



Scale: 5" / 100'  
Measured Depth Log

Well Name ELLIE LD26-625 Helmerich 517

Location SESE Section 28, T9N, R58W

State COLORADO

County WELD

Country USA

Rig Number H&P 517

API Number 05-123-43322

AFE # 203343

Geographic Region WATTENBERG

Field NEW RAYMEER/ WILDCAT

Spud Date 9/23/2016

Drilling Completed 9/27/2016

Surface Coordinates SESE SEC.28, T9N, R58W

1245' FSL x 330' FEL

Bottom Hole Coordinates SESE SEC.26, T9N, R58W

330' FEL x 990' FSL (Estimate)

Ground Elevation 4826'

K.B. Elevation 4856'

Logged Interval 5200' To 15980'

Total Depth 10780'

Formation TEEPEE BUTTESS - NIOBRARA B MARL

Type of Drilling Fluid OBM - OIL BASED MUD

## Operator

Company Noble Energy, Inc.

Address 1625 Broadway, Suite 2200  
Denver, CO 80202

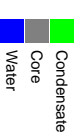
## Geologist

Name Tim Bright & Wedge Howland

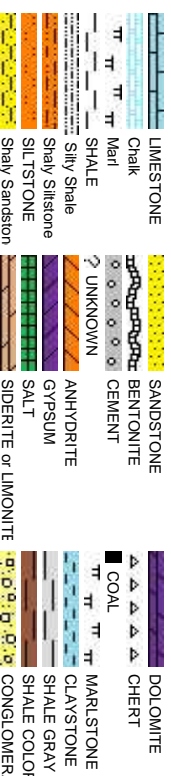
Company Terra Guidance

Address 1298 O Road  
Loma CO 81524  
(970) 260-5408

## Zone Color Coding



## Rock Types



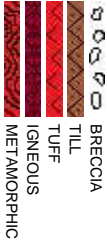
Accessories

Fossils		Stringer	
F FOSSIL	— ARGILLACEOUS	↘ GLAUCONITE	
GA GASTROPOD	/ ARGILLITE GRAIN	≡ GYPSIFEROUS	
AL ALGAE	B BENTONITE	⌈ HEAVY MINERAL	ANHYDRITE STRINGER
AM AMPHIPORA	BIT BITUMENOUS SUBSTANCE	K KAOLIN	BENTONITE STRINGER
BE BELEMNITE	BF BRECCIA FRAGMENTS	TT MARLSTONE	COAL STRINGER
BI BIOCLASTIC	LC CALCAREOUS	⌘ MINERAL CRYSTALS	DOLOMITE STRINGER
BR BRACHIOPOD	CF CARBONACEOUS FLAKES	ND NODULES	GYPSUM STRINGER
BR BRYOZOA	CHD CHITDK	PP PHOSPHATE PELLETS	LIMESTONE STRINGER
CE CEPHALOPOD	CHLT CHLIT	P PYRITE	MARLSTONE (CALC) STRG
CO CORAL	— COAL - THIN BEDS	BC SALT CAST	MARLSTONE (DOL) STRG
CR CRINOID	LD DOLOMITIC	: SANDY	SANDSTONE STRINGER
EC ECHINOID	+ FELDSPAR	↗ SILICEOUS	SHALE STRINGER
Minerals		.. SILTY	
CF FISH	● FERRUGINOUS PELLET	↘ TUFFACEOUS	
FM FORAMINIFERA	↘ FERRUGINOUS		SILTSTONE STRINGER

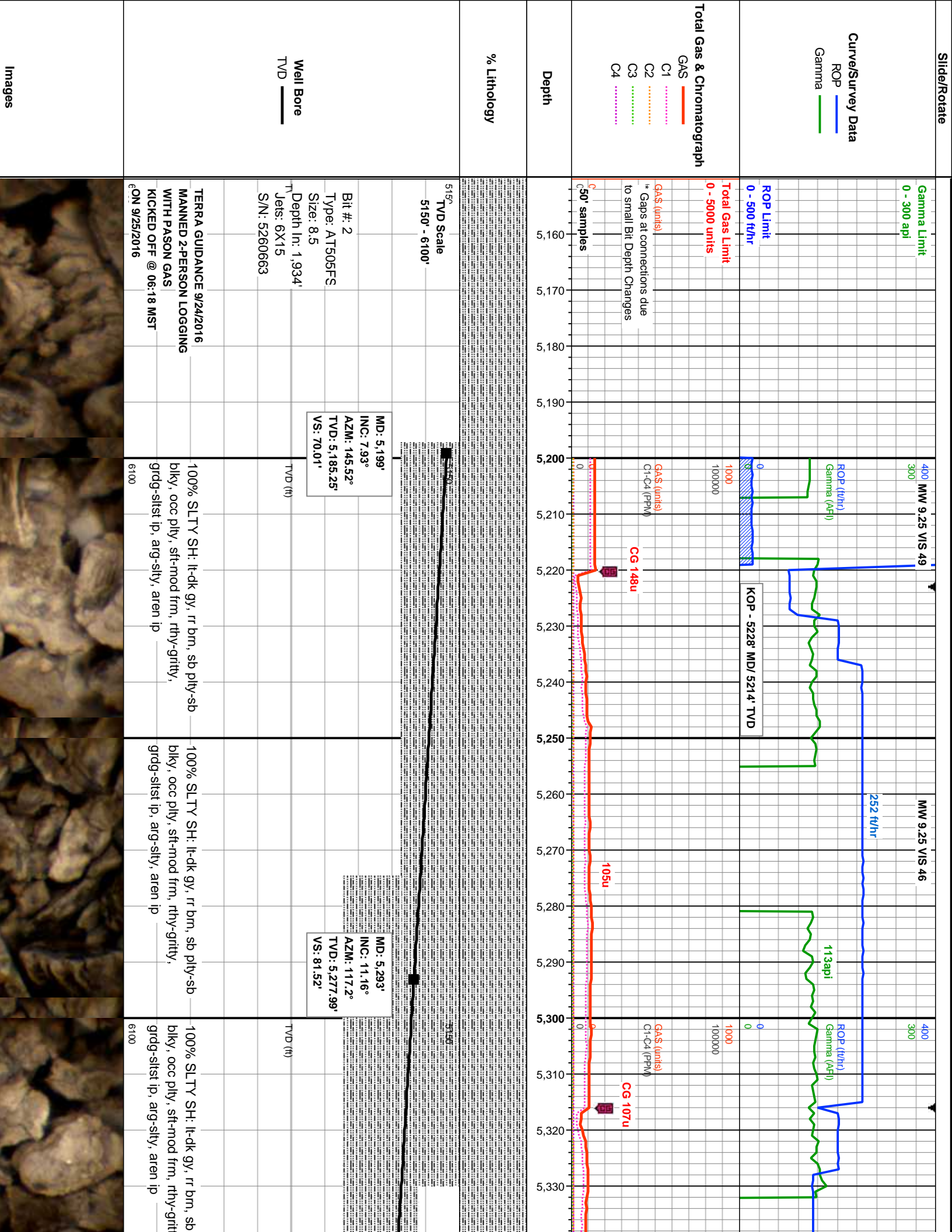
Other Symbols

Oil Show		Rounding	
ORGANIC	FORMATION TOP	L LITHOGRAPHIC	
P PINPOINT	✖ GAS SHOW	MX MICROXLN	
DEAD	✓ VUGGY	A ANGULAR	MUDSTONE
EVEN		R ROUNDED	PACKSTONE
QUESTIONABLE	Engineering	S SUBANG	WACKESTONE
SPOTTED STAINING	BIT	OT OVERTURNED STRATA	SUBRND
	CASING	REVERSE FAULT	
Porosity		Textures	
E EARTHY	↔ CONNECTION (LEFT)	SS SIDEWALL CORE (LEFT)	M MODERATE
F FENESTRAL	↕ CONNECTION (DOWN)	BS SIDEWALL CORE (RIGHT)	P POOR
F FRACTURE	CONNECTION GAS	SLIDE	W WELL
X INTERCRYSTALLINE	↓ CORE - LOST	OS SURVEY	CRYPTOXLN
INTEROOLITIC	■ CORE - RECOVERED	TRIP GAS	E EARTHY
MOLDIC	DST INTERVAL	WIRELINE TESTED - LEFT	FINELYXLN
	FAULT	WIRELINE TESTED - RT	GRAINSTONE

ConnectionGas(Vert)

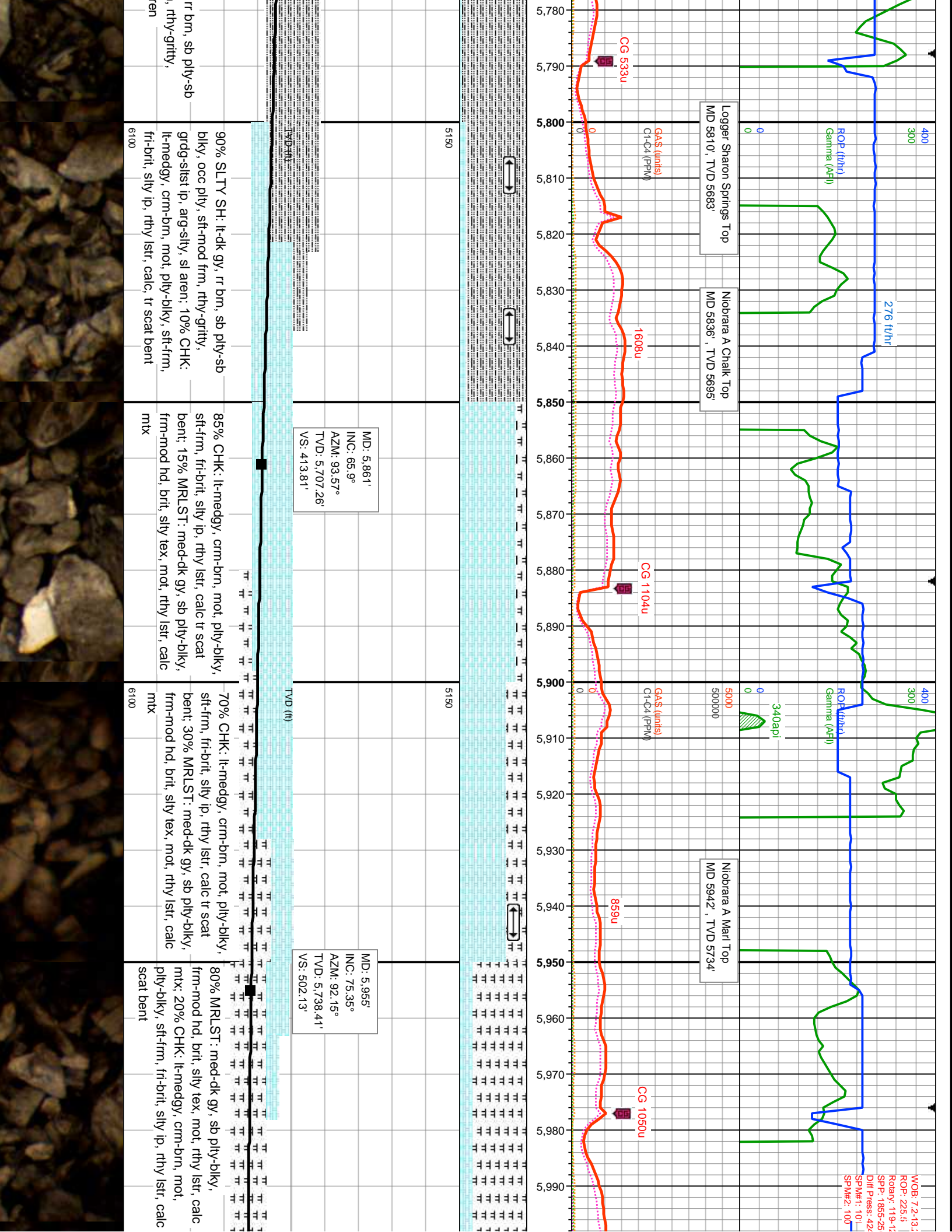


RED  
ATE

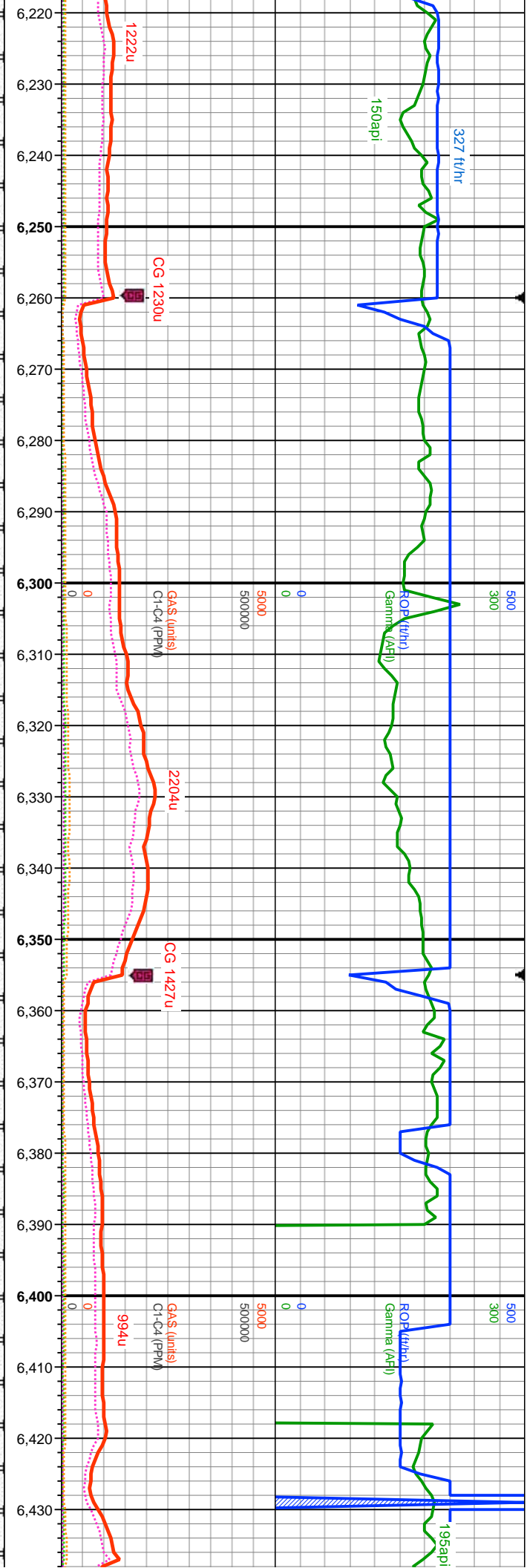












ST: med-dk gy, sb pty-sb blk, frm-mod hd, brit, silty tex, mot, rthy lstr, calc  
10% CHK: lt-med gy, crm-brn, mot, pty-blk, sft-frm, fri-brit, silty ip, rthy  
tr scat bent

MD: 6.239'  
INC: 90.43°  
AZM: 89.25°  
TVD: 5,762.98'  
VS: 763.72'

TVD (ft)

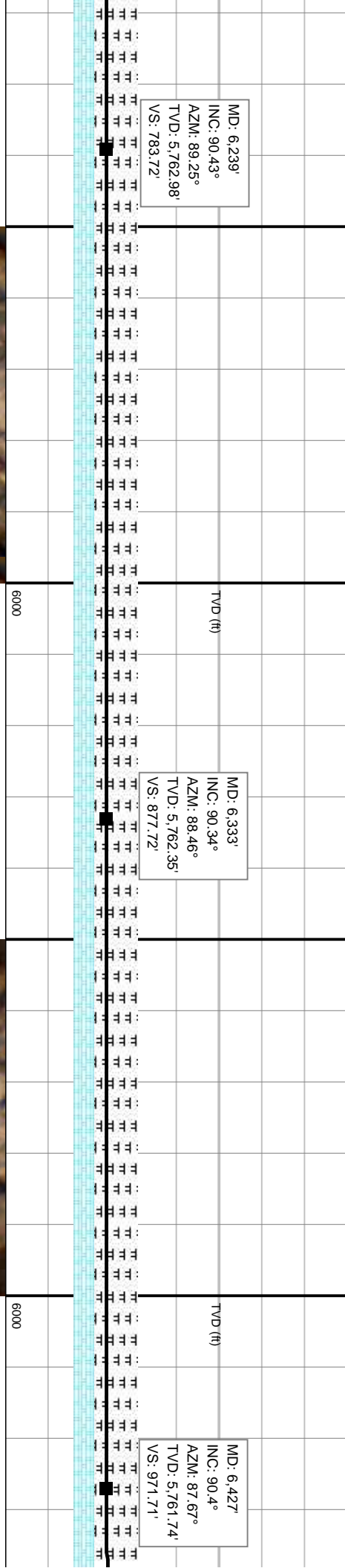
5000 90% MRLST: med-dk gy, sb pty-sb blk, frm-mod hd, brit, silty tex, mot, rthy lstr, calc  
mtx, 10% CHK: lt-med gy, crm-brn, mot, pty-blk, sft-frm, fri-brit, silty ip, rthy lstr,  
calc, tr scat bent

MD: 6.333'  
INC: 90.34°  
AZM: 88.46°  
TVD: 5,762.35'  
VS: 877.72'

TVD (ft)

5000 85% MRLST: med-dk gy, sb pty-sb blk, frm-mod hd, brit, silty tex, mot, rthy lstr, calc  
mtx, 15% CHK: lt-med gy, crm-brn, mot, pty-blk, sft-frm, fri-brit, silty ip, rthy lstr,  
tr scat bent

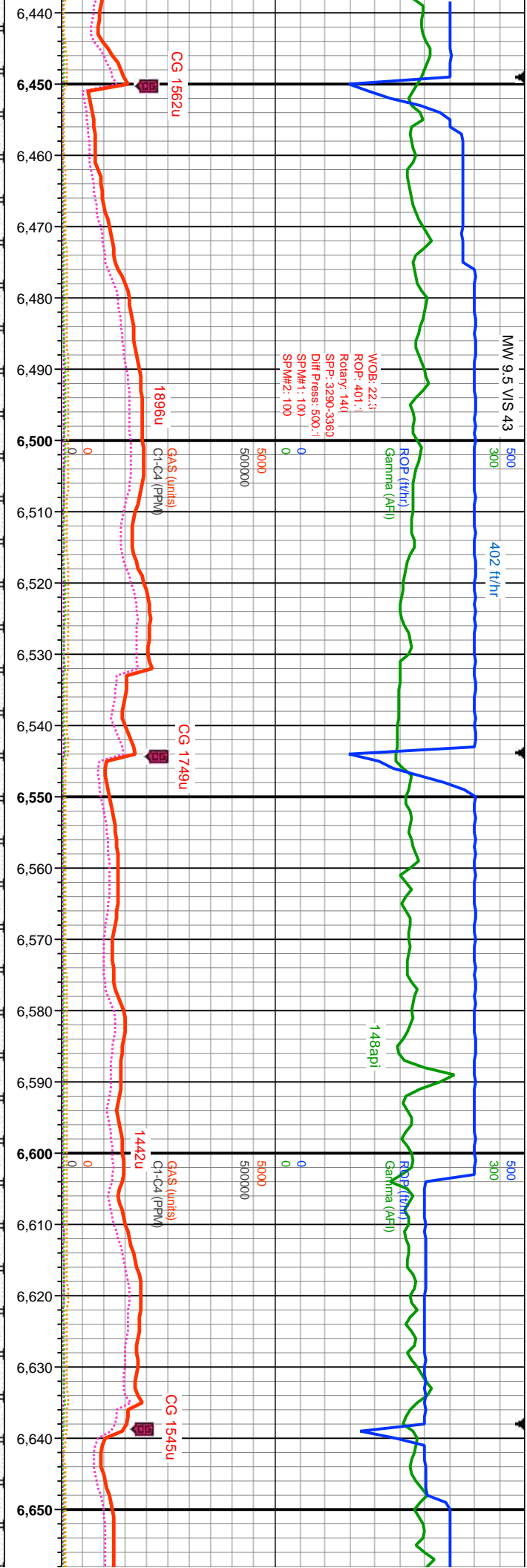
MD: 6.427'  
INC: 90.4°  
AZM: 87.67°  
TVD: 5,761.74'  
VS: 971.71'



