

Décollement Consulting Inc.



Scale: 5" / 100'
Measured Depth Log

Well Name Pronghorn 14-1-1-4HNB

Location SE/SW Section 4, T5N - R61W

State Colorado

Country USA

API Number 05-123-37499-00

Region D.J. Basin

Spud Date 8/6/2014

County Weld

Rig Number Cade 21

Field Wattenberg

Drilling Completed 8/13/2014

Ground Elevation 4,643'

K.B. Elevation 4,660'

Logged Interval 6,000' **To** 10,762'

Total Depth 10,762'

Formation Niobrara "B" Chalk

Type of Drilling Fluid Water Based Mud

Operator

Company Bonanza Creek Energy, Inc.

Address 410 17th Street, Suite 1500
Denver, CO 80202

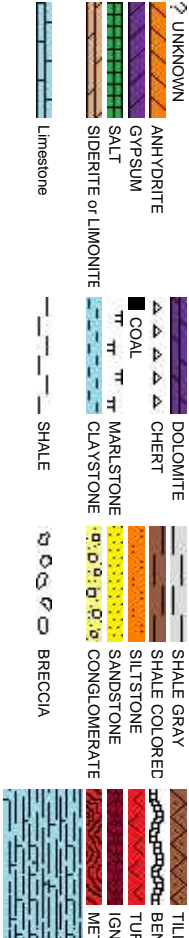
Geologist

Name Dick Brunner / Scott Sawyer

Company Décollement Consulting Inc.

