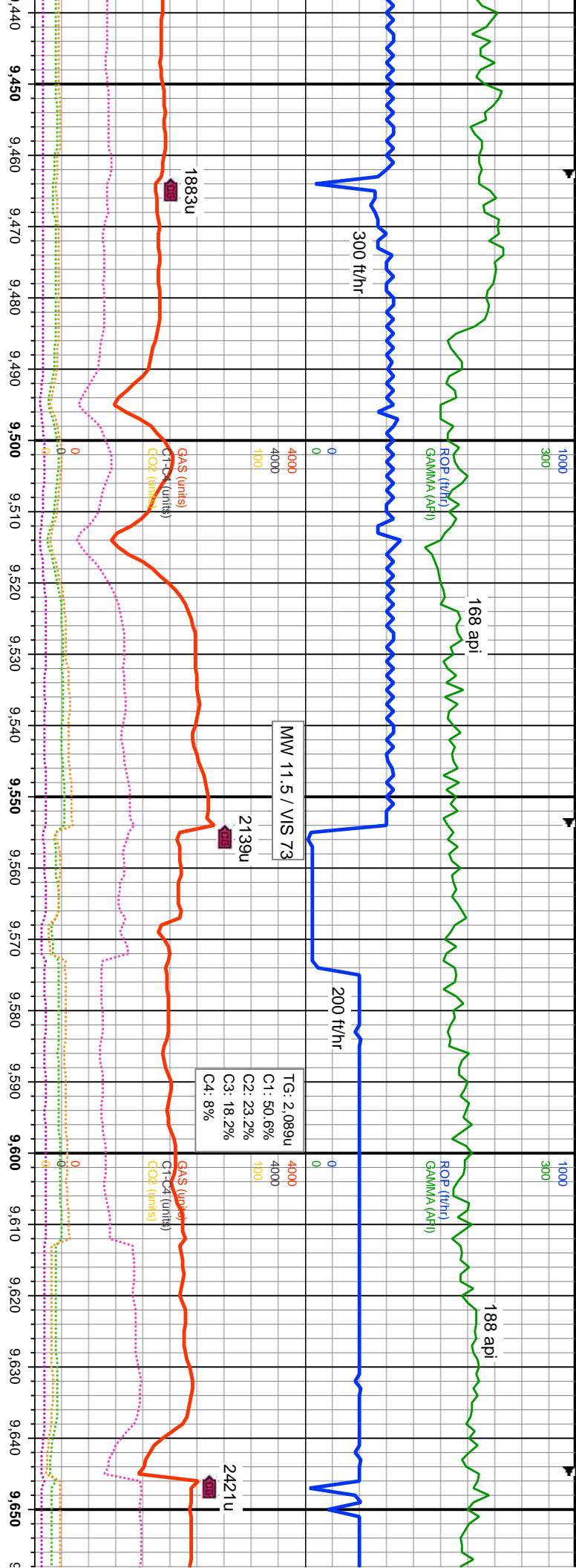




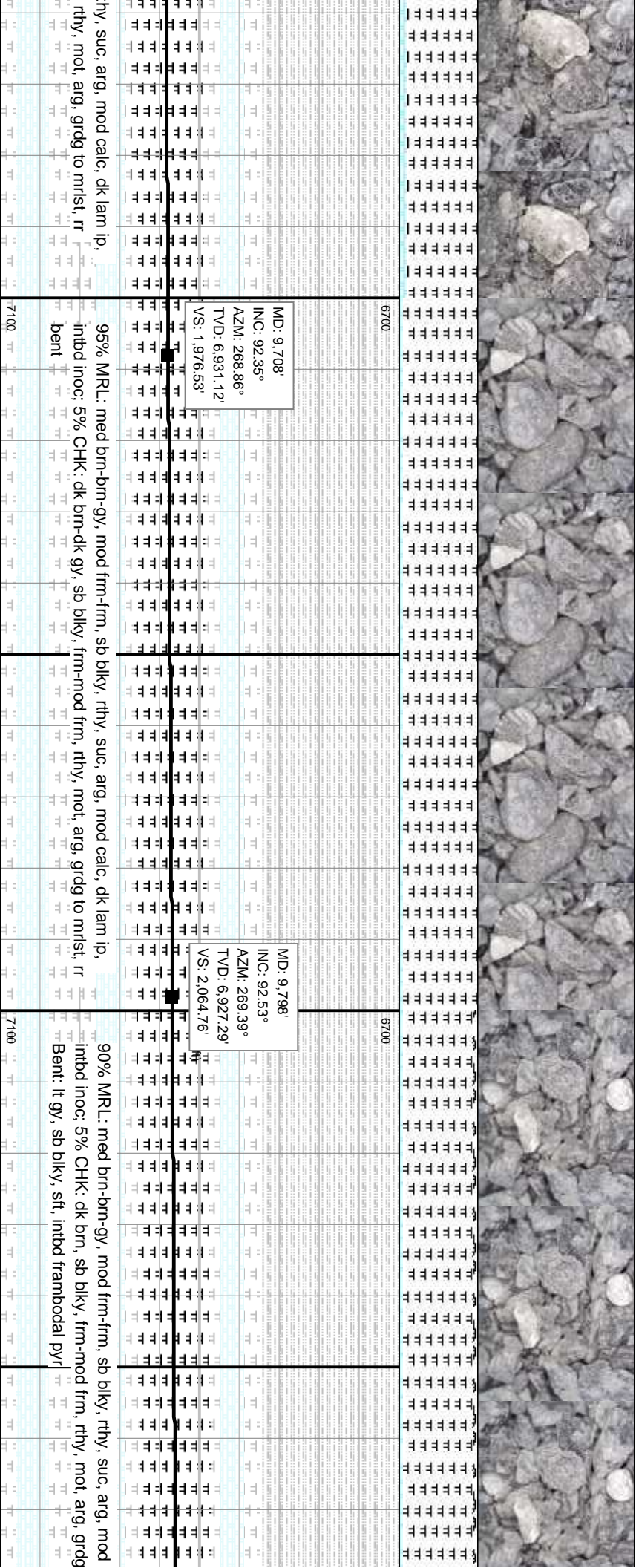
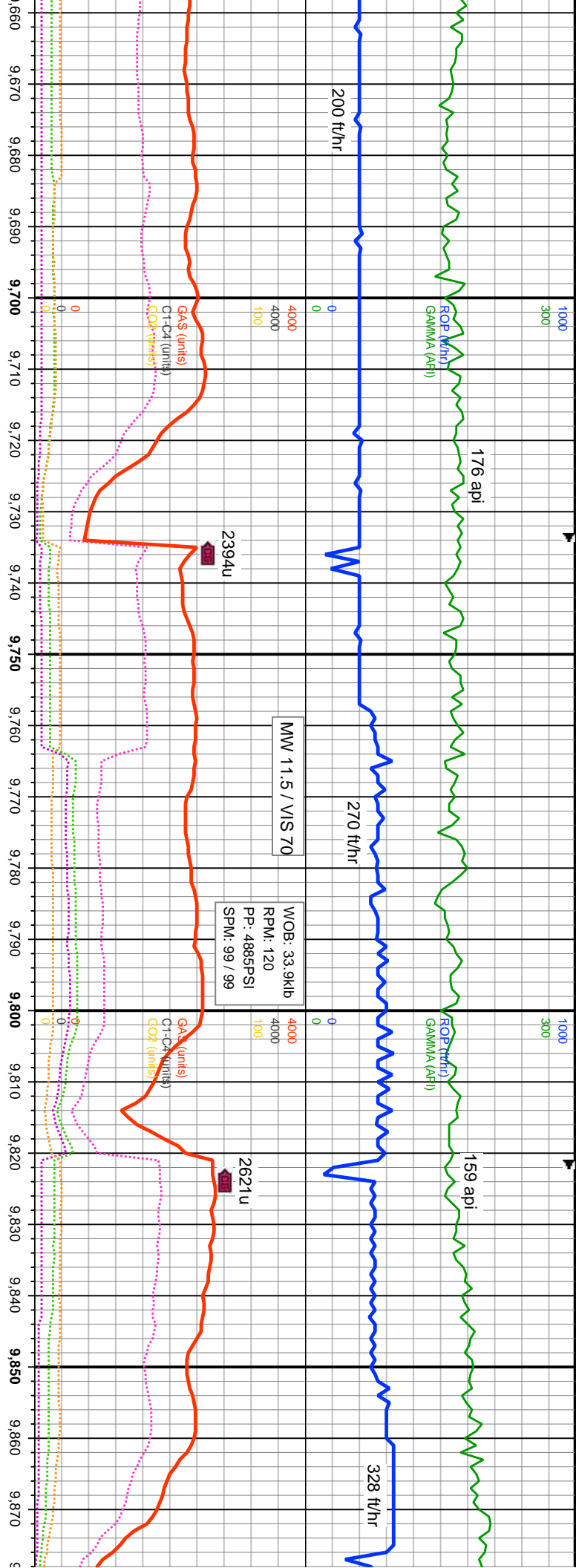


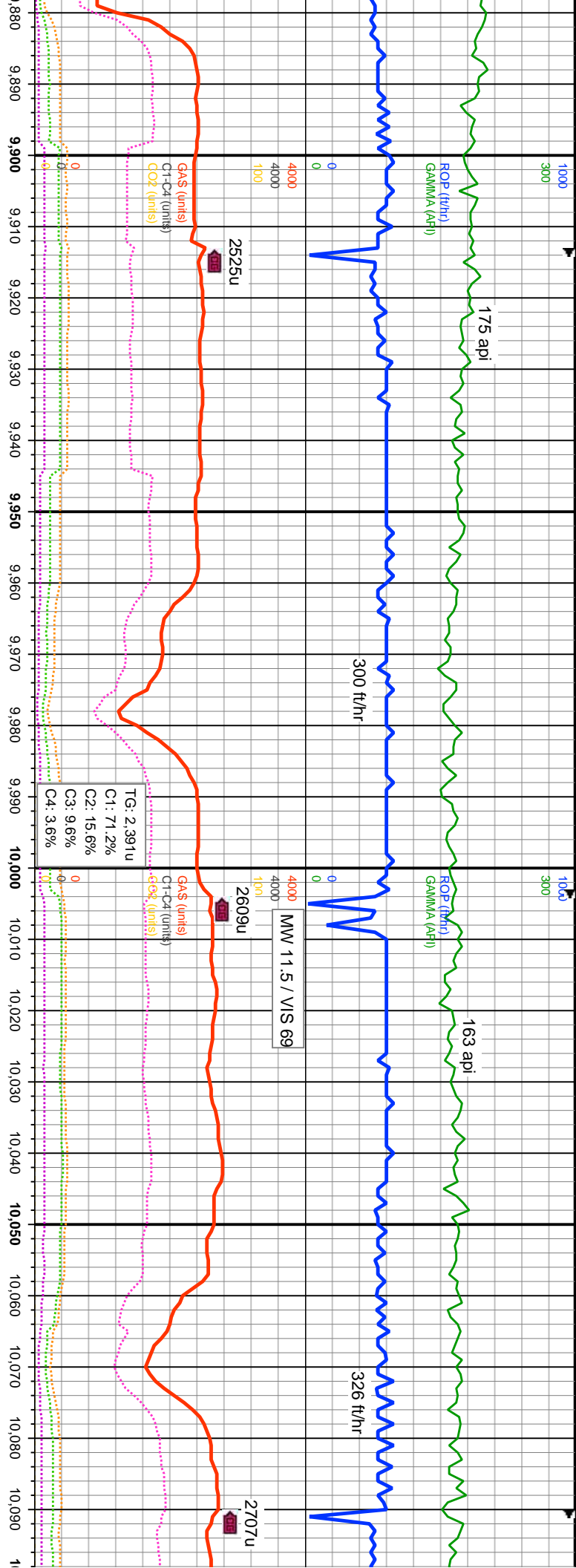


MD: 9.259'		MD: 9.349'		MD: 9.349'		MD: 9.349'	
INC: 90.42°		INC: 90.2°		INC: 90.2°		INC: 90.2°	
AZM: 268.86°		AZM: 268.95°		AZM: 268.95°		AZM: 268.95°	
TVD: 6.938.52'		TVD: 6.938.03'		TVD: 6.938.03'		TVD: 6.938.03'	
VS: 1.536.15'		VS: 1.624.39'		VS: 1.624.39'		VS: 1.624.39'	
95% MRL: med brn-brn-gy, mod frm-frn, fri ip, sb blkly-sb pily, rthy, suc, arg, mod calc, intbd dsm pyr lam; 5% CHK: dk brn, sb blkly, frm-mod frm, rthy, mot, arg, grgd to mltst, rr bent		95% MRL: med brn-brn-gy, mod frm-frn, fri ip, sb blkly, rthy, suc, arg, mod calc, dk lam, intbd dsm pyr lam; 5% CHK: dk brn, sb blkly, frm-mod frm, rthy, mot, arg, grgd to mltst, rr bent		95% MRL: med brn-brn-gy, mod frm-frn, fri ip, sb blkly, rthy, suc, arg, mod calc, dk lam, intbd dsm pyr lam; 5% CHK: dk brn, sb blkly, frm-mod frm, rthy, mot, arg, grgd to mltst, rr bent		95% MRL: med brn-brn-gy, mod frm-frn, fri ip, sb blkly, rthy, suc, arg, mod calc, dk lam, intbd dsm pyr lam; 5% CHK: dk brn, sb blkly, frm-mod frm, rthy, mot, arg, grgd to mltst, rr bent	

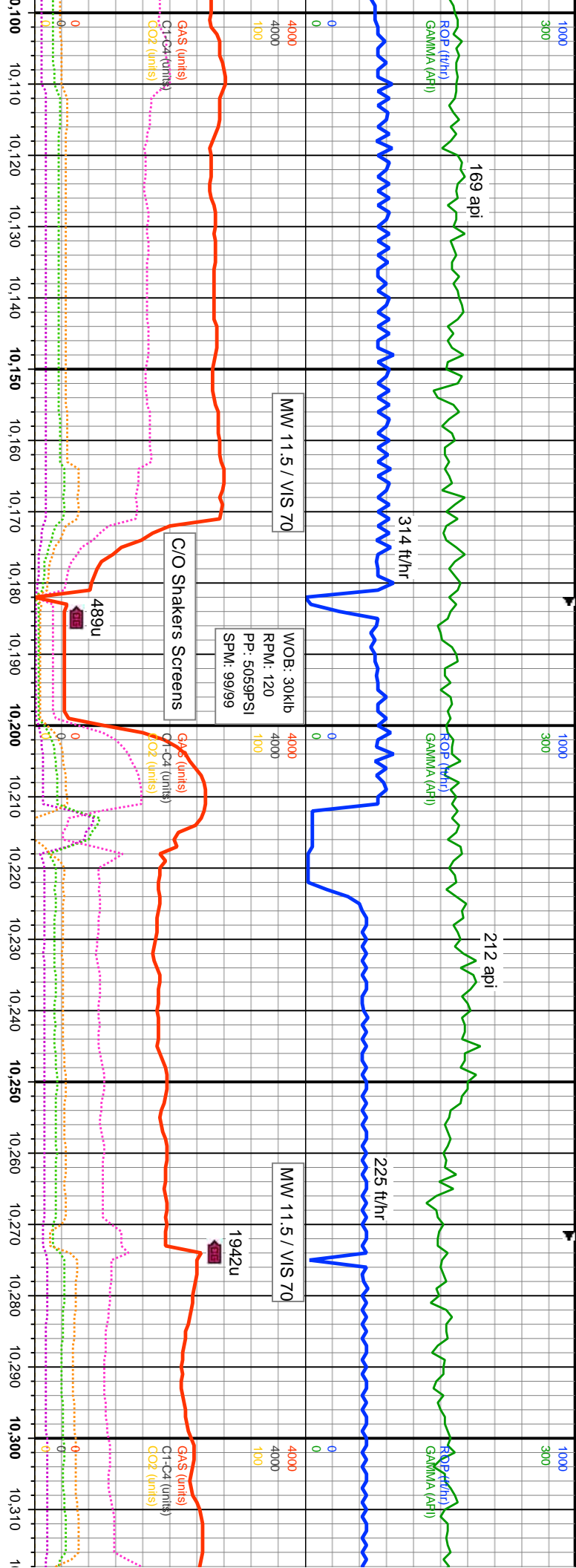


9480' MD: 8 U/T Fault		6700	90% MRL: med brn-brn-gy, mod frm-frm, sb blkly, rthy, suc, arg, mod calc, dk lam ip.	90% MRL: med brn-brn-gy, mod frm-frm, sb blkly, rthy, suc, arg, mod calc, dk lam ip.
439'	2.37°	937.59'	MD: 9.529'	MD: 9.618'
669.04°		712.65'	INC: 90.29°	INC: 92.48°
			AZM: 269.39°	AZM: 269.21°
			TVD: 6.937.07'	TVD: 6.934.92'
			VS: 1.800.99'	VS: 1.888.33'
frm-frm, fri ip, sb blkly, rthy, suc, arg, mod calc, dk lam.			90% MRL: med brn-brn-gy, mod frm-frm, sb blkly, rthy, suc, arg, mod calc, dk lam ip.	90% MRL: med brn-brn-gy, mod frm-frm, sb blkly, rthy, suc, arg, mod calc, dk lam ip.
frm-frm, rthy, mot, arg, grdg to mlst, rr bent			intbd inoc: 10% CHK: dk brn, sb blkly, frm-mod frm, rthy, mot, arg, grdg to mlst, rr bent, rr inoc	intbd inoc: 10% CHK: dk brn, sb blkly, frm-mod frm, rthy, mot, arg, grdg to mlst, rr bent, rr inoc
7100'			7100'	7100'