6000

6000





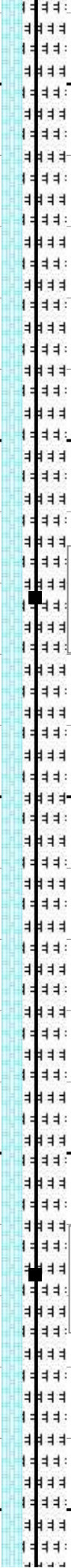
lty-sb blkly, frm-mod hd, brit, silty tex, mot, rthy lstr, calc  
-brn, mot, ply-blky, sft-frm, fri-brit, silty ip, rthy lstr, calc,

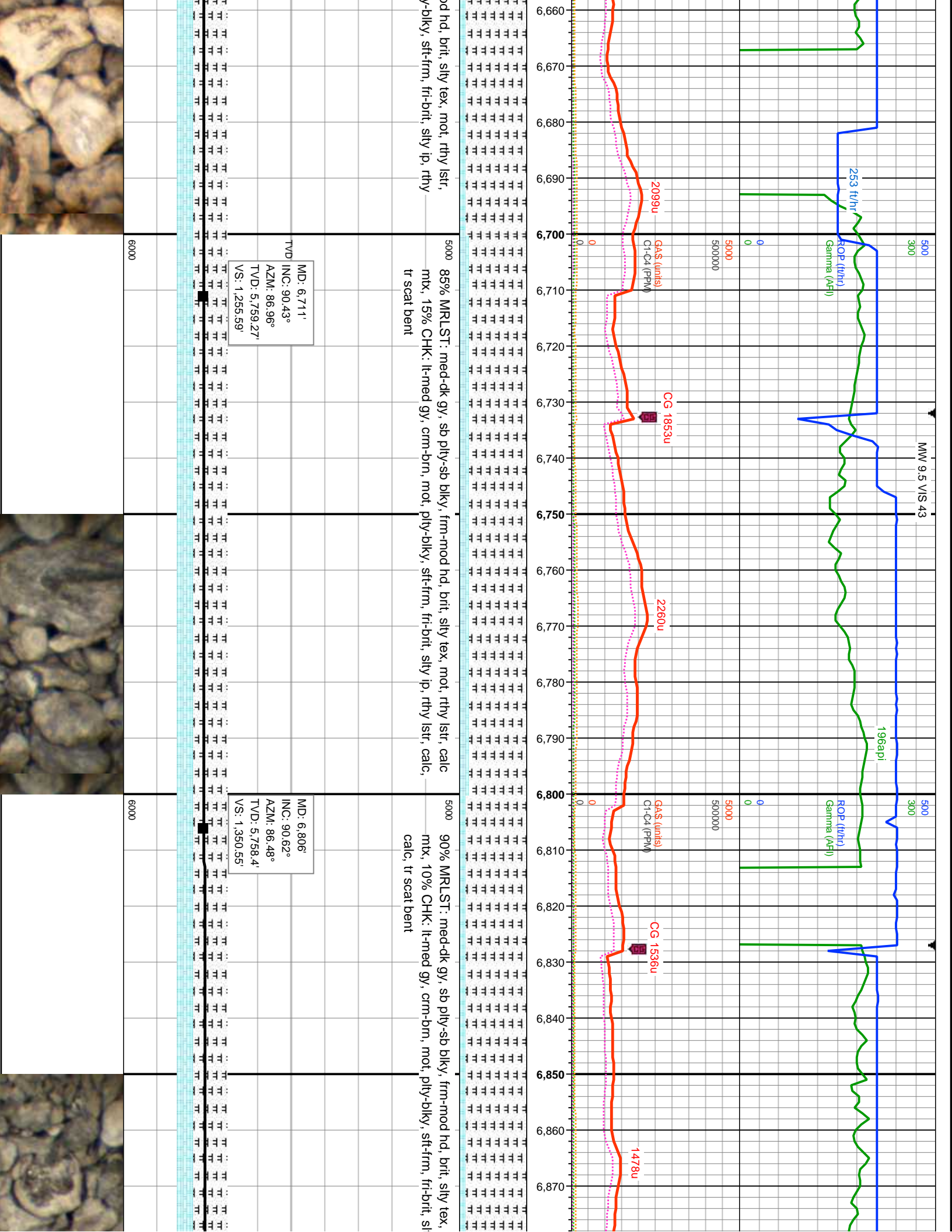
90% MRLST: med-dk gy, sb ply-sb blkly, frm-mod hd, brit, silty tex, mot, rthy lstr, calc  
mtx, 10% CHK: lt-med gy, crm-brn, mot, ply-blky, sft-frm, fri-brit, silty ip, rthy lstr, calc,  
tr scat bent

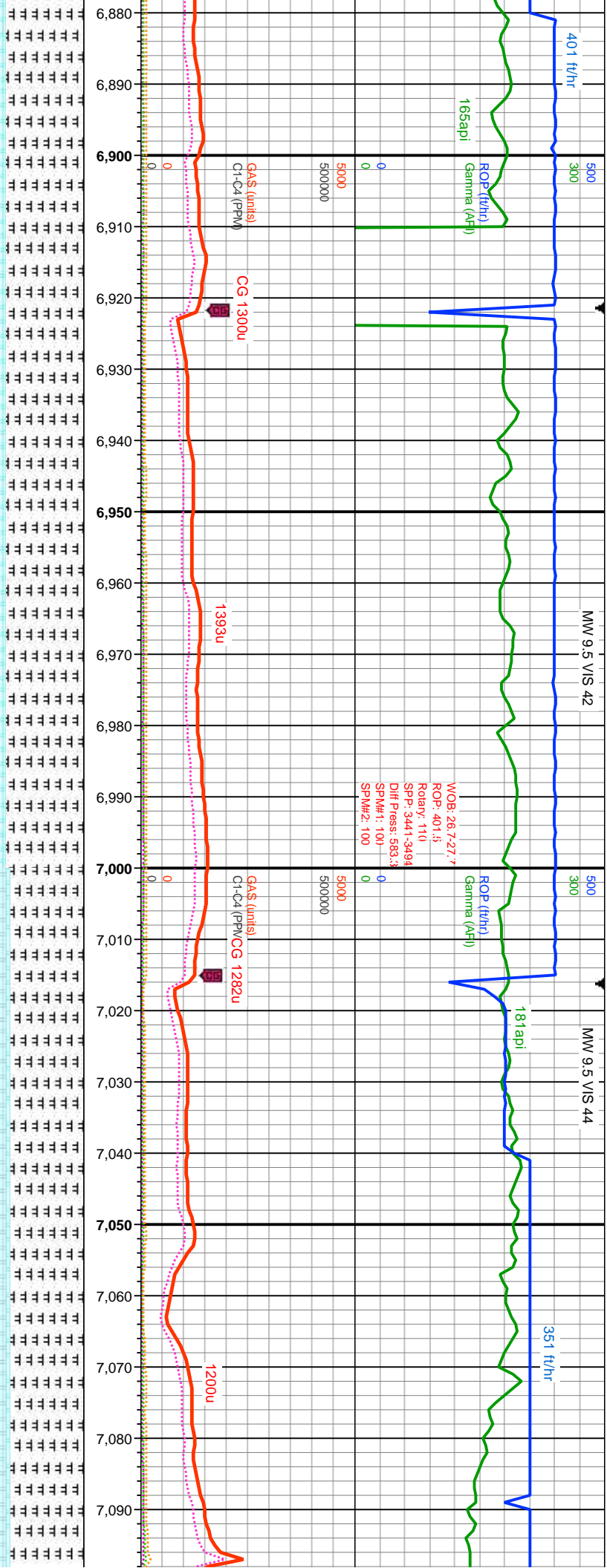
90% MRLST: med-dk gy, sb ply-sb blkly, frm-mod  
calc mtx, 10% CHK: lt-med gy, crm-brn, mot, ply-  
lstr, calc, tr scat bent

MD: 6.522'  
INC: 90.46°  
AZM: 86.82°  
TVD: 5,761.03'  
VS: 1,066.69'

MD: 6.617'  
INC: 90.62°  
AZM: 86.51°  
TVD: 5,760.14'  
VS: 1,161.64'







mot, rthy lstr, calc  
ip, rthy lstr, 5000  
90% MRLST: med-dk gy, sb pty-sb blk, frm-mod hd, brit, silty tex, mot, rthy lstr, calc  
mtx, 10% CHK: lt-med gy, crm-brn, mot, pty-blky, sft-frm, fri-brit, silty ip, rthy lstr, calc,  
tr scat bent

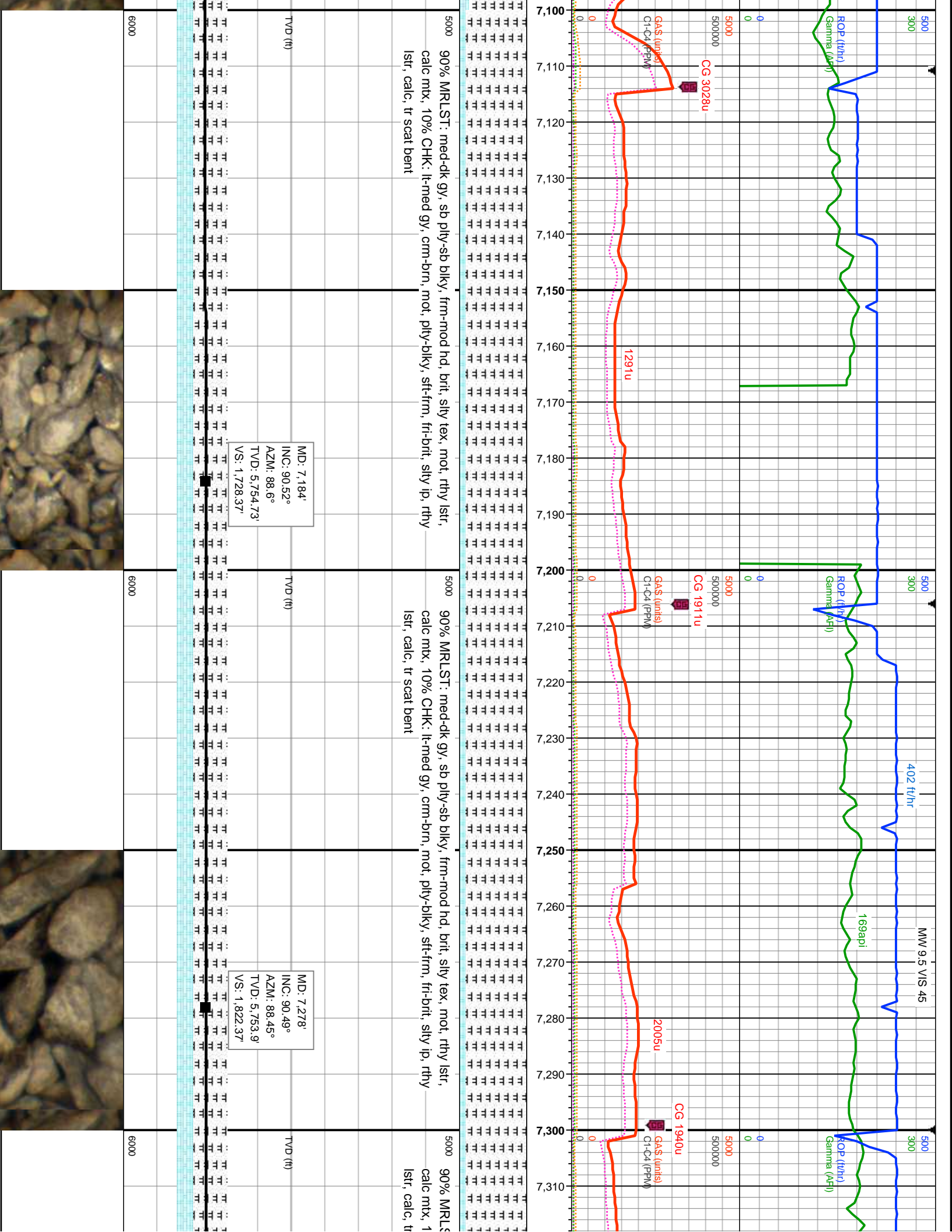
MD: 6.900'  
INC: 90.65°  
AZM: 86.79°  
TVD: 5.757.36'  
VS: 1.444.49'

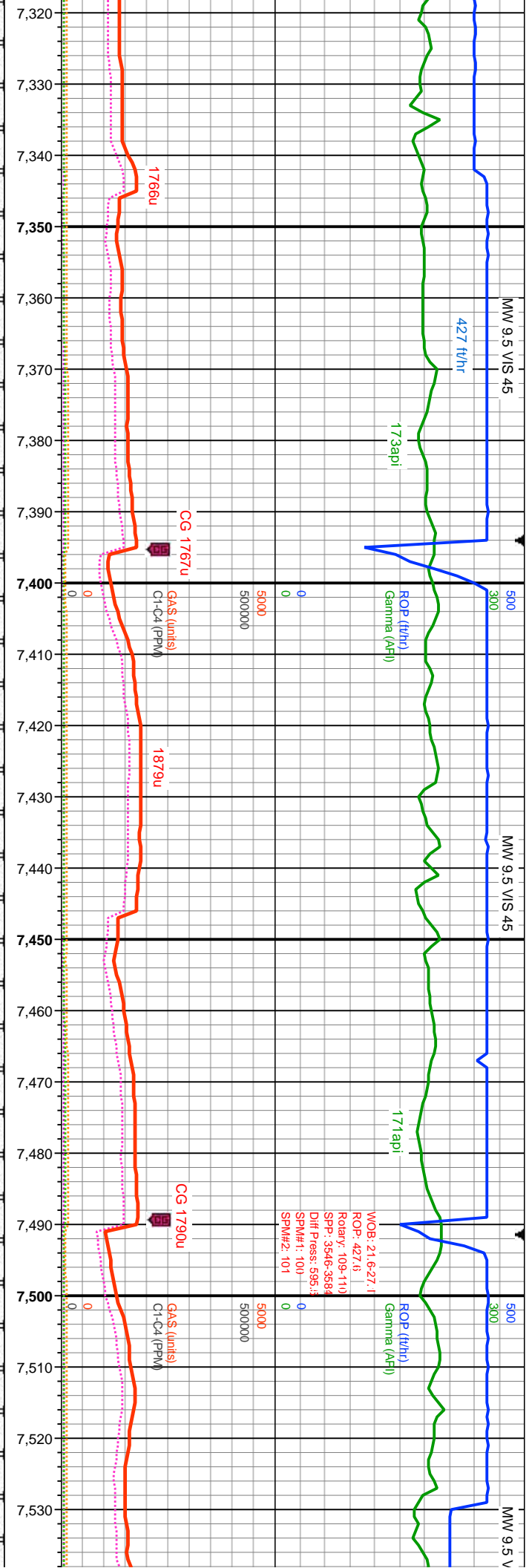
MD: 6.995'  
INC: 90.52°  
AZM: 86.42°  
TVD: 5.756.39'  
VS: 1.539.44'

MD: 7.089'  
INC: 90.49°  
AZM: 86.79°  
TVD: 5.755.56'  
VS: 1.633.39'

6000  
6000  
6000







5T: med-ck gy, sb ply-sb bky, frm-mod h.d, brit, sily tex, mot, rthy lst, 0% CHK: lt-med gy, crm-brn, mot, ply-bky, sft-frm, fri-brit, sily ip, rthy scat bent

MD: 7,373'  
INC: 90.58°  
AZM: 88.55°  
TVD: 5,753.01"  
VS: 1,917.36'

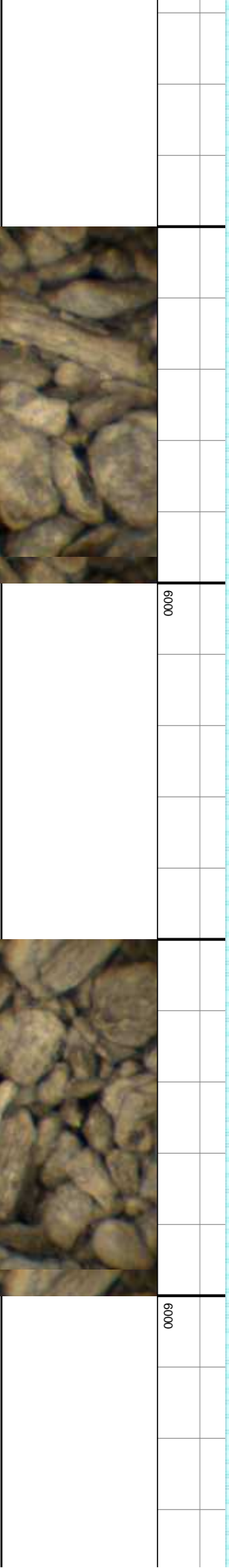
TV D (ft)

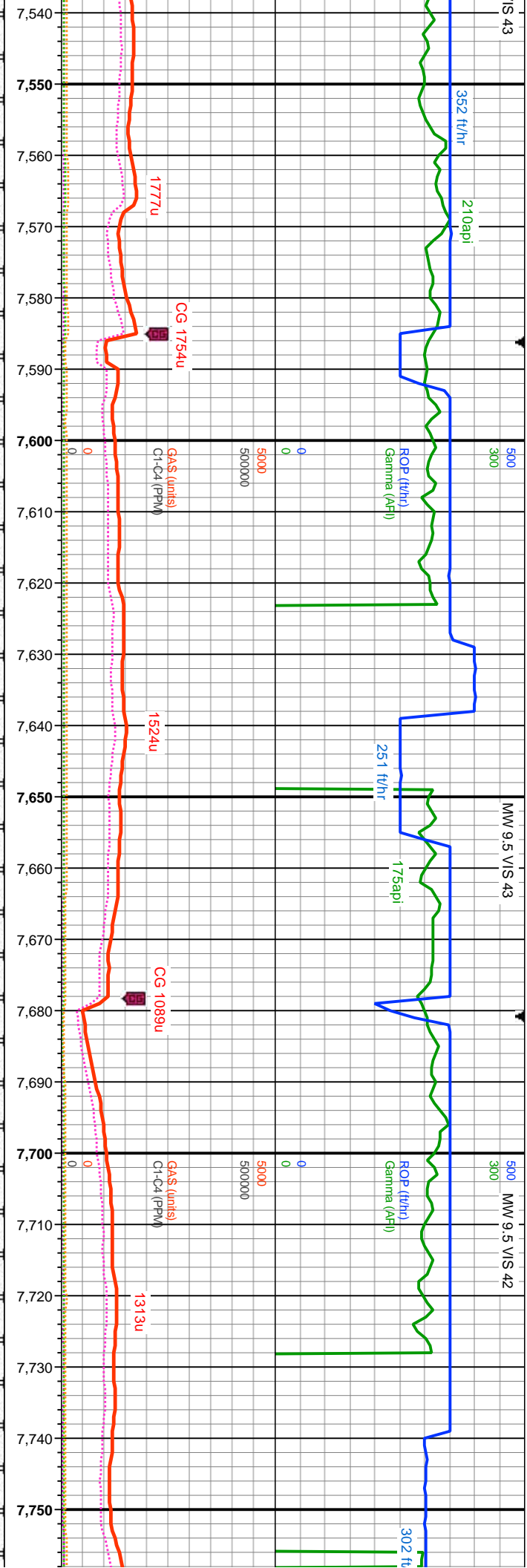
90% MRLST: med-ck gy, sb ply-sb blk, frm-mod ho, brit, silty tex, mot, rthy lstr, calc mtx, 10% CHK: lt-med gy, crm-brn, mot, ply-blky, stf-frm, fri-brit, silty ip, rthy lstr, calc, tr scat bent