Address 13300 Braun Road
Golden, CO 80401

Rock Types

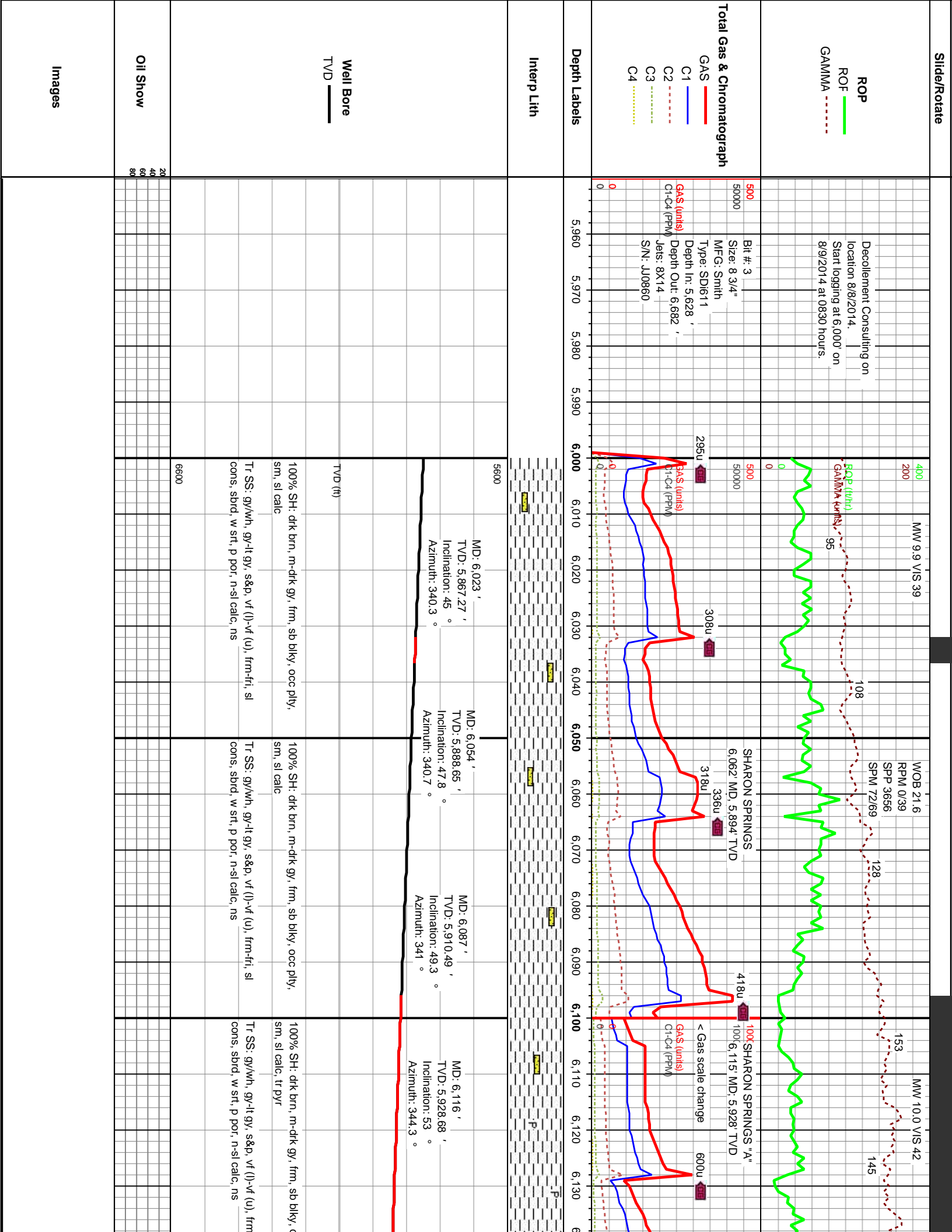


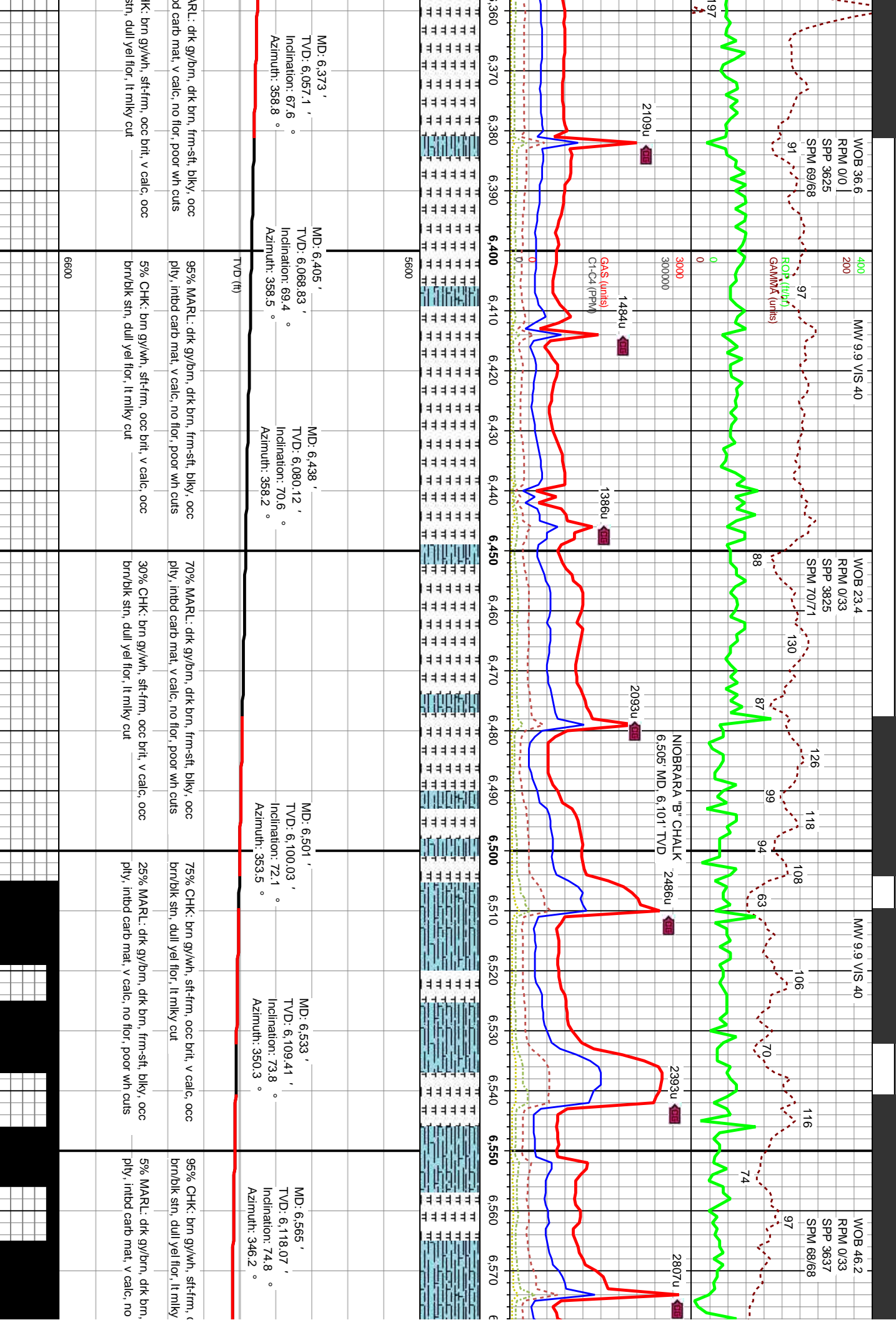
Accessories

Fossils		Stringer	
F FOSSIL	- ARGILLACEOUS	✓ GLAUCONITE	ANHYDRITE STRINGER
GASTROPOD	/ ARGILLITE GRAIN	⚡ GYPSIFEROUS	BENTONITE STRINGER
ALGAE	B BENTONITE	↑ HEAVY MINERAL	COAL STRINGER
AMPHIPORA	BITUMENOUS SUBSTANCE	K KAOLIN	DOLOMITE STRINGER
OSTRACOD	BRECCIA FRAGMENTS	TT MARLSTONE	GYPSUM STRINGER
BELEMNITE	1 CALCAREOUS	⚡ MINERAL CRYSTALS	LIMESTONE STRINGER
PELECYPOD	■ CARBONACEOUS FLAKES	⚡ NODULES	TT MARLSTONE (CALC) STRG
PELLET	▲ CHTDK	● PHOSPHATE PELLETS	TT MARLSTONE (DOL) STRG
PISOLITE	▲ CHLT	P PYRITE	SANDSTONE STRINGER
PLANT REMAINS	COAL - THIN BEDS	⊞ SALT CAST	— SHALE STRINGER
BRACHIOPOD	∠ DOLOMITIC	∴ SANDY	SILTSTONE STRINGER
CEPHALOPOD	+ FELDSPAR	✓ SILICEOUS	
CORAL	● FERRUGINOUS PELLET	.. SILTY	
