

# Décollement Consulting Inc.



Scale: 5" / 100'  
Measured Depth Log

**Well Name** State Pronghorn A-E-16HNB

**Location** NW/NW Section 16, T5N - R61W

**State** Colorado

**Country** USA

**API Number** 05-123-39066-00

**Region** D.J. Basin

**Spud Date** 7/9/2014

**County** Weld

**Rig Number** Cade 21

**Field** Wattenberg

**Drilling Completed** 7/20/2014

**Ground Elevation** 4,642'

**K.B. Elevation** 4,659'

**Logged Interval** 6,000' **To** 10,953'

**Total Depth** 10,953'

**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

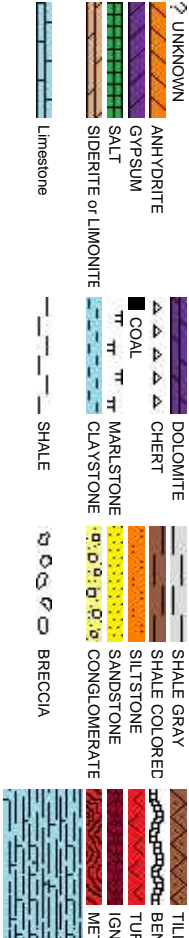
## Geologist

**Name** Dick Brunner / Scott Sawyer

**Company** Decollement Consulting Inc.

**Address** 13300 Braun Road  
Golden, CO 80401

## Rock Types



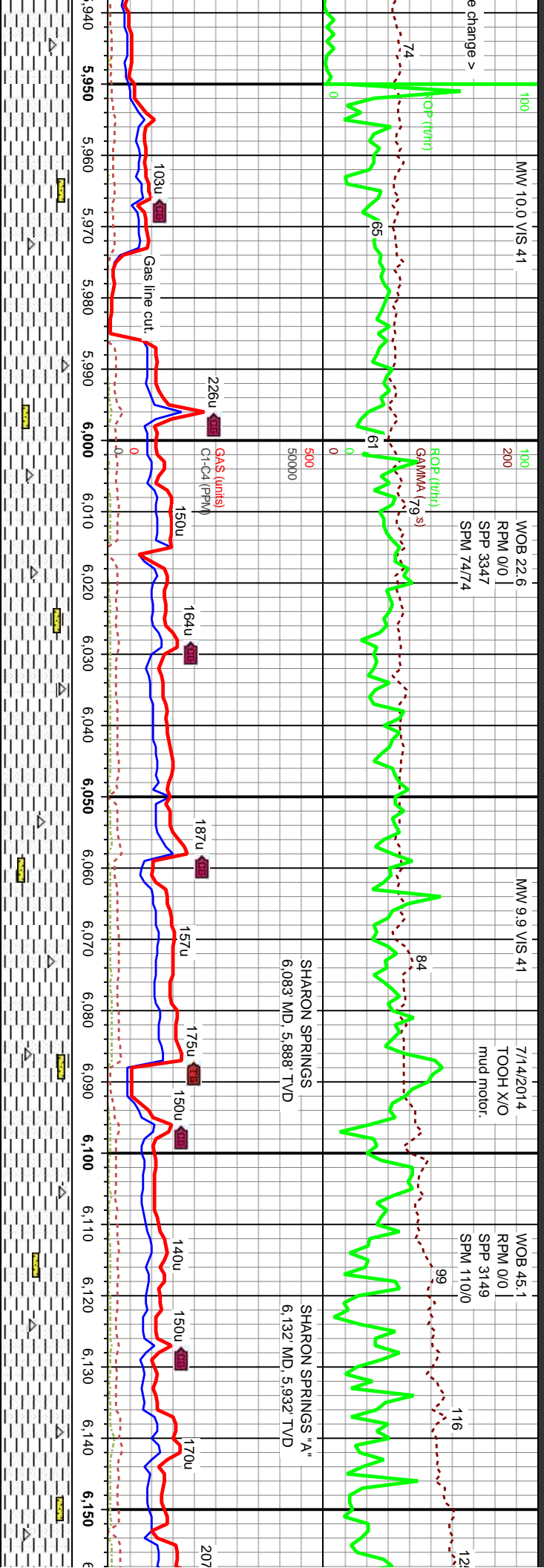
Accessories

<b>Fossils</b>	<b>F</b> FOSSIL	<b>-</b> ARGILLACEOUS	<b>✓</b> GLAUCONITE	<b>Stringer</b>