MD: 7.467'  
INC: 90.49°  
AZM: 88.42°  
TVD: 5,752.13  
VS: 2,011.36'

TVDD (ft)

90% MRLST: med-dk gy, sb  
calc mtx, 10% CHK: lt-med gy,  
lstr, calc, tr scat bent





ply-sb blk, frm-mod hd, brit, sily tex, mot, rthy lstr, y, cm-brn, mot, ply-blky, sft-frm, fri-brit, sily ip, rthy

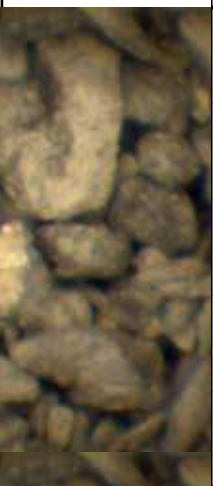
90% MRLST: med-dk gy, sb ply-sb blk, frm-mod hd, brit, sily tex, mot, rthy lstr, calc mtx, 10% CHK: lt-med gy, cm-brn, mot, ply-blky, sft-frm, fri-brit, sily ip, rthy lstr, calc, tr scat bent

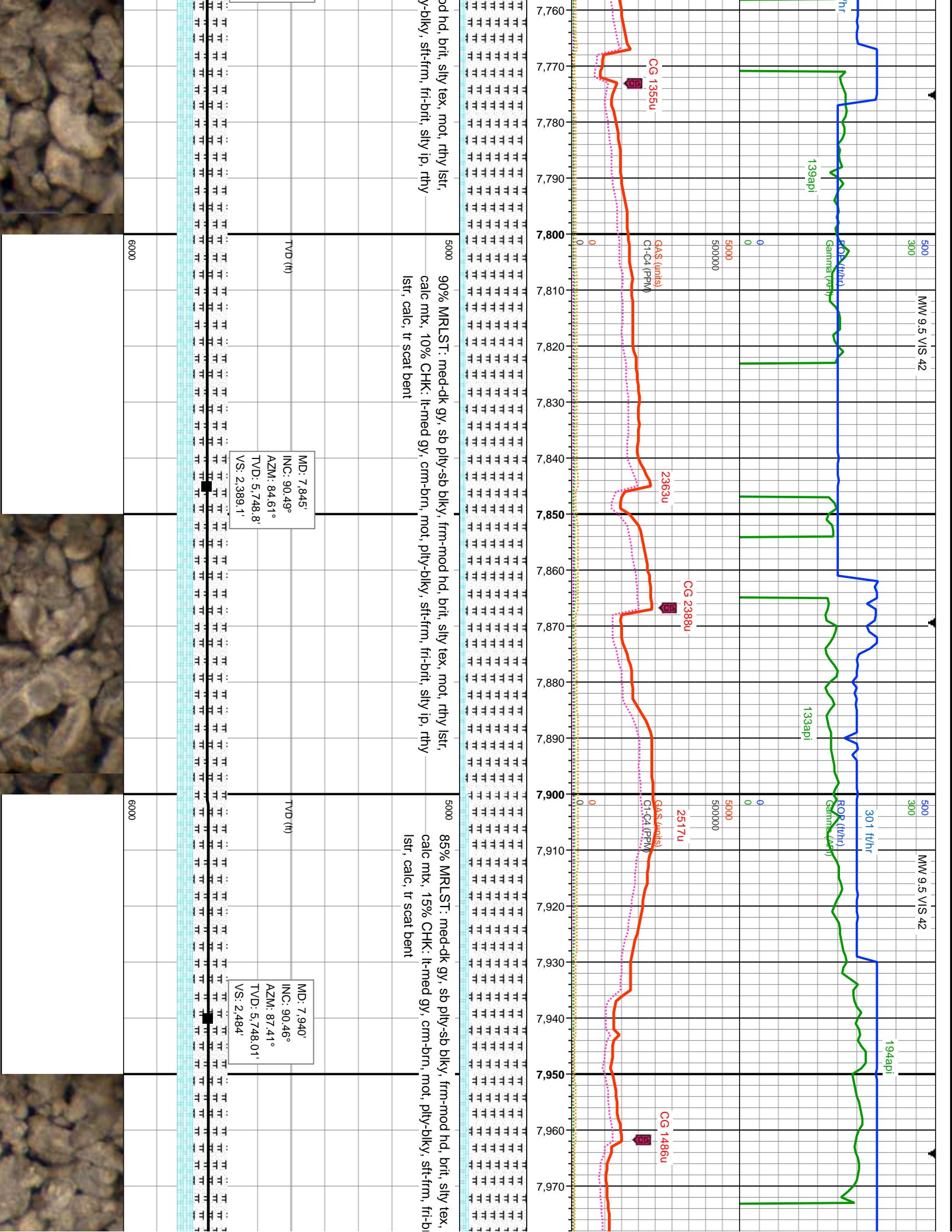
90% MRLST: med-dk gy, sb ply-sb blk, frm-mod hd, brit, sily tex, mot, rthy lstr, calc mtx, 10% CHK: lt-med gy, cm-brn, mot, ply-blky, sft-frm, fri-brit, sily ip, rthy lstr, calc, tr scat bent

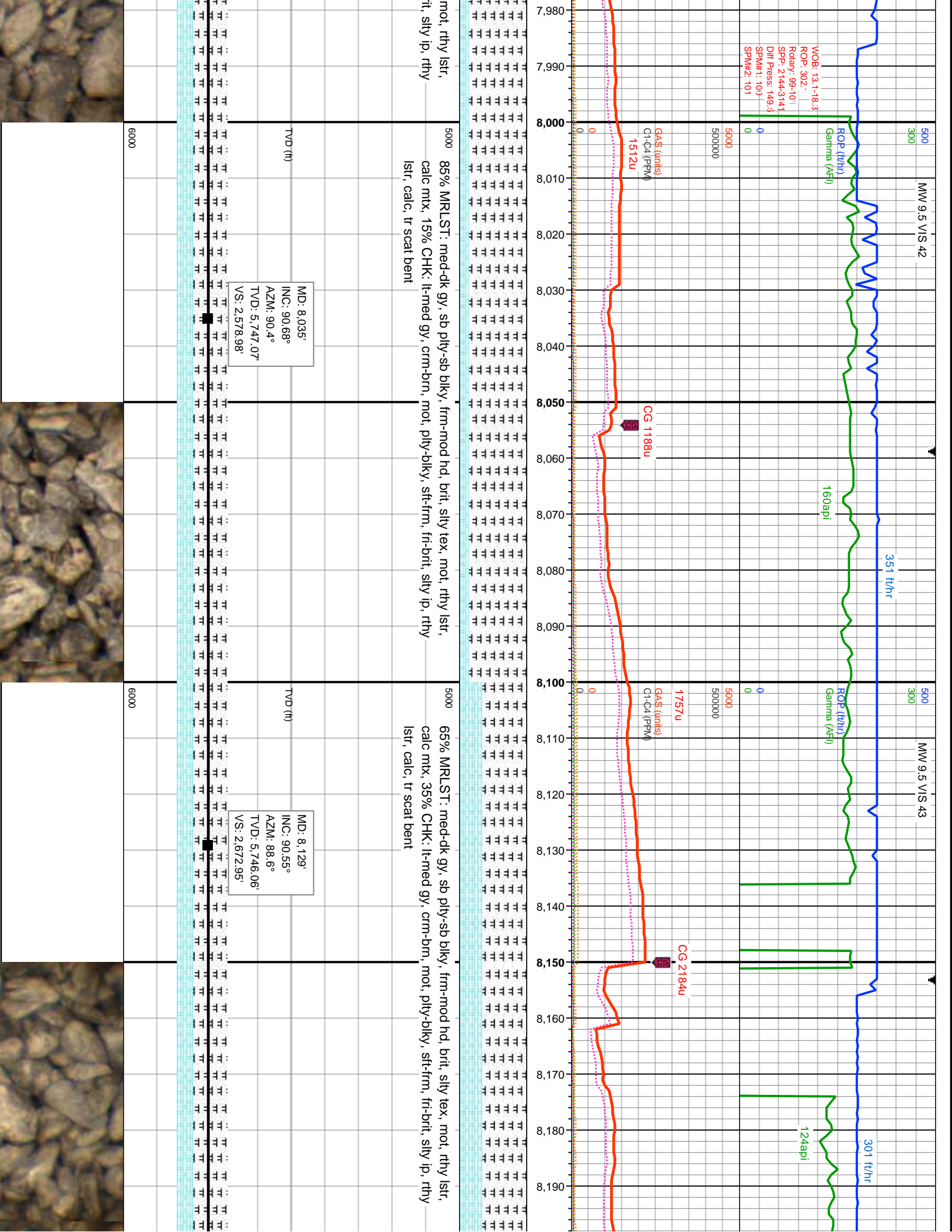
MD: 7.562'  
INC: 90.52°  
AZM: 87.78°  
TVD: 5.751.3'  
VS: 2.106.35'

MD: 7.656'  
INC: 90.55°  
AZM: 86.79°  
TVD: 5.750.42'  
VS: 2.200.33'

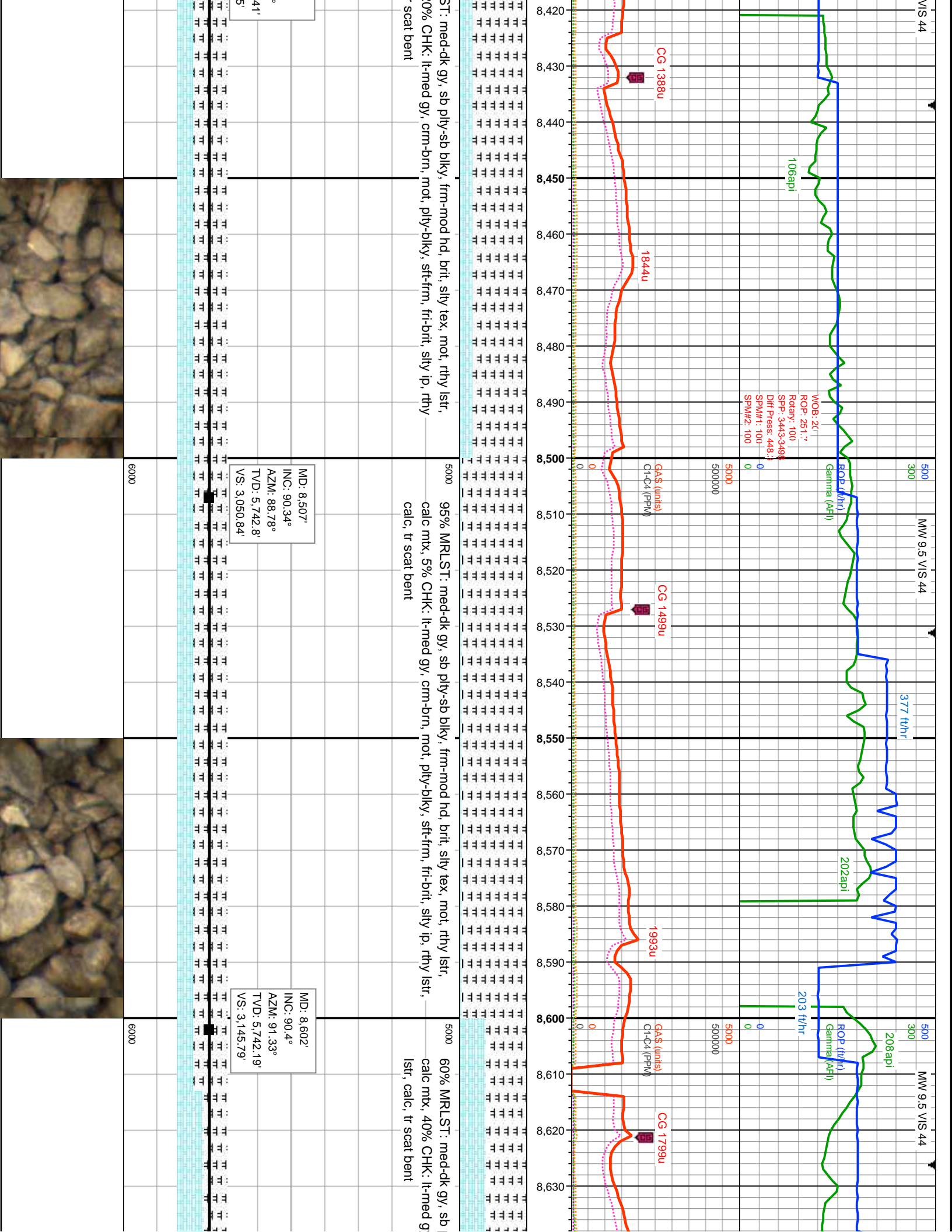
MD: 7.751'  
INC: 90.46°  
AZM: 85.67°  
TVD: 5.749.58'  
VS: 2.295.26'