CRINOID	➤ FERRUGINOUS	✓ TUFFACEOUS	
ECHINOID			
FISH			
FORAMINIFERA	/// ANHYDRITIC		

Other Symbols

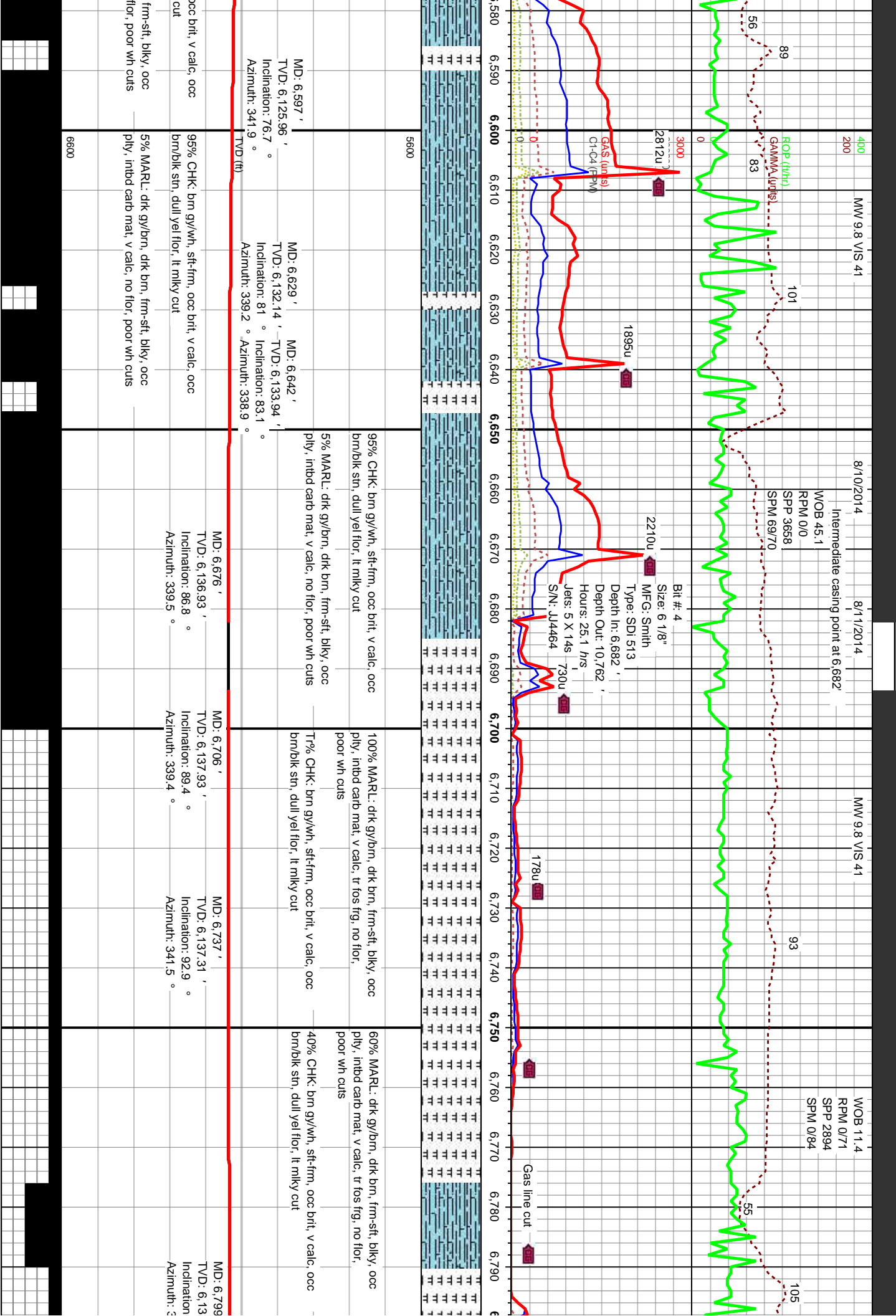
Oil Show		Engineering	
○ ORGANIC	✖ GAS SHOW	↕ REVERSE FAULT	MX MICROXLN
P PINPOINT	MINDEPTH MN DEPTH	▲ SIDEWALL CORE (LEFT)	MS MUDSTONE
✓ VUGGY	↖ NORMAL FAULT	▲ SIDEWALL CORE (RIGHT)	R ROUNDED
● DEAD	↗ OIL SHOW	SLIDE	B SUBANG
● EVEN	↕ OVERTURNED STRATA	05 SURVEY	P SUBRD
○ QUESTIONABLE	↔ BIT	TRIP GAS	
SPOTTED STAINING	CONNECTION (LEFT)	WIRELINE TESTED - LEFT	
Porosity		WIRELINE TESTED - RT	
E EARTHY	CONNECTION (RIGHT)		
F FENESTRAL	CONNECTION GAS		
F FRACTURE	CORE - LOST		
INTERCRYSTALLINE	CORE - RECOVERED		
INTERCOLLITIC	DST INTERVAL		
MOLDIC	FAULT		
	FORMATION TOP		
Rounding		Textures	
		BOUNDSTONE	P POOR
		CHALKY	W WELL
		CRYPTOXLN	
		E EARTHY	
		FINELYXLN	
		GRAINSTONE	
		L LITHOGRAPHIC	
		Sorting	
		Chalk	
		Chalk	