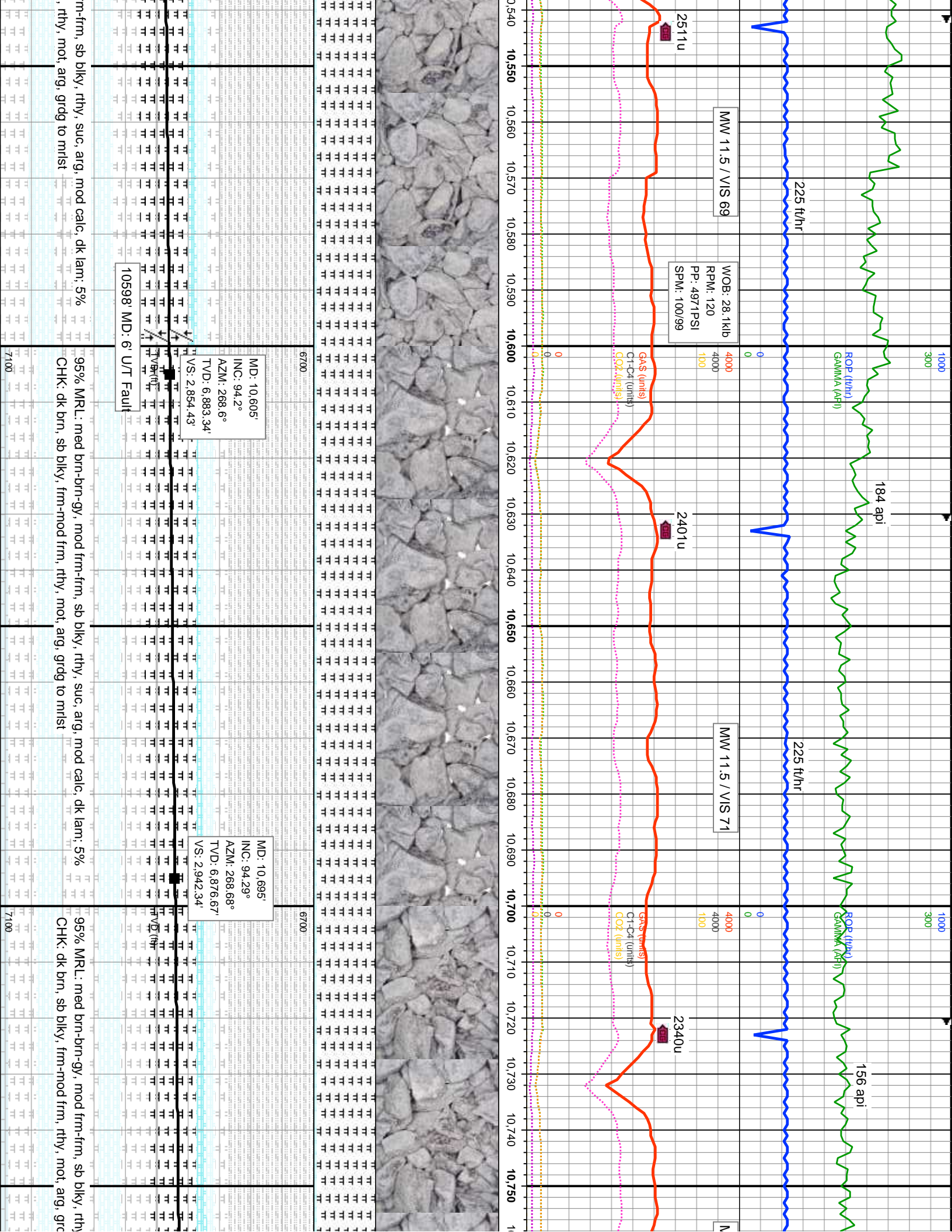


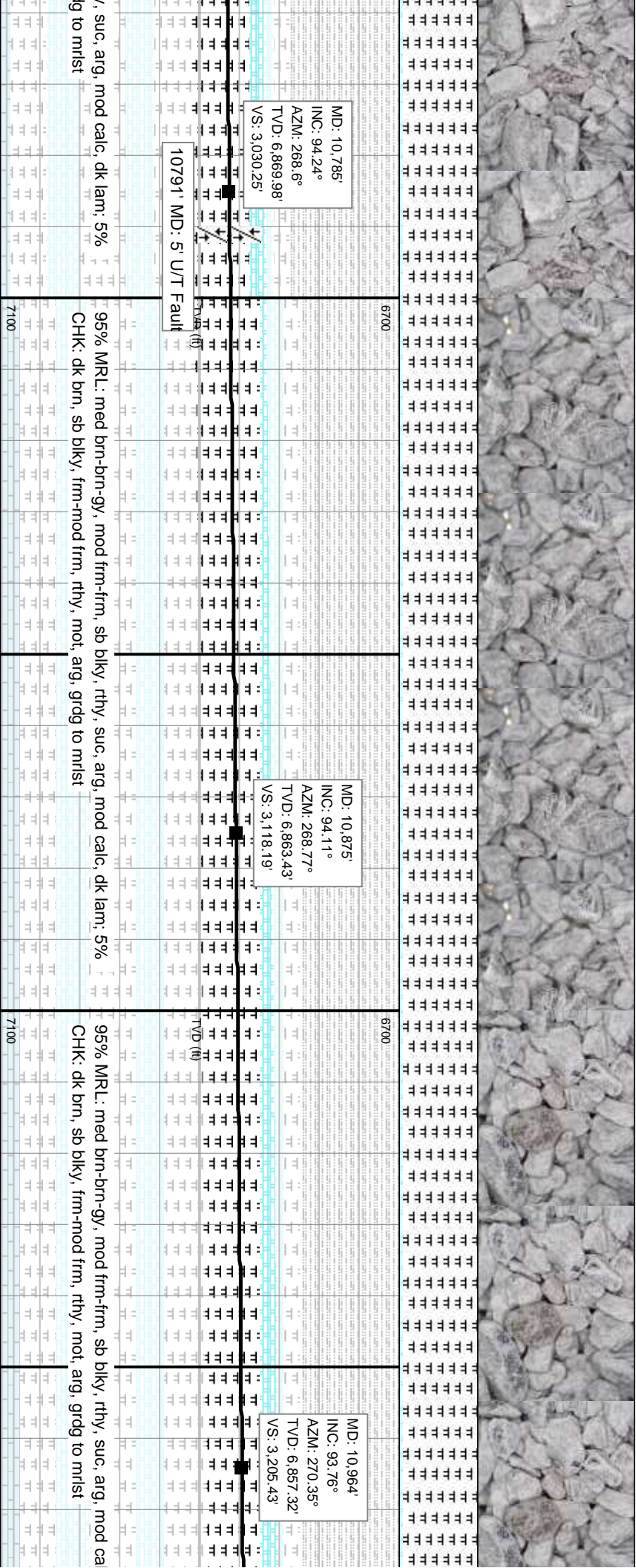
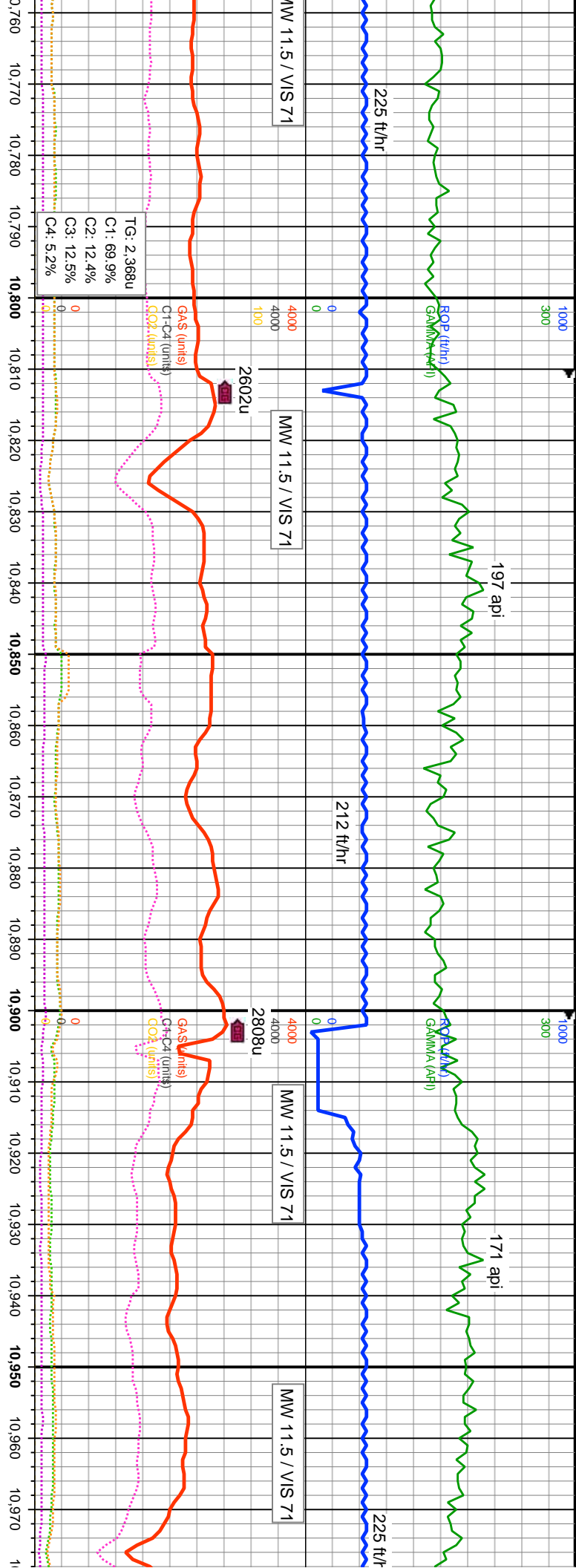


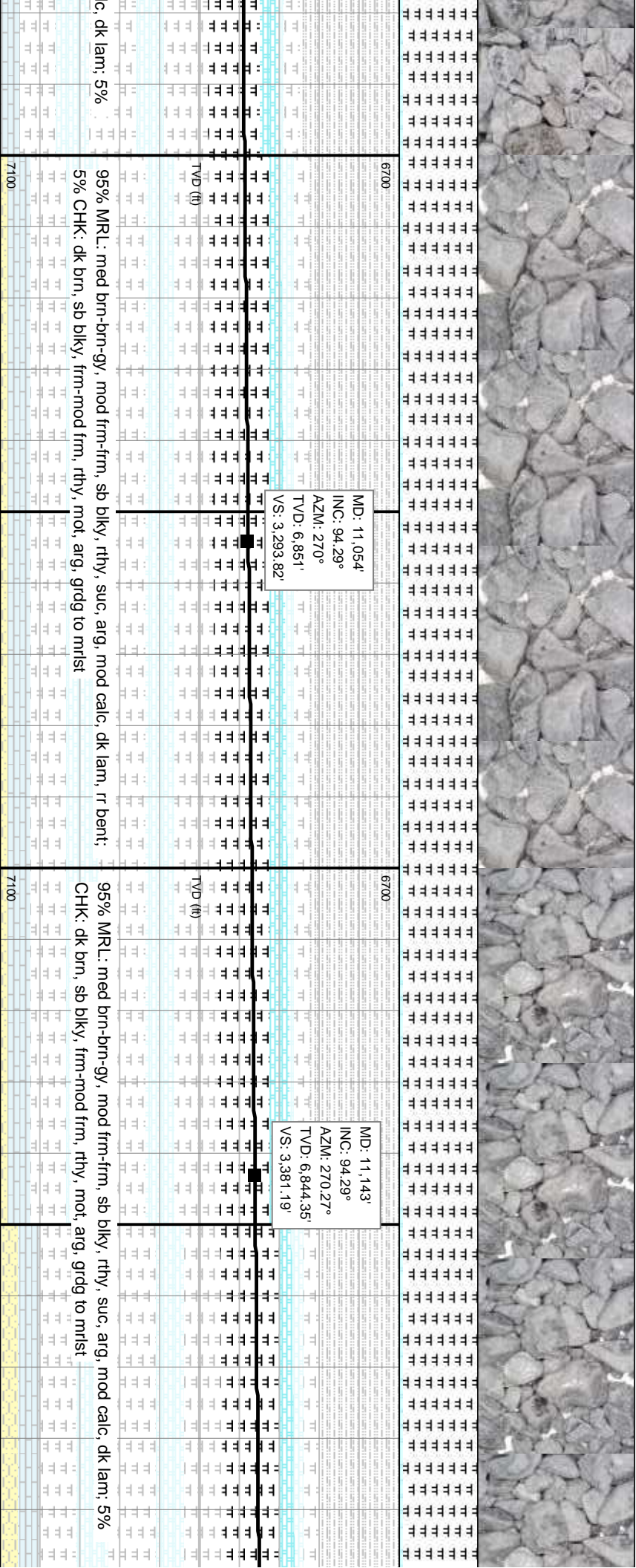
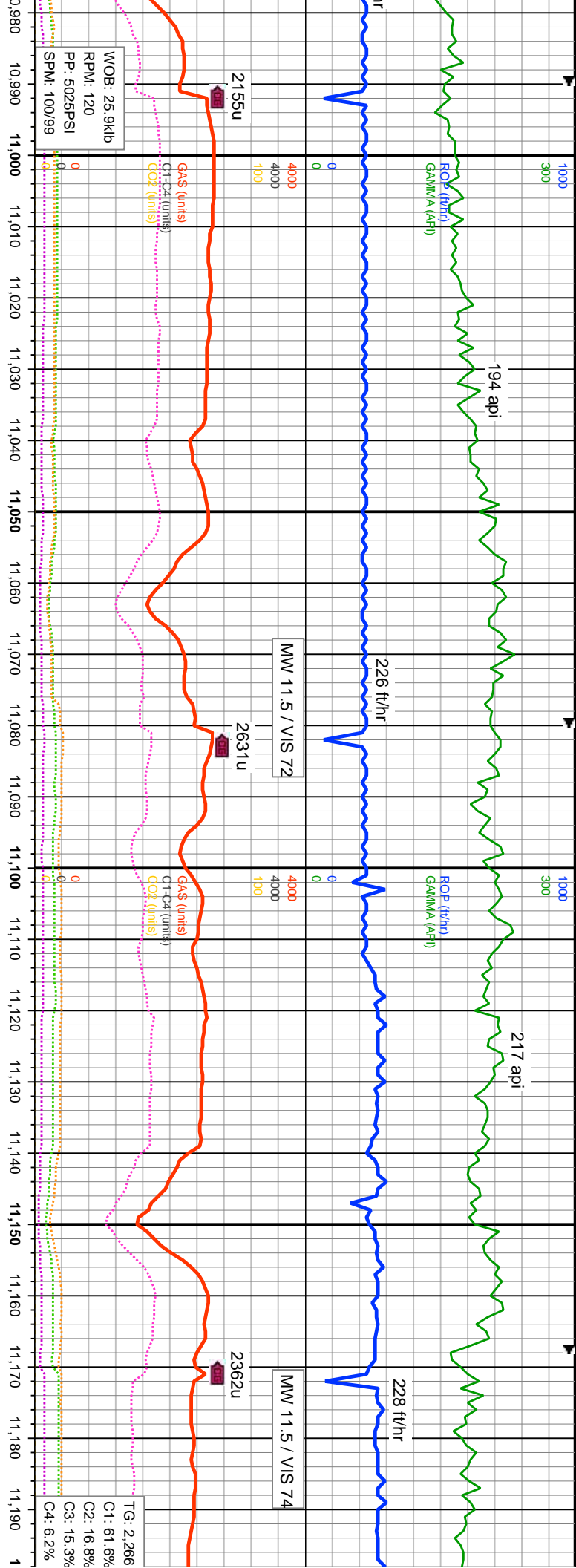
MD: 9.887' INC: 91.87° AZM: 268.51° TVD: 6.923.88' VS: 2.151.96'		6700	95% MRL: med brn-brn-gy, mod frm-frm, sb blkly, rthy, suc, arg, mod calc, dk lam, occ	95% MRL: med brn-brn-gy, mod frm-frm, sb blkly, rthy, suc, arg, mod calc, dk lam, occ
MD: 9.977' INC: 92.26° AZM: 268.77° TVD: 6.920.63' VS: 2.240.06'		6700	95% MRL: med brn-brn-gy, mod frm-frm, sb blkly, rthy, suc, arg, mod calc, dk lam, occ	95% MRL: med brn-brn-gy, mod frm-frm, sb blkly, rthy, suc, arg, mod calc, dk lam, occ
MD: 10.067' INC: 92.4° AZM: 269.12° TVD: 6.916.97' VS: 2.328.24'		6700	95% MRL: med brn-brn-gy, mod frm-frm, sb blkly, rthy, suc, arg, mod calc, dk lam, occ	95% MRL: med brn-brn-gy, mod frm-frm, sb blkly, rthy, suc, arg, mod calc, dk lam, occ

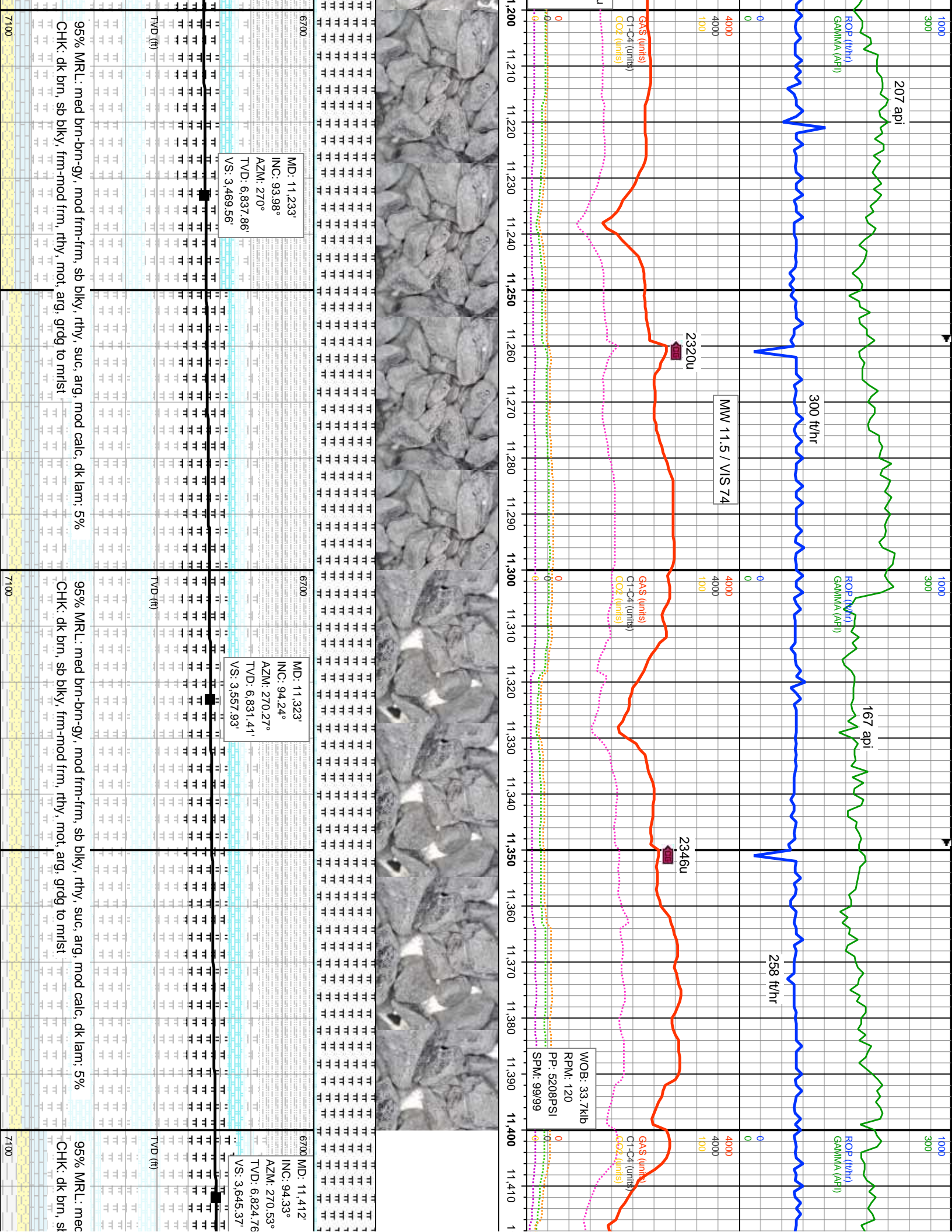


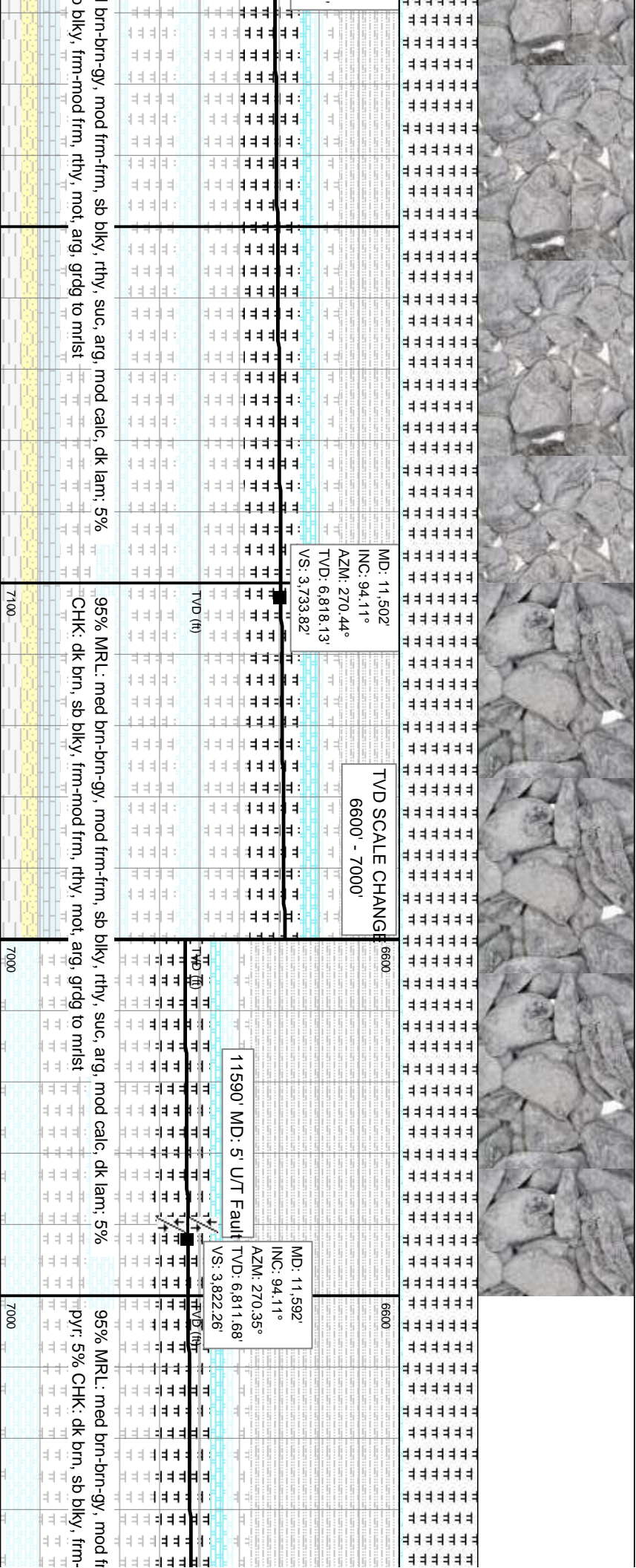
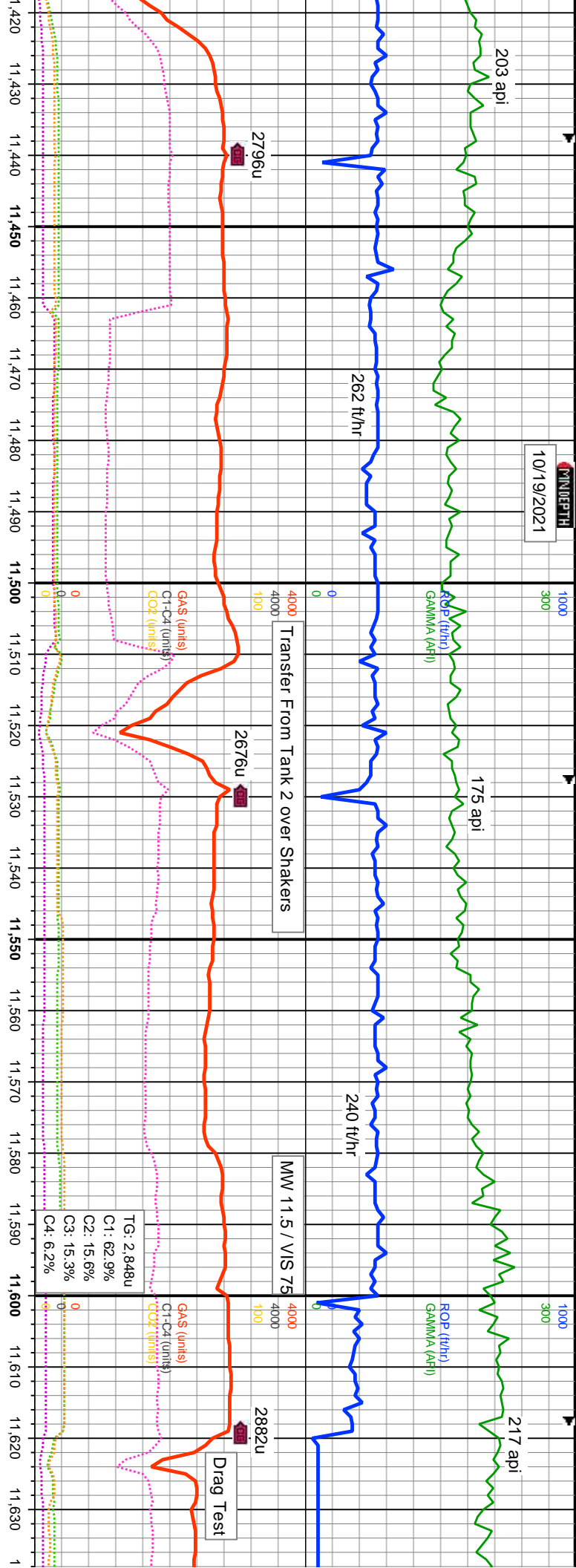
6700	MD: 10.157 INC: 92.26° AZM: 268.95° TVD: 6.913.32' VS: 2.416.44'	95% MRL: med brn-brn-gy, mod frm-frm, sb blkly, rthy, suc, arg, mod calc, dk lam, occ intbd inoc: 5% CHK: dk brn, sb blkly, frm-mod frm, rthy, mot, arg, grdg to mntst, rr inoc
6700	MD: 10.246' INC: 93.76° AZM: 269.65° TVD: 6.908.64' VS: 2.503.7'	95% MRL: med brn-brn-gy, mod frm-frm, sb blkly, rthy, suc, arg, mod calc, dk lam, occ intbd inoc: 5% CHK: dk brn, sb blkly, frm-mod frm, rthy, mot, arg, grdg to mntst, rr inoc
6700		95% MRL: med brn-brn-gy, mod frm-frm, sb blkly, rthy, suc, arg, mod calc, dk lam, occ intbd inoc: 5% CHK: dk brn, sb blkly, frm-mod frm, rthy, mot, arg, grdg to mntst, rr inoc