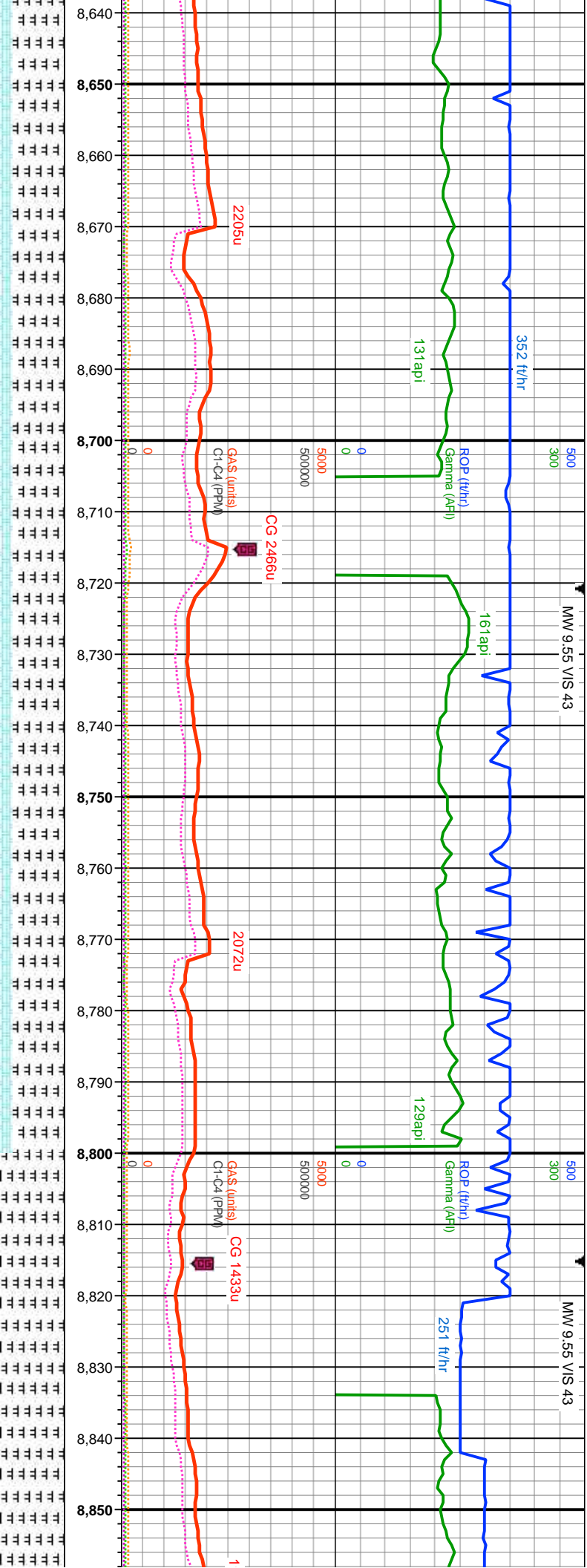






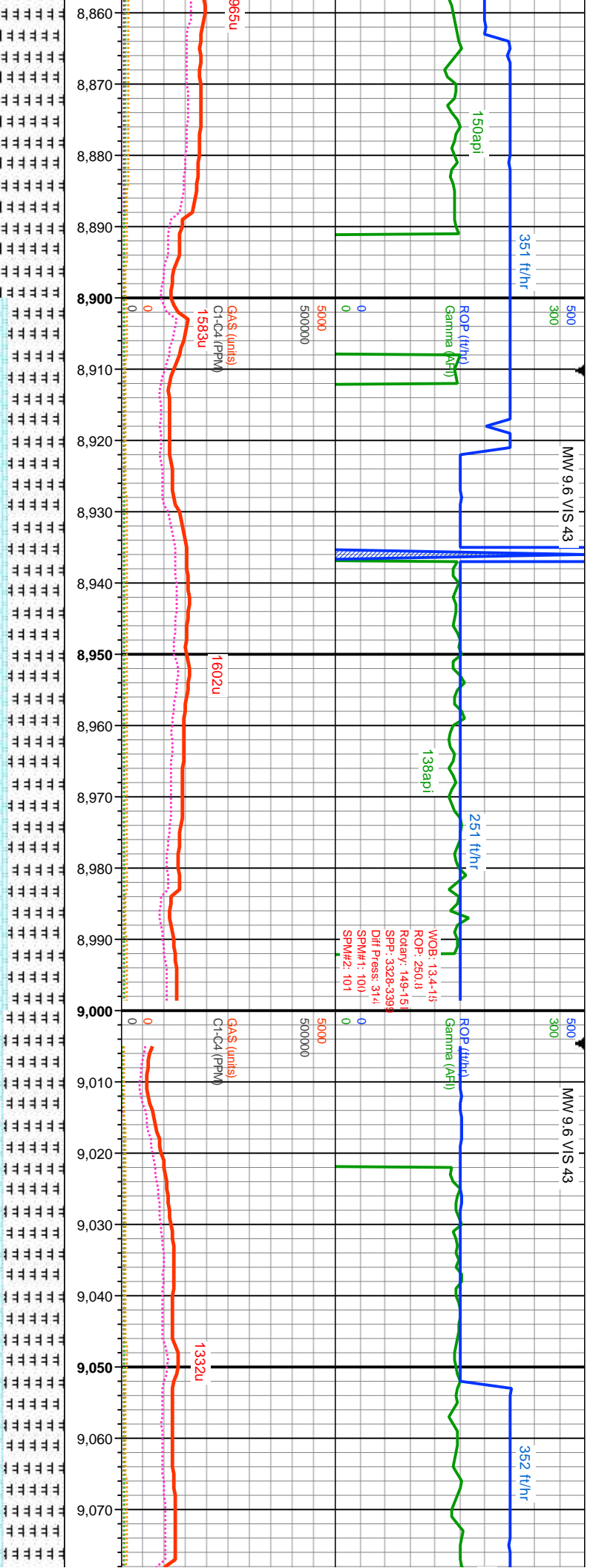






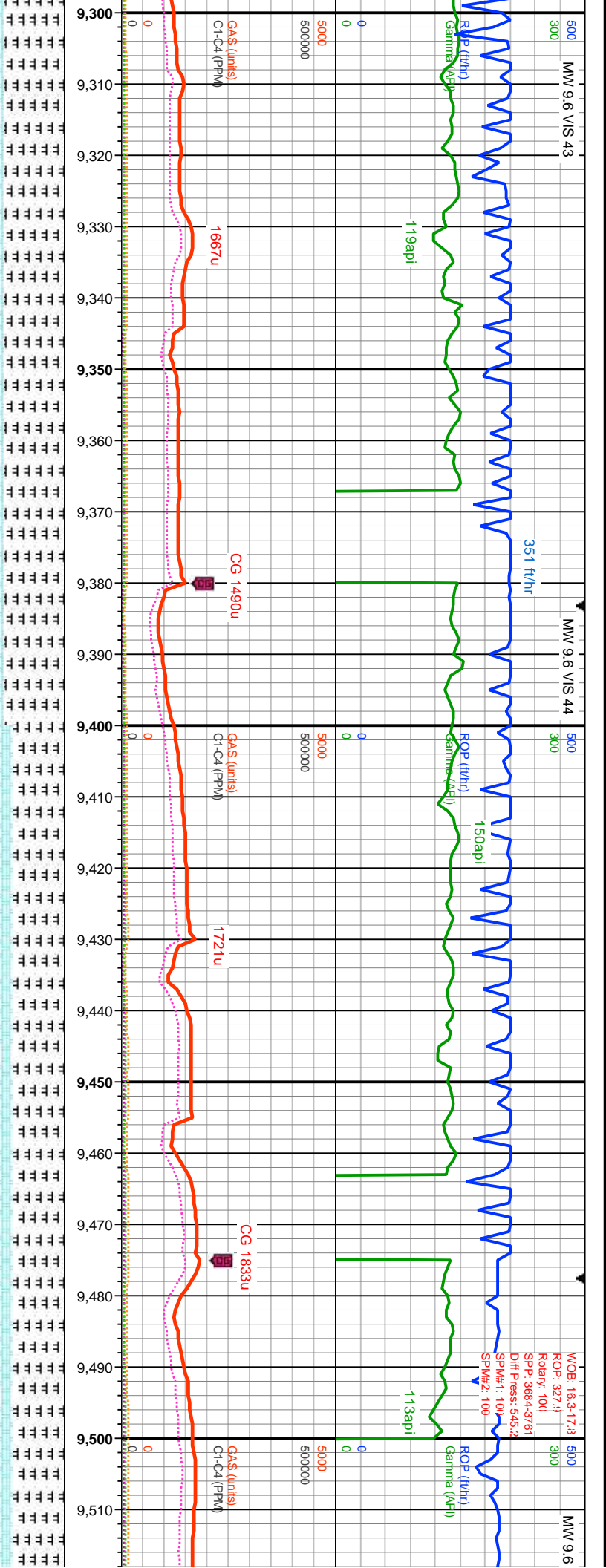
ply-sb blkly, frm-mod hd, brit, silty tex, mot, rthy lstr, y, crm-brn, mot, ply-blky, sft-frm, fri-brit, silty ip, rthy	5000 60% MRLST: med-dk gy, sb ply-sb blkly, frm-mod hd, brit, silty tex, mot, rthy lstr, calc mtx, 40% CHK: lt-med gy, crm-brn, mot, ply-blky, sft-frm, fri-brit, silty ip, rthy lstr, calc, tr scat bent	5000 75% MRLST: med-dk gy, sb ply-sb blkly, frm-mc
	<div data-bbox="397 504 544 651">MD: 8.697' INC: 90.28° AZM: 92.59° TVD: 5.741.62' VS: 3.240.6'</div>	<div data-bbox="397 1386 544 1533">MD: 8.791' INC: 90.4° AZM: 93.19° TVD: 5.741.07' VS: 3.334.32'</div>
	TVD (ft)	TVD (ft)
	6000	6000



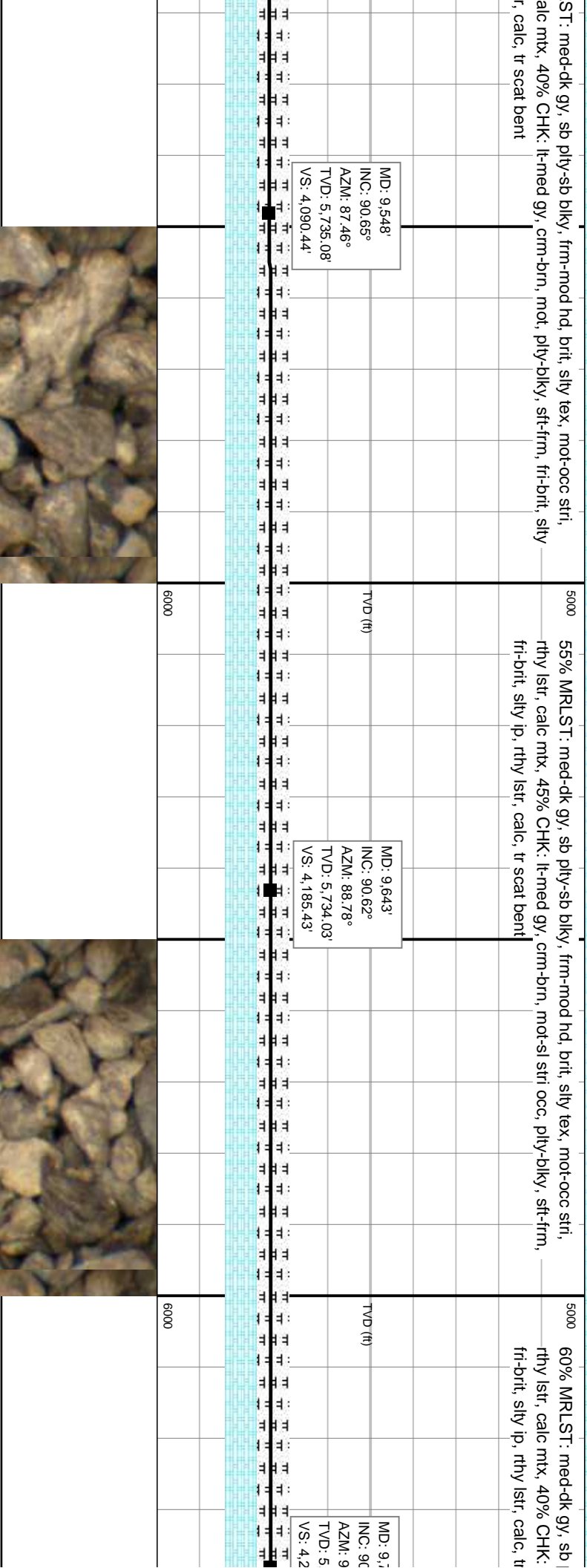
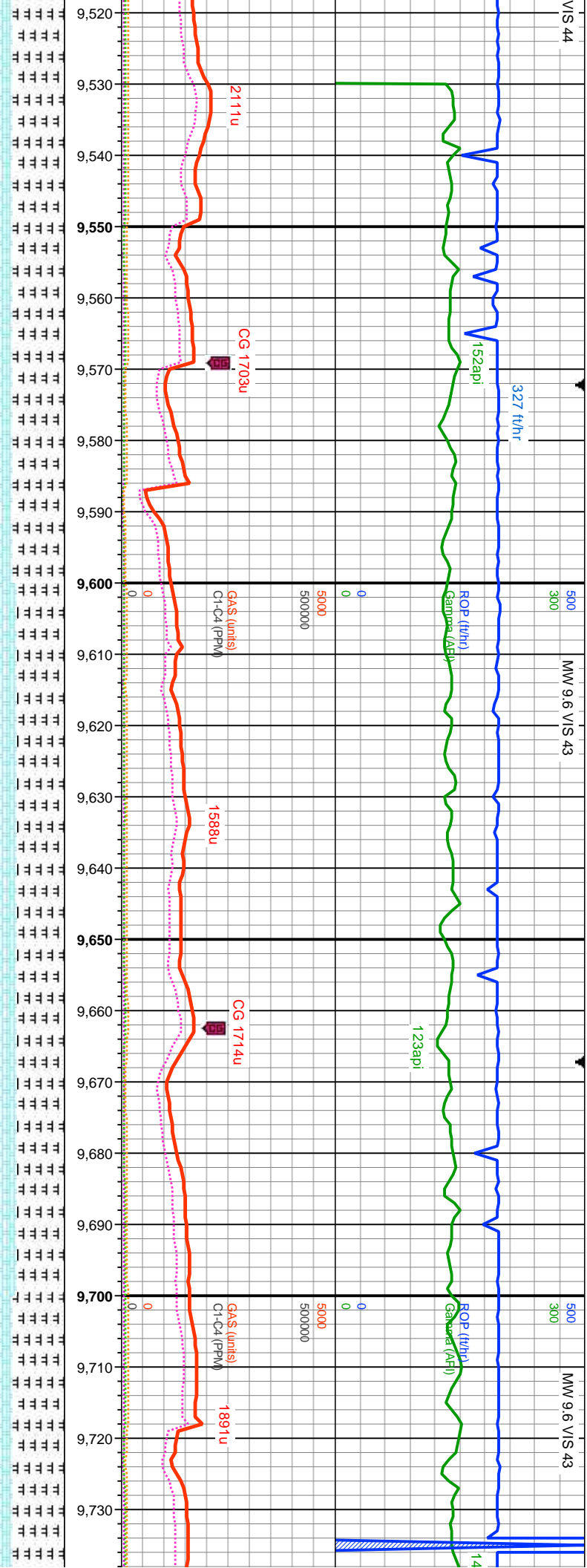


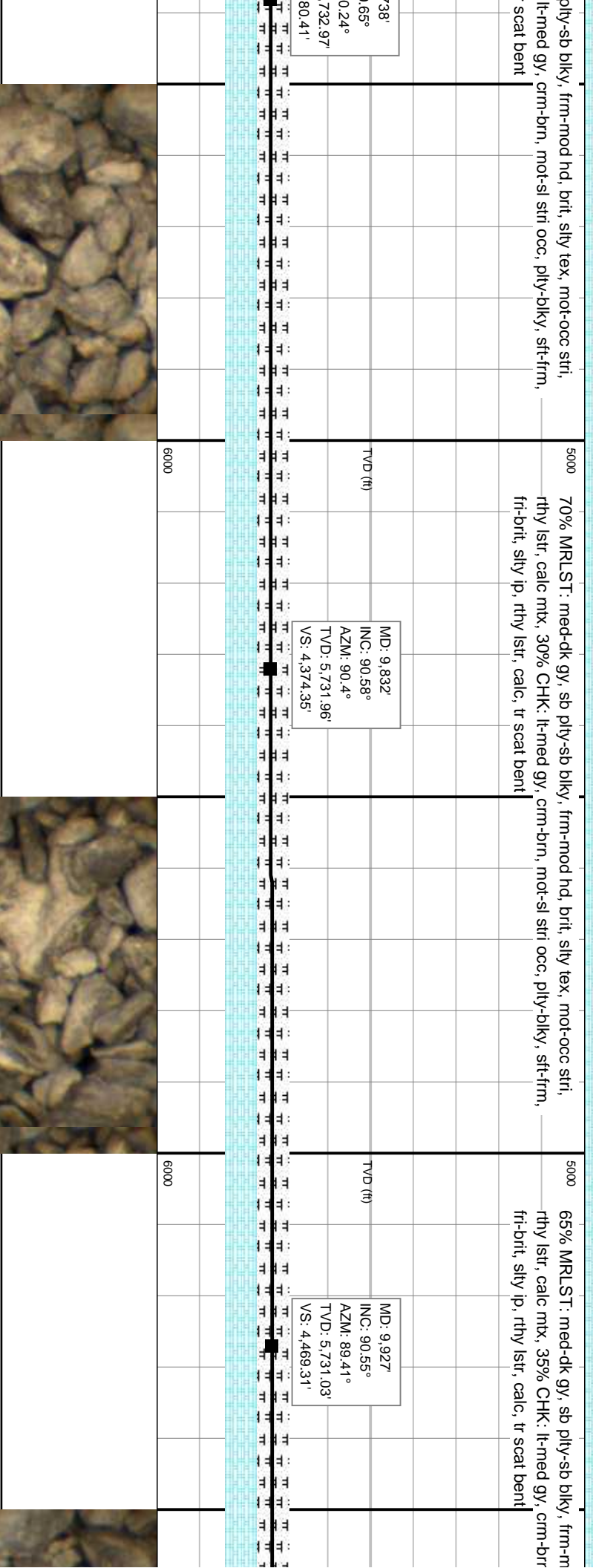
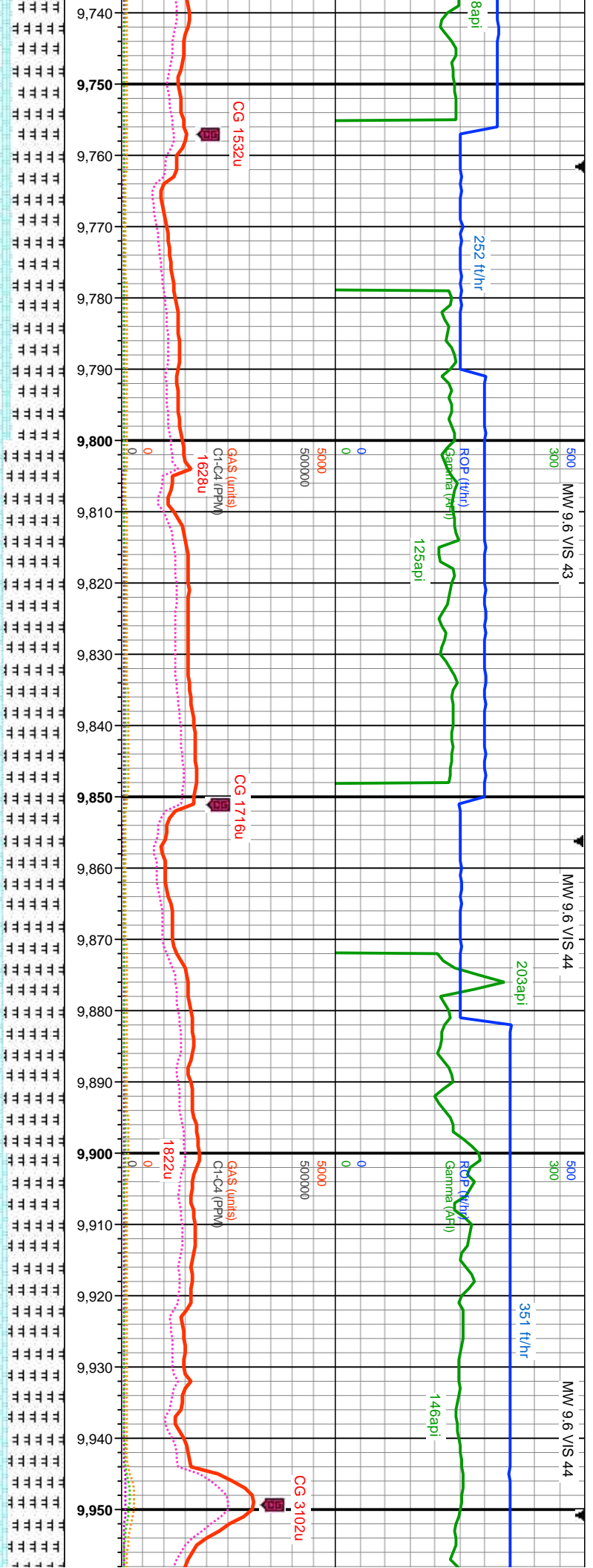
hd, brit, sily tex, mot, rthy lstr, -blky, sft-frm, fri-brit, sily ip, rthy	5000 65% MRLST: med-dk gy, sb pty-sb blky, frm-mod hd, brit, sily tex, mot, rthy lstr, calc mtx, 35% CHK: lt-med gy, crm-brn, mot, pty-blky, sft-frm, fri-brit, sily ip, rthy lstr, calc, tr scat bent	5000 70% MRLST: med-dk gy, sb pty-sb blky, frm-mod hd, brit, sily tex, rthy lstr, calc mtx, 30% CHK: lt-med gy, crm-brn, mot, pty-blky, sft- ip, rthy lstr, calc, tr scat bent
<div>MD: 8,886' INC: 90.37° AZM: 93.17° TVD: 5,740.43' VS: 3.428 99'</div>	TVD (ft)	TVD (ft)
	6000	6000

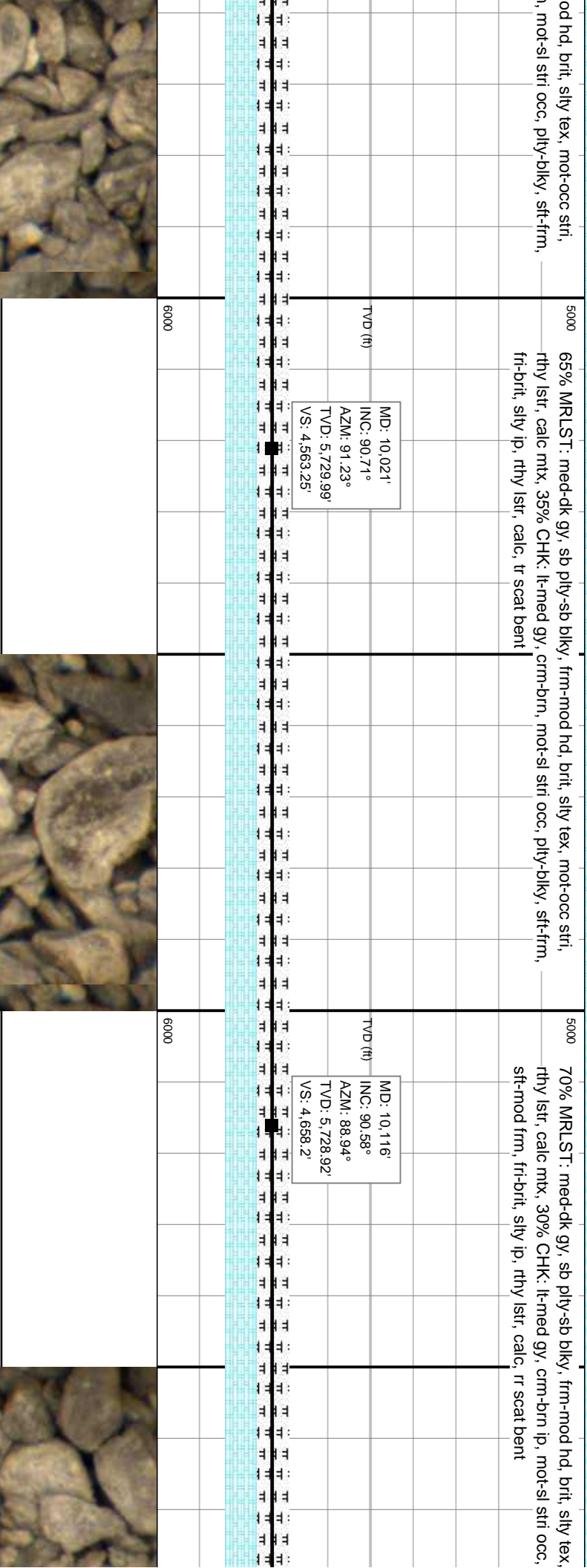
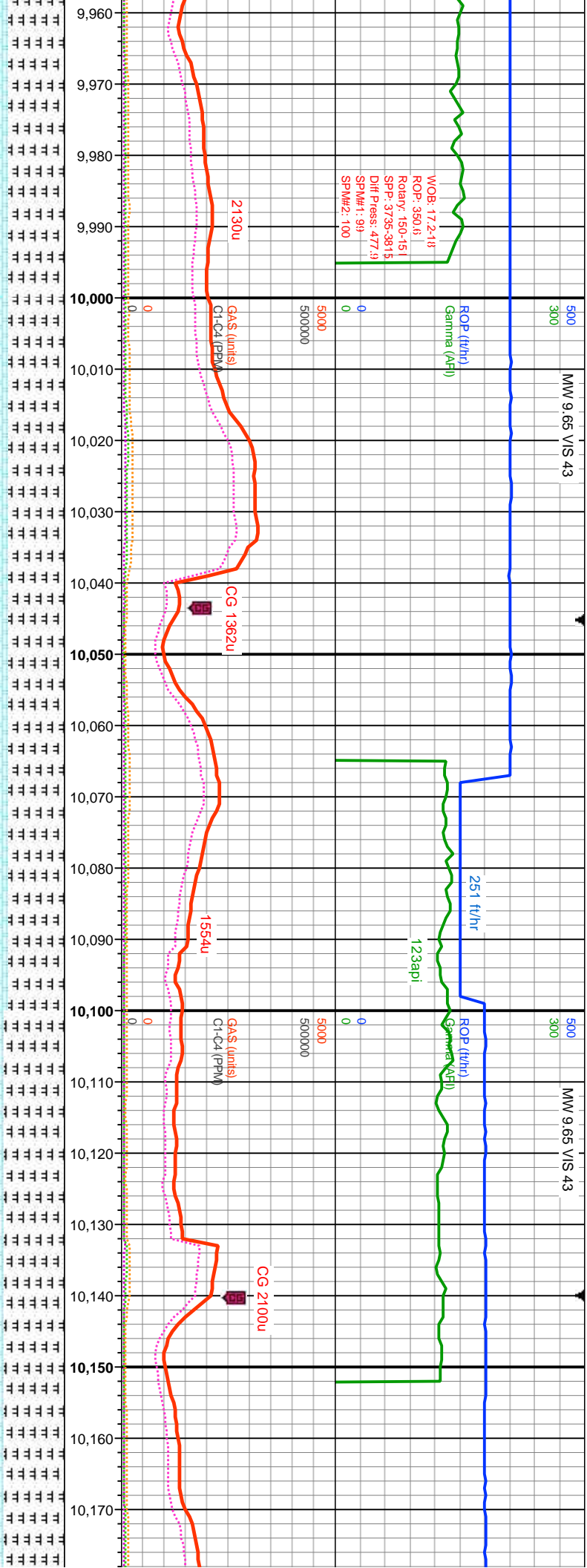