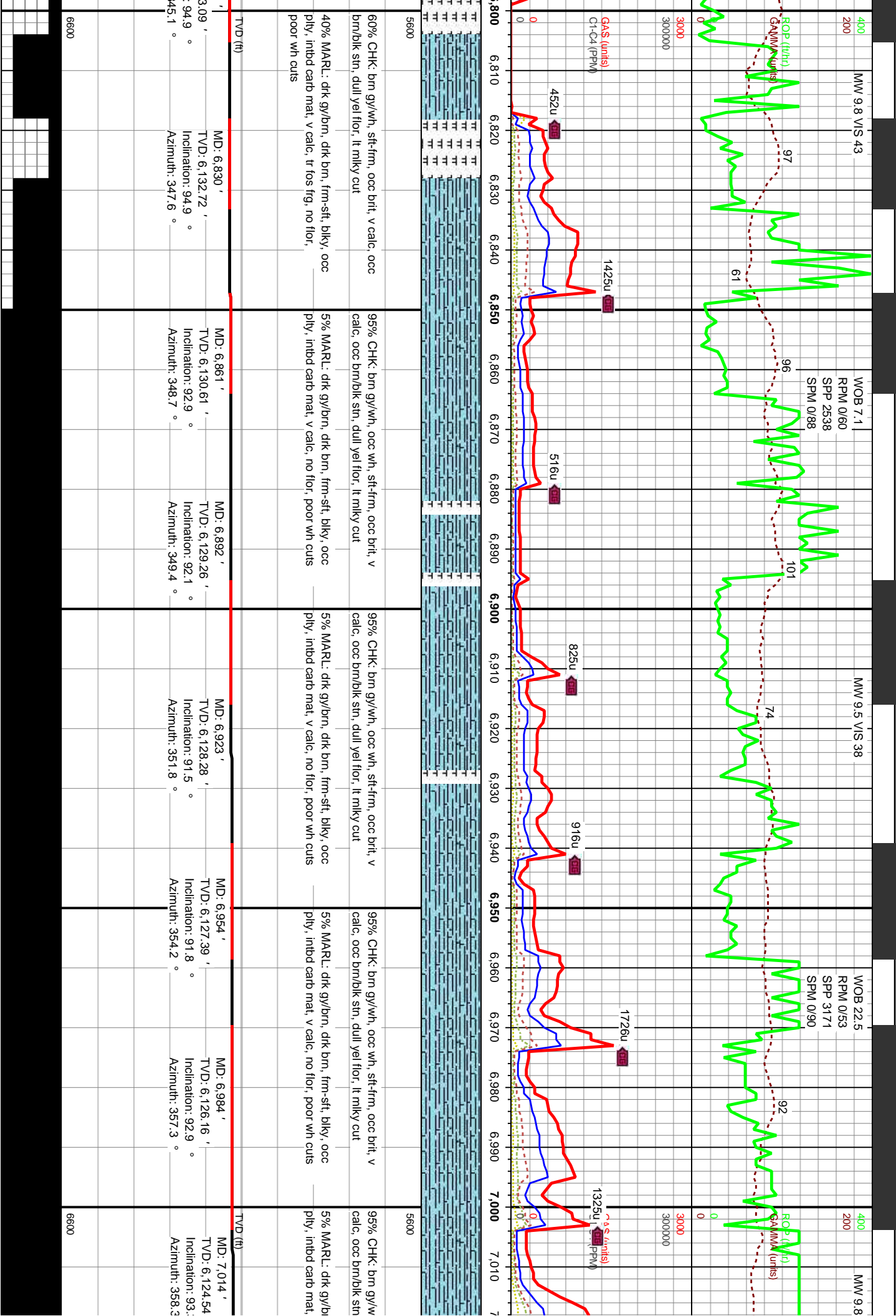


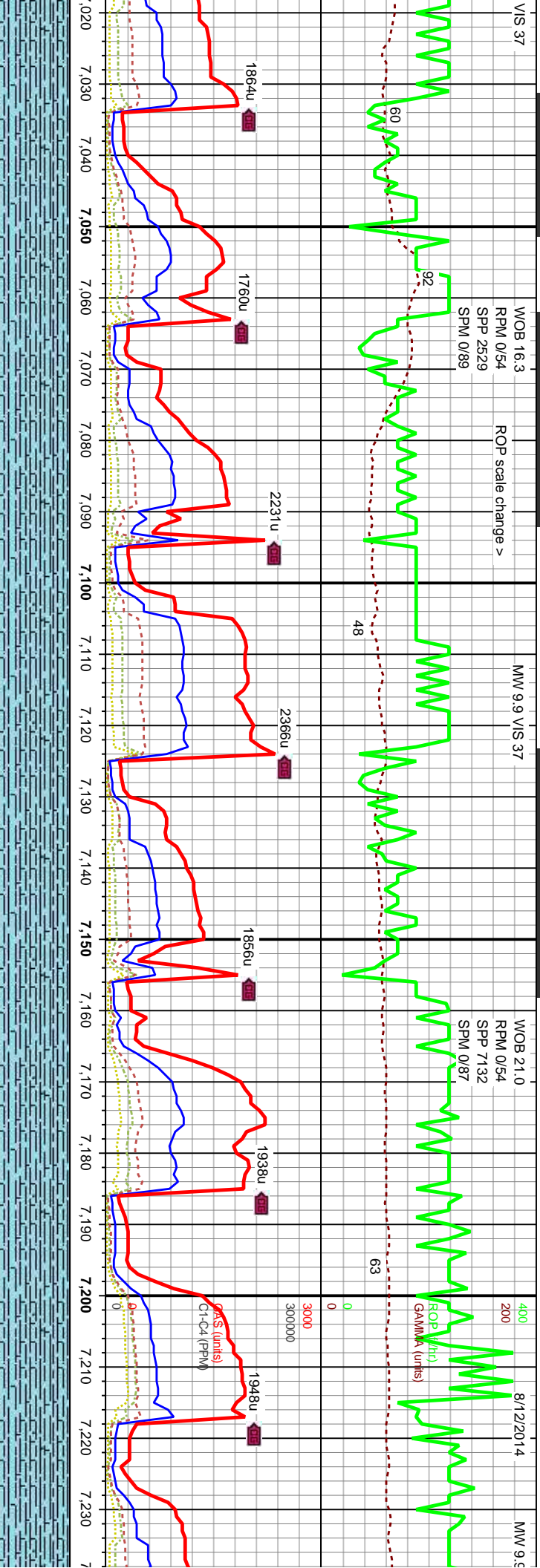


5600

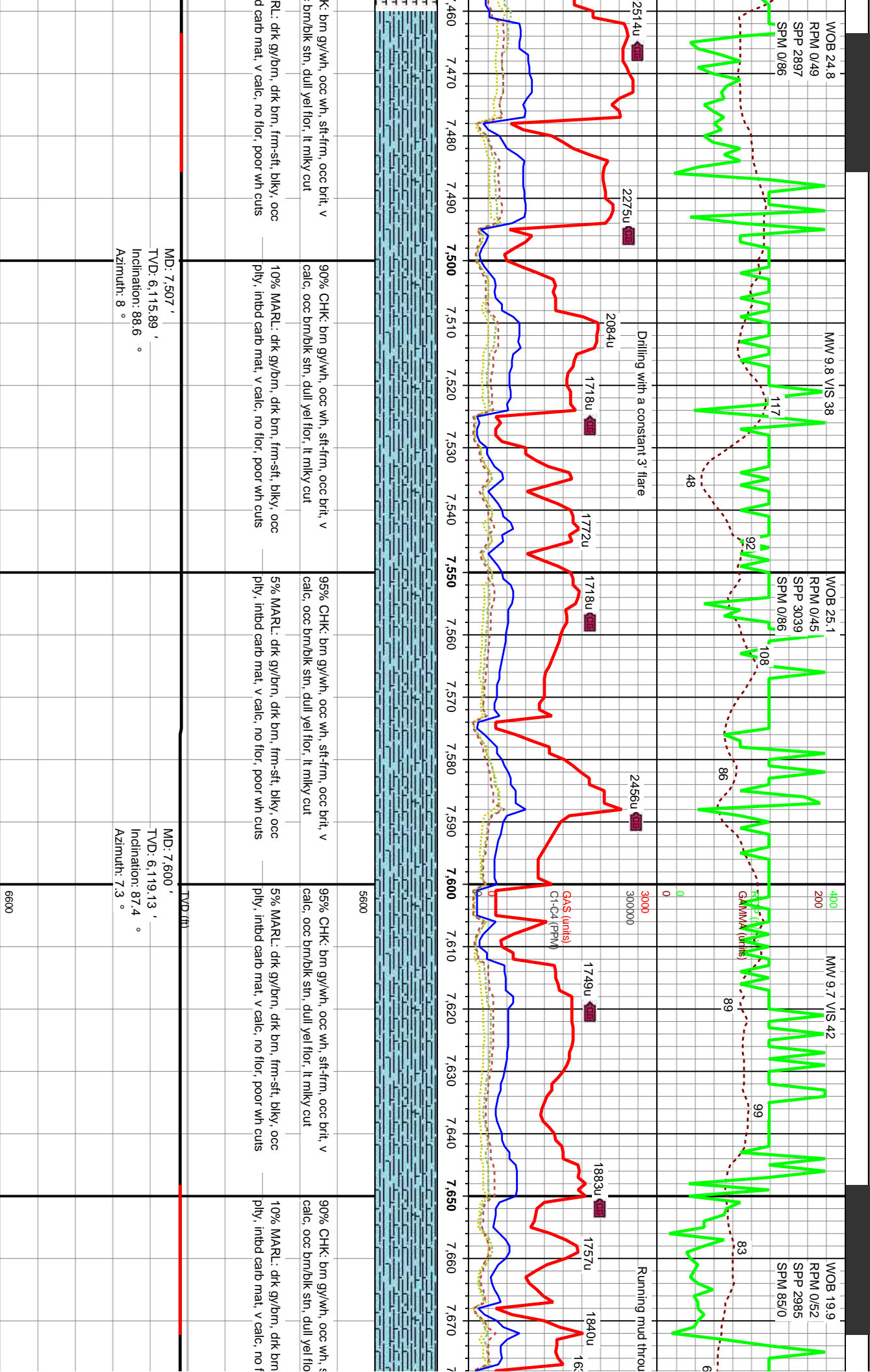
NIORARA "B" CHALK
6.505' MD, 6.101' TVD







h, occ wh, sft-frn, occ brit, v dull yell flor, lt milky cut	95% CHK: brn gy/wh, occ wh, sft-frn, occ brit, v calc, occ brn/bk sin, dull yell flor, lt milky cut	100% CHK: brn gy/wh, occ wh, sft-frn, occ brit, v calc, occ brn/bk sin, dull yell flor, lt milky cut	100% CHK: brn gy/wh, occ wh, sft-frn, occ brit, v calc, occ brn/bk sin, dull yell flor, lt milky cut	100% CHK: brn gy/wh, occ wh, sft-frn, occ brit, v calc, occ brn/bk sin, dull yell flor, lt milky cut	5600
n, dkf brn, frm-sft, blk, occ v calc, no flor, poor wh cns	5% MARL: dkf gy/brn, dkf brn, frm-sft, blk, occ ply, inbnd carb mat, v calc, no flor, poor wh cns	Tr MARL: dkf gy/brn, dkf brn, frm-sft, blk, occ ply, inbnd carb mat, v calc, no flor, poor wh cns	Tr MARL: dkf gy/brn, dkf brn, frm-sft, blk, occ ply, inbnd carb mat, v calc, no flor, poor wh cns	Tr MARL: dkf gy/brn, dkf brn, frm-sft, blk, occ ply, inbnd carb mat, v calc, no flor, poor wh cns	6600