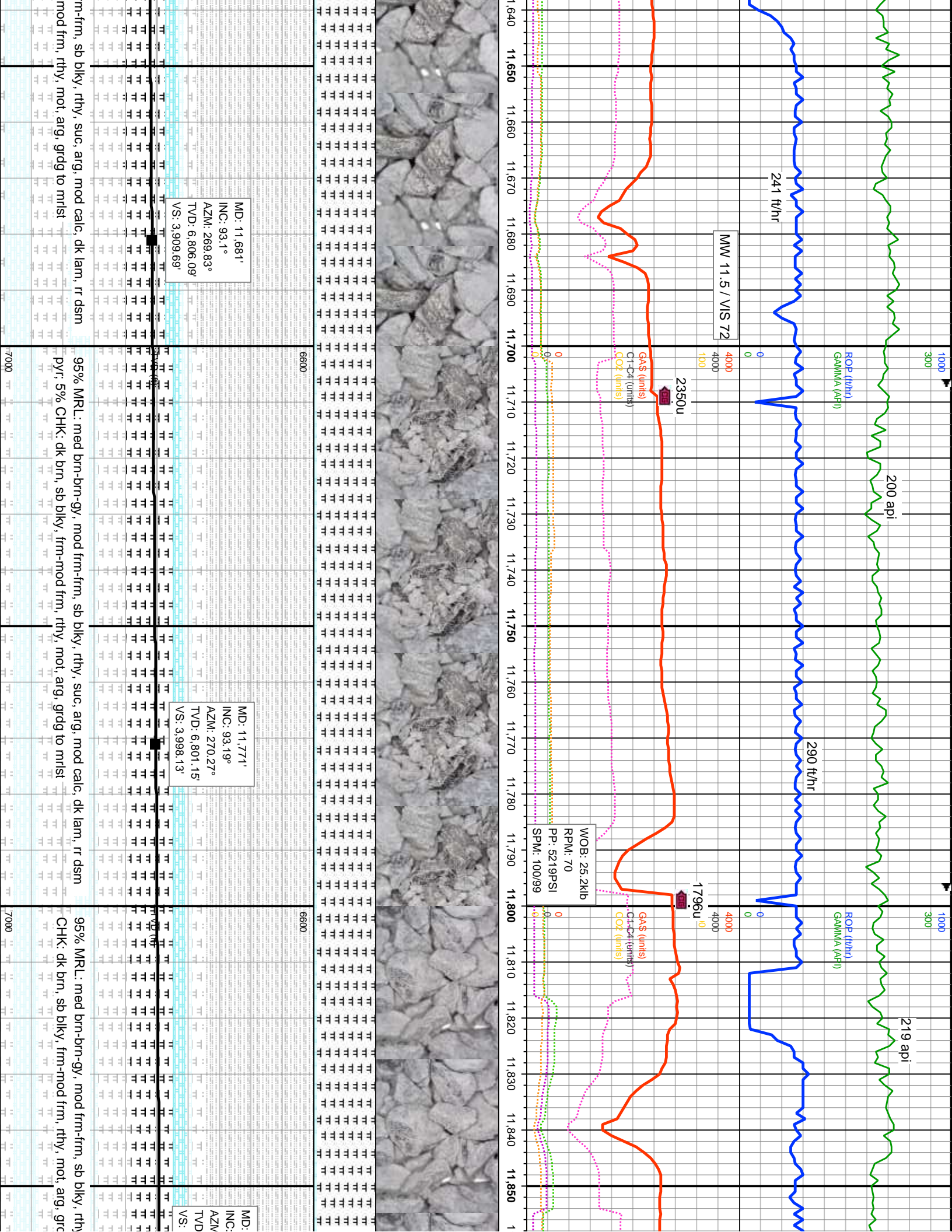


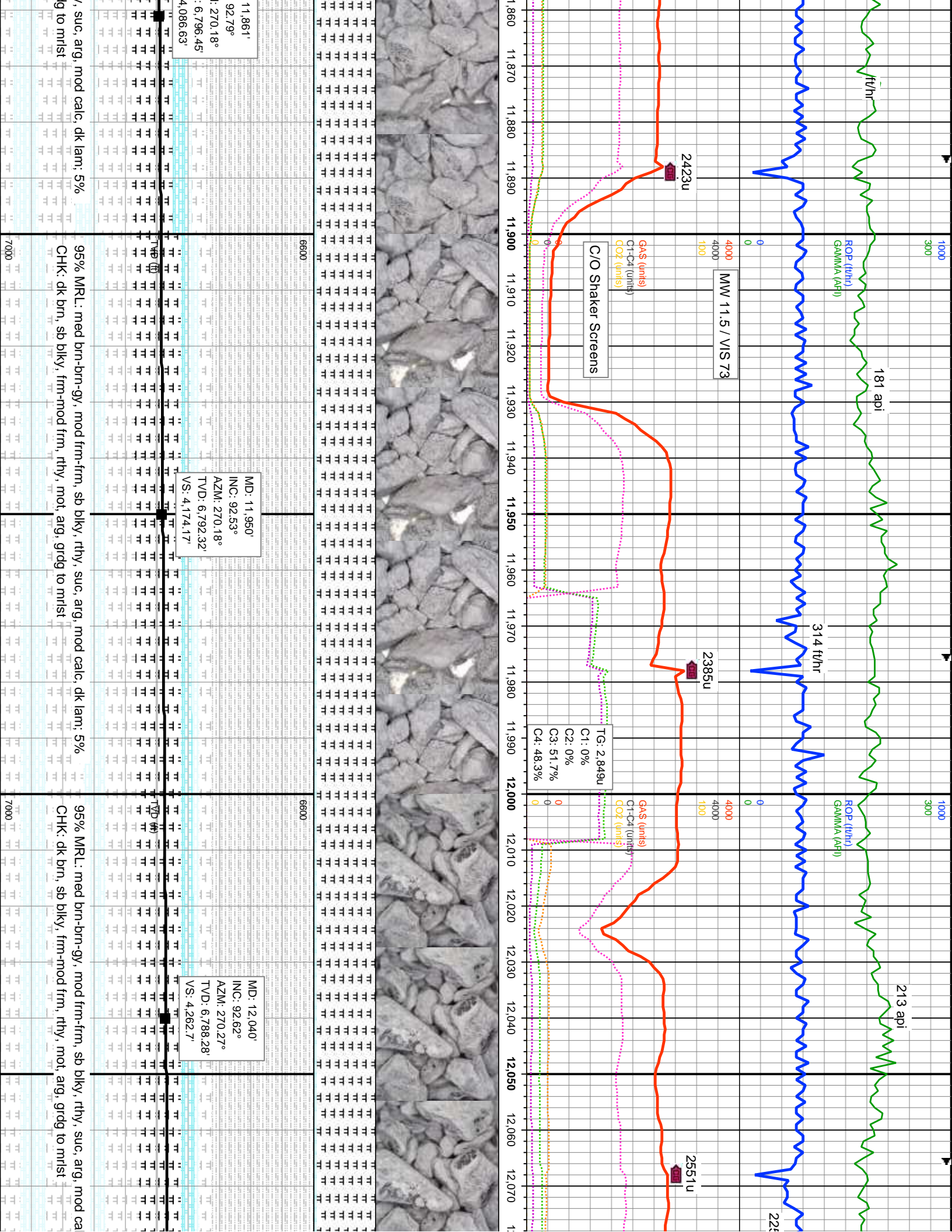


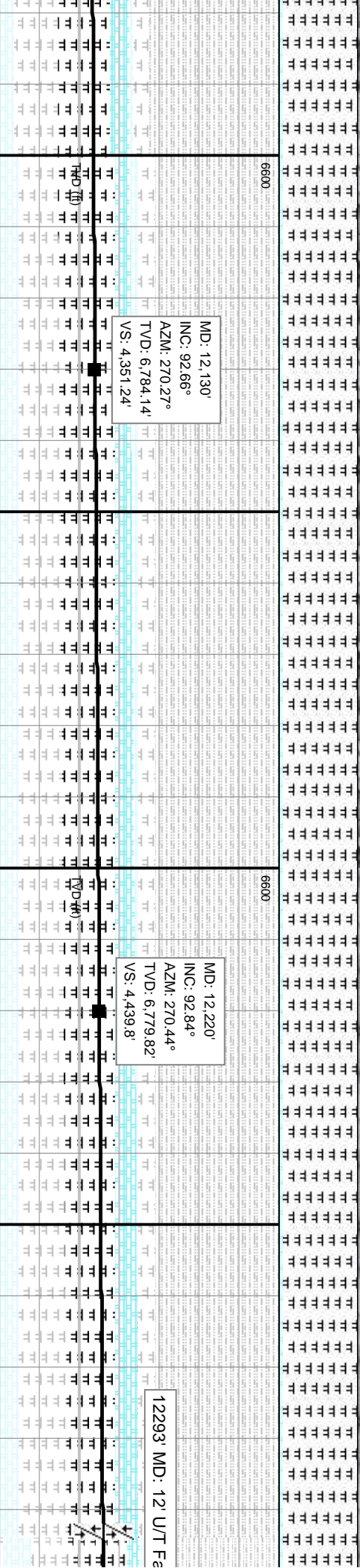
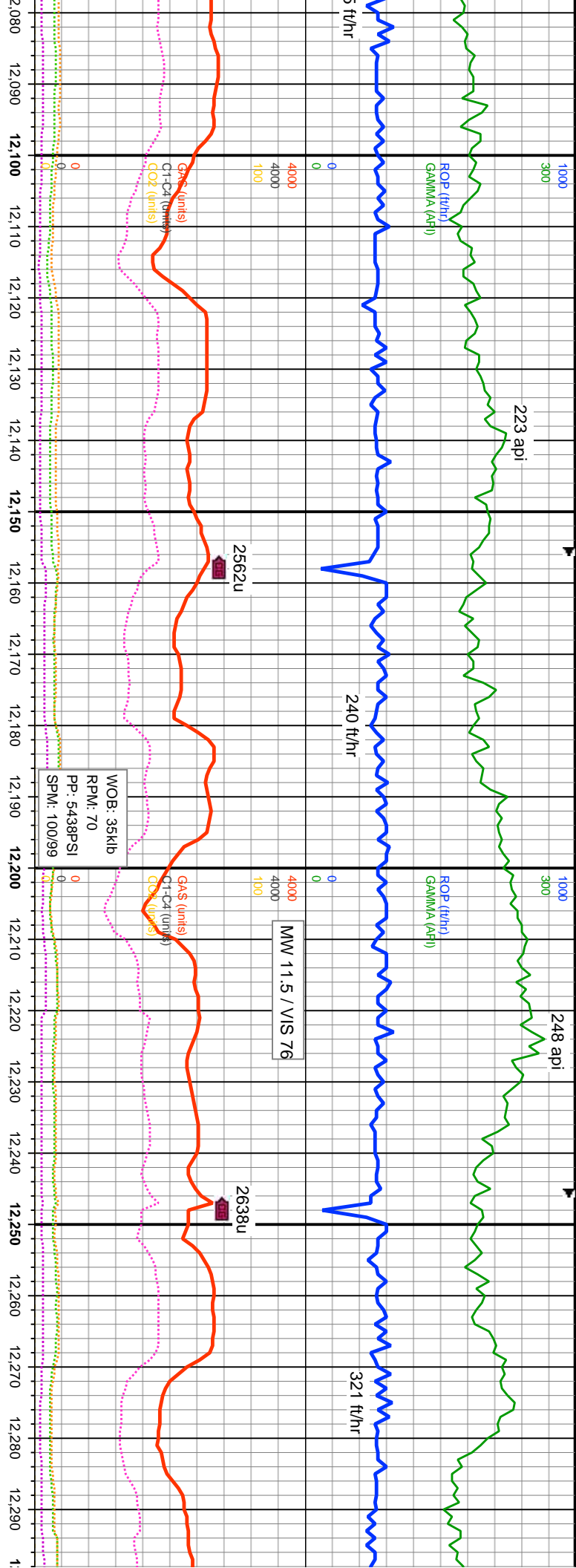






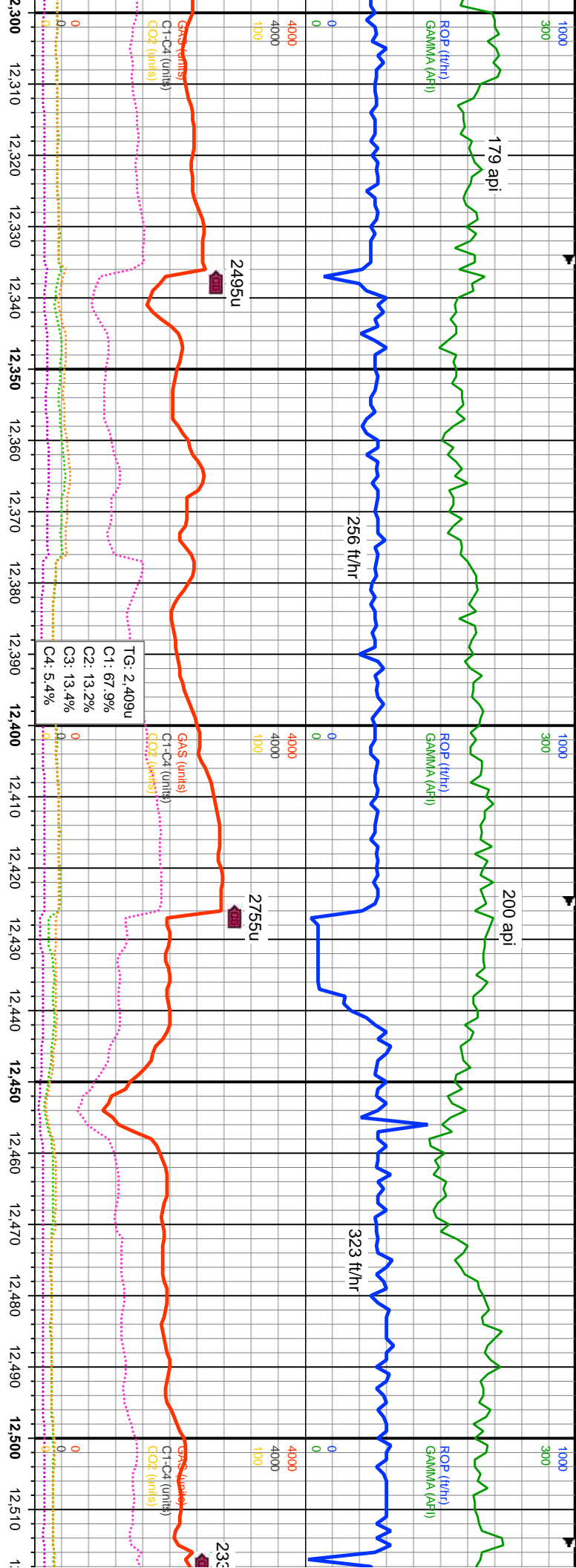




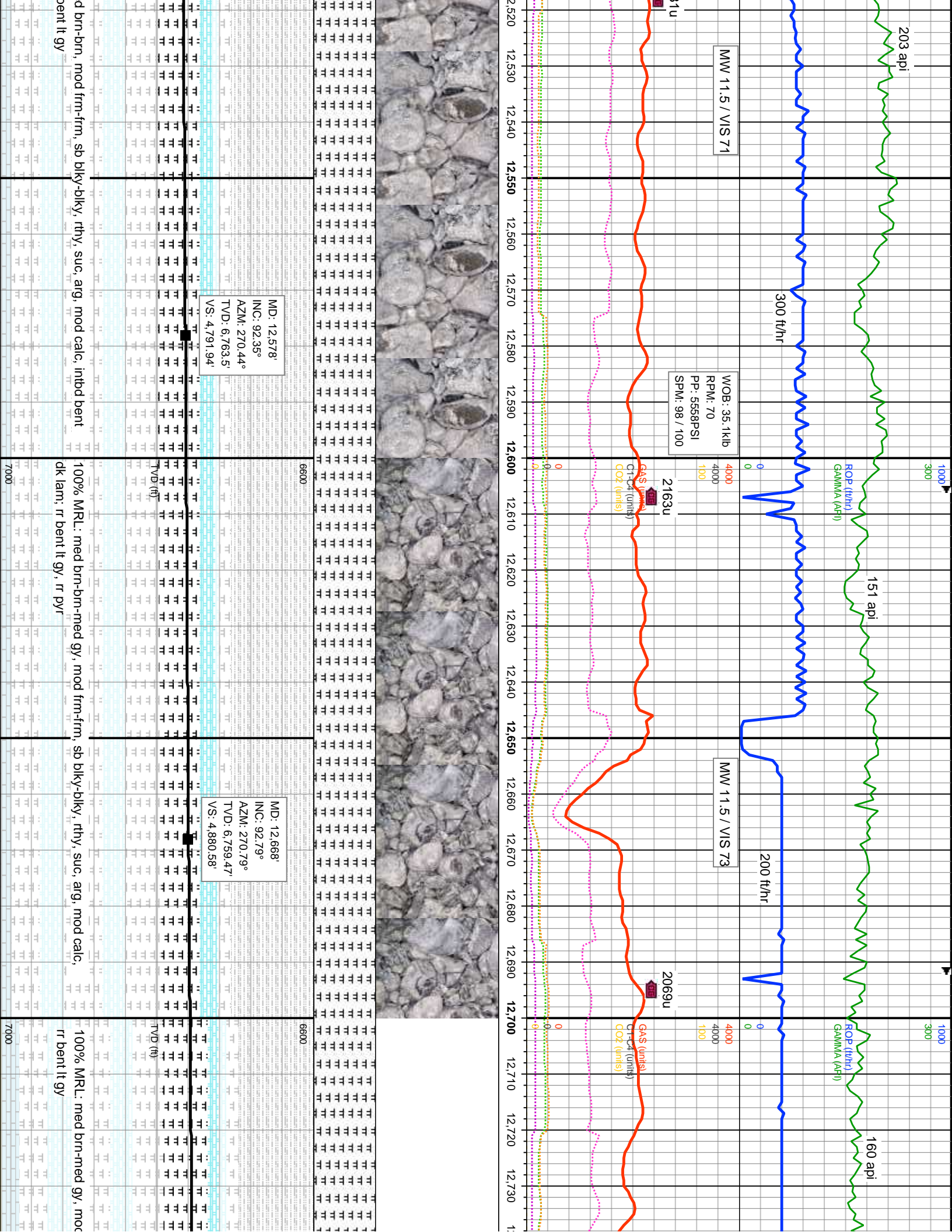


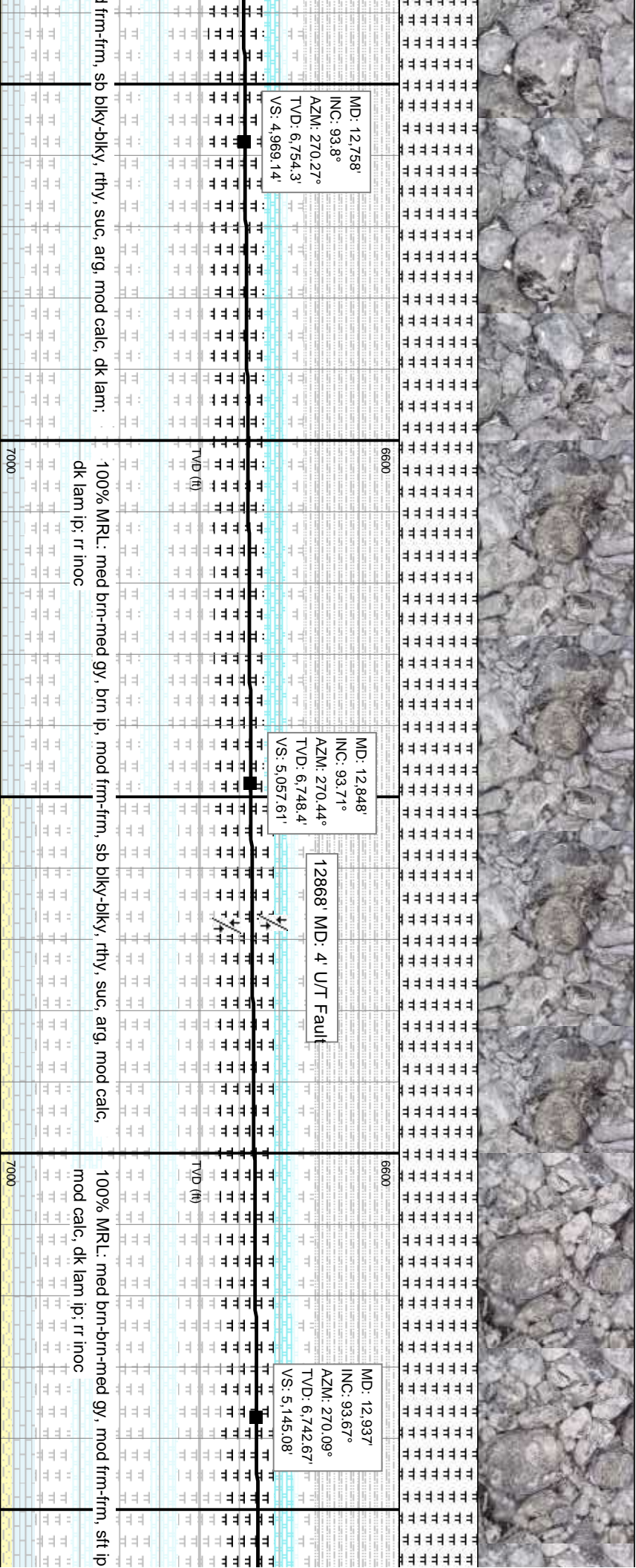
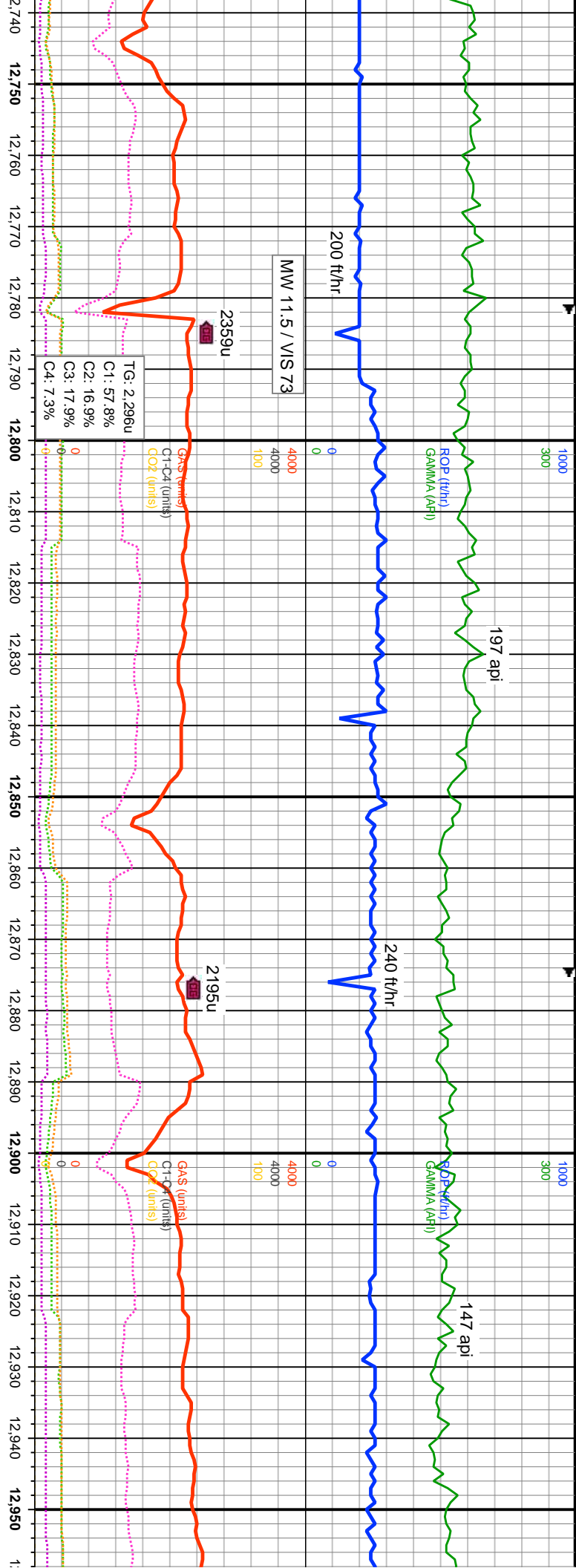
95% MRL: med brn-brn-gy, mod frm-frm, sb blkly, rthy, suc, arg, mod calc, dk lam, 5%
CHK: dk brn, sb blkly, frm-mod frm, rthy, mot, arg, grdg to mist