GASTROPOD	<b>/</b> ARGILLITE GRAIN	<b>✓</b> GYPSIFEROUS	ANHYDRITE STRINGER	
ALGAE	<b>Ø</b> OOLITE	<b>B</b> BENTONITE	BENTONITE STRINGER	
AMPHIPORA	OSTRACOD	BITUMENOUS SUBSTANCE	KAOLIN	COAL STRINGER
BELEMNITE	PELECYPOD	BRECCIA FRAGMENTS	<b>TT</b> MARLSTONE	DOLOMITE STRINGER
BIOCLASTIC	PELLET	<b>1</b> CALCAREOUS	MINERAL CRYSTALS	GYPSUM STRINGER
BRACHIOPOD	PISOLITE	CARBONACEOUS FLAKES	NODULES	LIMESTONE STRINGER
BRYOZOA	PLANT REMAINS	CHTDK	PHOSPHATE PELLET	MARLSTONE (CALC) STRG
CEPHALOPOD	PLANT SPORES	CHLILT	<b>P</b> PYRITE	MARLSTONE (DOL) STRG
CORAL	SCAPHOPOD	<b>-</b> COAL - THIN BEDS	SALT CAST	SANDSTONE STRINGER
CRINOID	<b>III</b> STROMATOPOROID	<b>✓</b> DOLOMITIC	<b>✓</b> SANDY	SHALE STRINGER
ECHINOID	<b>+</b> FELDSPAR	FELDSPAR	SILTY	SILTSTONE STRINGER
FISH	<b>●</b> FERRUGINOUS PELLET	FERRUGINOUS	TUFFACEOUS	
FORAMINIFERA	<b>//</b> ANHYDRITIC	FERRUGINOUS	TUFFACEOUS	