MD: 7,046 ' TVD: 6,122.89 ' Inclination: 92.8 ° Azimuth: 359.7 °	MD: 7,076 ' TVD: 6,121.64 ' Inclination: 91.8 ° Azimuth: 3 °	MD: 7,107 ' TVD: 6,120.83 ' Inclination: 91.2 ° Azimuth: 4.1 °	MD: 7,137 ' TVD: 6,120.41 ' Inclination: 90.4 ° Azimuth: 6.4 °	TVD (ft)	MD: 7,230 ' TVD: 6,119.28 ' Inclination: 91 ° Azimuth: 7.7 °



K: bm gy/wh, occ wh, sft-frn, occ brt, v
brn/bk sin, dull yel flr, lt milky cut

RL: dtk gy/bm, dtk brn, frm-sft, blk, occ
carb mat, v calc, no flr, poor wh cns

90% CHK: bm gy/wh, occ wh, sft-frn, occ brt, v
calc, occ brn/bk sin, dull yel flr, lt milky cut

10% MARL: dtk gy/bm, dtk brn, frm-sft, blk, occ
ply, inbd carb mat, v calc, no flr, poor wh cns

95% CHK: bm gy/wh, occ wh, sft-frn, occ brt, v
calc, occ brn/bk sin, dull yel flr, lt milky cut

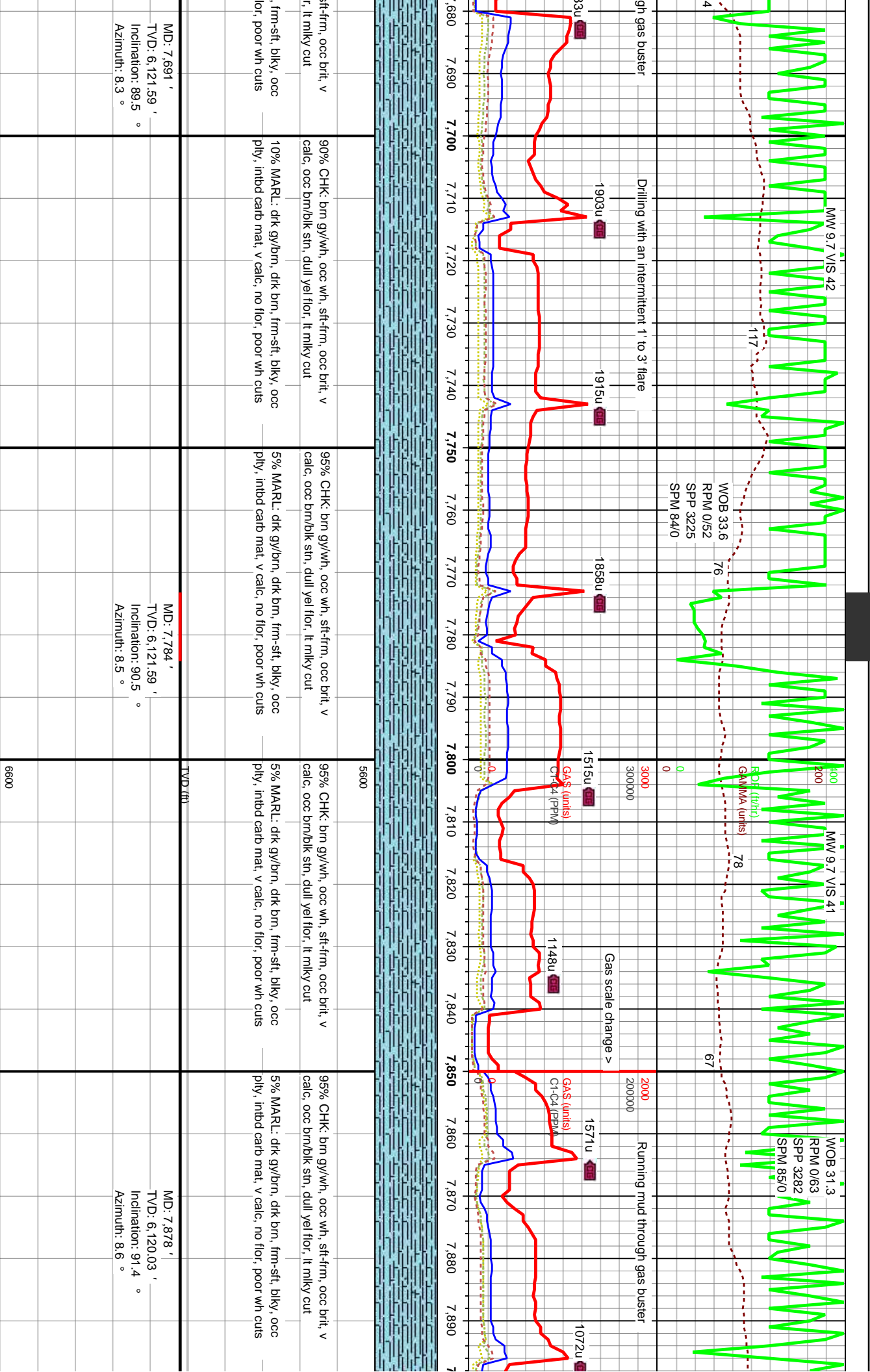
5% MARL: dtk gy/bm, dtk brn, frm-sft, blk, occ
ply, inbd carb mat, v calc, no flr, poor wh cns