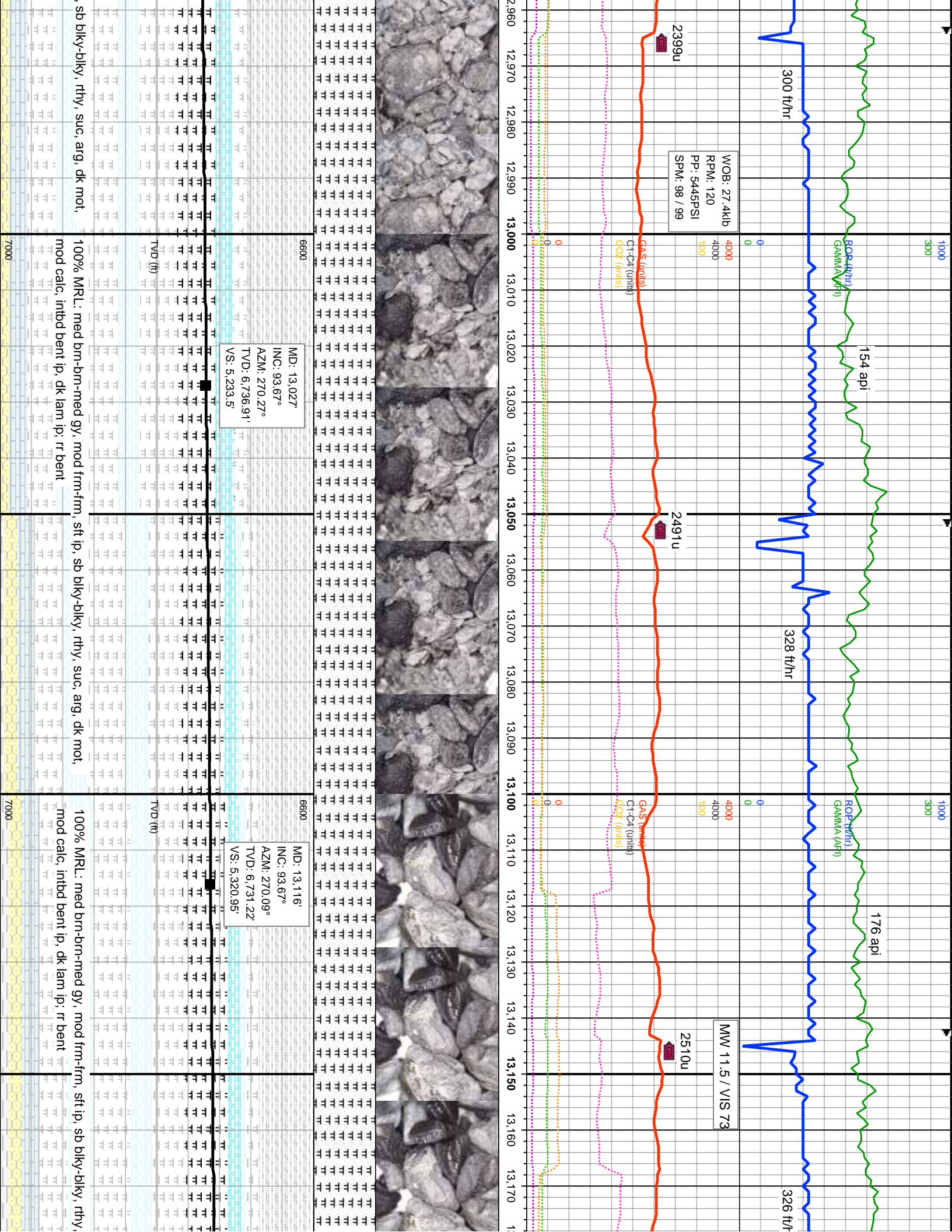
95% MRL: med brn-brn, mod frm-frm, sb blkly-blkly, rthy, suc, arg, mod calc, dk lam, 5%
CHK: dk brn, sb blkly, frm-mod frm, rthy, mot, arg, grdg to mist, dk org lam ip

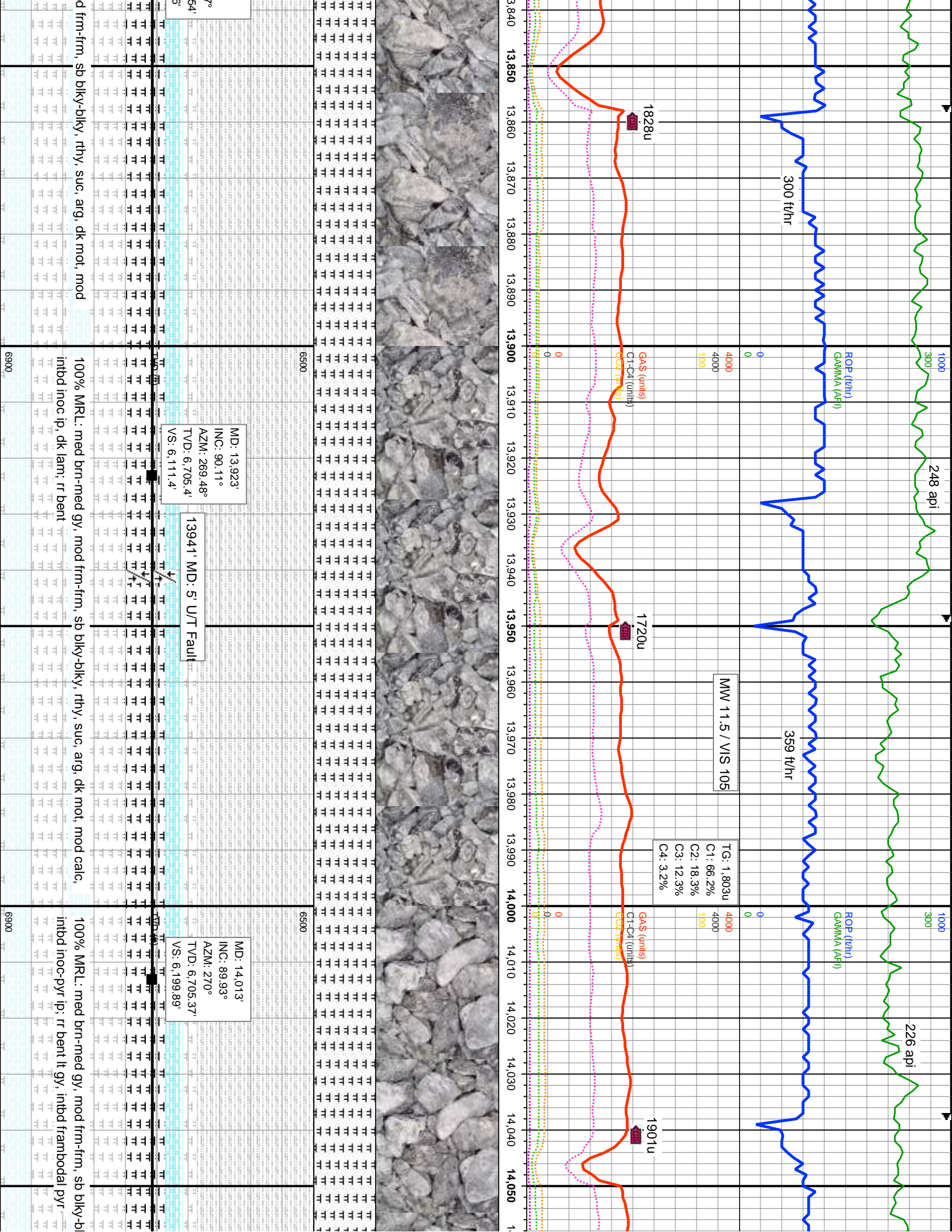


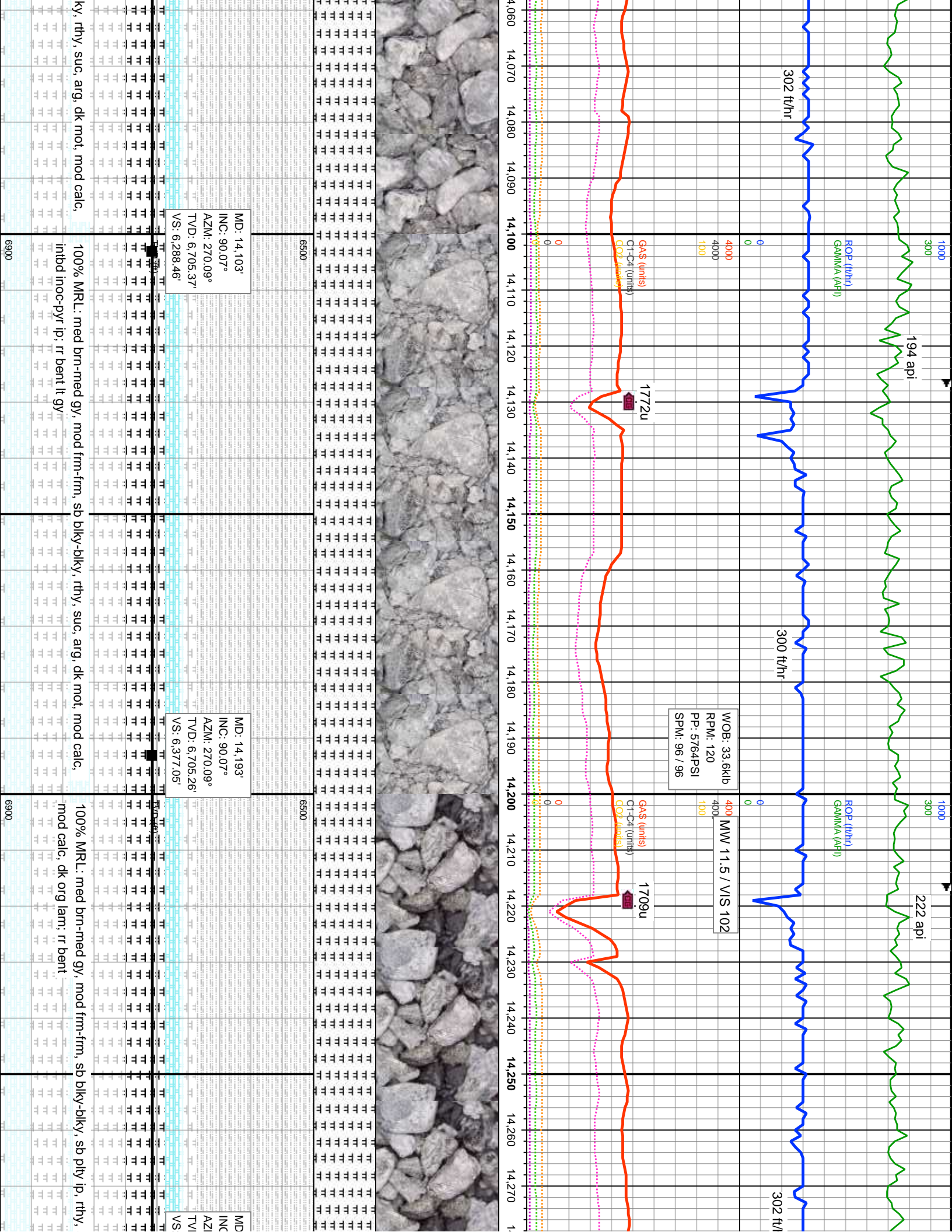
MD: 12.309° INC: 92.79° AZM: 270° TVD: 6,775.45' VS: 4,527.33'		MD: 12.399° INC: 92.84° AZM: 270.44° TVD: 6,771.03' VS: 4,615.84'		MD: 12.489° INC: 92.22° AZM: 270° TVD: 6,767.05' VS: 4,704.38'	
95% MR: med brn-brn, mod frm-frm, sb blkly-blky, rthy, suc, arg, mod calc, dk lam; 5% CHK: dk brn, sb blkly, frm-mod frm, rthy, mot, arg, grdg to mrlst, rr bent lt gy		95% MR: med brn-brn, mod frm-frm, sb blkly-blky, rthy, suc, arg, mod calc, dk lam; 5% CHK: dk brn, sb blkly, frm-mod frm, rthy, mot, arg, grdg to mrlst, rr bent lt gy		100% MR: me lam, dk lam; rr b	

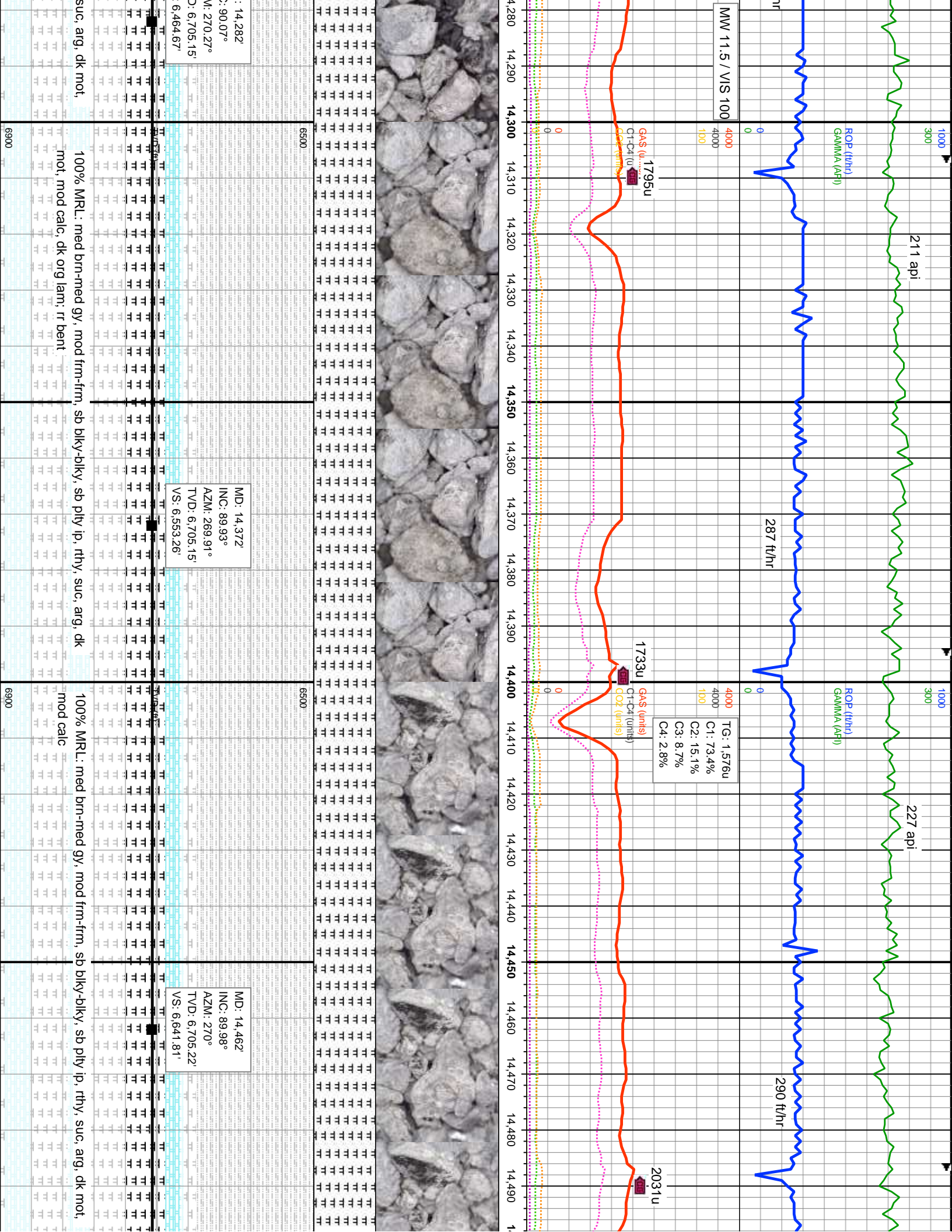


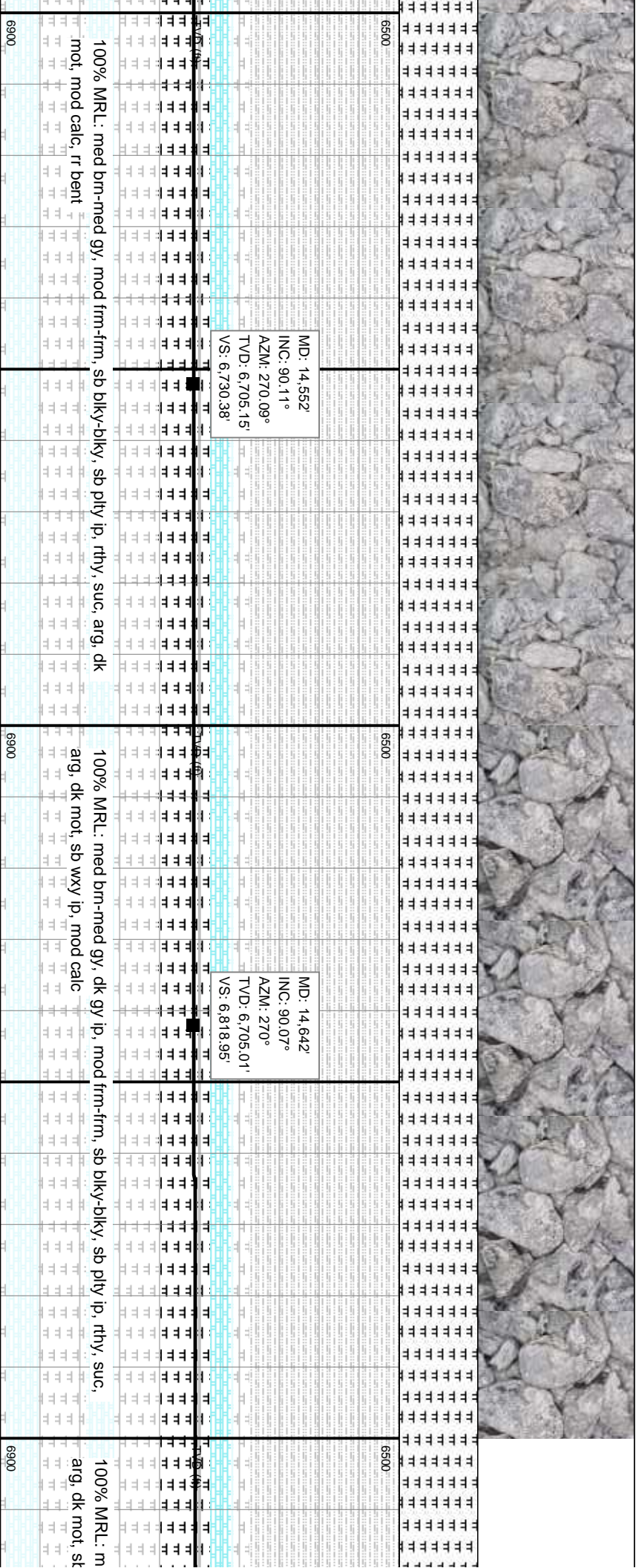
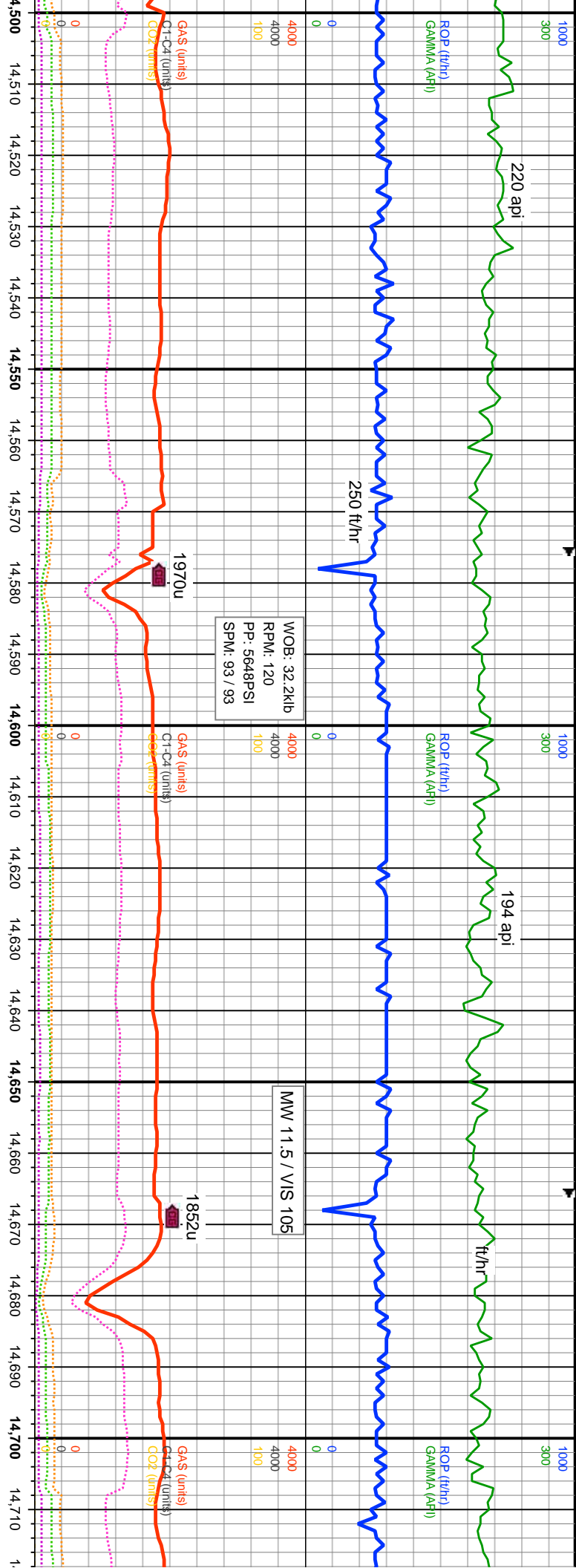