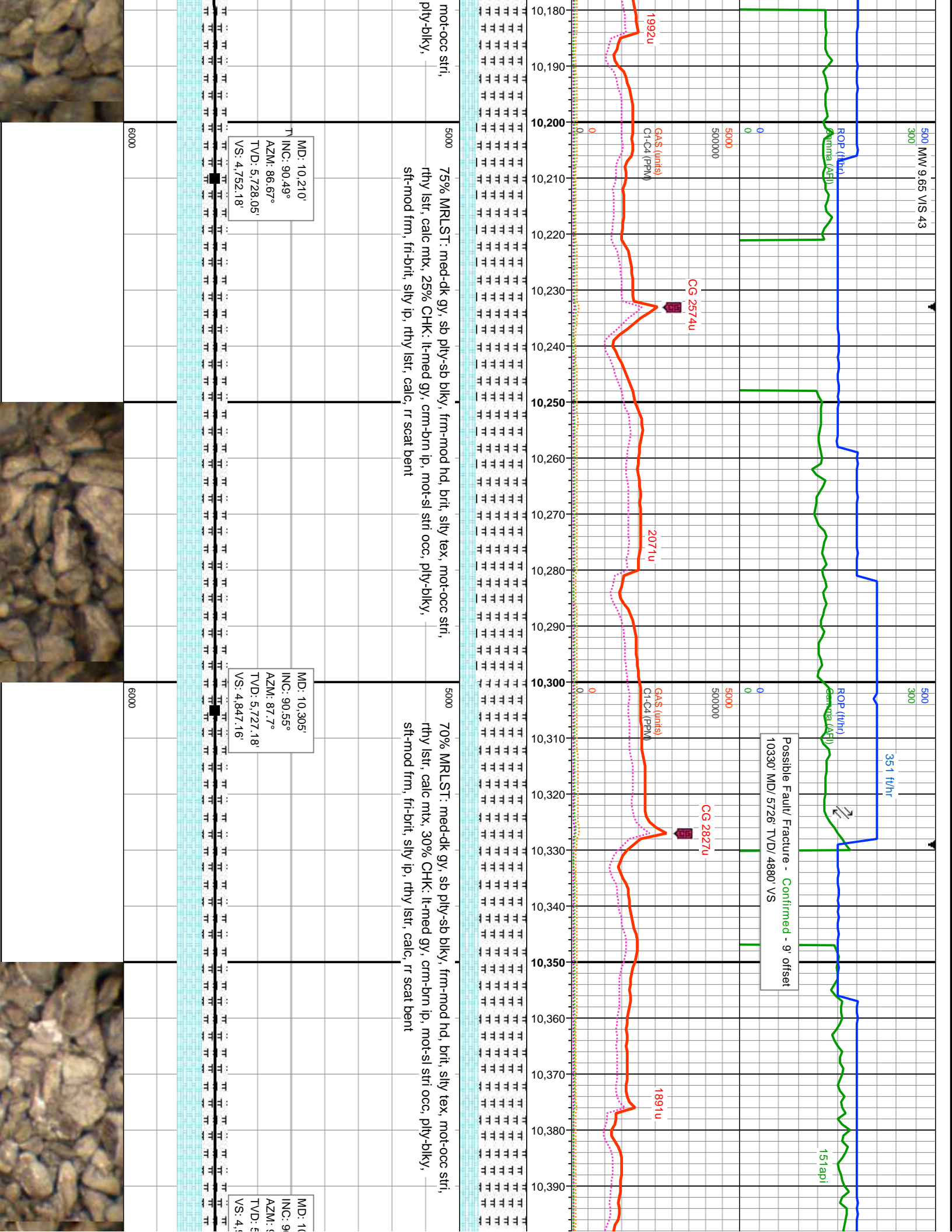


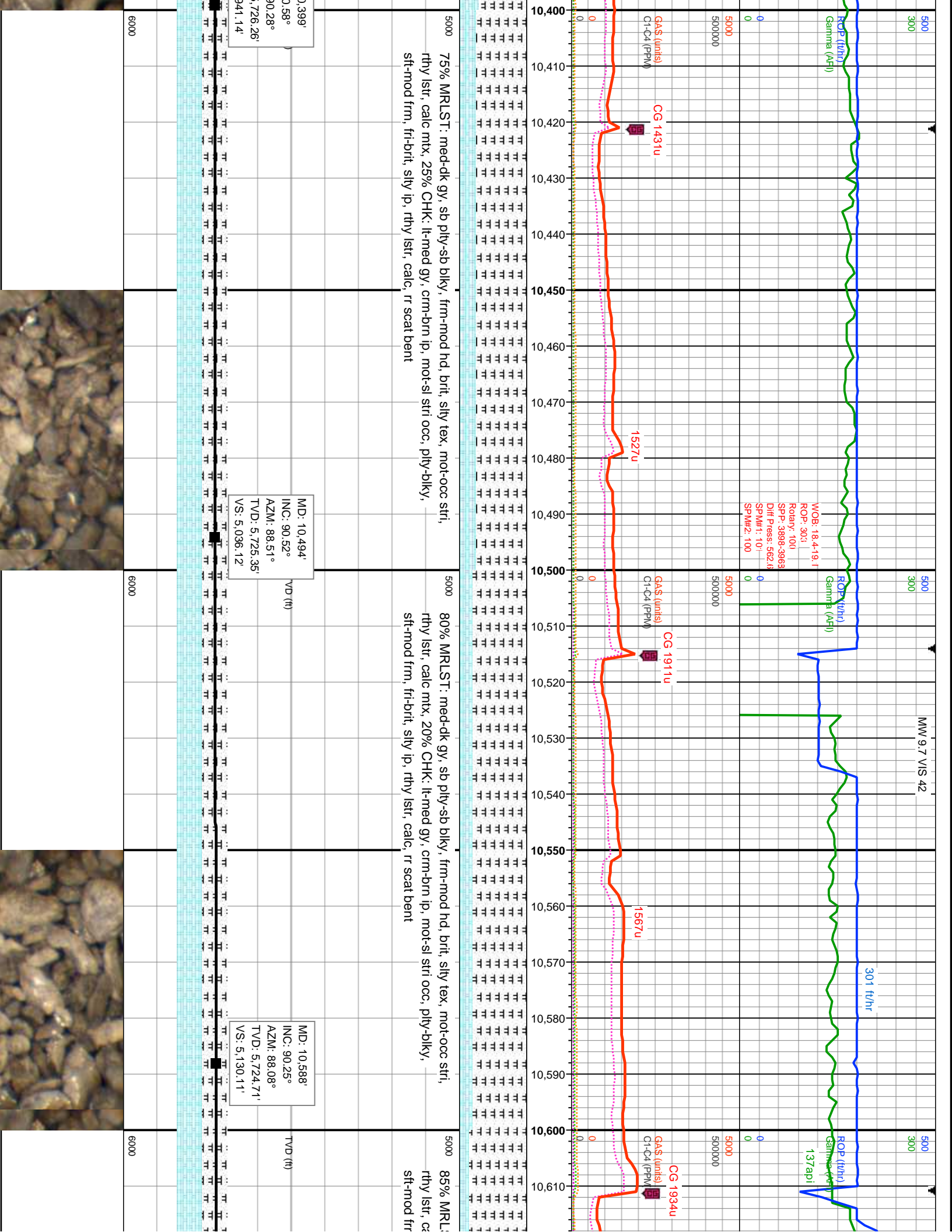
5000	70% MRLST: med-dk gy, sb ply-sb blkly, frm-mod hd, brit, silty tex, mot-occ stri, rthy lstr, calc mtx, 30% CHK: lt-med gy, crm-brn, mot, ply-blky, sft-frm, fri-brit, silty ip, rthy lstr, calc, tr scat bent	5000	60% MRLST: med-dk gy, sb ply-sb blkly, frm-mod hd, brit, silty tex, mot-occ stri, rthy lstr, calc mtx, 40% CHK: lt-med gy, crm-brn, mot, ply-blky, sft-frm, fri-brit, silty ip, rthy lstr, calc, tr scat bent	5000	60% MRL
TVD (ft)	MD: 9.359' INC: 90.52° AZM: 88.4° TVD: 5.736.85' VS: 3.901.48'	TVD (ft)	MD: 9.454' INC: 90.49° AZM: 87.03° TVD: 5.736.01' VS: 3.996.47'	TVD (ft)	
6000		6000		6000	