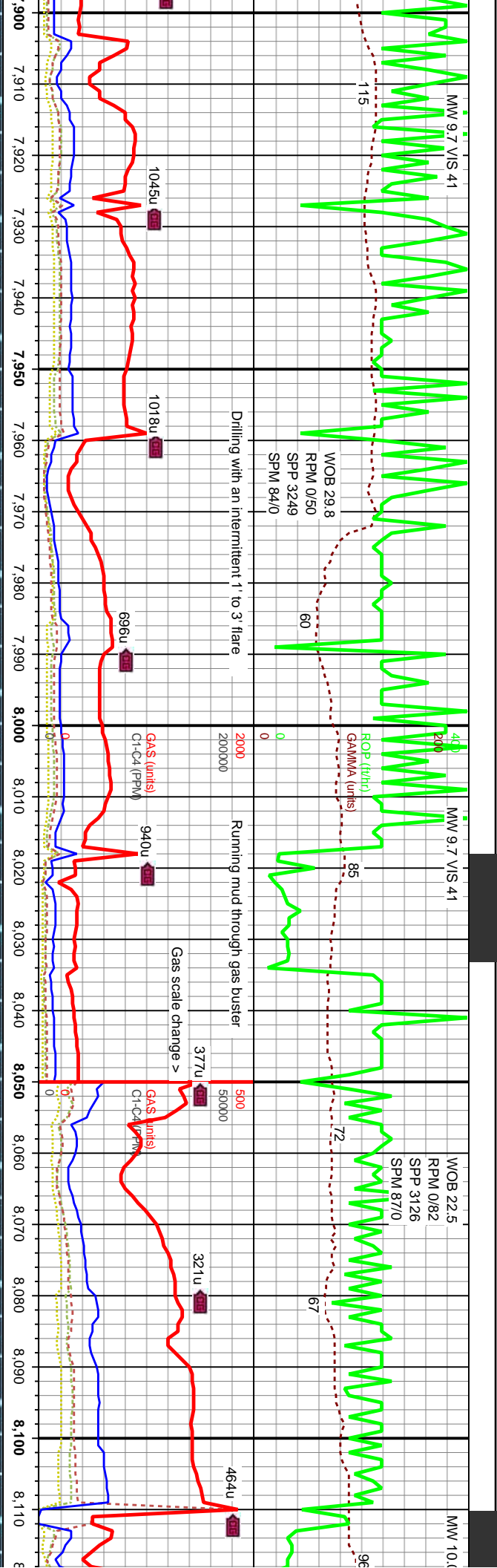
95% CHK: bm gy/wh, occ wh, sft-frn, occ brt, v
calc, occ brn/bk sin, dull yel flr, lt milky cut

5% MARL: dtk gy/bm, dtk brn, frm-sft, blk, occ
ply, inbd carb mat, v calc, no flr, poor wh cns

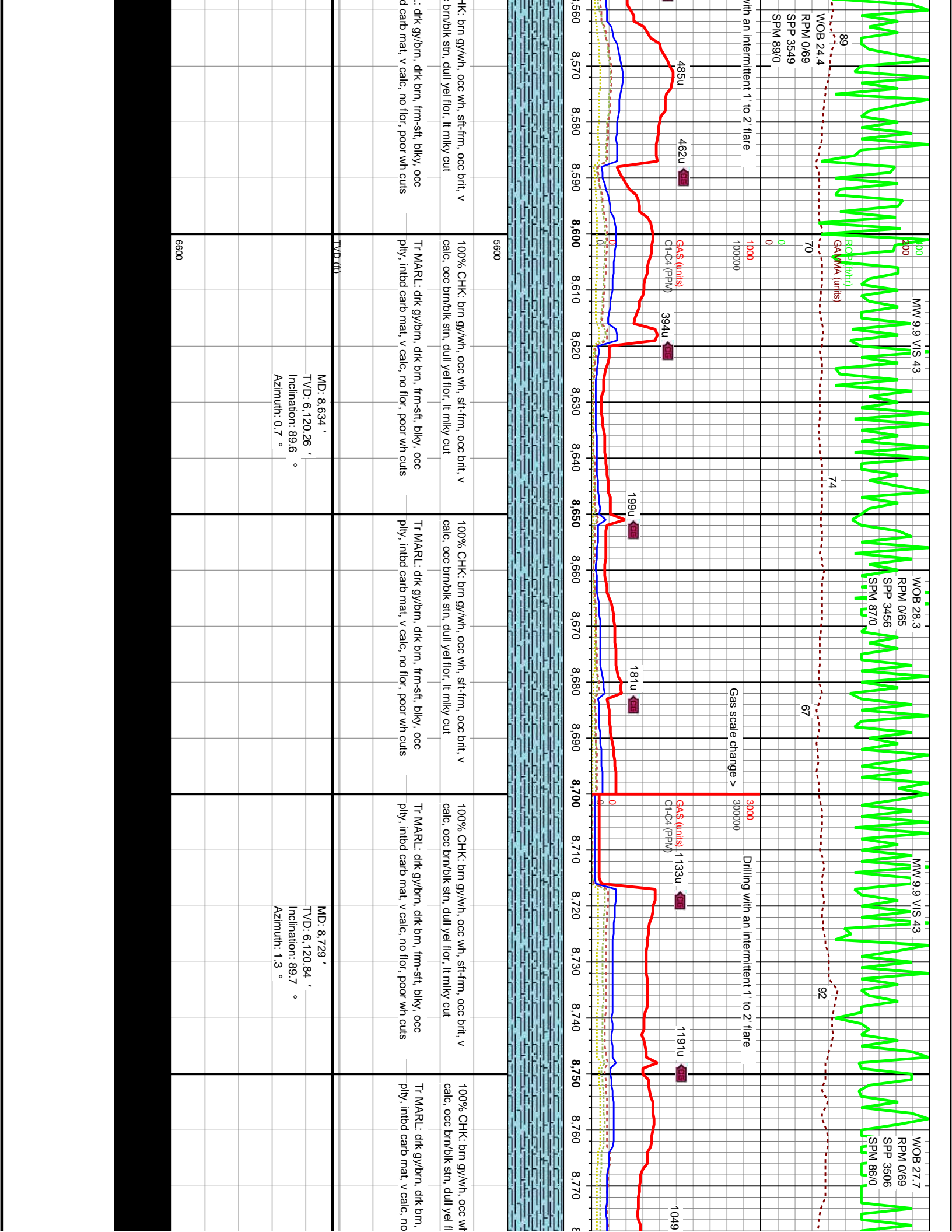
90% CHK: bm gy/wh, occ wh, s
calc, occ brn/bk sin, dull yel flo