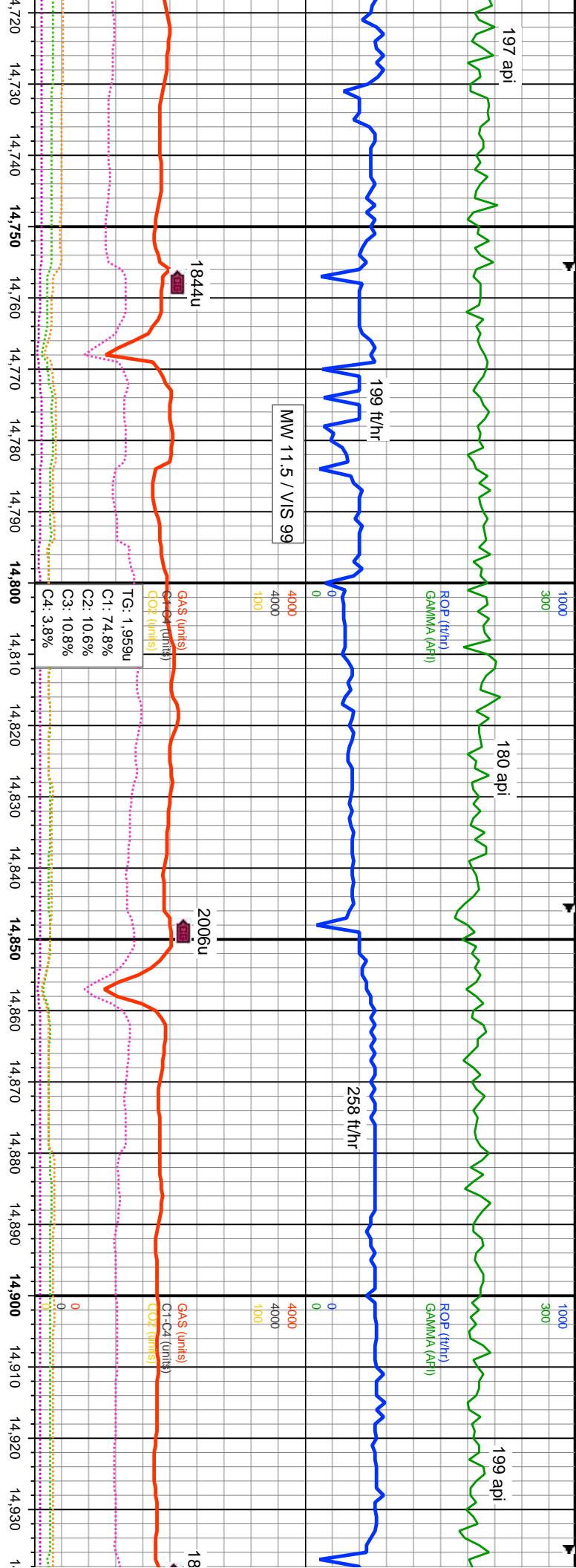










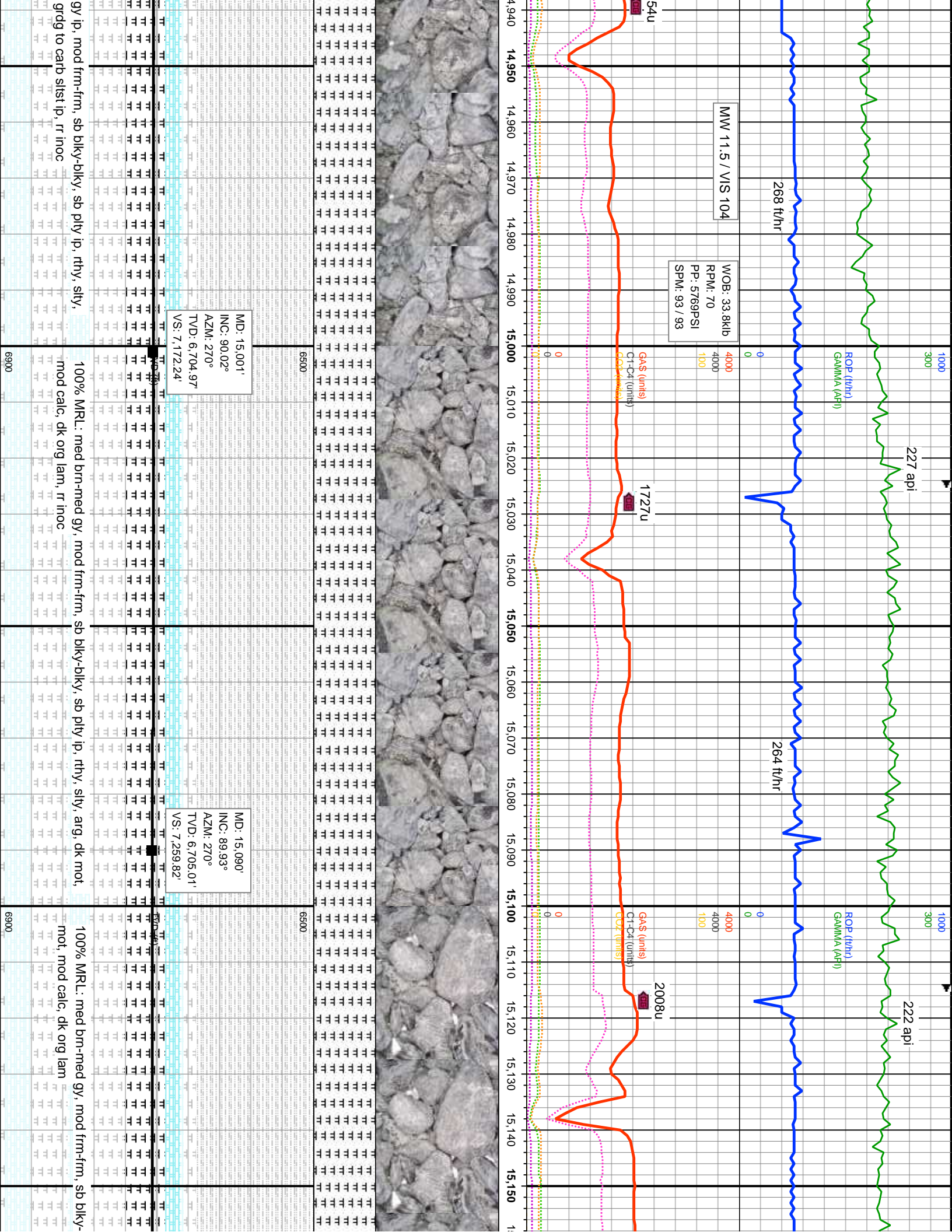


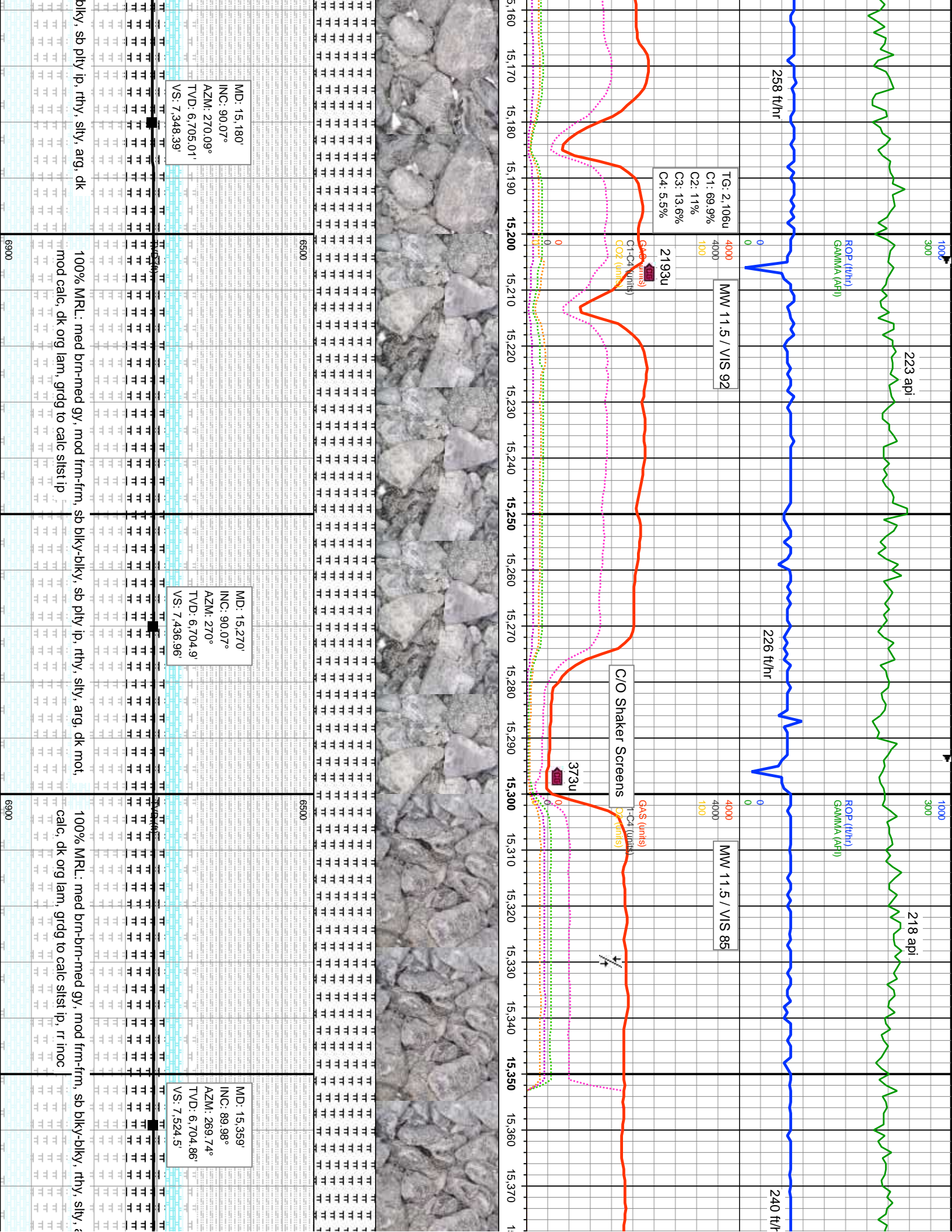
MD: 14,731'
INC: 89.98°
AZM: 270°
TVD: 6,704.97'
VS: 6,906.53'

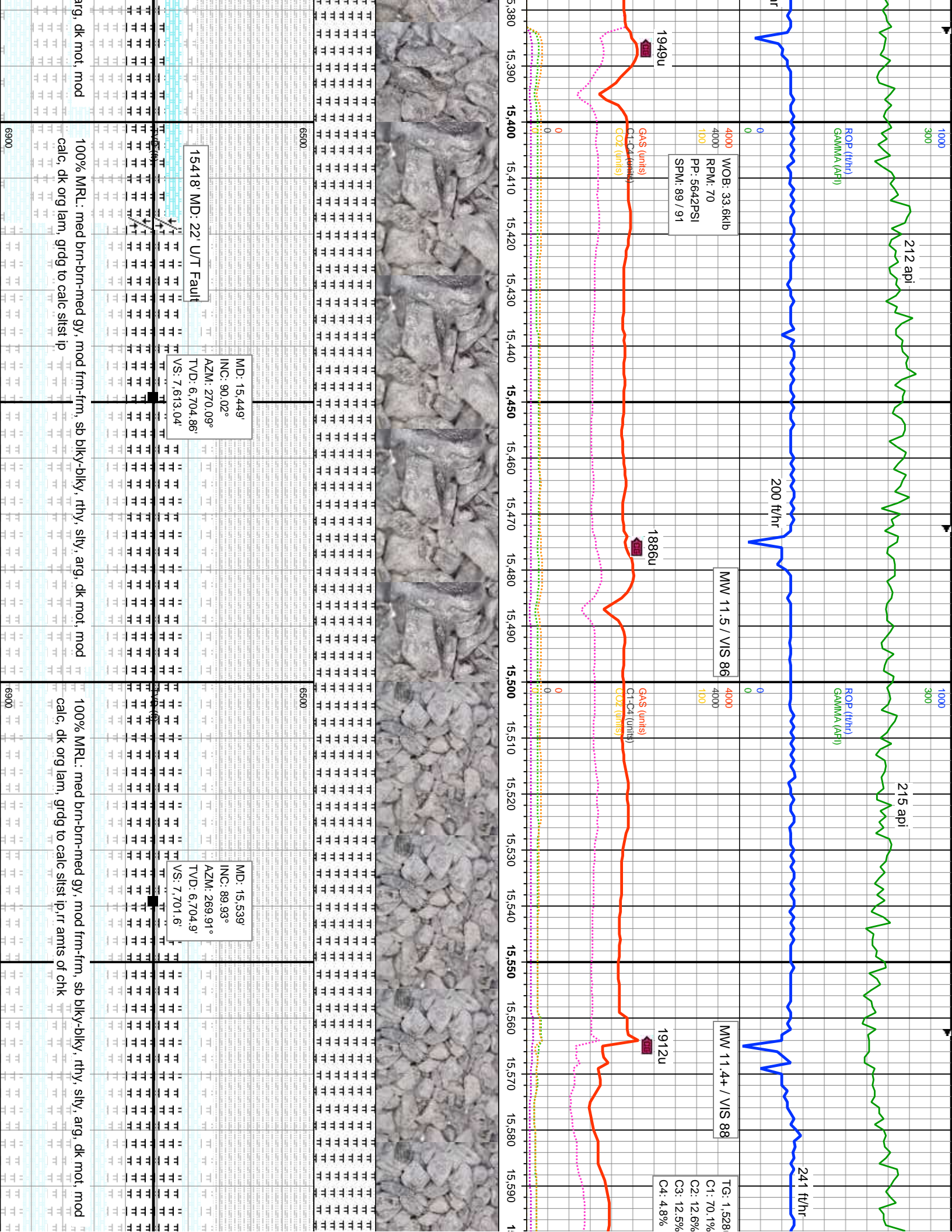
MD: 14,821'
INC: 89.98°
AZM: 270°
TVD: 6,705'
VS: 6,995.09'

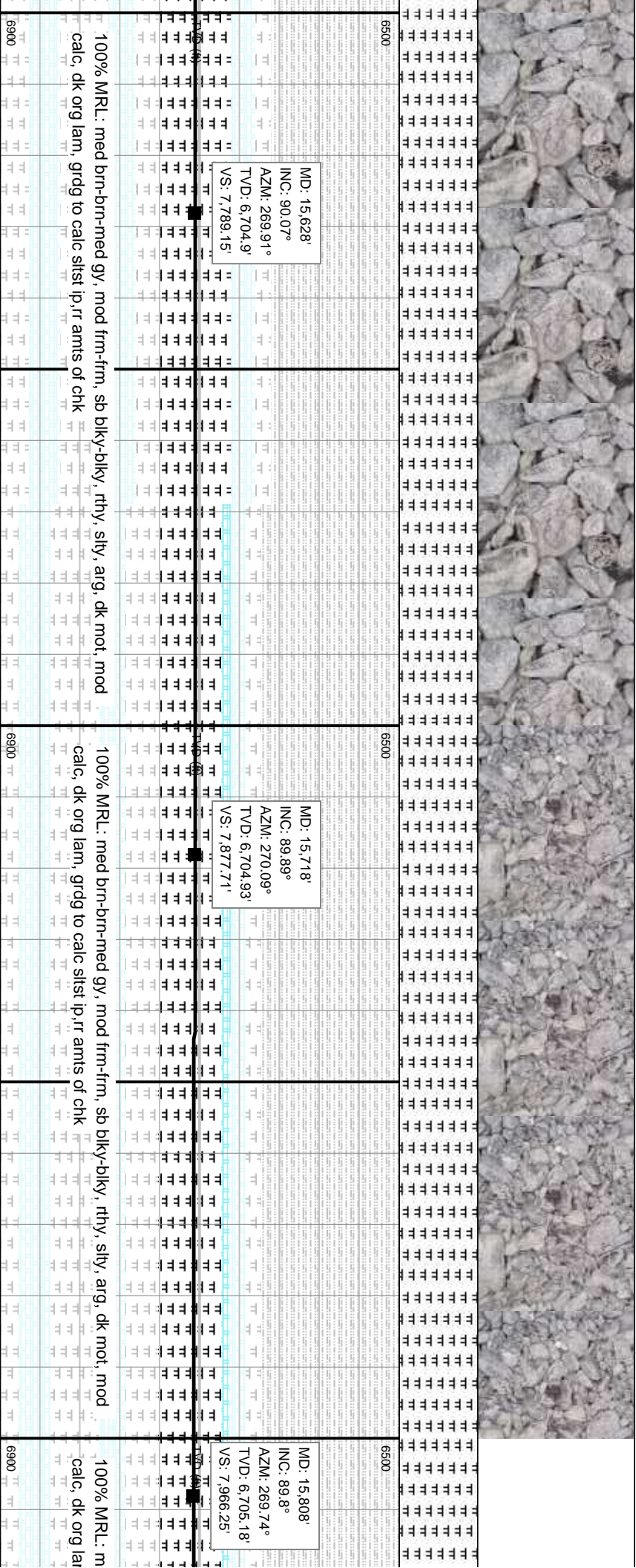
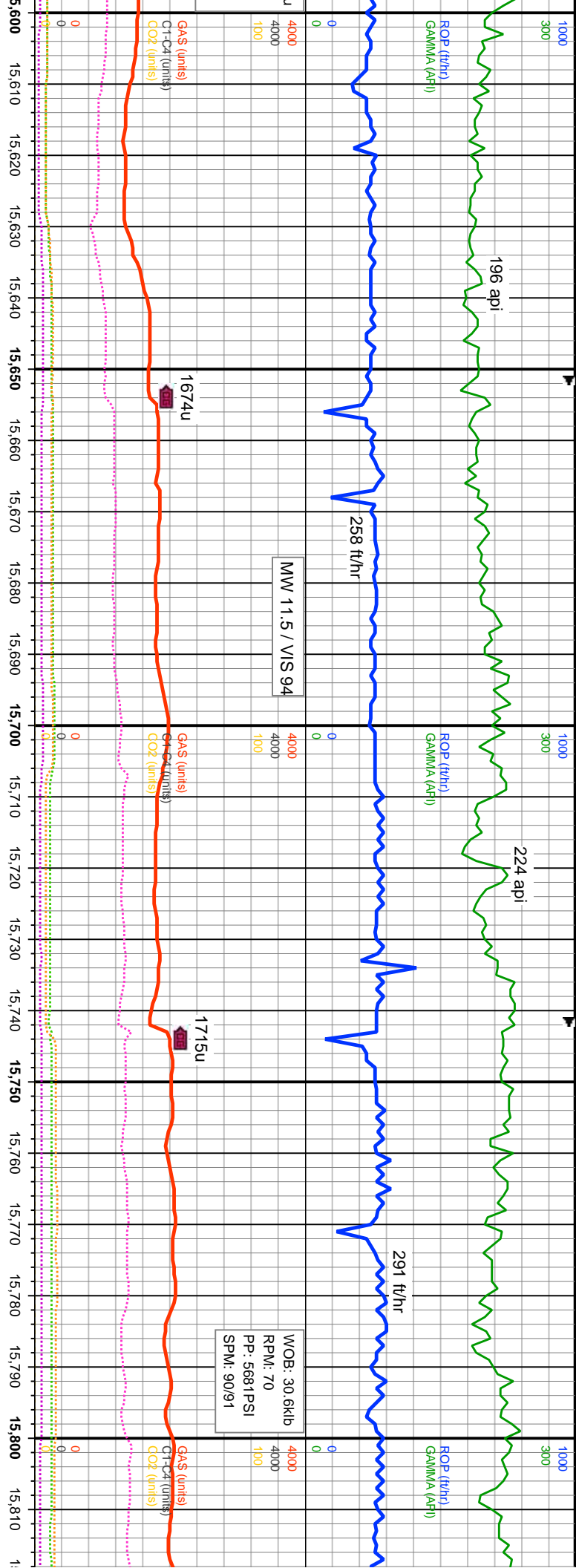
MD: 14,911'
INC: 90.02°
AZM: 270.09°
TVD: 6,705'
VS: 7,083.66'