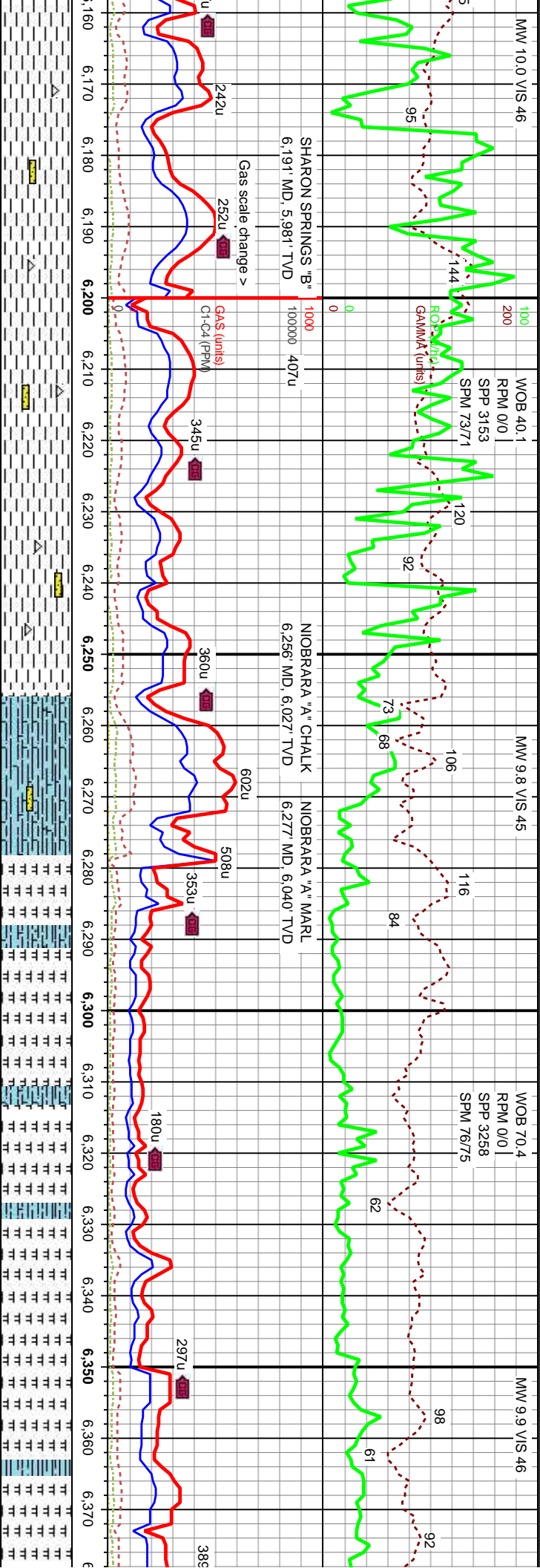
Other Symbols

<b>Oil Show</b>	<b>Ø</b> ORGANIC	GAS SHOW	MN DEPTH	<b>A</b> ANGULAR	<b>MX</b> MICROXLN
<b>P</b> PINPOINT	VUGGY	NORMAL FAULT	OIL SHOW	<b>R</b> ROUNDED	<b>PS</b> PACKSTONE
<b>D</b> DEAD	EVEN	OVERTURNED STRATA	SUBRAND	<b>B</b> SUBANG	<b>WS</b> WACKESTONE
<b>QUESTIONABLE</b>	<b>Engineering</b>	REVERSE FAULT	<b>Textures</b>	<b>Sorting</b>	
SPOTTED STAINING	BIT	SIDEWALL CORE (LEFT)	BOUNDSTONE	<b>M</b> MODERATE	
<b>Porosity</b>	CONNECTION (LEFT)	SIDEWALL CORE (RIGHT)	<b>P</b> POOR		
<b>E</b> EARTHY	CONNECTION (RIGHT)	SLIDE	<b>W</b> WELL		
FENESTRAL	CONNECTION GAS	SURVEY	<b>Chalk</b>		
<b>F</b> FRACTURE	CORE - LOST	TRIP GAS	<b>E</b> EARTHY		
INTERCRYSTALLINE	CORE - RECOVERED	WIRELINE TESTED - LEFT	<b>Chalk</b>		
INTERCRYSTALLINE	DST INTERVAL	WIRELINE TESTED - RT	<b>Chalk</b>		
INTERCRYSTALLINE	FAULT	<b>Rounding</b>			
MOLDIC	FORMATION TOP				