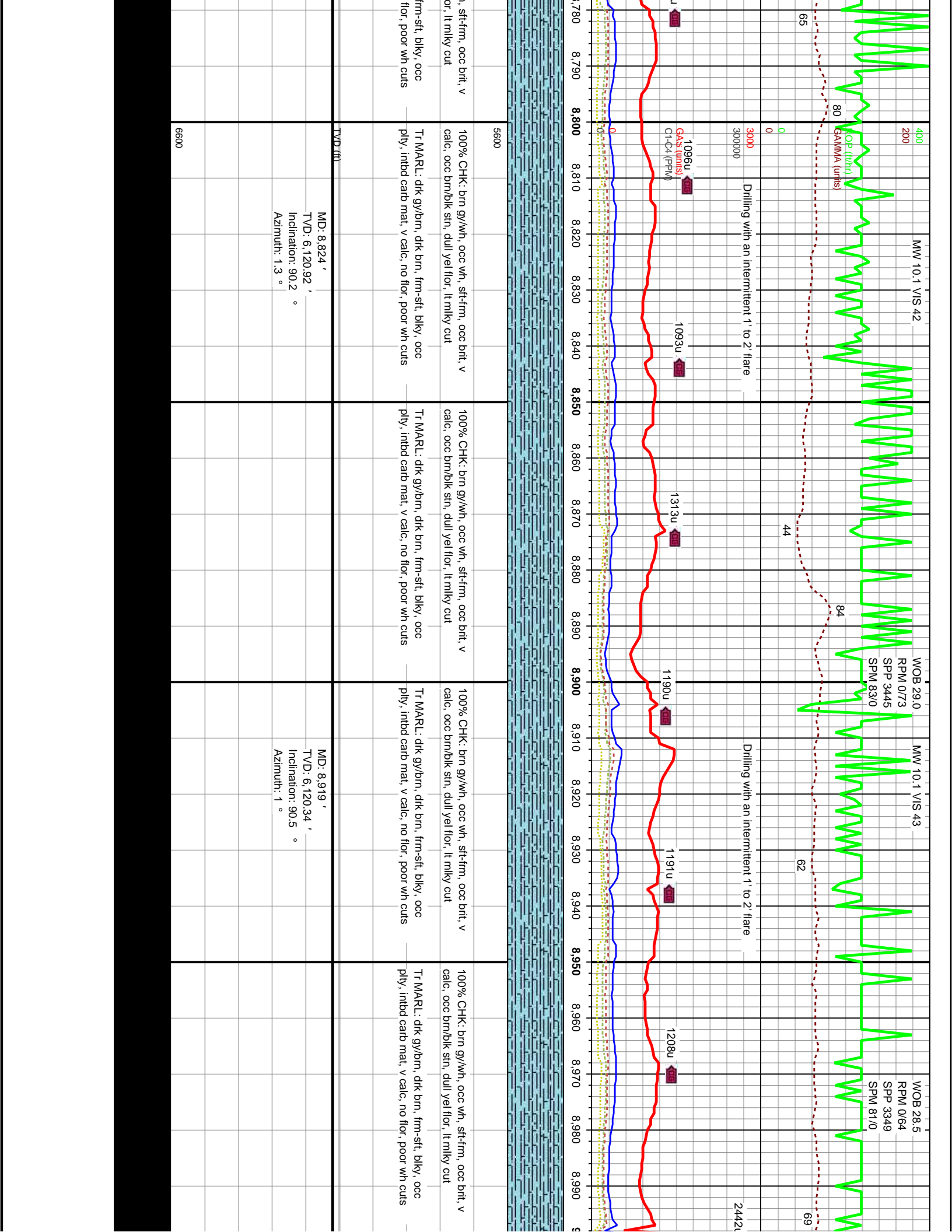
10% MARL: dtk gy/bm, dtk brn
ply, inbd carb mat, v calc, no f