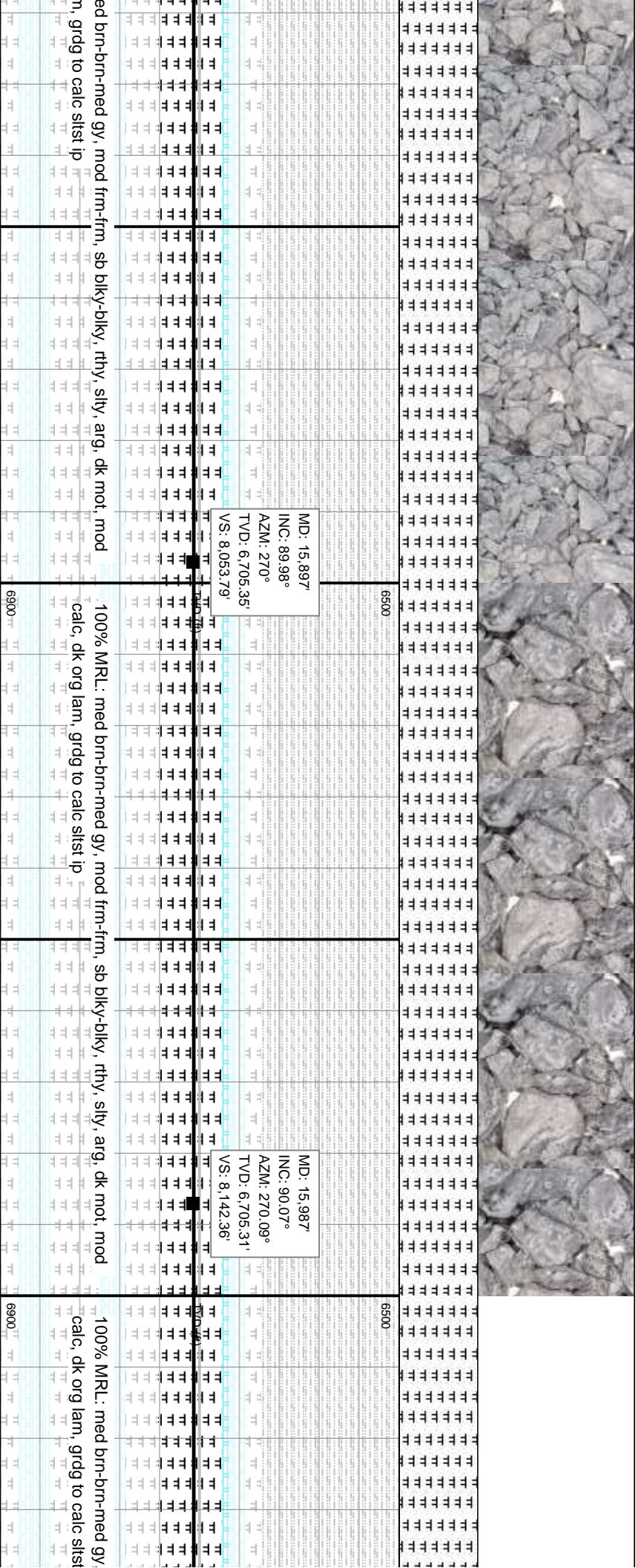
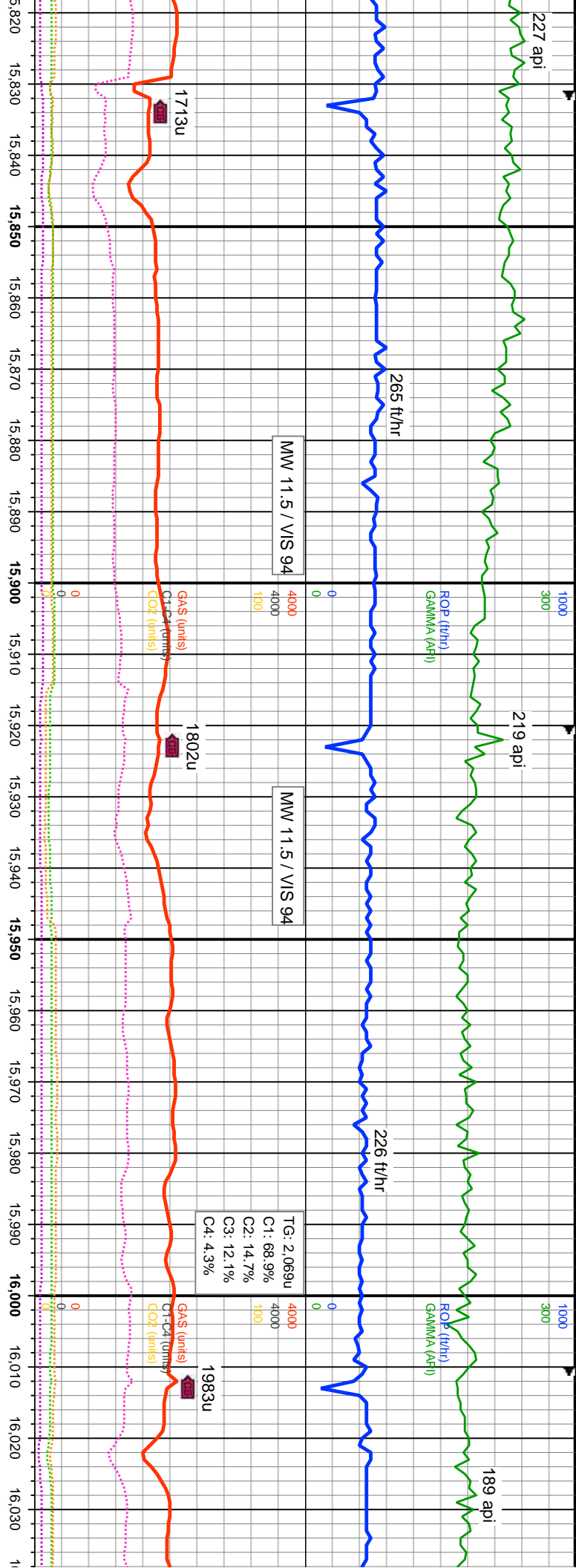
med brn-med gy, dk gy ip, mod frm-frm, sb blkly-blky, sb plty ip, rthy, suc.	6500	100% MRL: med brn-med gy, dk gy ip, mod frm-frm, sb blkly-blky, sb plty ip, rthy, silty.	6500
arg, dk mot, sb wxy ip, mod calc, grdg to carb silst ip	6900	100% MRL: med brn-med gy, dk arg, dk mot, sb wxy ip, mod calc.	6900

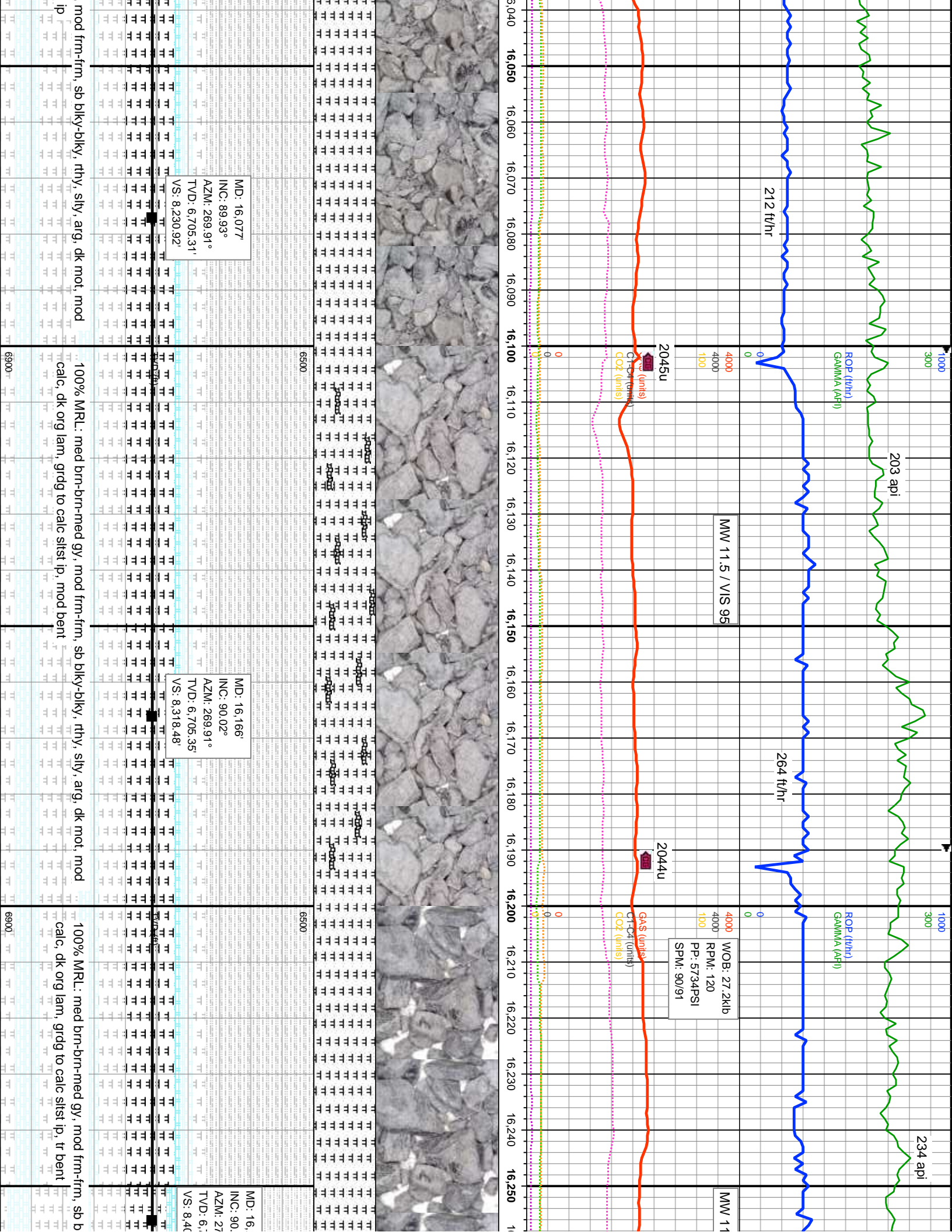


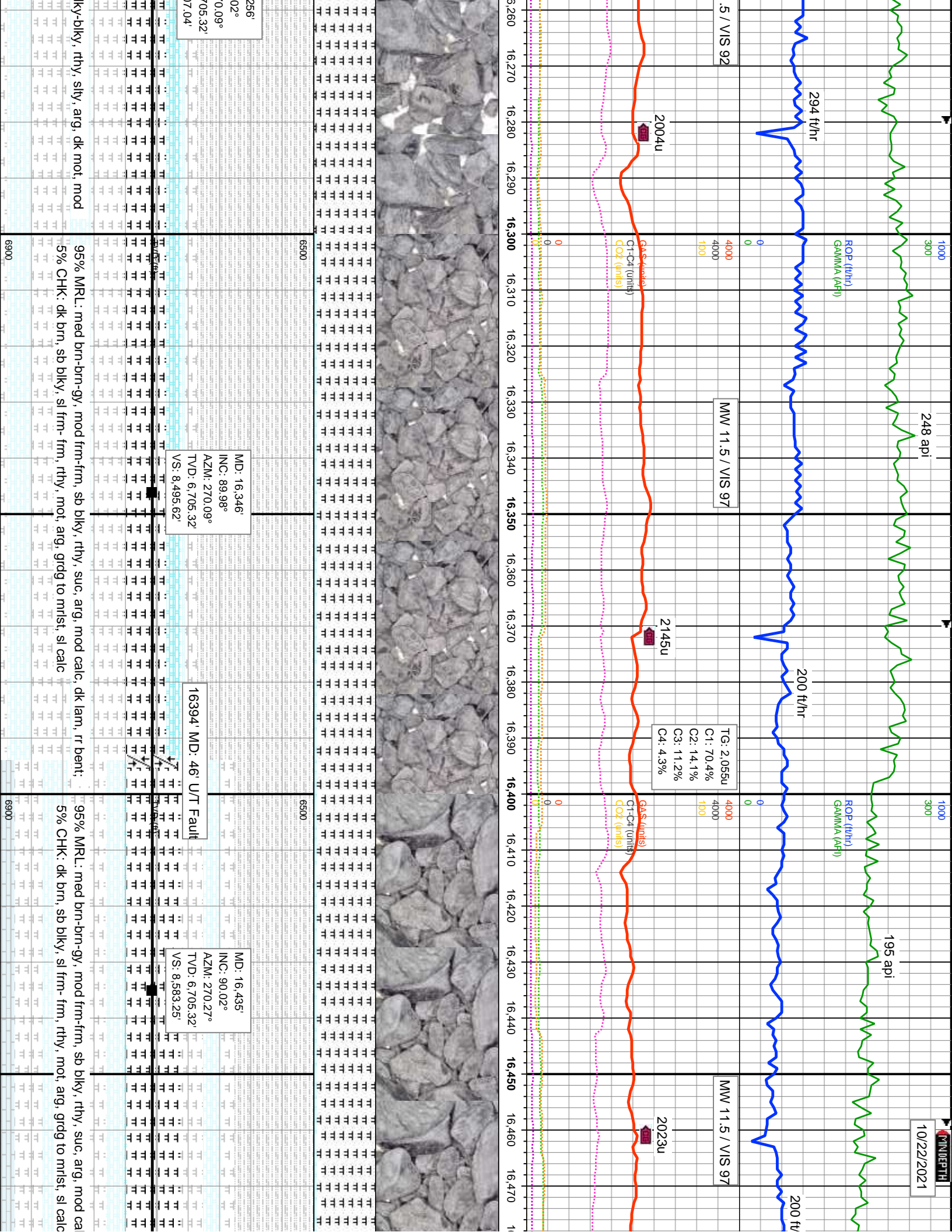


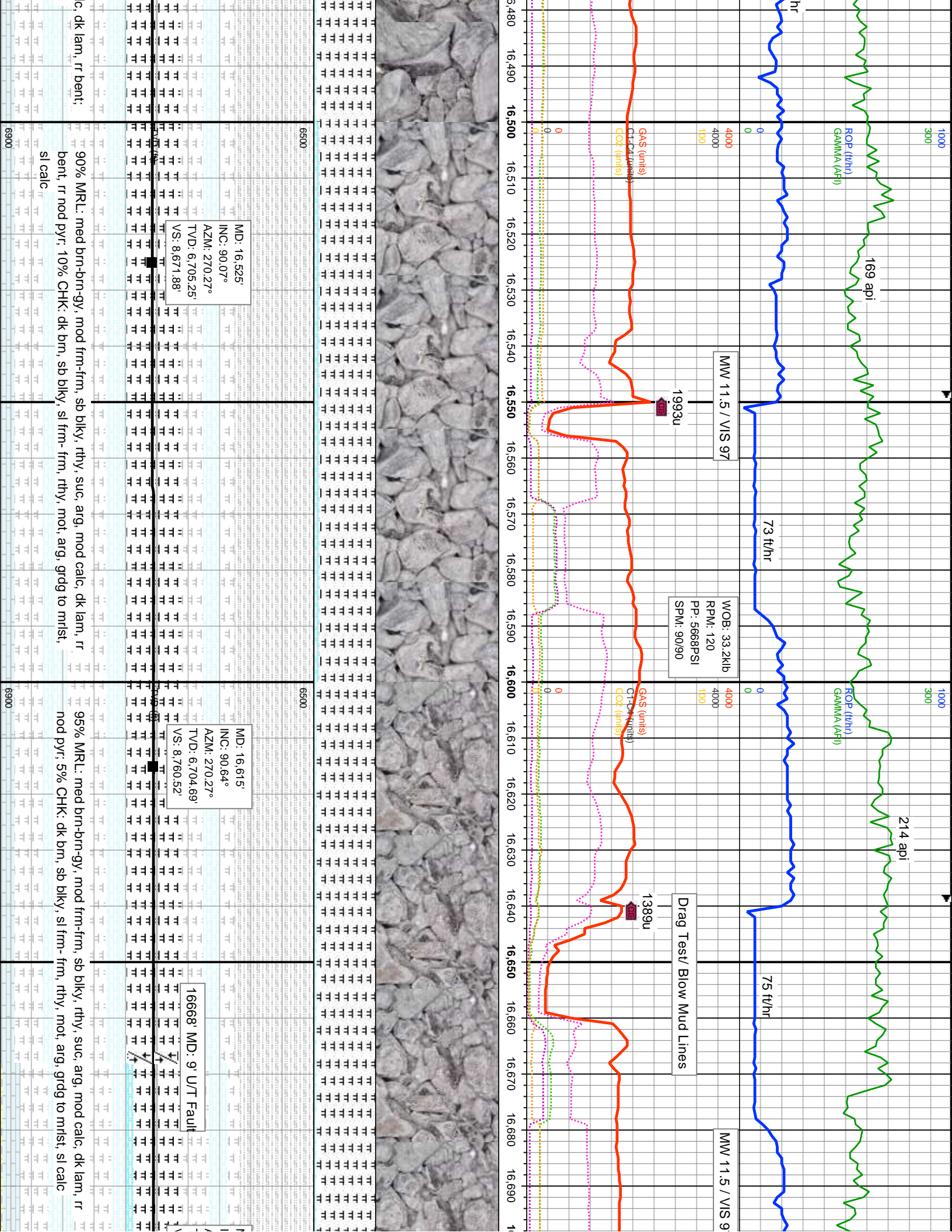


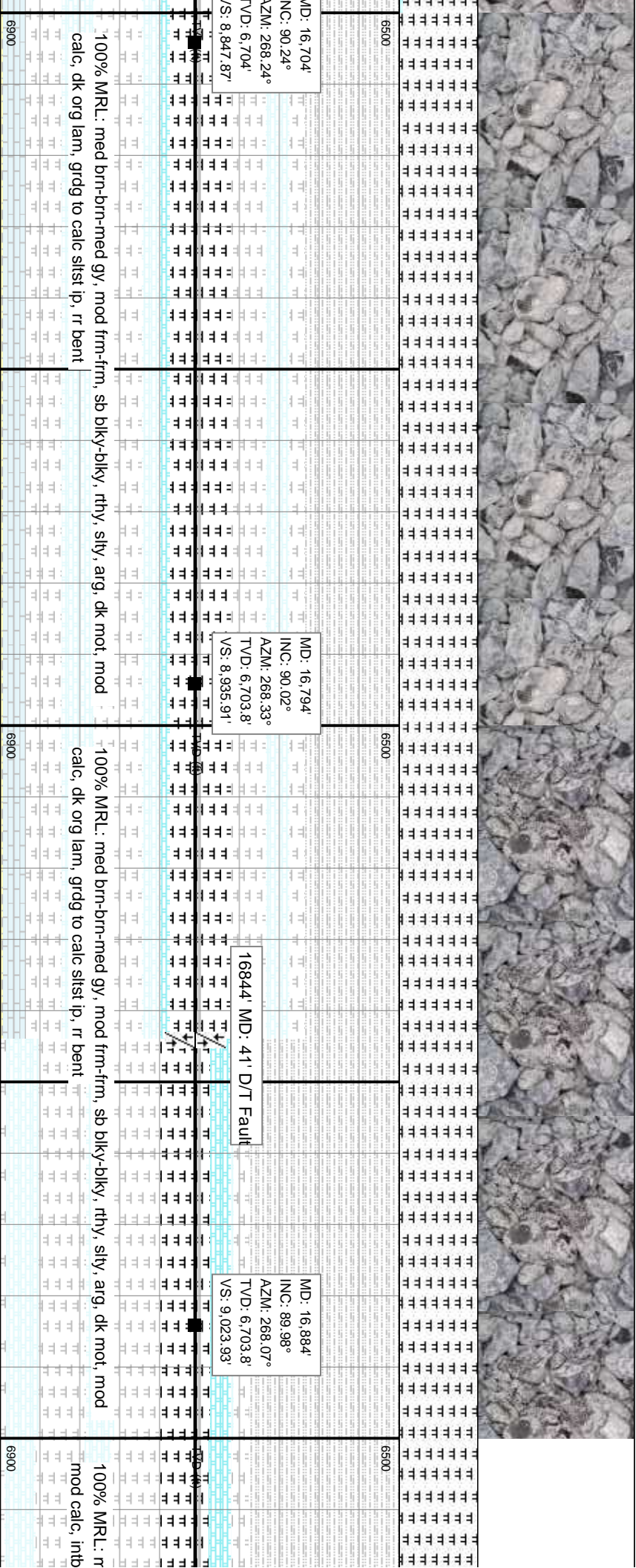
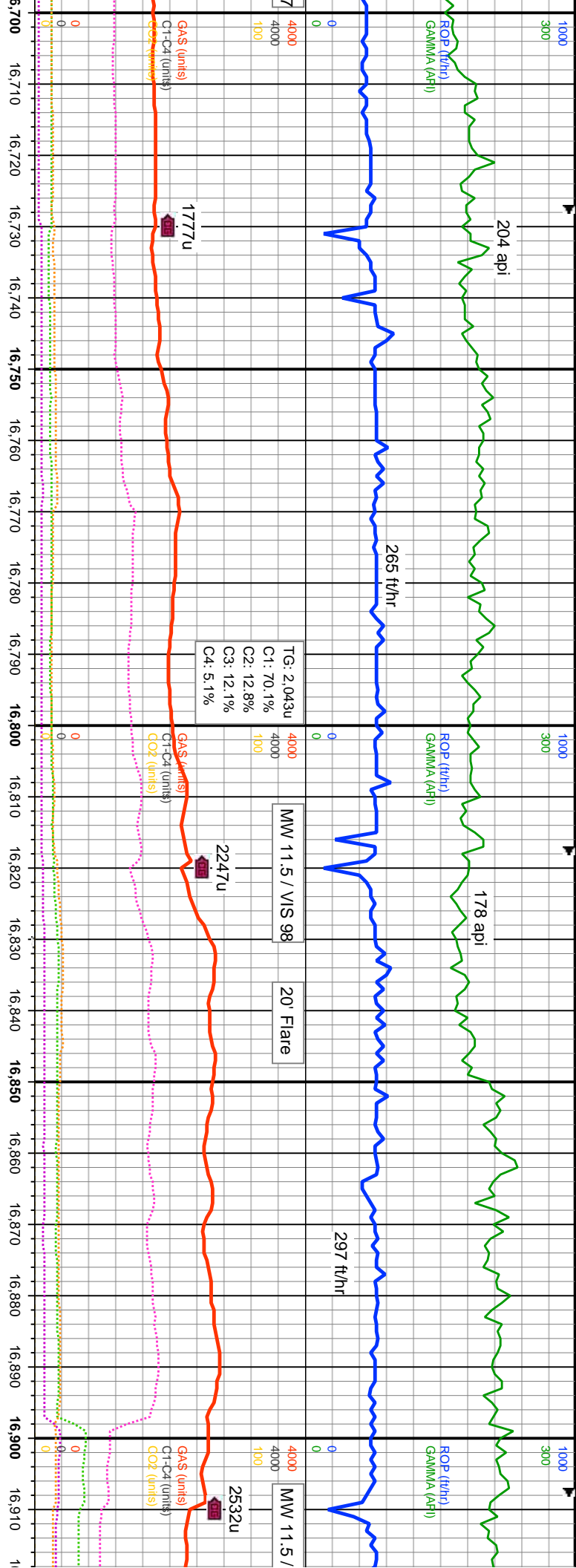