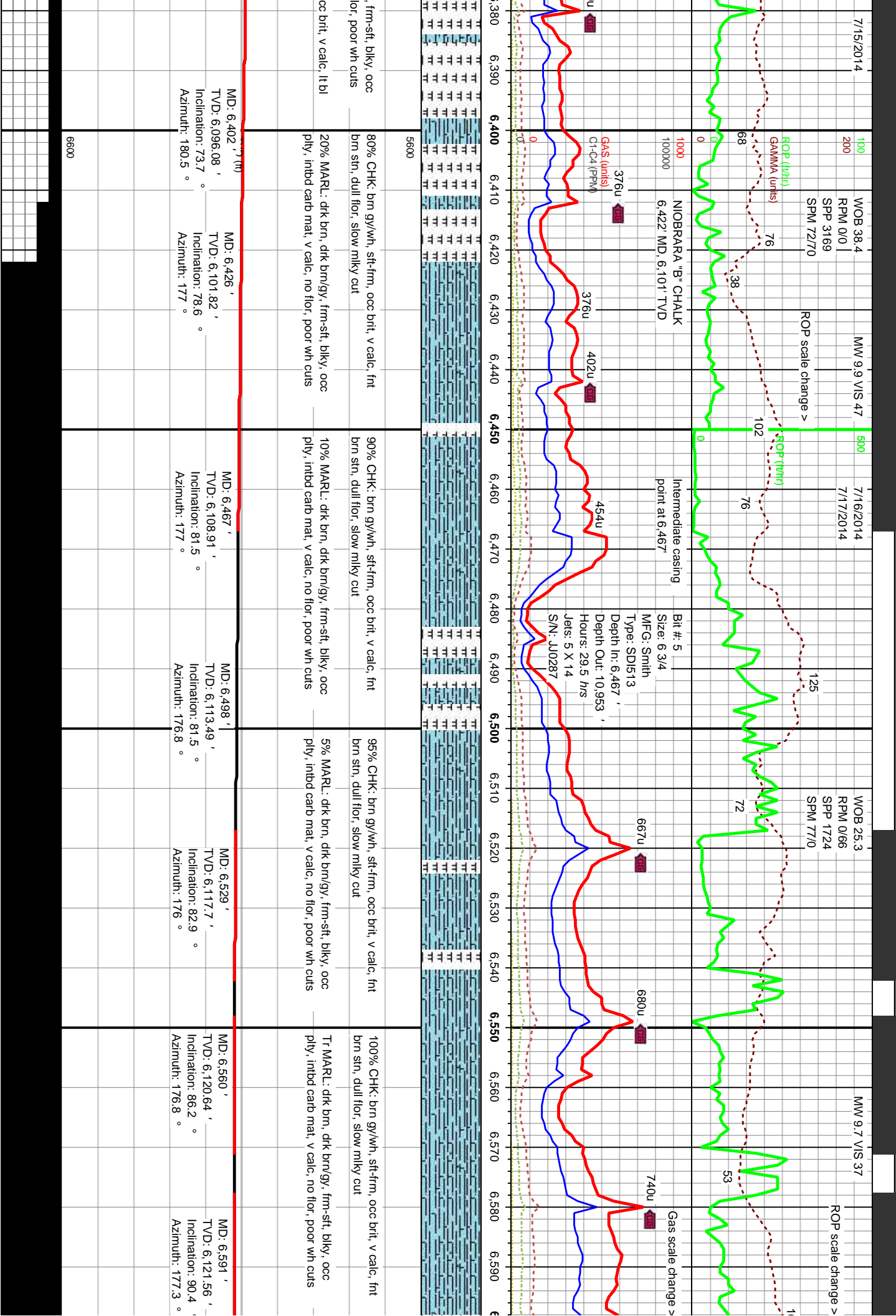


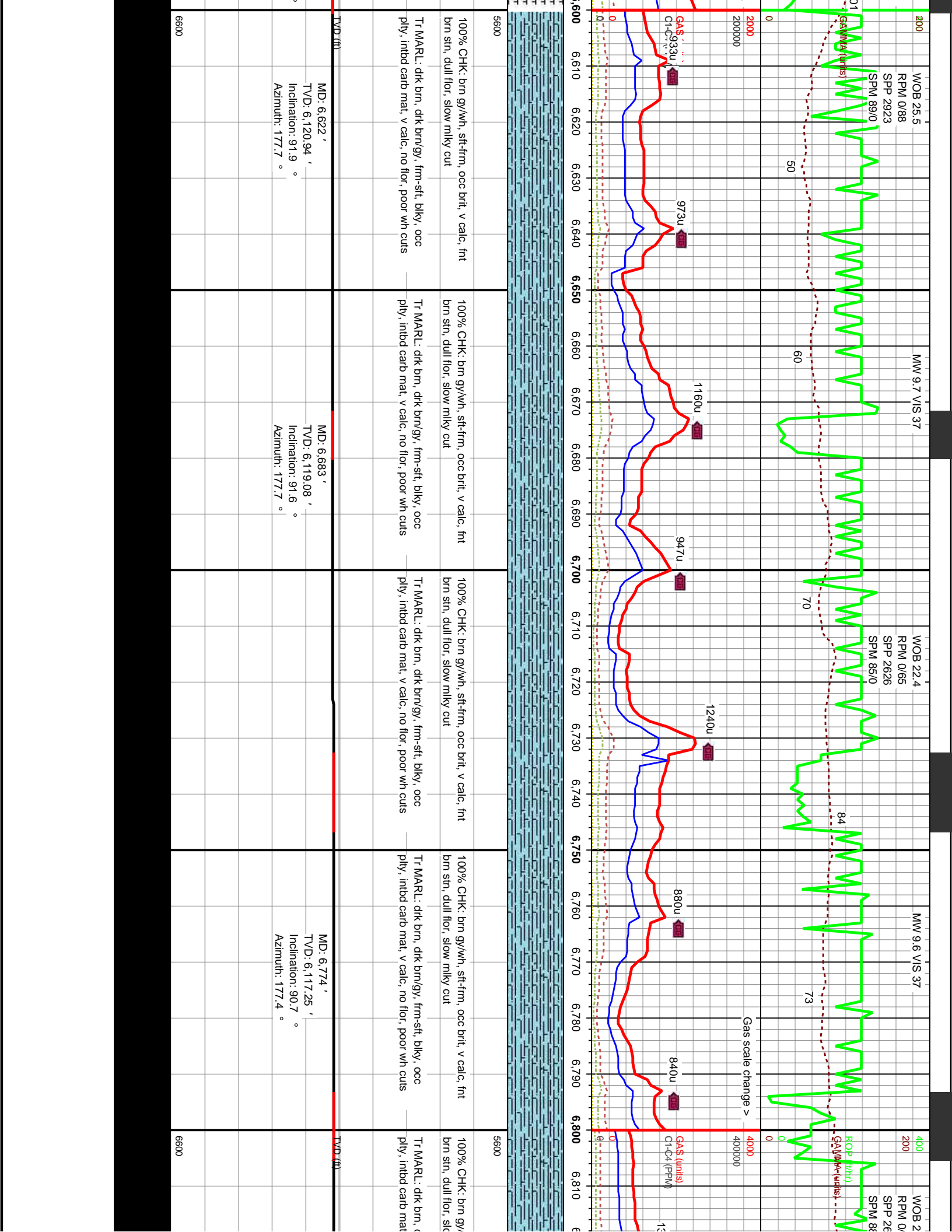
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occ ply,	100% SH: dfk brn, m-dfk gy, frm, sb blkly, occ ply, sm, sl calc, tr cht	TVD (ft)	100% SH: dfk brn, m-dfk gy, frm, sb blkly, occ ply, sm, sl calc, tr cht	100% SH: dfk brn, m-dfk gy, frm, sb blkly, occ ply, sm, sl calc, tr cht	100% SH: dfk brn, m-dfk gy, frm, sb blkly, occ ply, sm, sl calc, tr cht	100% SH: dfk brn, m-dfk gy, frm, sb blkly, occ ply, sm, sl calc, tr cht	100% SH: dfk brn, m-dfk gy, frm, sb blkly, occ ply, sm, sl calc, tr cht	100% SH: dfk brn, m-dfk gy, frm, sb blkly, occ ply, sm, sl calc, tr cht	100% SH: dfk brn, m-dfk