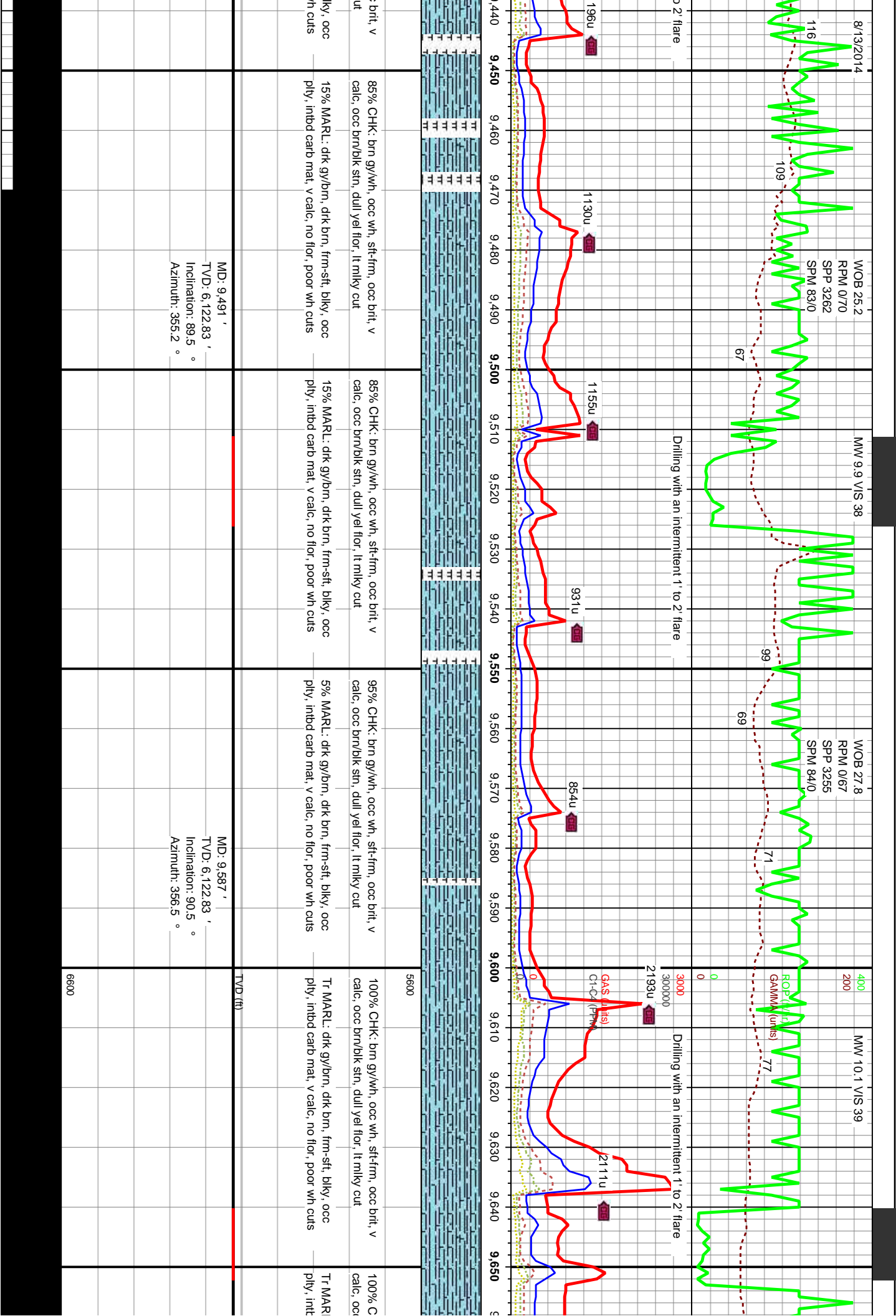


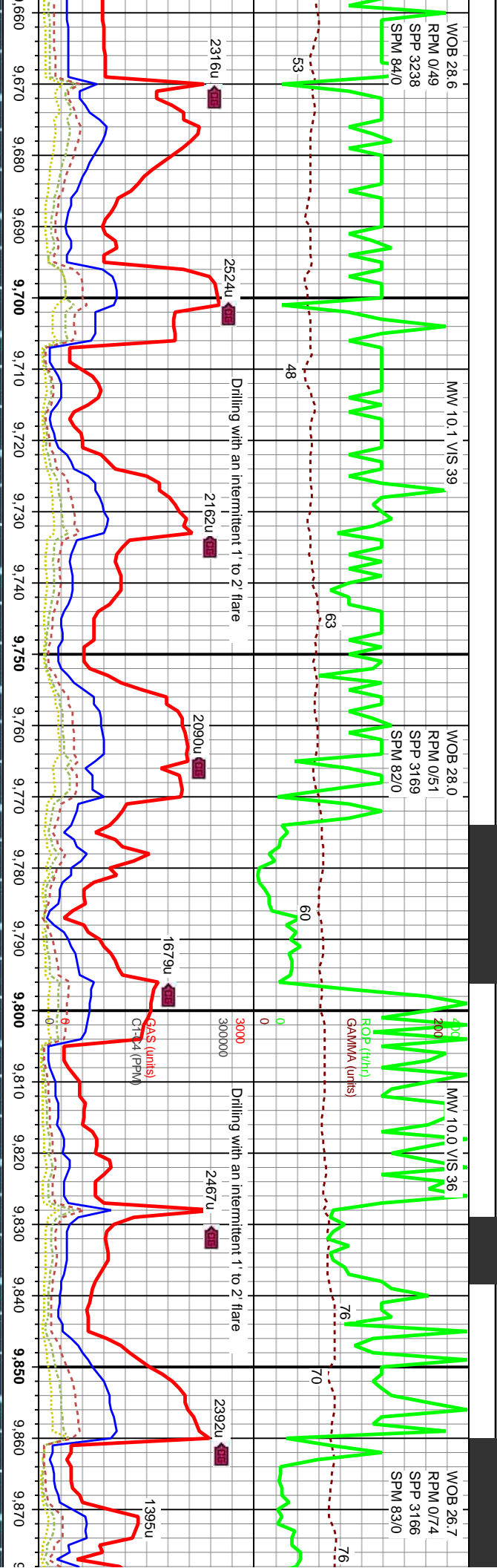


95% CHK: brn gy/wh, occ wh, sft-frn, occ brit, v calc, occ brn/bk sin, dull yel flor, lt milky cut	95% CHK: brn gy/wh, occ wh, sft-frn, occ brit, v calc, occ brn/bk sin, dull yel flor, lt milky cut	100% CHK: brn gy/wh, occ wh, sft-frn, occ brit, v calc, occ brn/bk sin, dull yel flor, lt milky cut	100% CHK: brn gy/wh, occ wh, sft-frn, occ brit, v calc, occ brn/bk sin, dull yel flor, lt milky cut	90% CHK: brn gy/w/wh, occ brn/bk sin
5% MARL: dk gy/brn, dk brn, frm-sft, blk, occ ply, inbd carb mat, v calc, no flor, poor wh cns	5% MARL: dk gy/brn, dk brn, frm-sft, blk, occ ply, inbd carb mat, v calc, no flor, poor wh cns	Tr MARL: dk gy/brn, dk brn, frm-sft, blk, occ ply, inbd carb mat, v calc, no flor, poor wh cns	Tr MARL: dk gy/brn, dk brn, frm-sft, blk, occ ply, inbd carb mat, v calc, no flor, poor wh cns	10% MARL: dk gy/l
MD: 7.939 ' TVD: 6.117.24 ' Inclination: 91.9 ° Azimuth: 8 °				
MD: 7.970 ' TVD: 6.116.21 ' Inclination: 91.9 ° Azimuth: 7.3 °				
TVD (ft)				
6600				









CHK: brn gy/wh, occ wh, sft-firm, occ brit, v c brn/bk stn, dull yel flr, lt milky cut	100% CHK: brn gy/wh, occ wh, sft-firm, occ brit, v calc, occ brn/bk stn, dull yel flr, lt milky cut	100% CHK: brn gy/wh, occ wh, sft-firm, occ brit, v calc, occ brn/bk stn, dull yel flr, lt milky cut	100% CHK: brn gy/wh, occ wh, sft-firm, occ brit, v calc, occ brn/bk stn, dull yel flr, lt milky cut	100% CHK: brn gy/wh, occ wh, sft-firm, occ brit, v calc, occ brn/bk stn, dull yel flr, lt milky cut	100% CHK: brn gy/wh, occ wh, sft-firm, occ brit, v calc, occ brn/bk stn, dull yel flr, lt milky cut
Tr MARL: dk gy/brn, dk brn, frm-sft, bkly, occ ply, inbd carb mat, v calc, no flr, poor wh cuts	Tr MARL: dk gy/brn, dk brn, frm-sft, bkly, occ ply, inbd carb mat, v calc, no flr, poor wh cuts	Tr MARL: dk gy/brn, dk brn, frm-sft, bkly, occ ply, inbd carb mat, v calc, no flr, poor wh cuts	Tr MARL: dk gy/brn, dk brn, frm-sft, bkly, occ ply, inbd carb mat, v calc, no flr, poor wh cuts	Tr MARL: dk gy/brn, dk brn, frm-sft, bkly, occ ply, inbd carb mat, v calc, no flr, poor wh cuts	Tr MARL: dk gy/brn, dk brn, frm-sft, bkly, occ ply, inbd carb mat, v calc, no flr, poor wh cuts
MD: 9.683 ' TVD: 6.121.99 ' Inclination: 90.5 ° Azimuth: 356.9 °	MD: 9.778 ' TVD: 6.120.5 ' Inclination: 91.3 ° Azimuth: 356.9 °	MD: 9.874 ' TVD: 6.119.99 ' Inclination: 89.7 ° Azimuth: 356.7 °			