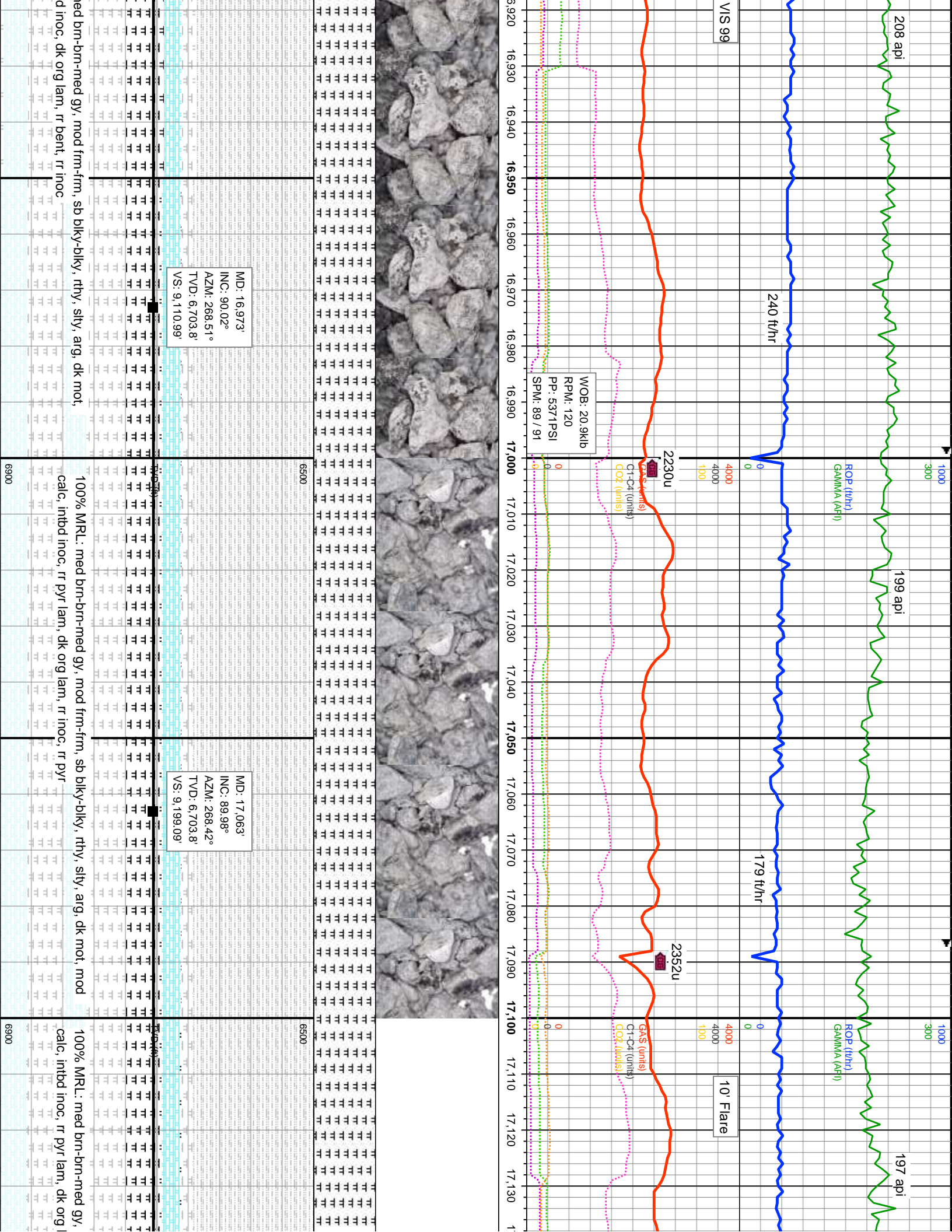


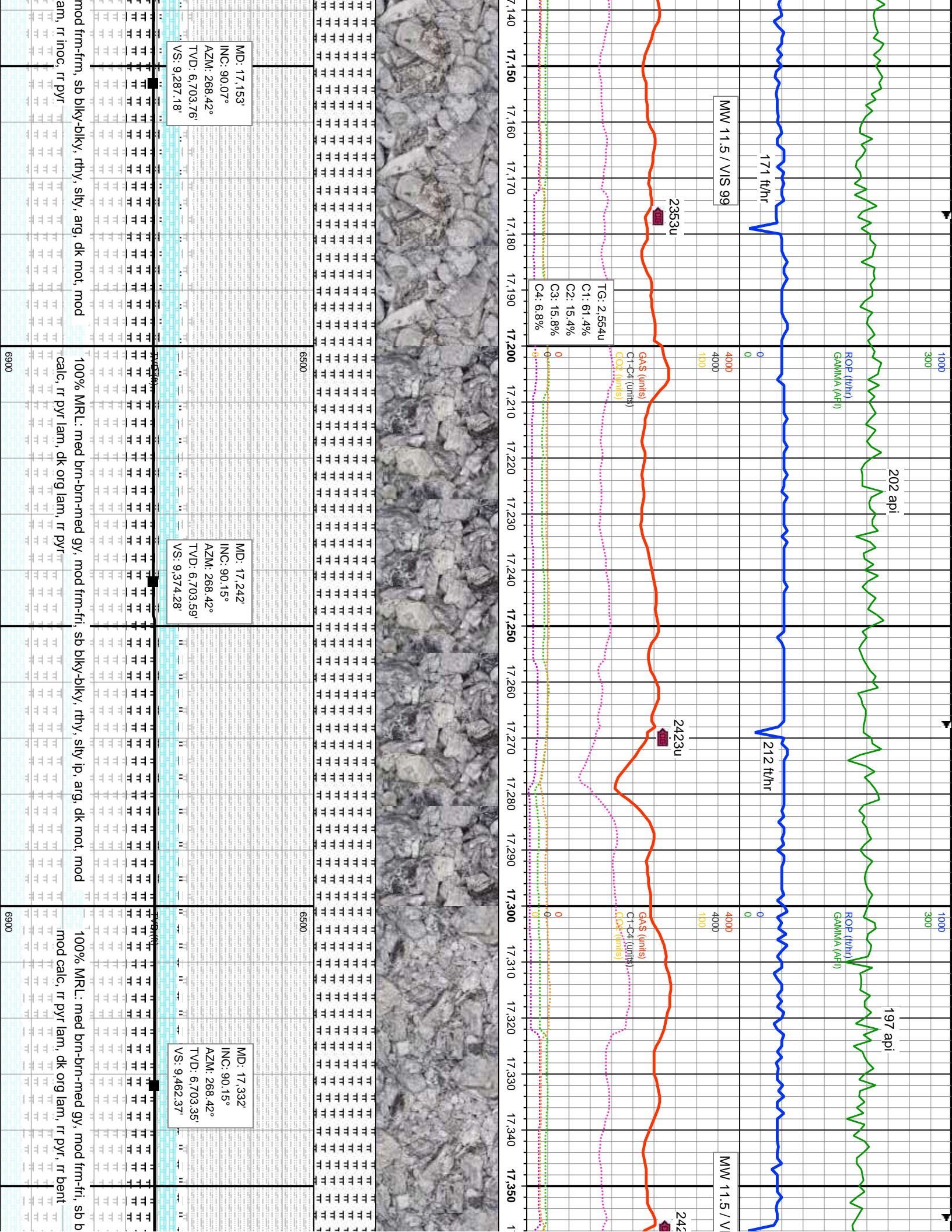


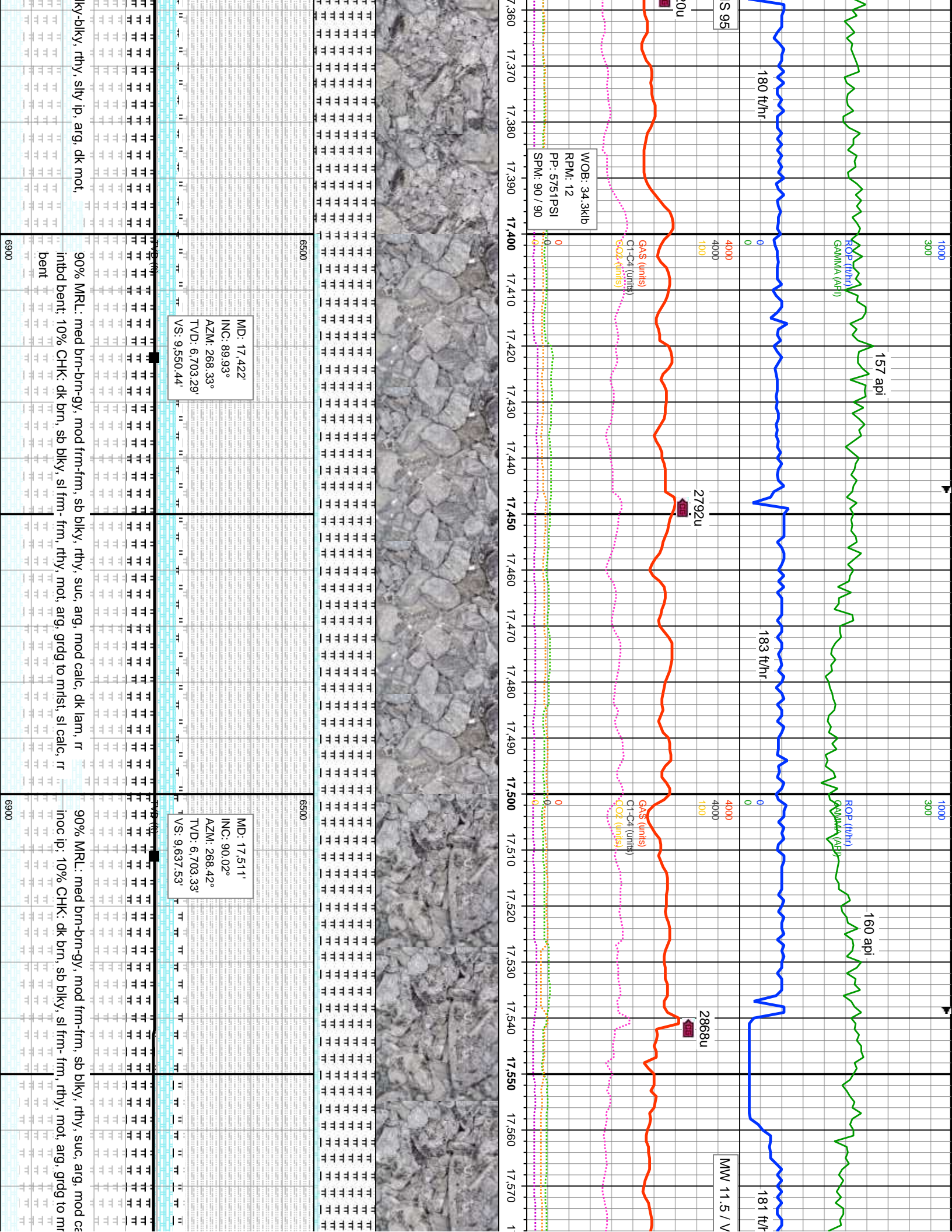


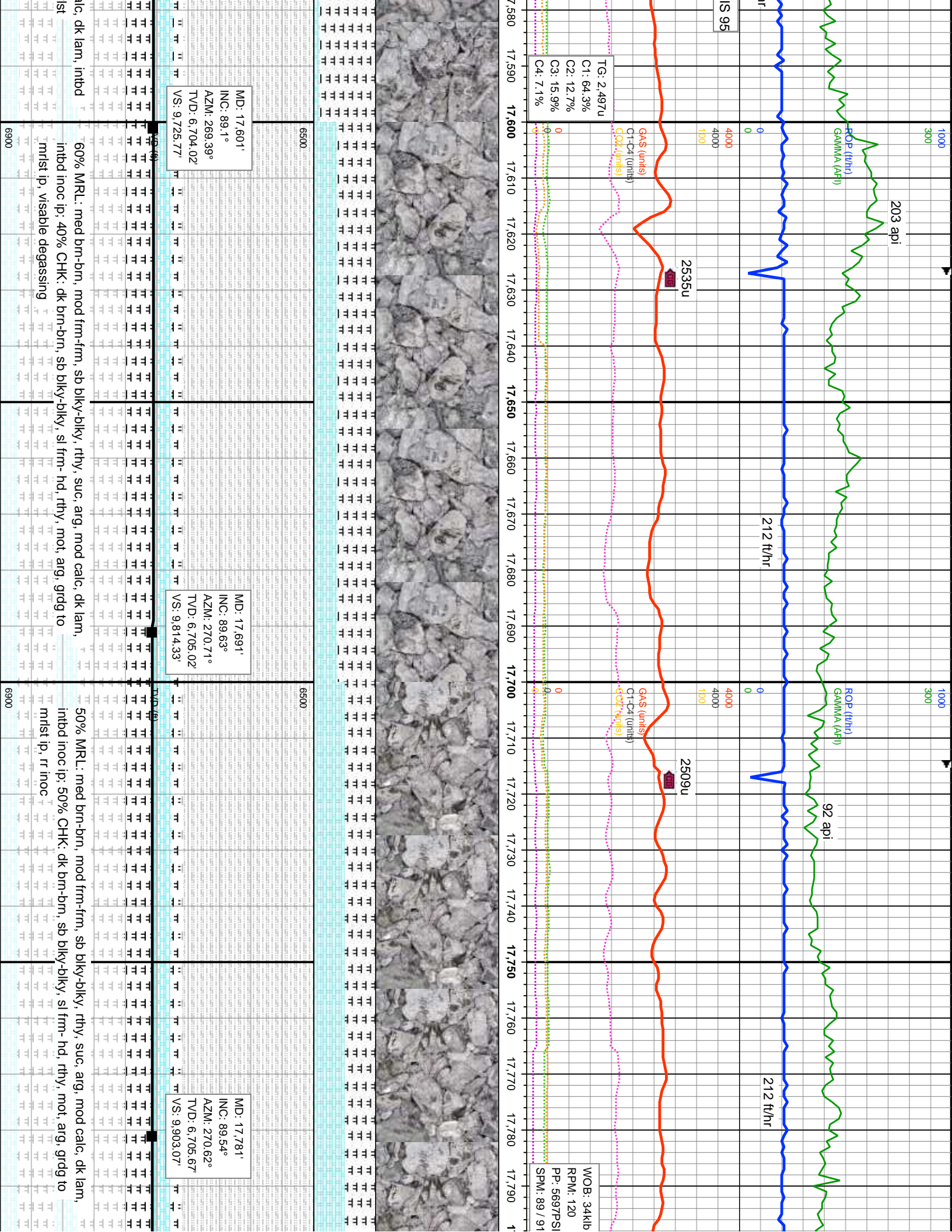


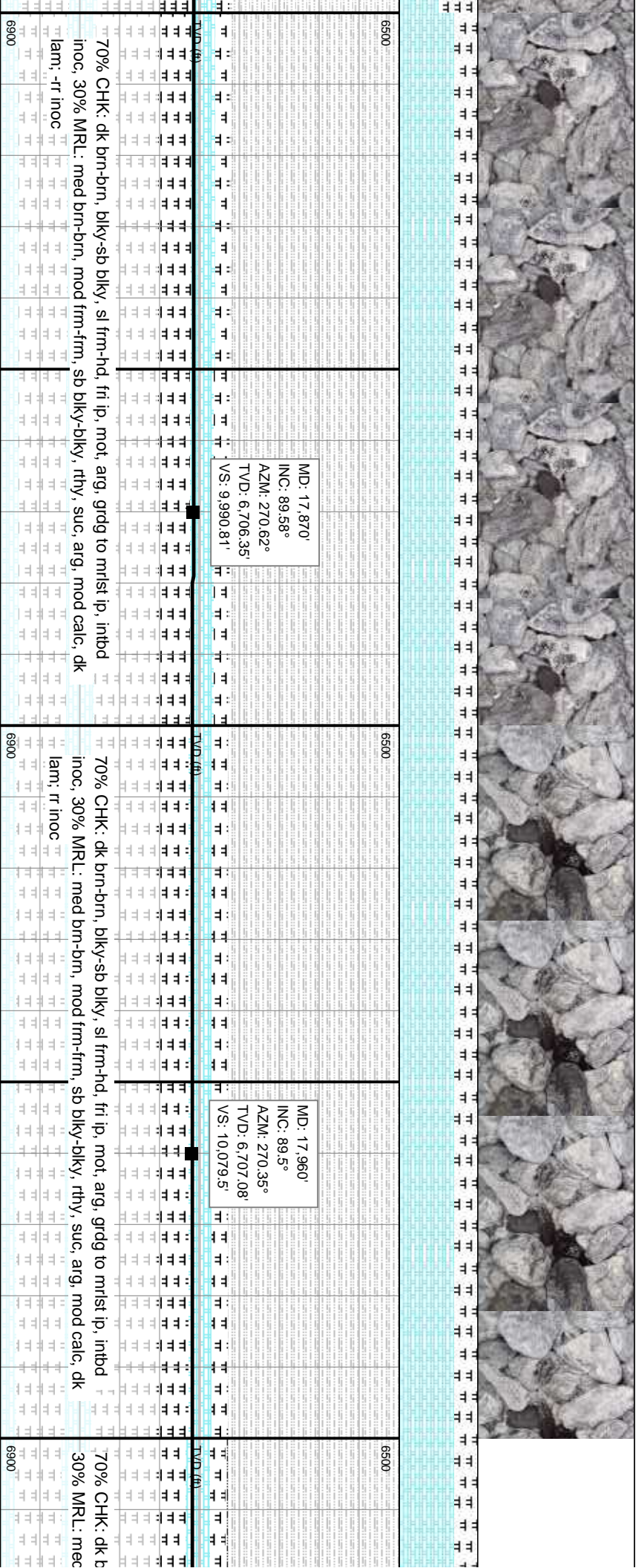
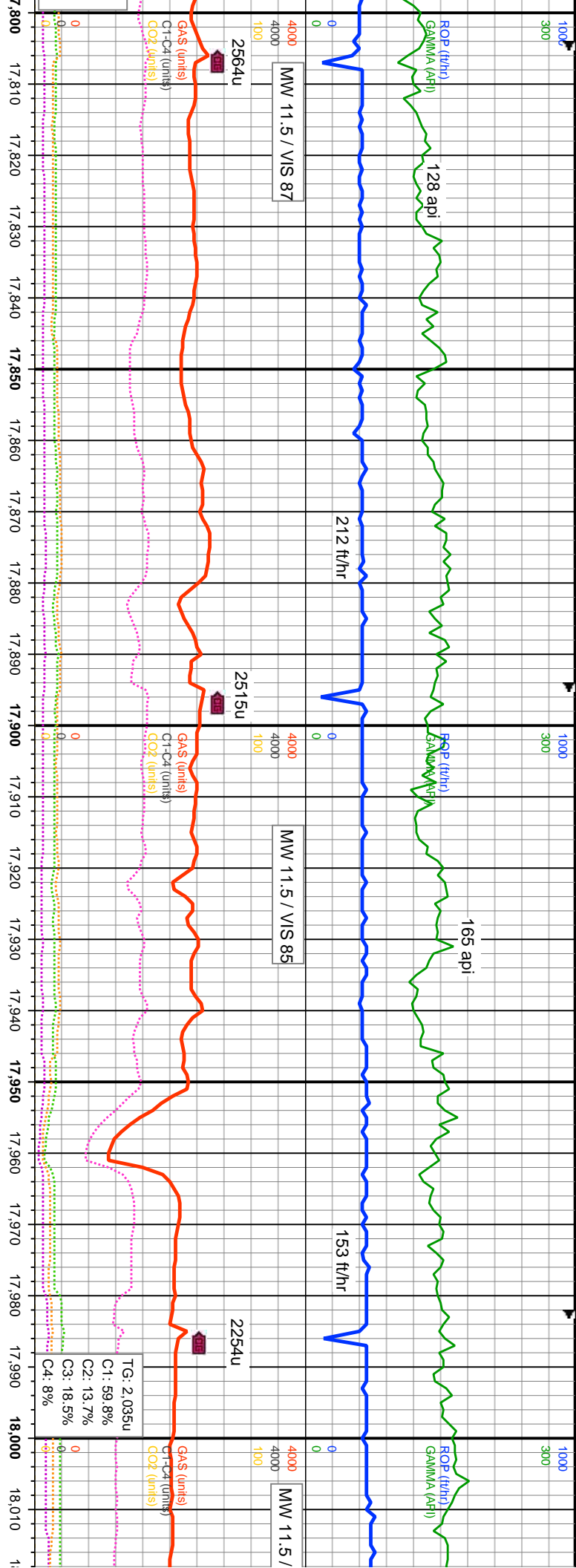