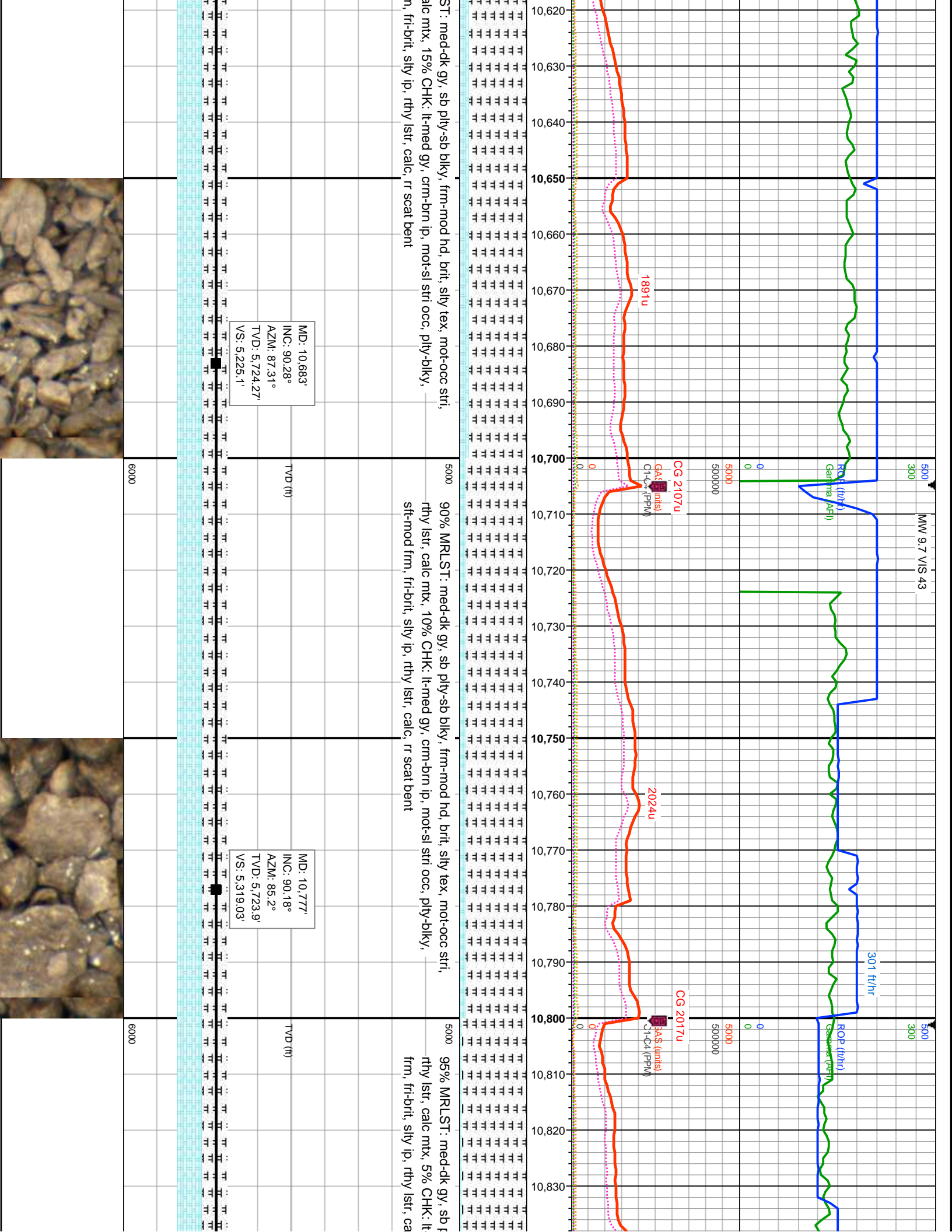


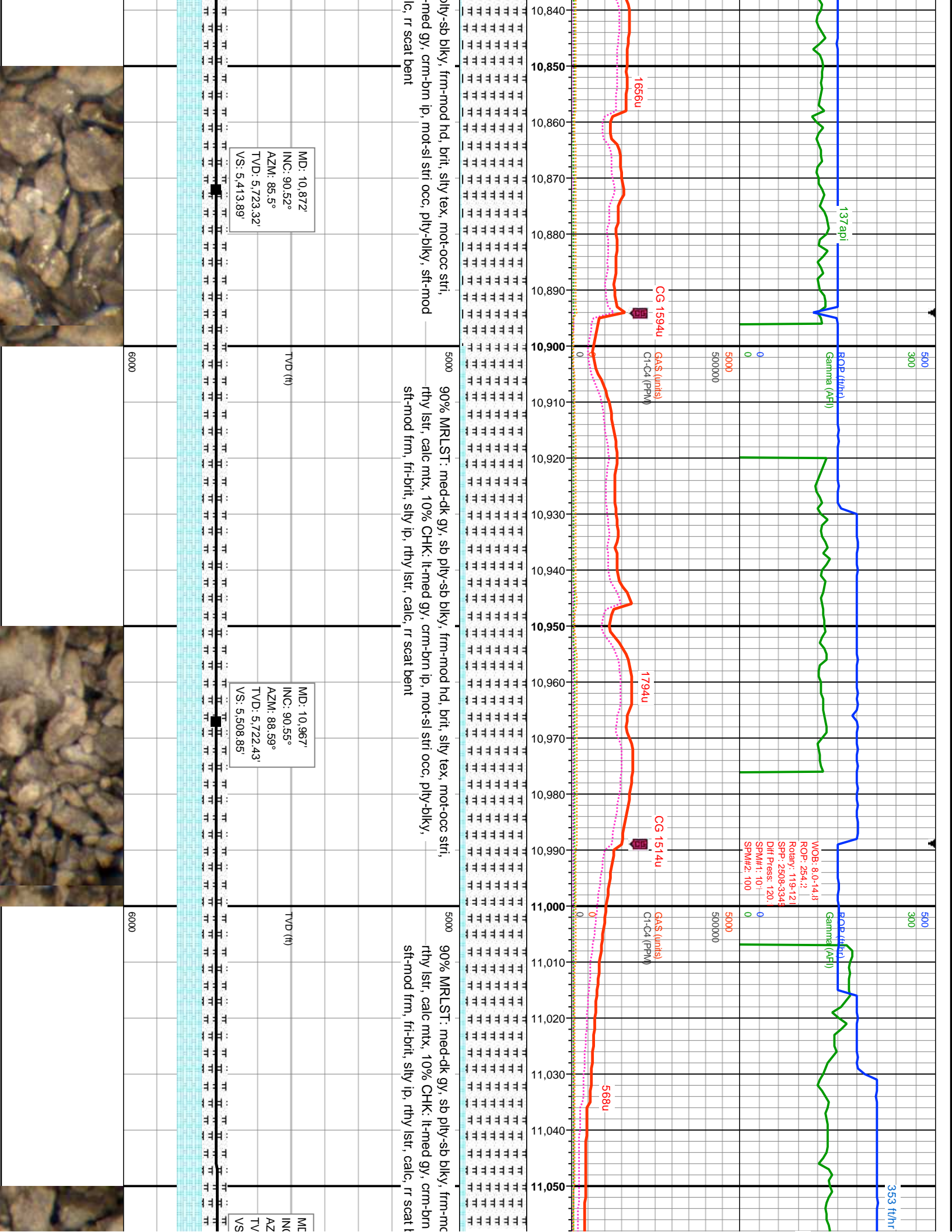


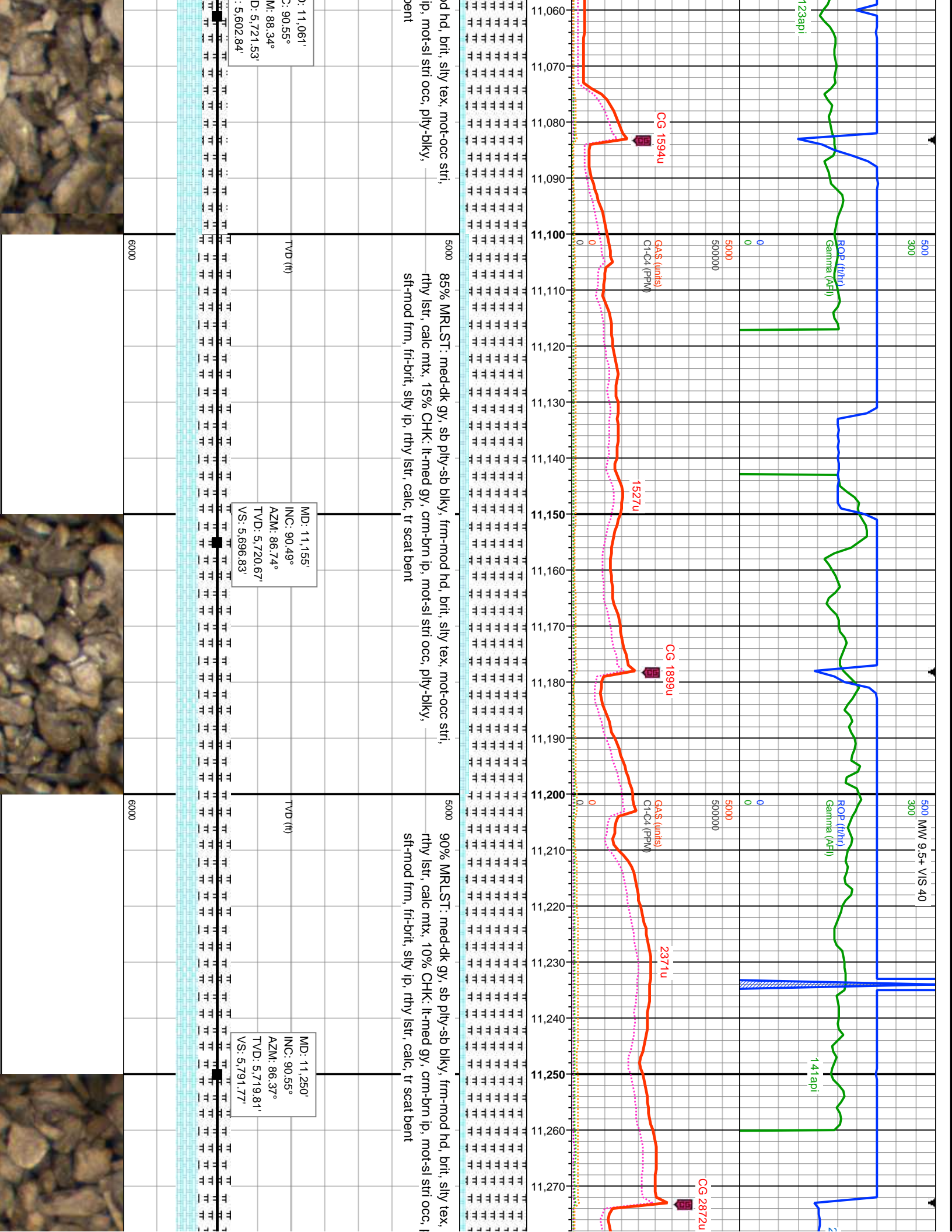


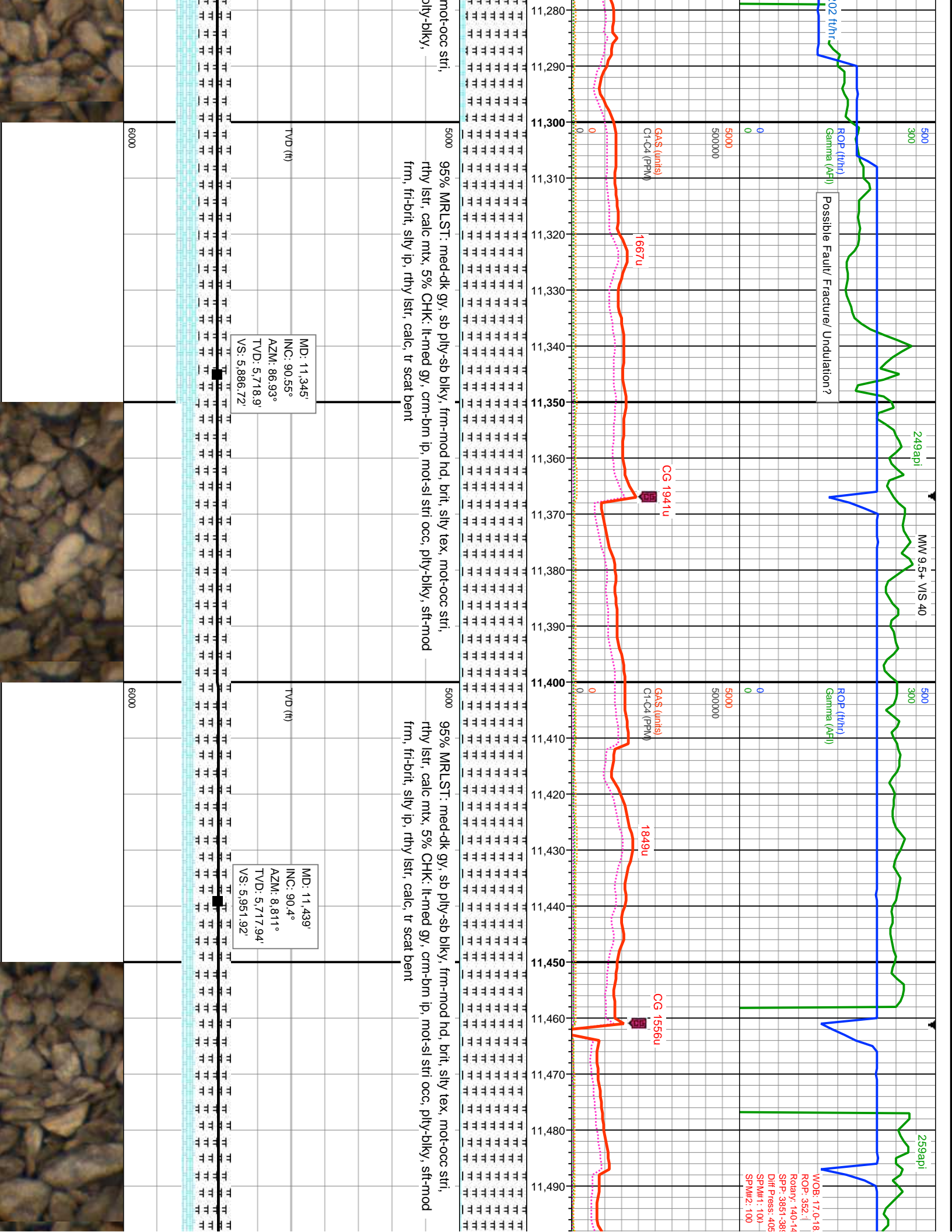


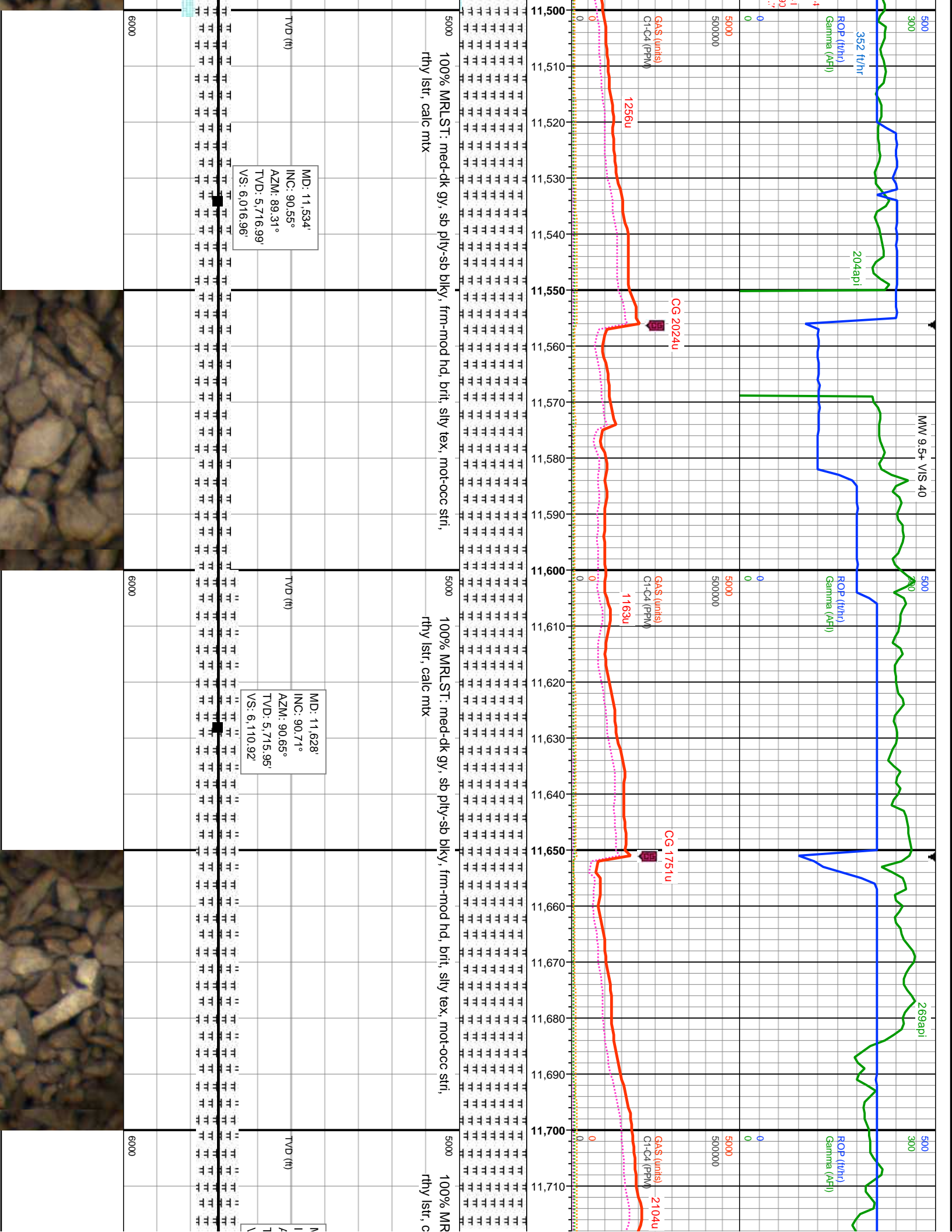


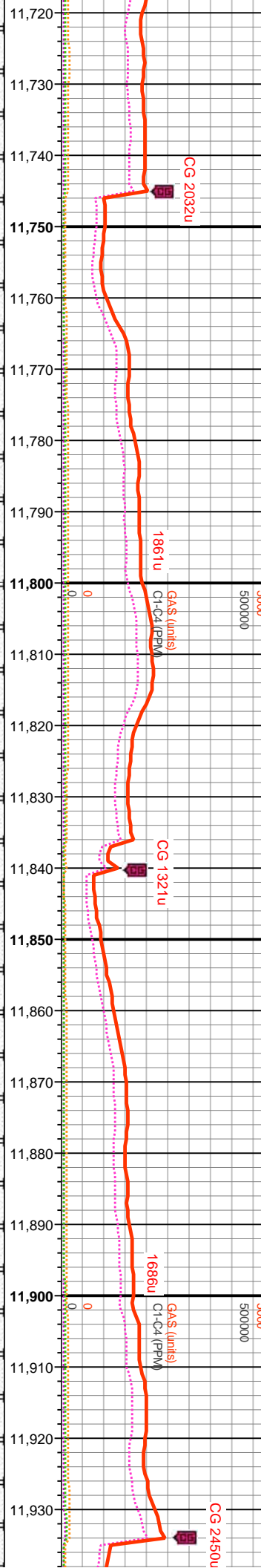
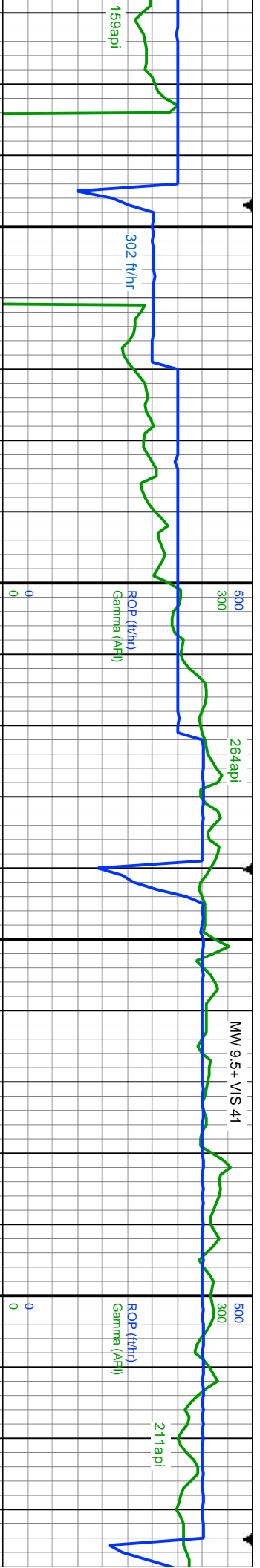