gy, frm, sb blkly, occ ply, sm, sl calc, tr cht	100% SH: dfk brn, m-dfk gy, frm, sb blkly, occ ply, sm, sl calc, tr cht	100% SH: dfk brn, m-dfk gy, frm, sb blkly, occ ply, sm, sl calc, tr cht	100% SH: dfk brn, m-dfk gy, frm, sb blkly, occ ply, sm, sl calc, tr cht	
-fri, sl	Tr SS: gy/wh, gy-lt gy, s&p, vf (l)-vf (u), frm-fri, sl cons, sbdr, w srl, p por, n-sl calc, ns		Tr SS: gy/wh, gy-lt gy, s&p, vf (l)-vf (u), frm-fri, sl cons, sbdr, w srl, p por, n-sl calc, ns	Tr SS: gy/wh, gy-lt gy, s&p, vf (l)-vf (u), frm-fri, sl cons, sbdr, w srl, p por, n-sl calc, ns	Tr SS: gy/wh, gy-lt gy, s&p, vf (l)-vf (u), frm-fri, sl cons, sbdr, w srl, p por, n-sl calc, dul yel flor	Tr SS: gy/wh, gy-lt gy, s&p, vf (l)-vf (u), frm-fri, sl cons, sbdr, w srl, p por, n-sl calc, ns	Tr SS: gy/wh, gy-lt gy, s&p, vf (l)-vf (u), frm-fri, sl cons, sbdr, w srl, p por, n-sl calc, ns	Tr SS: gy/wh, gy-lt gy, s&p, vf (l)-vf (u), frm-fri, sl cons, sbdr, w srl, p por, n-sl calc, ns	Tr SS: gy/wh, gy-lt gy, s&p, vf (l)-vf (u), frm-fri, sl cons, sbdr, w srl, p por, n-sl calc, ns	Tr SS: gy/wh, gy-lt gy, s&p, vf (l)-vf (u), frm-fri, sl cons, sbdr, w srl, p por, n-sl calc, ns	Tr SS: gy/wh, gy-lt gy, s&p, vf (l)-vf (u), frm-fri, sl cons, sbdr, w srl, p por, n-sl calc, ns	Tr SS: gy/wh, gy-lt gy, s&p, vf (l)-vf (u), frm-fri, sl cons, sbdr, w srl, p por, n-sl calc, ns	
6600		6600											