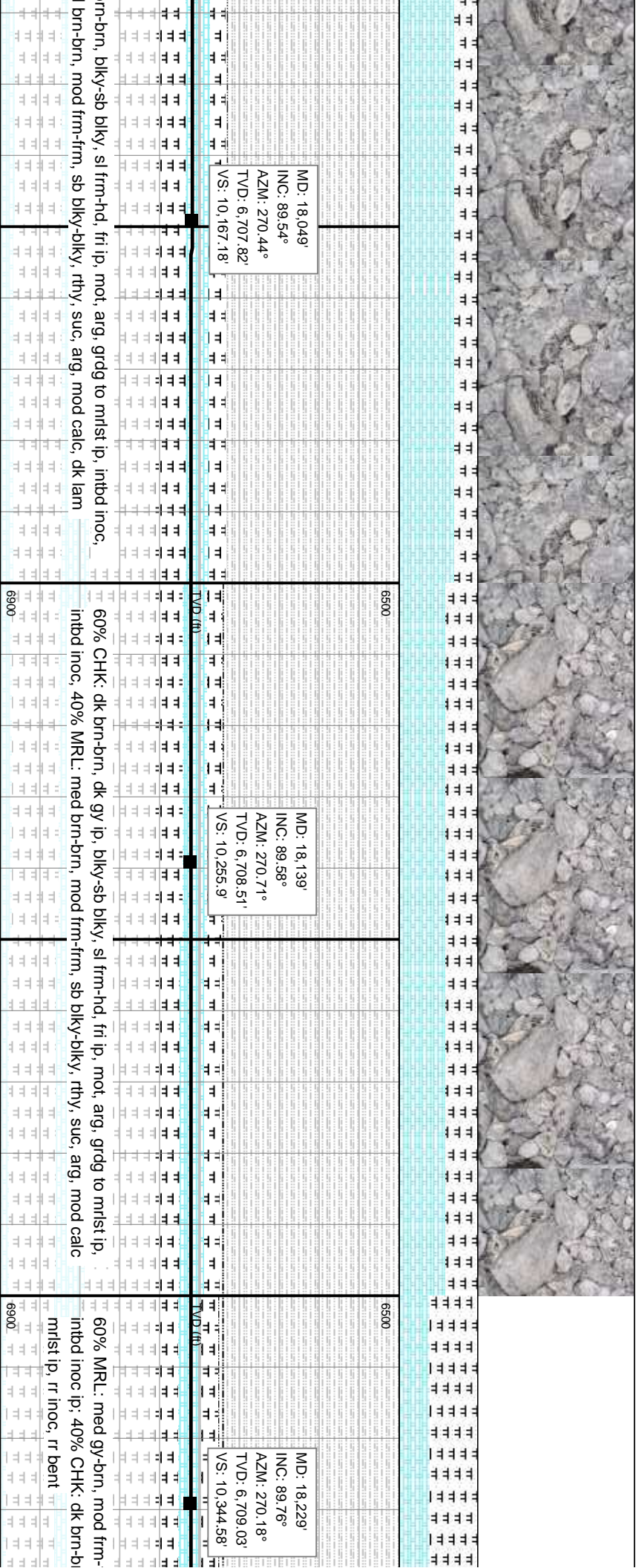
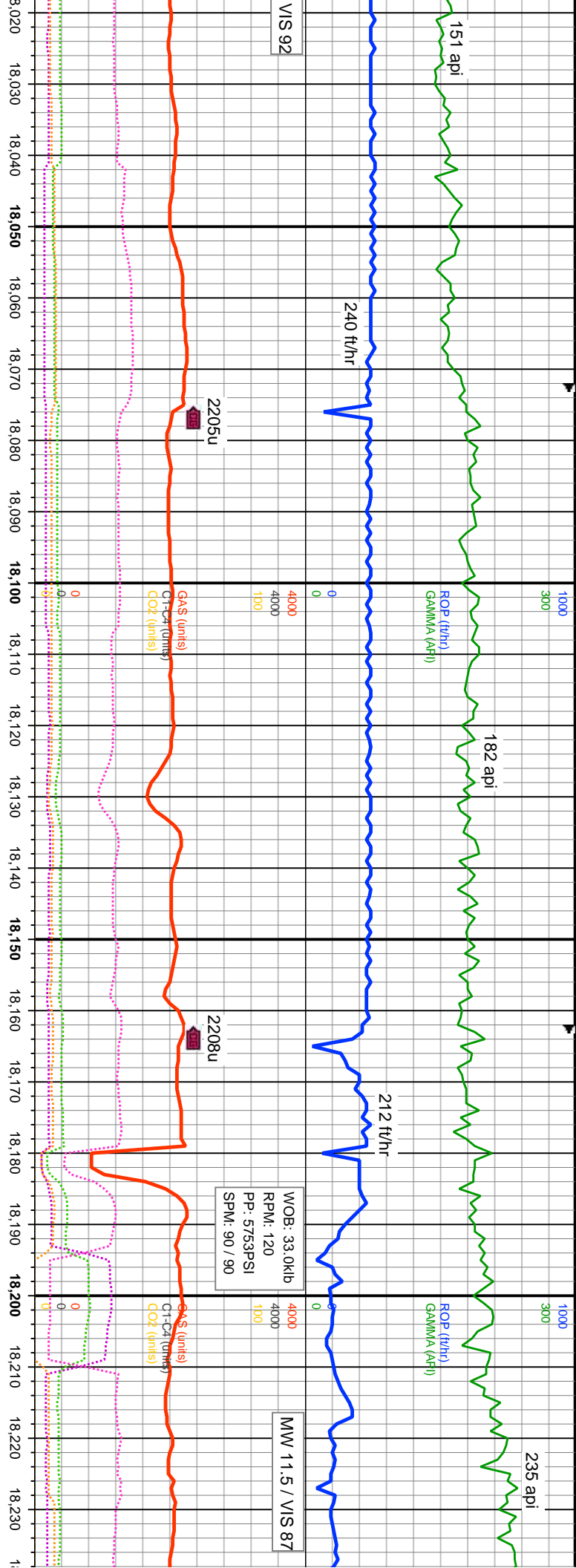


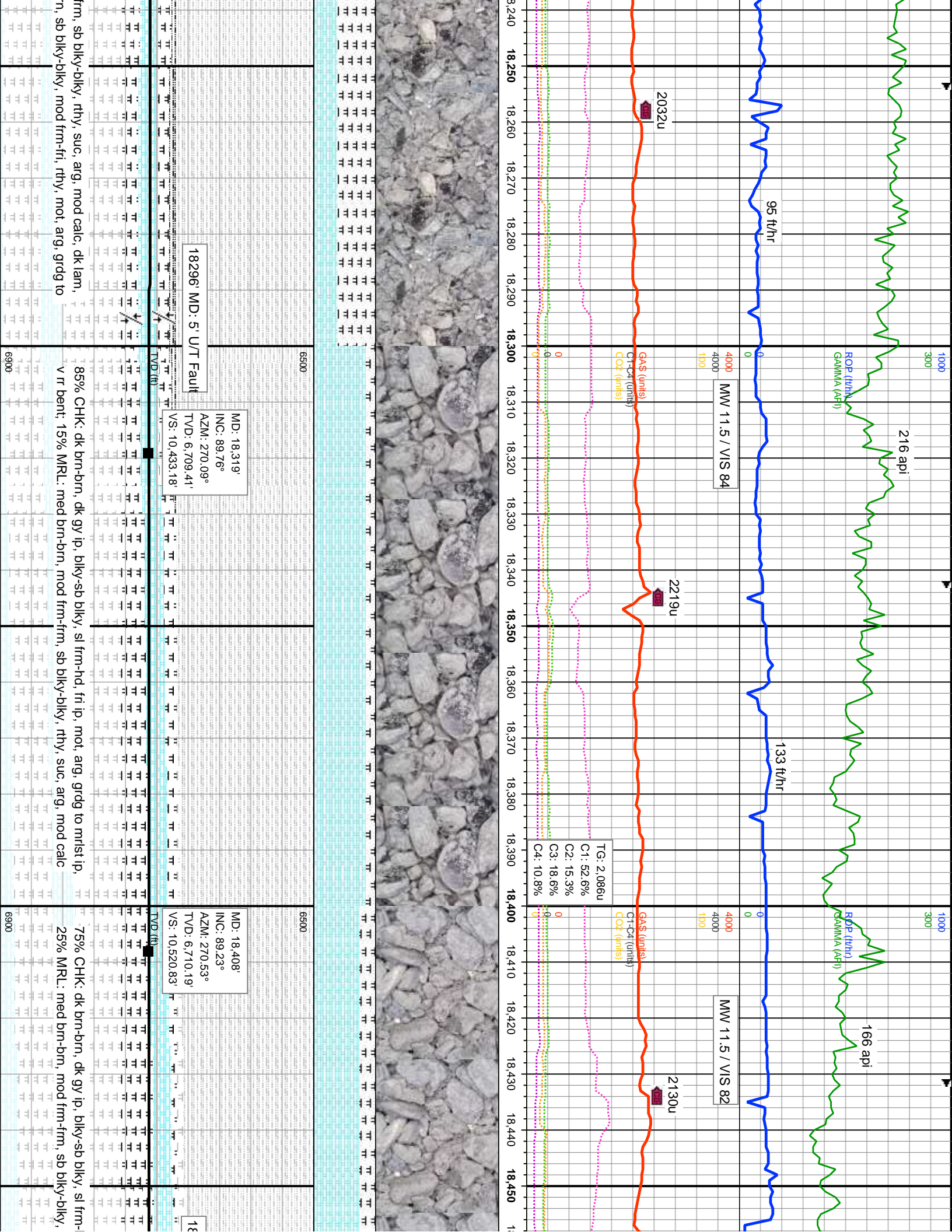


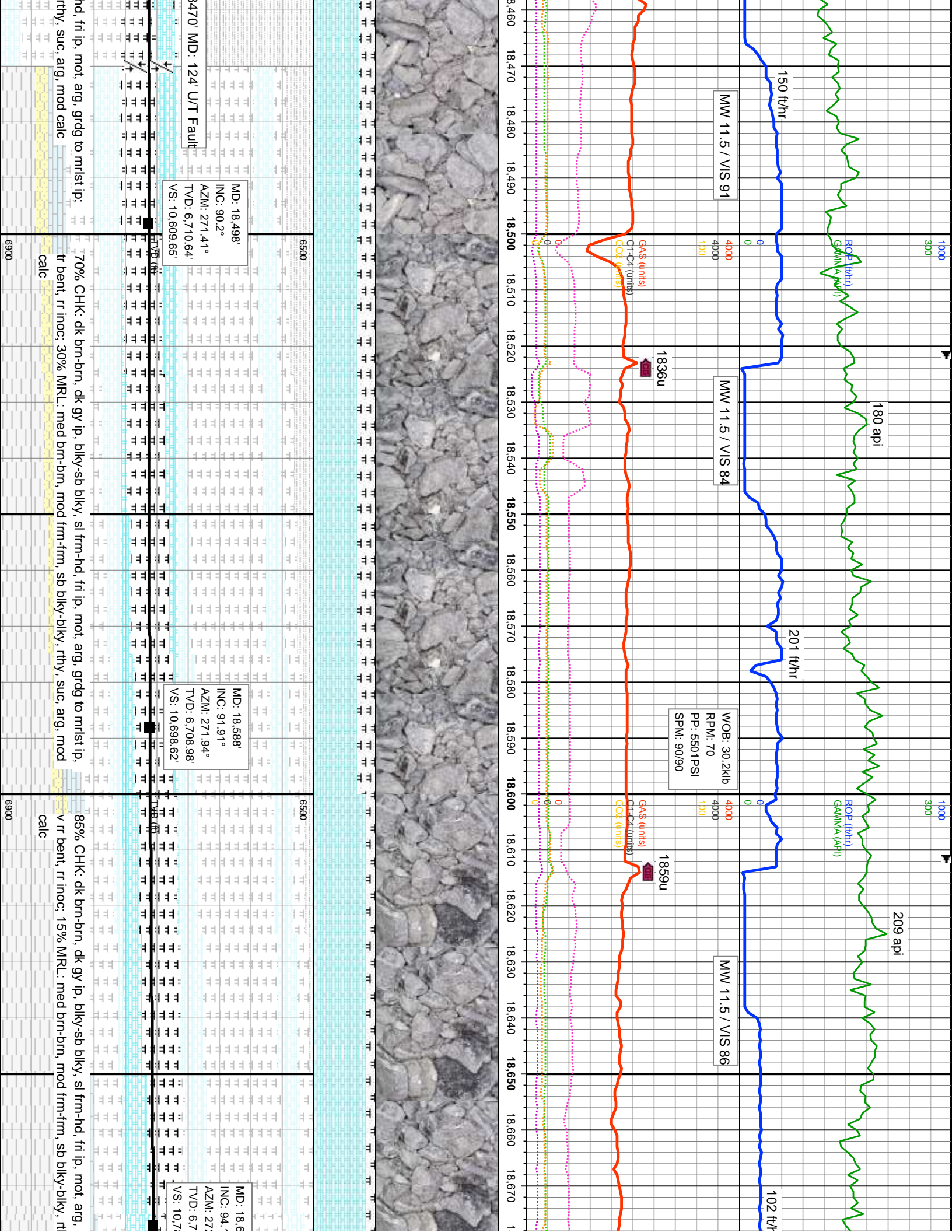


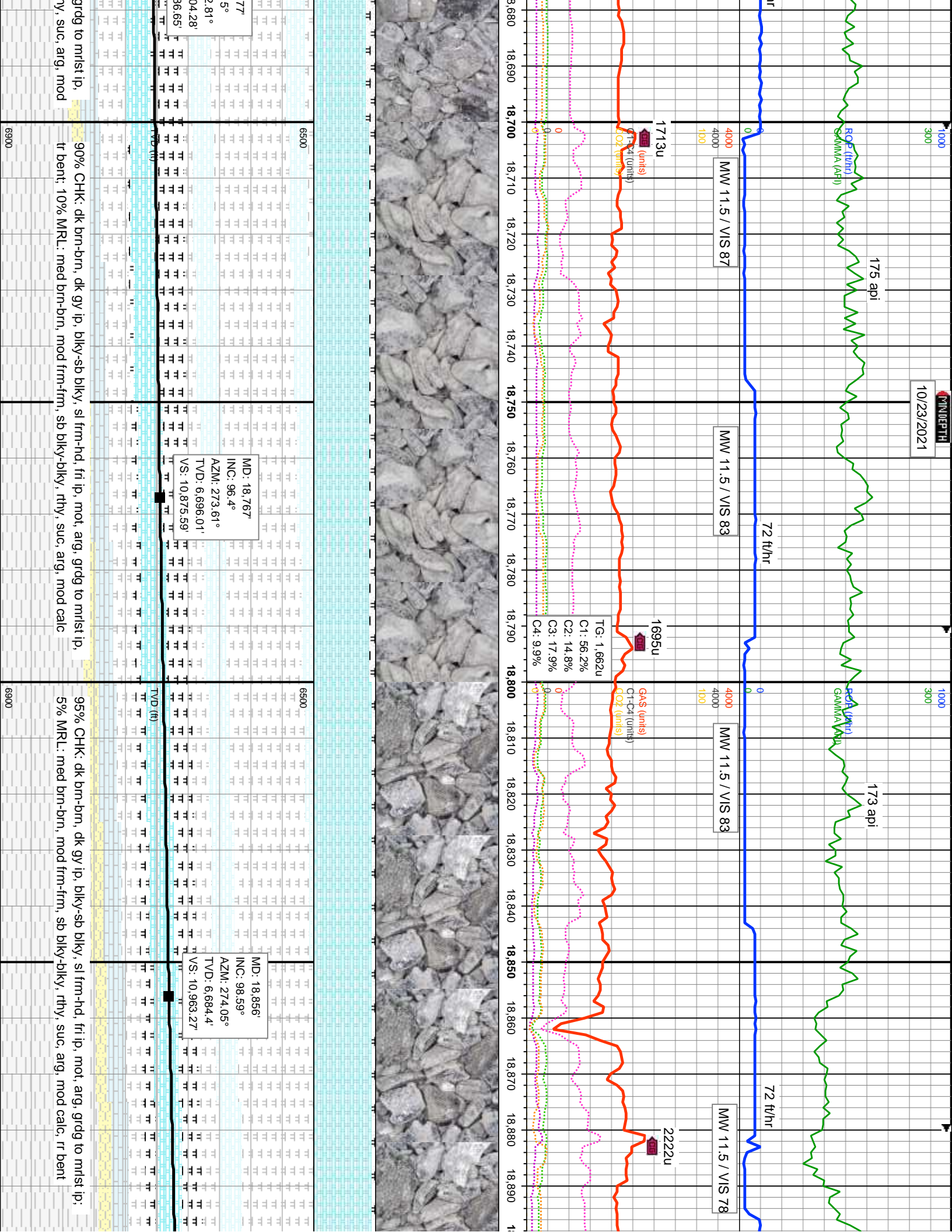


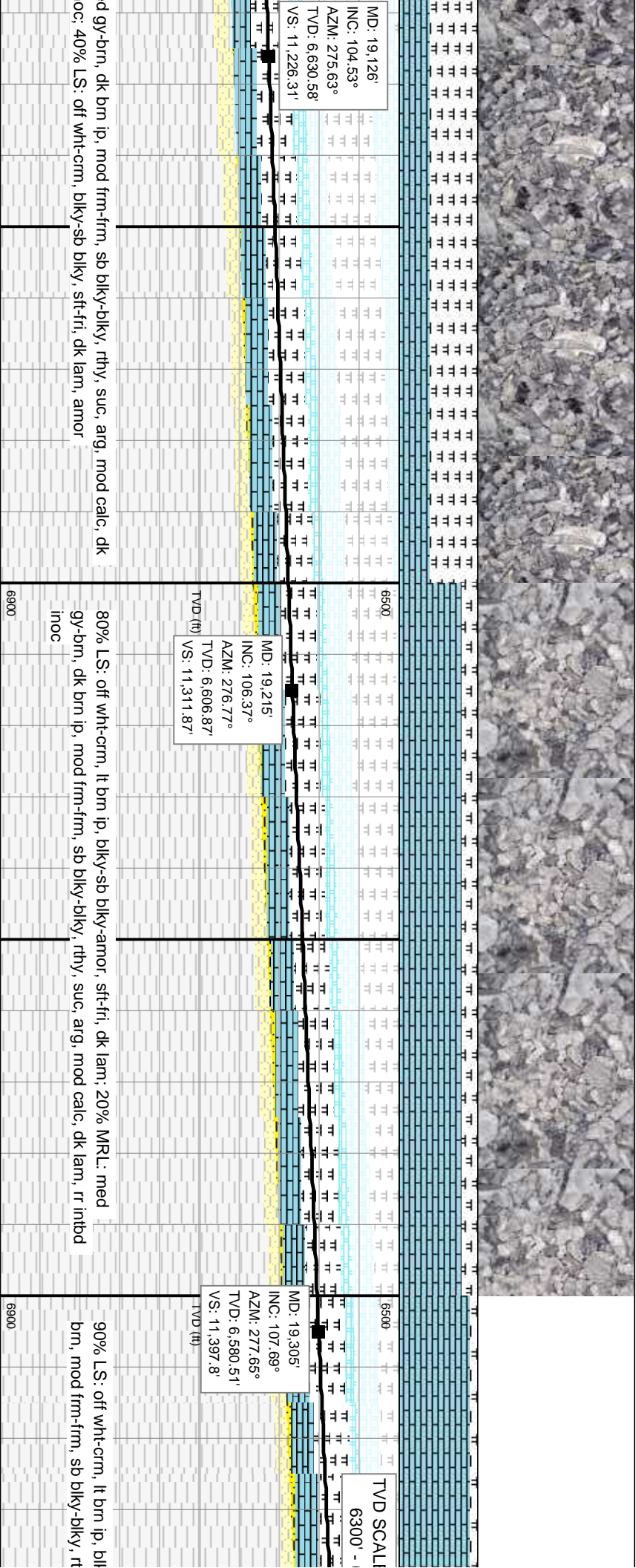
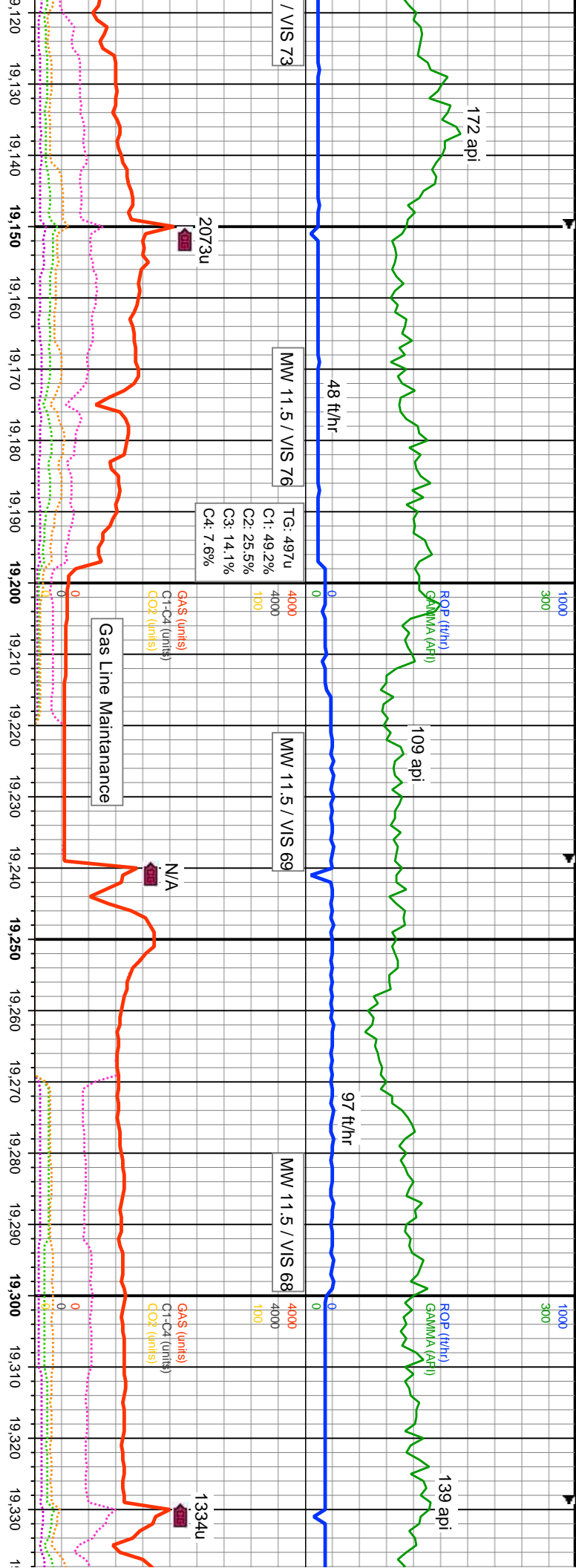












80% LS: off wht-crm, lt brn ip, blk-y-sb blk-y-armor, sft-fri, dk lam: 20% MRL: med gy-brn, dk brn ip, mod frm-frn, sb blk-y-blky, rthy, suc, arg, mod calc, dk lam, rr intbd inoc

90% LS: off wht-crm, lt brn ip, blk-y-sb blk-y-armor, sft-fri, dk lam: 20% MRL: med gy-brn, dk brn ip, mod frm-frn, sb blk-y-blky, rthy, suc, arg, mod calc, dk lam, rr intbd inoc