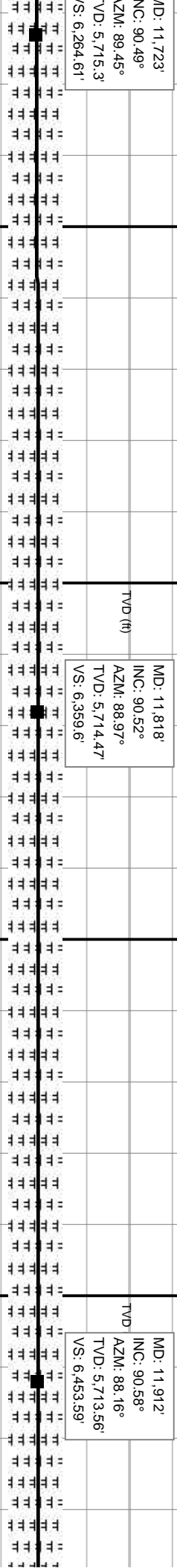


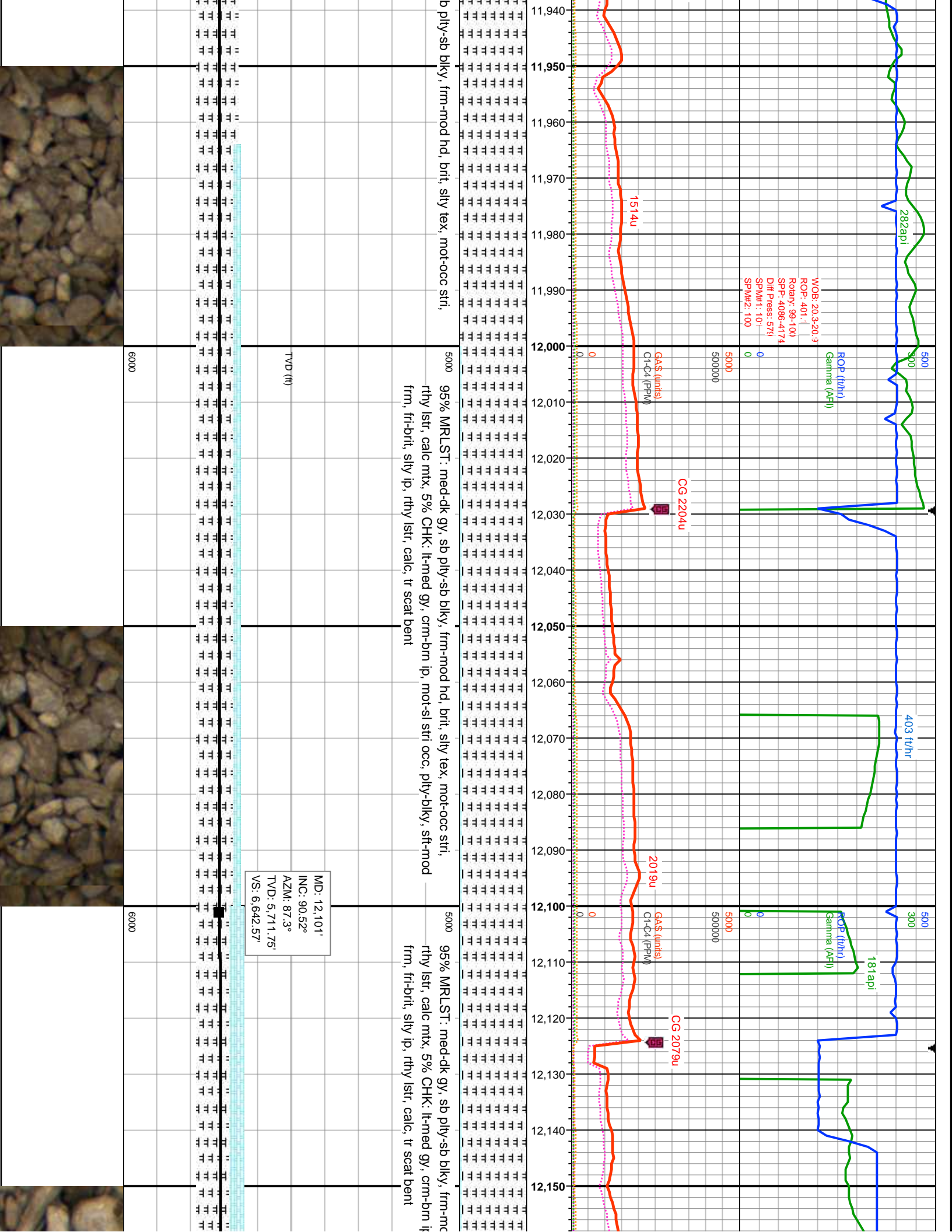


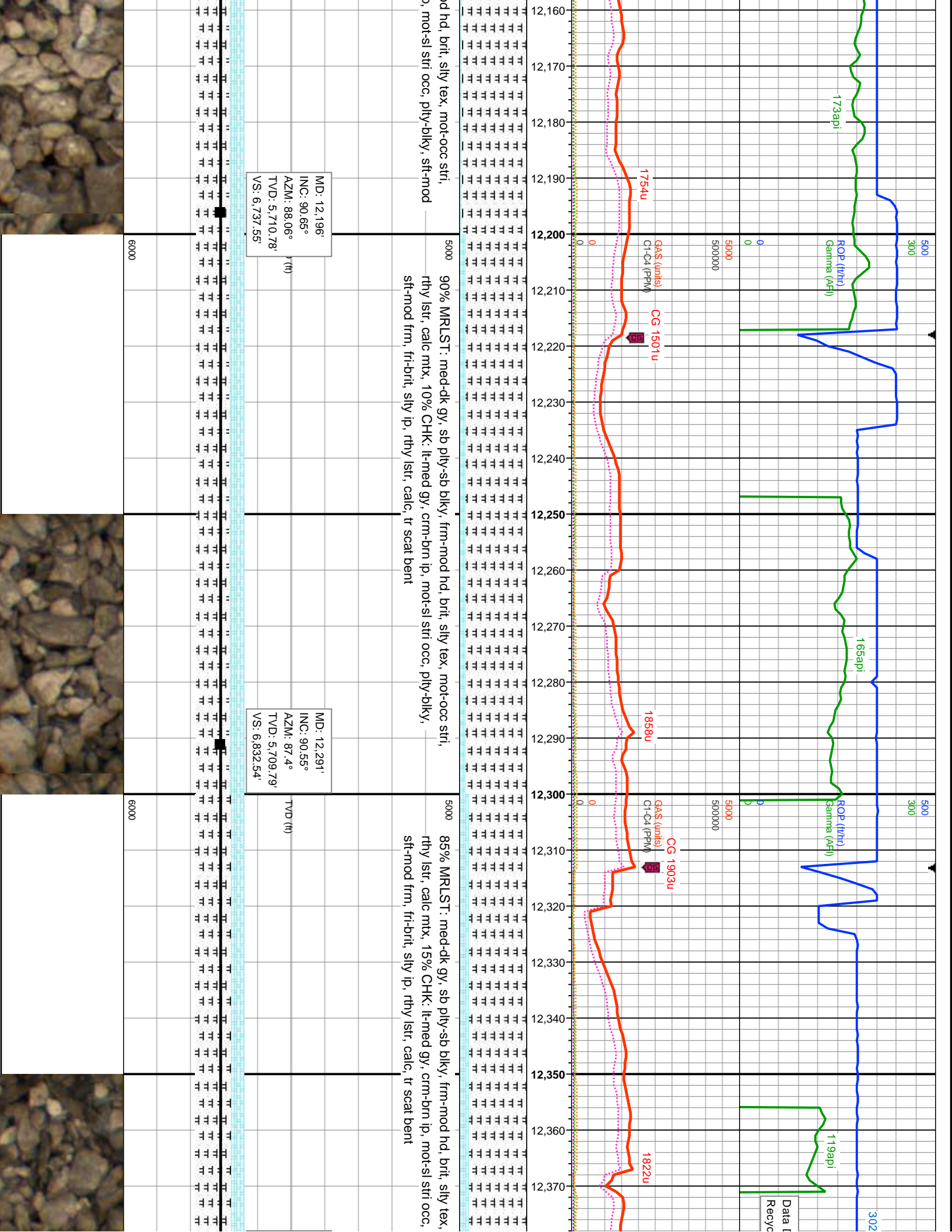


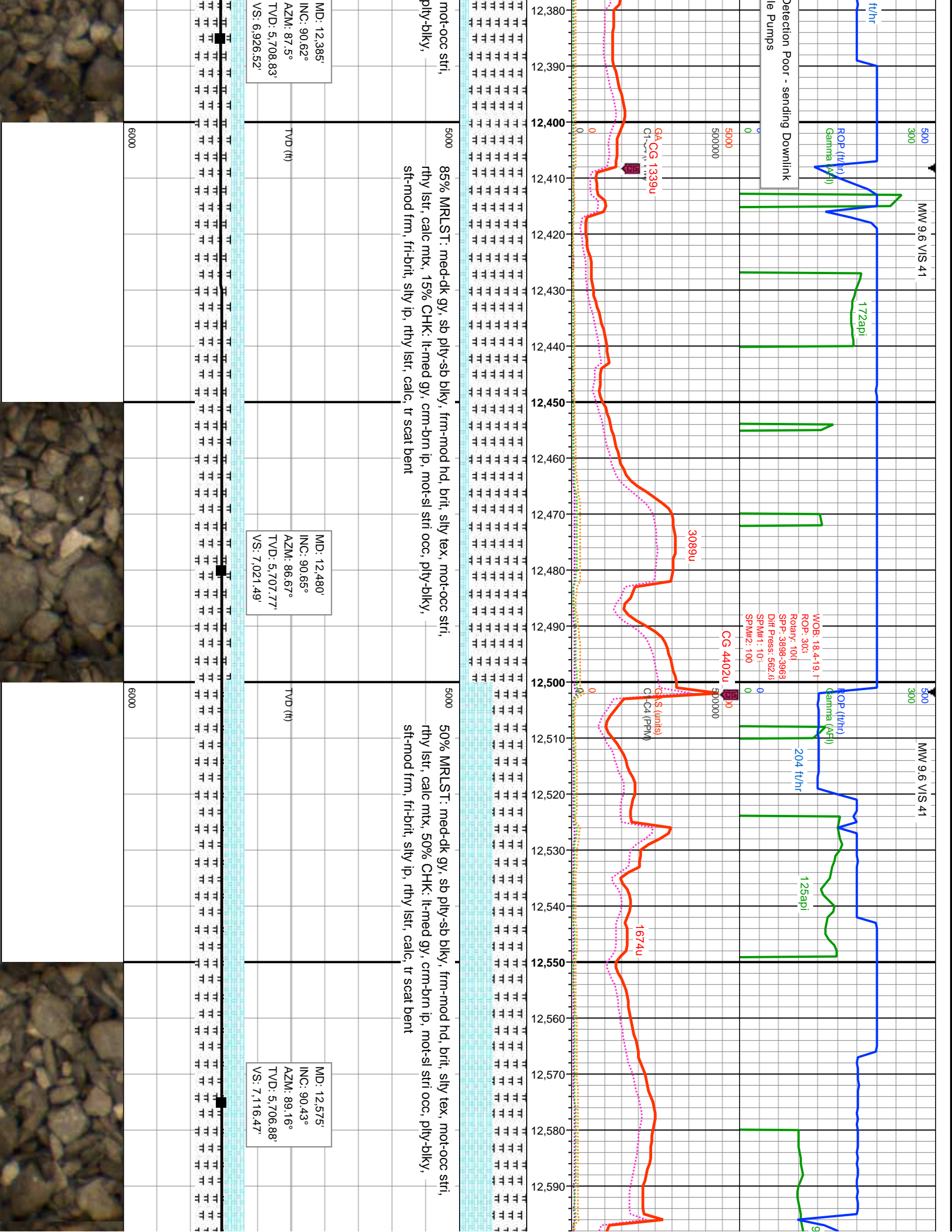
LTST: med-dk gy, sb plty-sb blkly, frm-mod hd, brit, slty tex, mot-occ stri, alc mtx

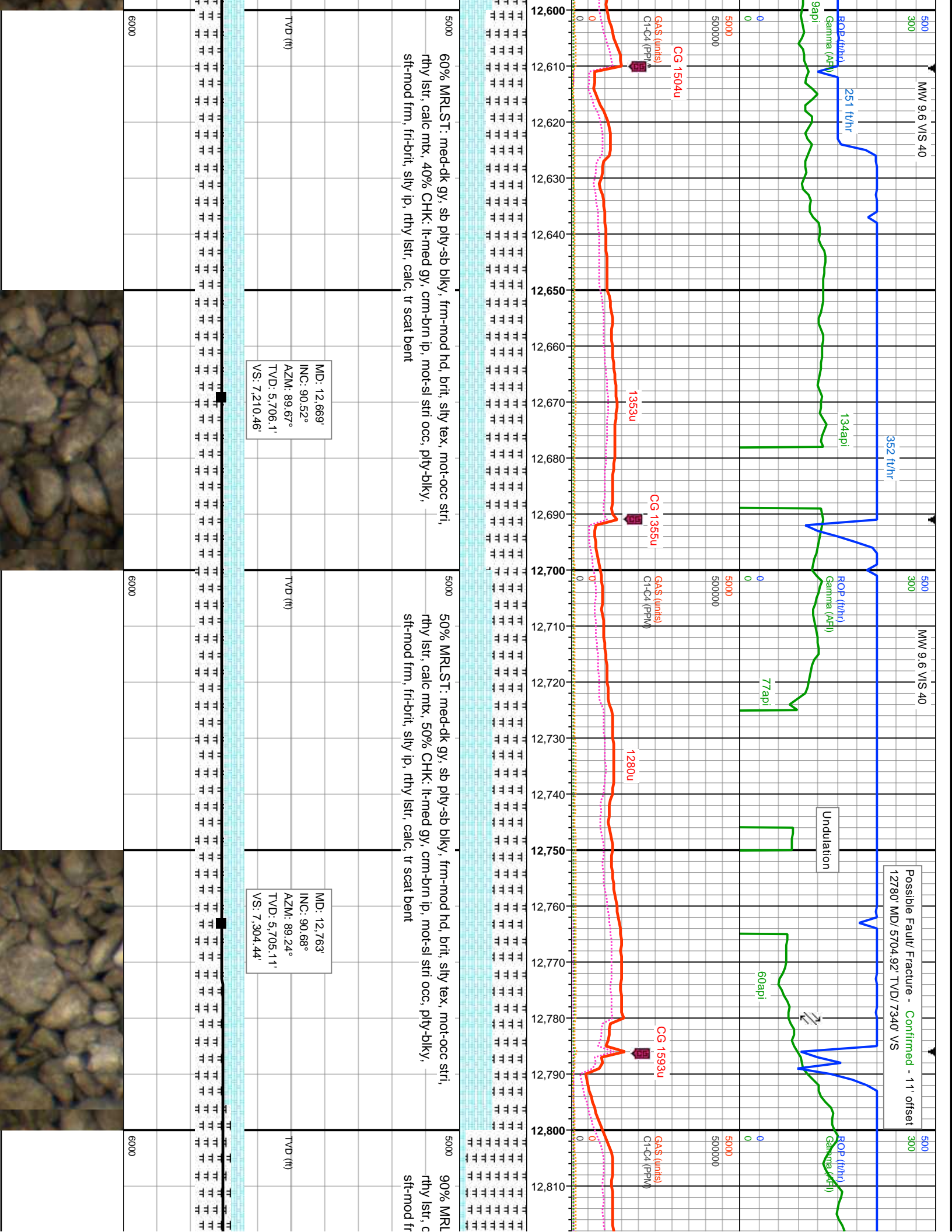
100% MRLST: med-dk gy, sb pily-sb blk, frm-mod hd, brit, silty tex, mot-occ stri, rthy lsst, calc mnt

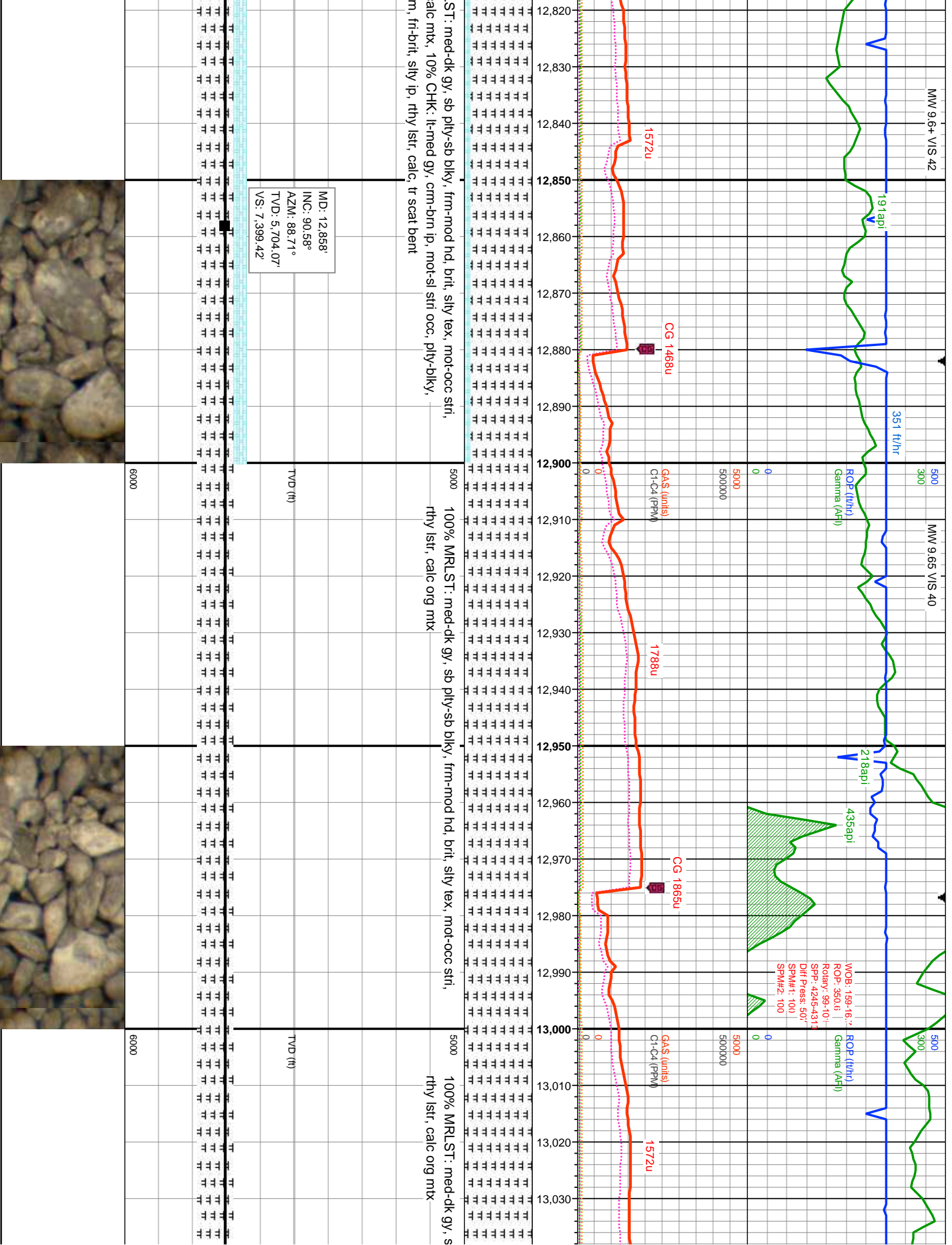
100% MRLST: med-dk gy, s  
rthy lstr, calc mtx

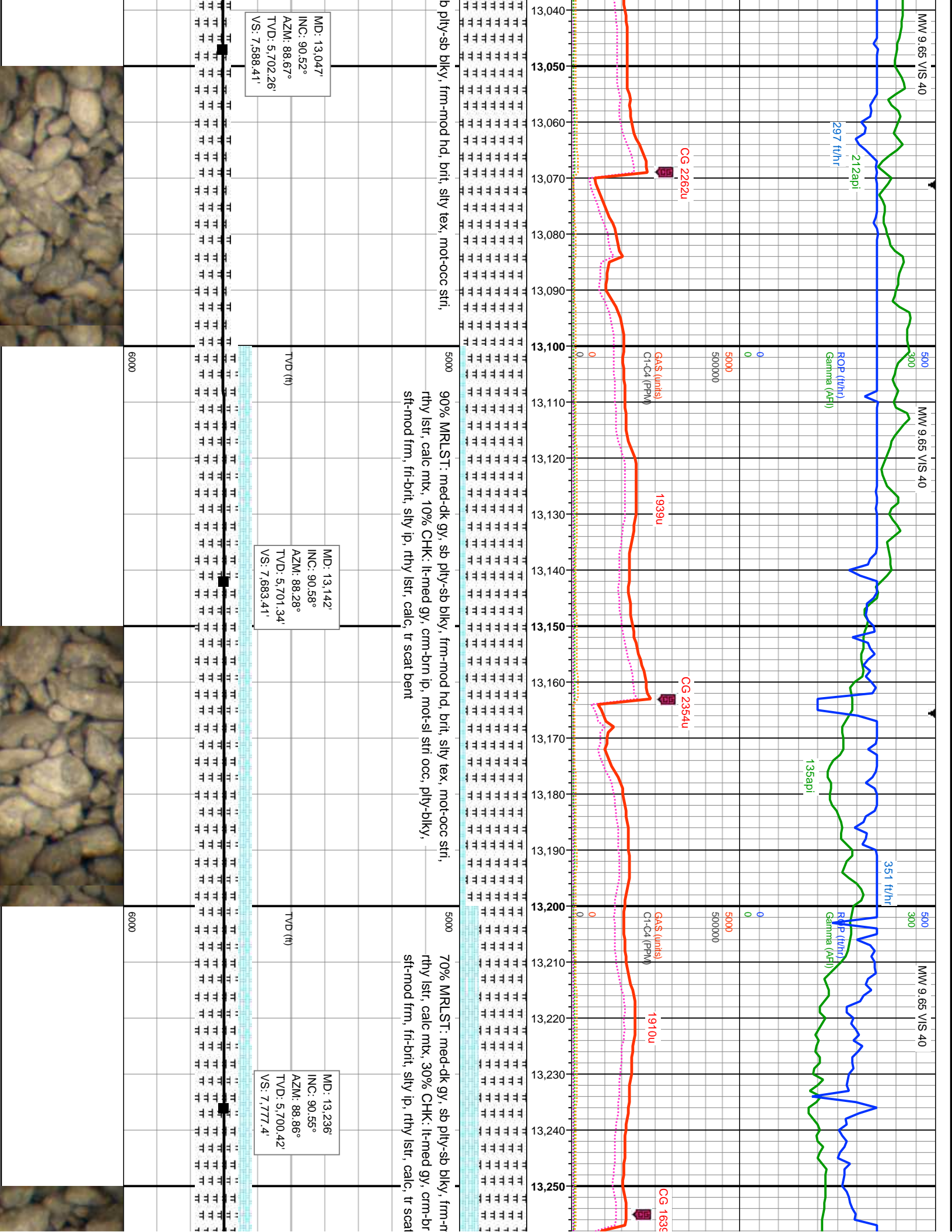


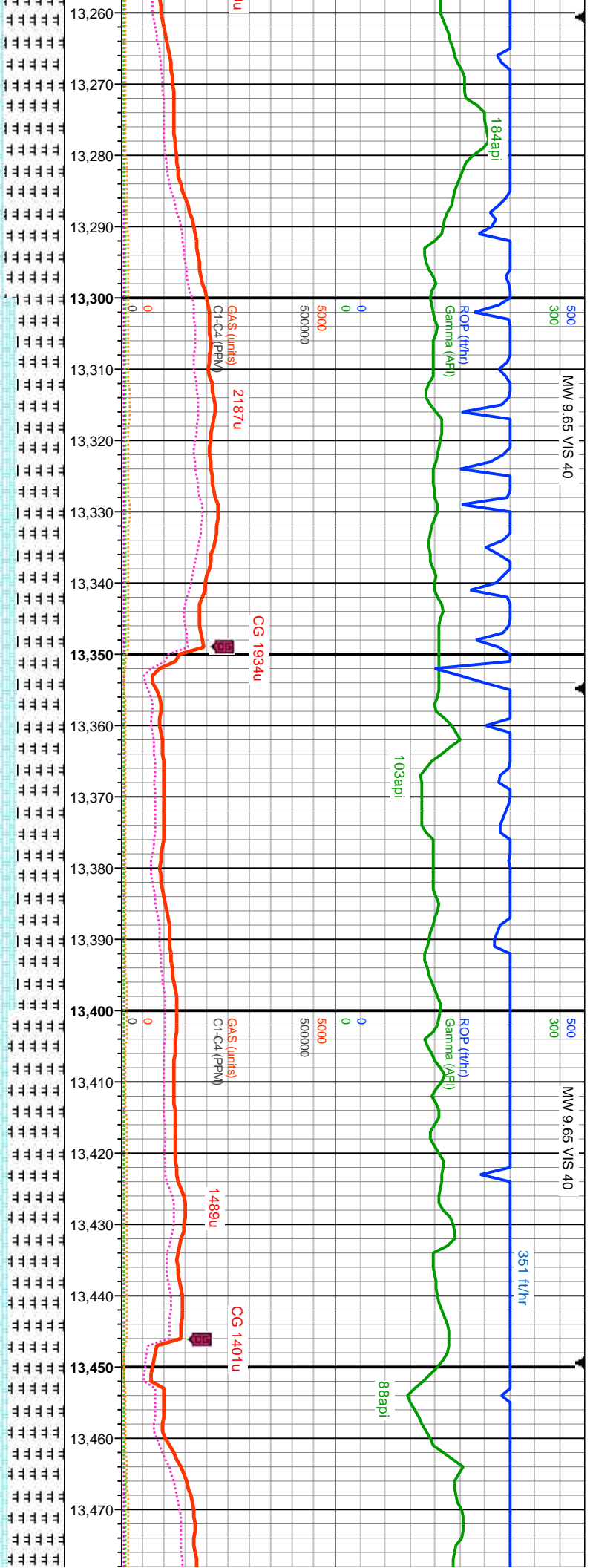



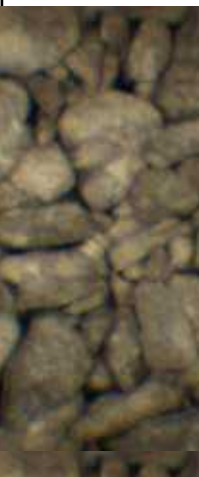



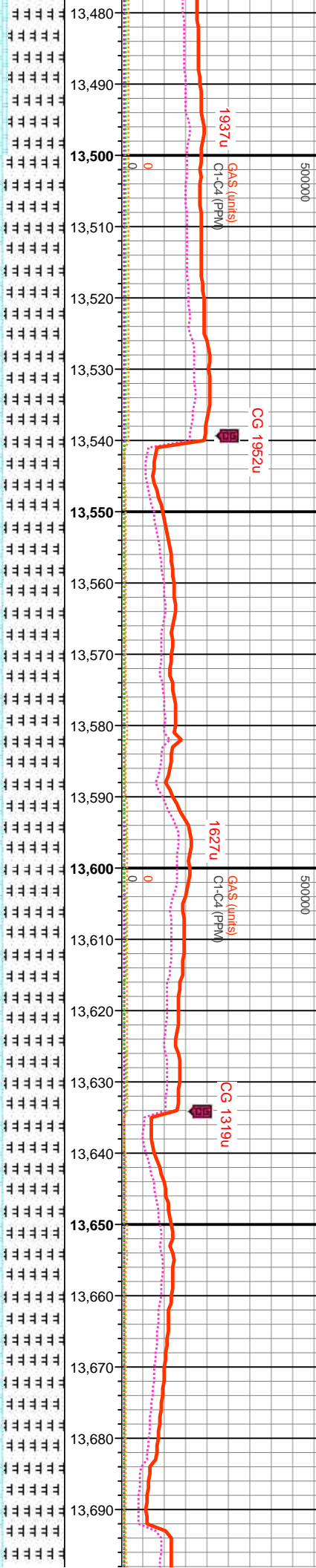
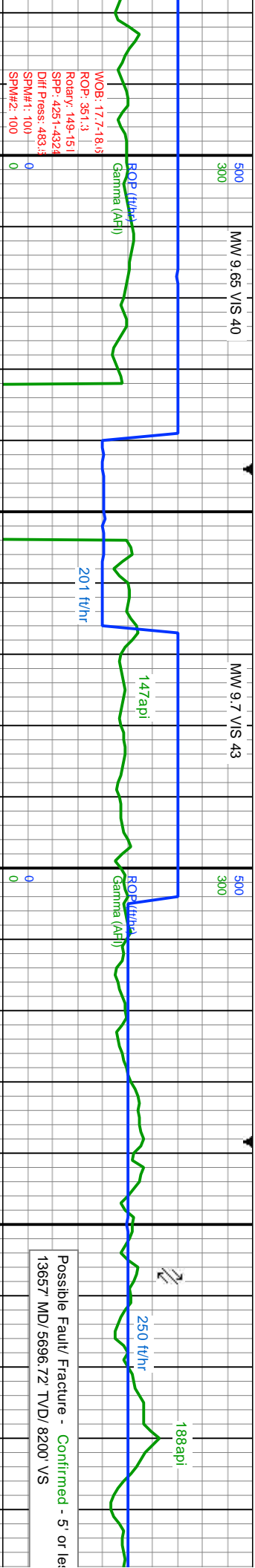