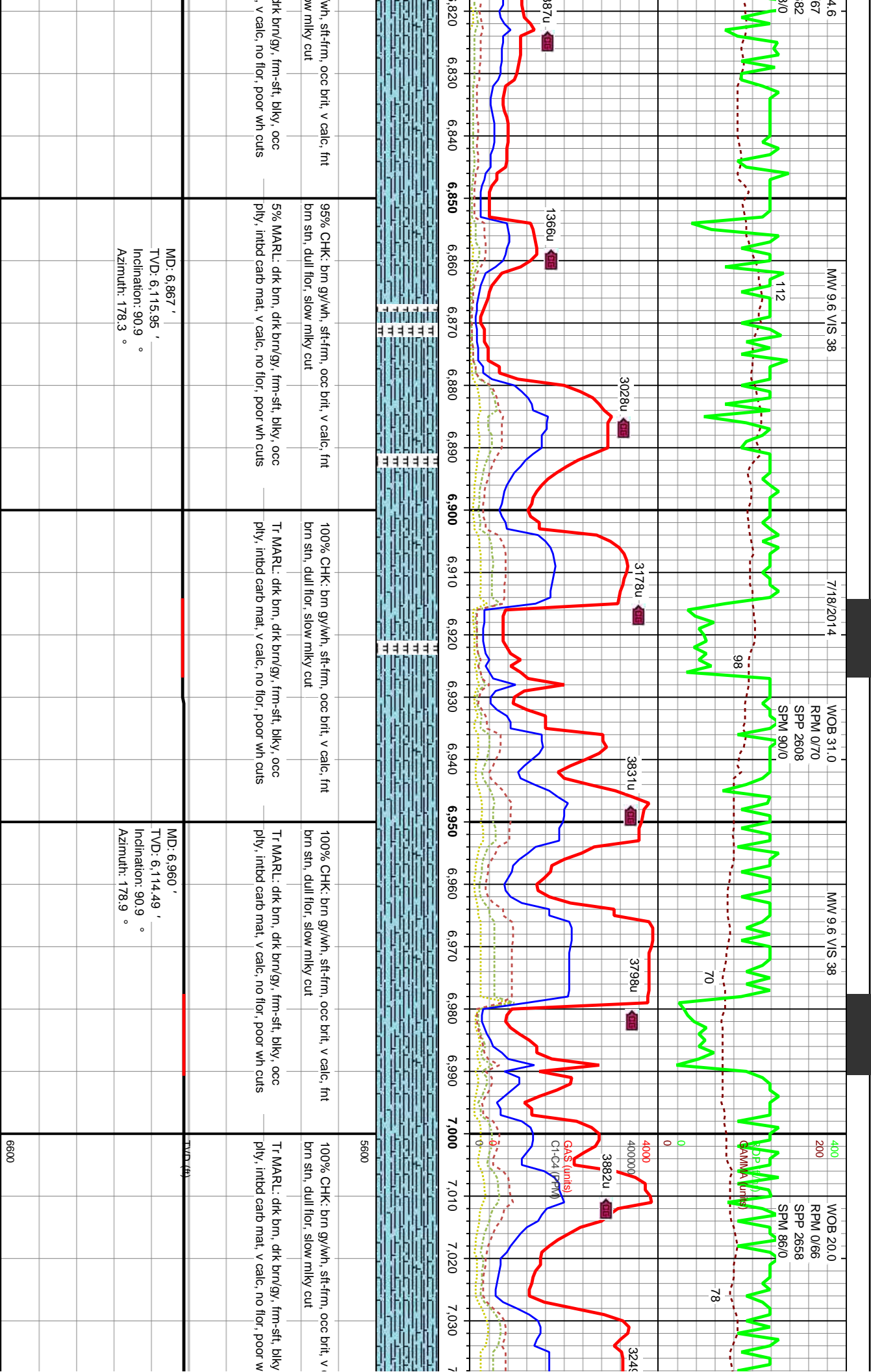


MD: 6.181 '	MD: 6.212 '	MD: 6.244 '	MD: 6.276 '	MD: 6.308 '	MD: 6.340 '	MD: 6.371 '
TVD: 5,973.4 '	TVD: 5,996.71 '	TVD: 6,019 '	TVD: 6,039.46 '	TVD: 6,057.79 '	TVD: 6,073.59 '	TVD: 6,086.16 '
Inclination: 38.8 °	Inclination: 43.7 °	Inclination: 48 °	Inclination: 52.5 °	Inclination: 57.6 °	Inclination: 63.2 °	Inclination: 69 °
Azimuth: 209.2 °	Azimuth: 203.2 °	Azimuth: 198.4 °	Azimuth: 199.7 °	Azimuth: 198.1 °	Azimuth: 193.3 °	Azimuth: 187.4 °
t: dkf brn, m-dkf gy, frm, sb blkly, occ ply, ic, tr cht, bri yel min flor v/wh, gy-it gy, s&p, v'l (l)-v'l (u), frm-fri, sl pld, w srt, p por, n-si calc, ns	100% SH: dkf brn, m-dkf gy, frm, sb blkly, occ ply, sm, calc, tr cht, bri yel min flor Tr SS: gy/wh, gy-it