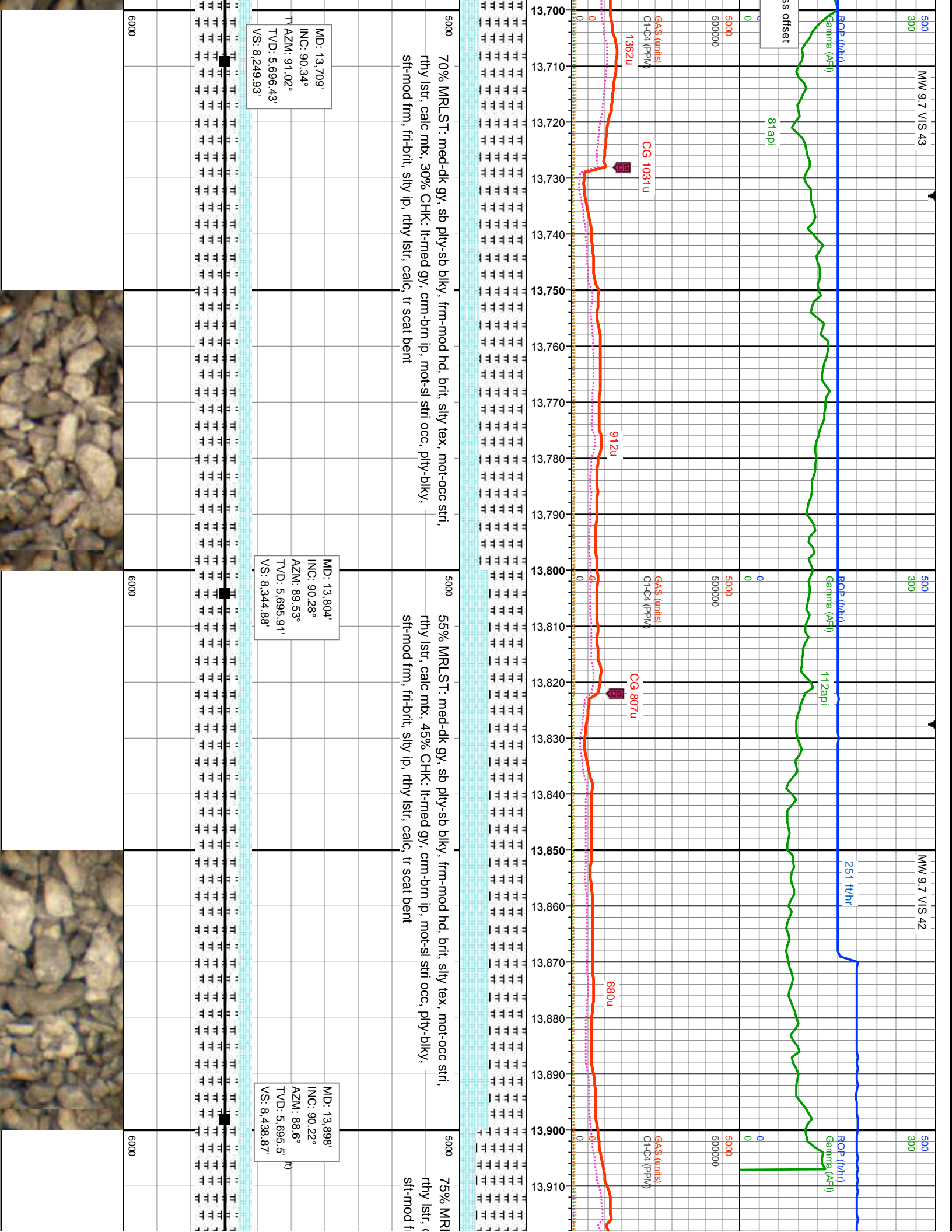


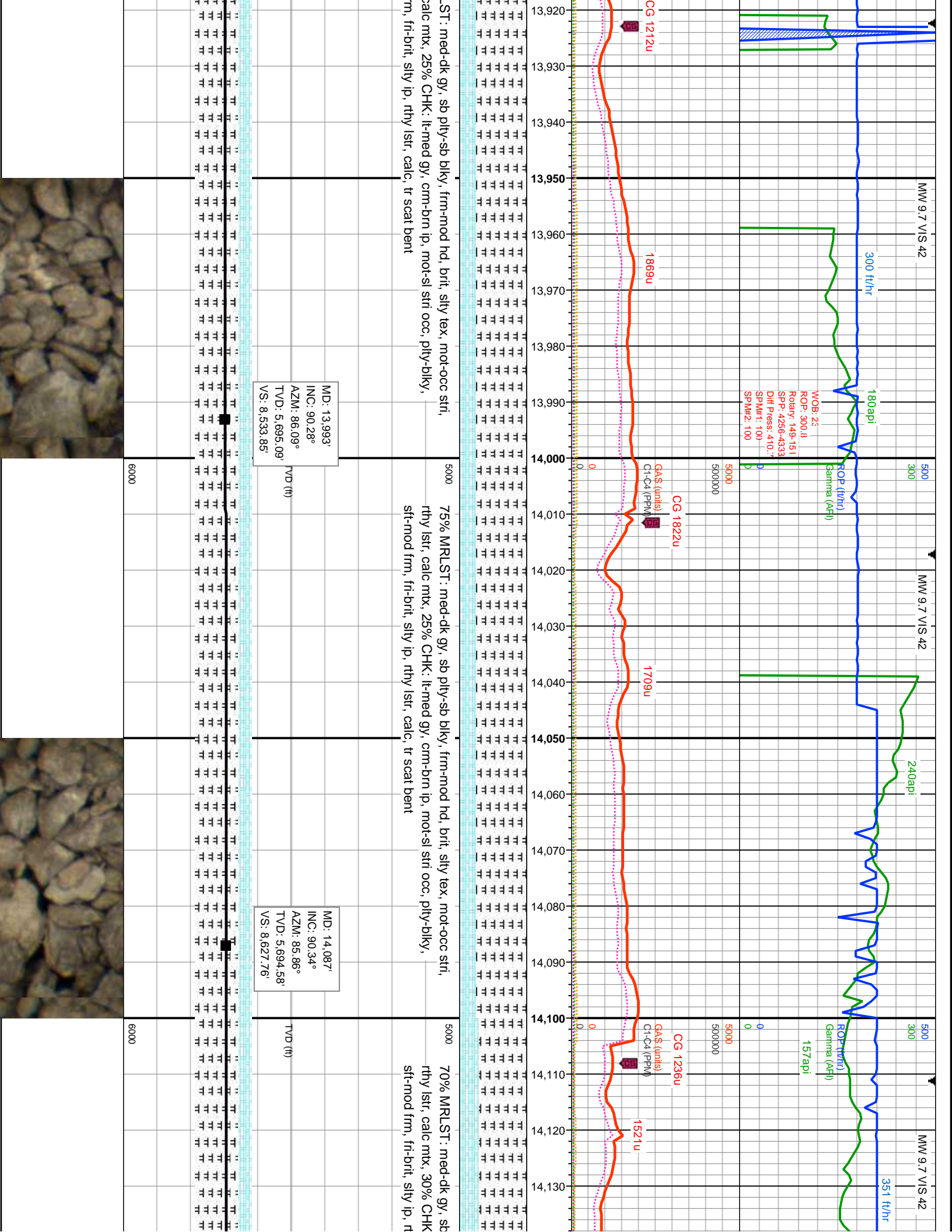
mod hd, brit, silty tex, mot-occ stri, n ip, mot-sl stri occ, pily-blky, bent	5000	55% MRLST: med-dk gy, sb pily-sb blkly, frm-mod hd, brit, silty tex, mot-occ stri, rthy lstr, calc mtbx, 45% CHK: lt-med gy, crm-brn ip, mot-sl stri occ, pily-blky, sft-mod frm, fri-brit, silty ip, rthy lstr, calc, tr scat bent	5000	65% MRLST: med-dk gy, sb pily-sb blkly, frm-mod hd, brit, silty tex, rthy lstr, calc mtbx, 35% CHK: lt-med gy, crm-brn ip, mot-sl stri occ, sft-mod frm, fri-brit, silty ip, rthy lstr, calc, tr scat bent
MD: 13.331' INC: 90.46° AZM: 88.41° TVD: 5.699.58' VS: 7.872.4'				
TVD (ft)				
6000				
	6000		6000	

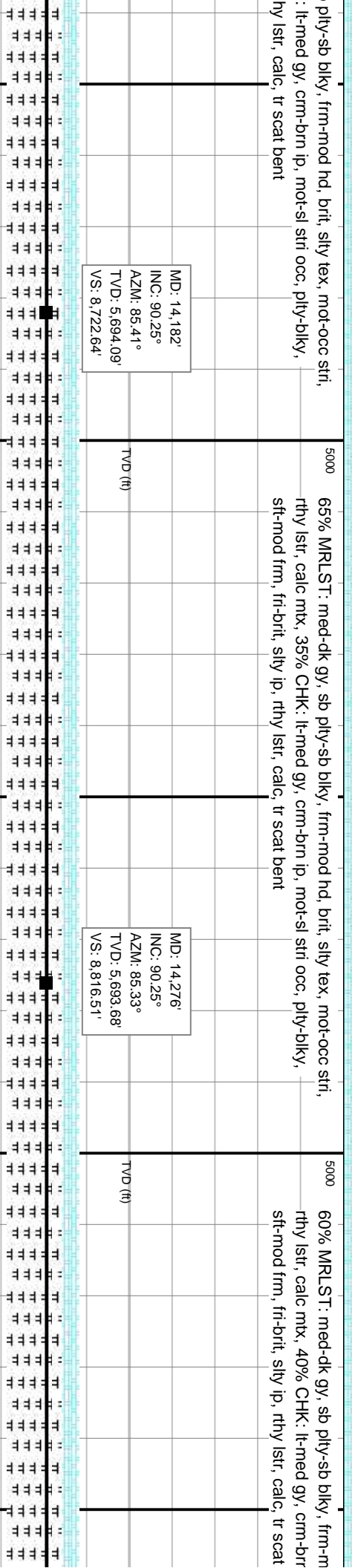
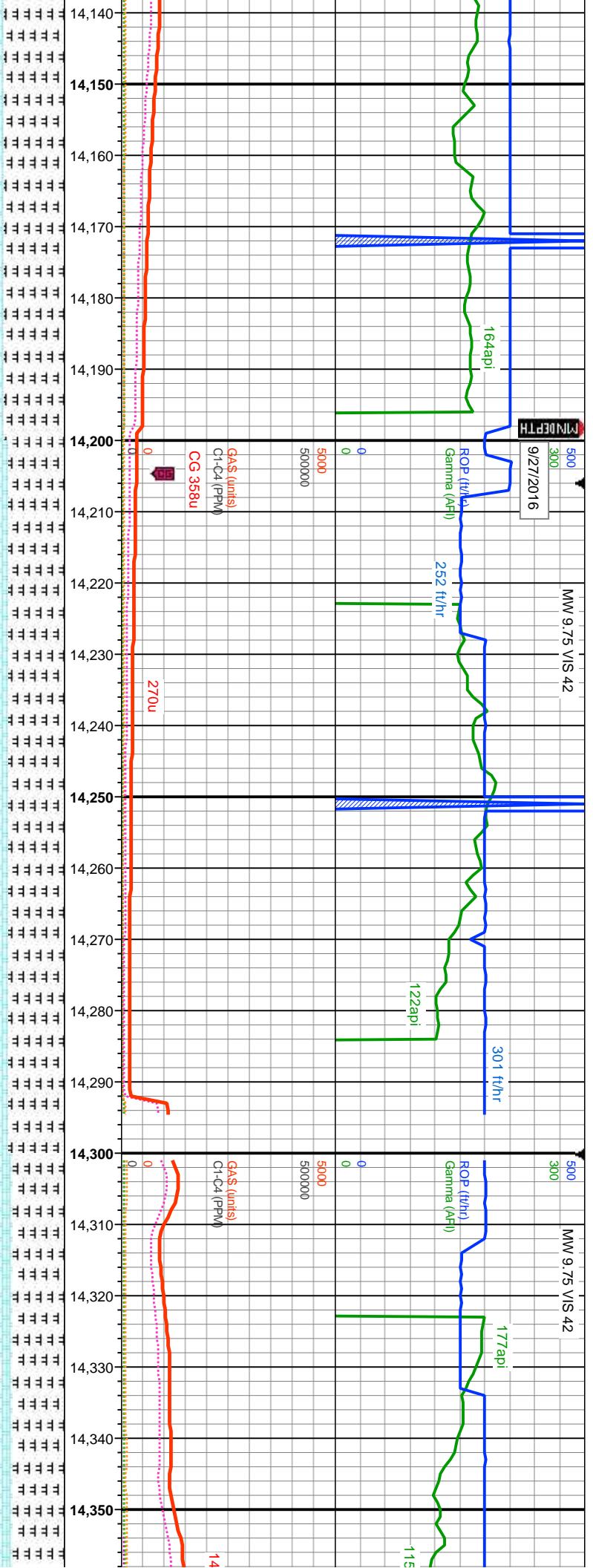


mot-occ stri, pty-blky,	5000	70% MRLST: med-dk gy, sb pty-sb blky, frm-mod hd, brit, sily tex, mot-occ stri, rthy lstr, calc mtx, 30% CHK: lt-med gy, crm-brn ip, mot-sl stri occ, pty-blky, sft-mod frm, fri-brit, sily ip, rthy lstr, calc, tr scat bent	MD: 13.520' INC: 90.68° AZM: 90.35° TVD: 5.697.73' VS: 8.061.37'	5000	70% MRLST: med-dk gy, sb pty-sb blky, frm-mod hd, brit, sily tex, mot-occ stri, rthy lstr, calc mtx, 30% CHK: lt-med gy, crm-brn ip, mot-sl stri occ, pty-blky, sft-mod frm, fri-brit, sily ip, rthy lstr, calc, tr scat bent	MD: 13.614' INC: 90.28° AZM: 93.75° TVD: 5.696.94' VS: 8.155.17'
	6000			6000		

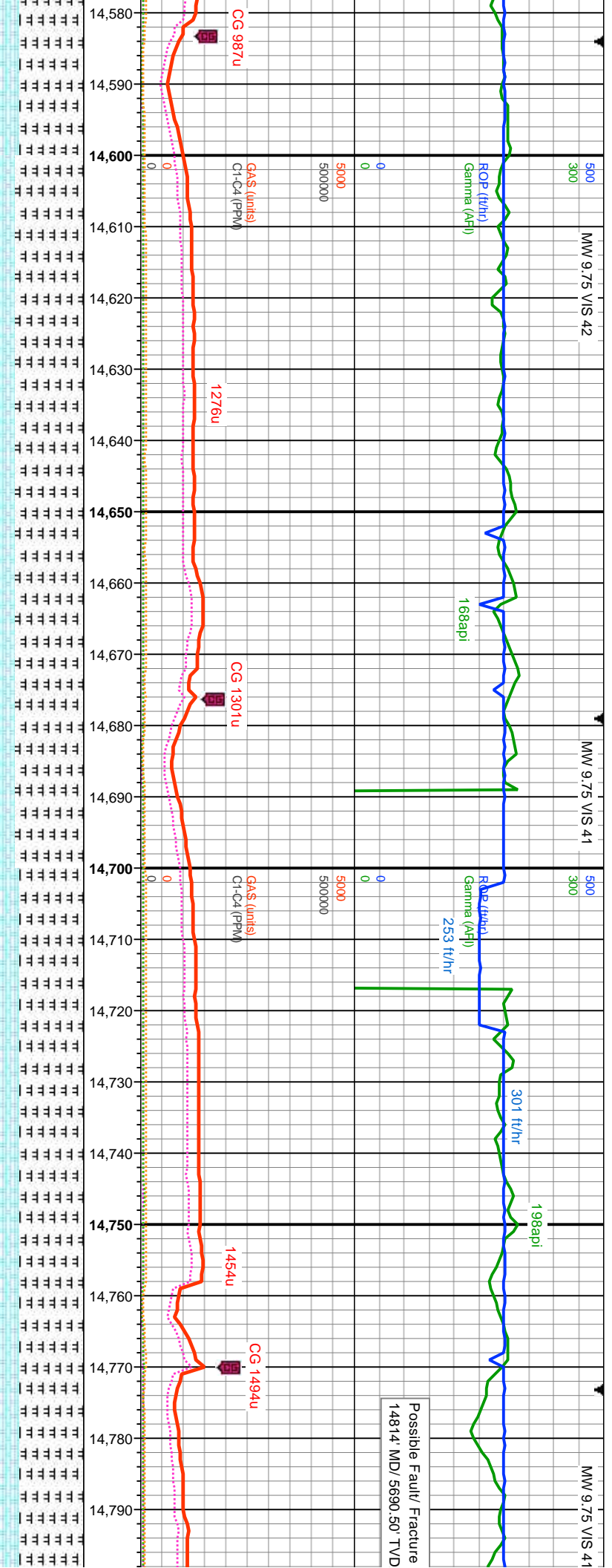












mot-occ stri, pty-blky, 80% MRLST: med-dk gy, sb pty-sb blky, frm-mod hd, brit, sly tex, mot-occ stri, rthy lstr, calc mtx, 20% CHK: lt-med gy, crm-brn ip, mot-sl stri occ, pty-blky, sft-mod frm, fri-brit, sly ip, rthy lstr, calc, tr scat bent	5000 TVD (ft) MD: 14,655' INC: 90.28° AZM: 88.39° TVD: 5,692.05' VS: 9,195.4'	6000	
75% MRLST: med-dk gy, sb pty-sb blky, frm-mod hd, brit, sly tex, mot-occ stri, rthy lstr, calc mtx, 25% CHK: lt-med gy, crm-brn ip, mot-sl stri occ, pty-blky, sft-mod frm, fri-brit, sly ip, rthy lstr, calc, tr scat bent	5000 TVD (ft) MD: 14,749' INC: 90.71° AZM: 87.32° TVD: 5,691.24' VS: 9,289.39'	6000	