gy, s&p, v'l (l)-v'l (u), frm-fri, sl cons, sbd, w srt, p por, n-si calc, ns	60% CHK: brn gy/wh, stf-frm, occ brit, v calc, lt bl mly cut, fnt brn str, nfo 30% MARL: dkf brn, dkf brn/gy, frm-stf, blkly, occ ply, intbd carb mat, v calc, no flor, poor wh cuts 10% SH: dkf brn, m-dkf gy, frm, sb blkly, occ ply, sm, calc, tr cht, bri yel min flor, w/ tr SS	80% MARL: dkf brn, dkf brn/gy, frm-stf, blkly, occ ply, intbd carb mat, v calc, no flor, poor wh cuts 20% CHK: brn gy/wh, stf-frm, occ brit, v calc, lt bl mly cut, fnt brn str, nfo	90% MARL: dkf brn, dkf brn/gy ply, intbd carb mat, v calc, no f	10% CHK: brn gy/wh, stf-frm, o mly cut, fnt brn str, nfo	
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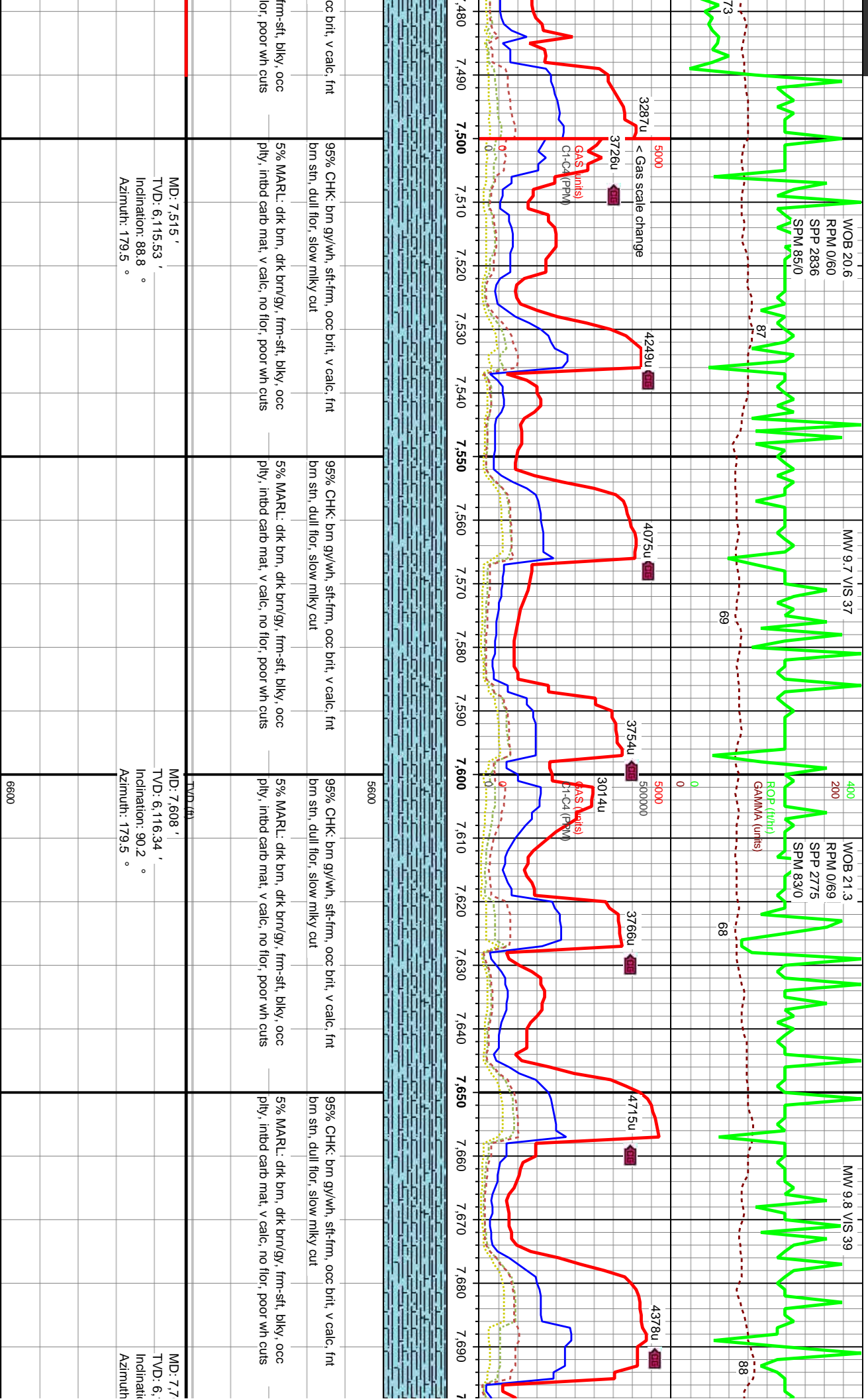


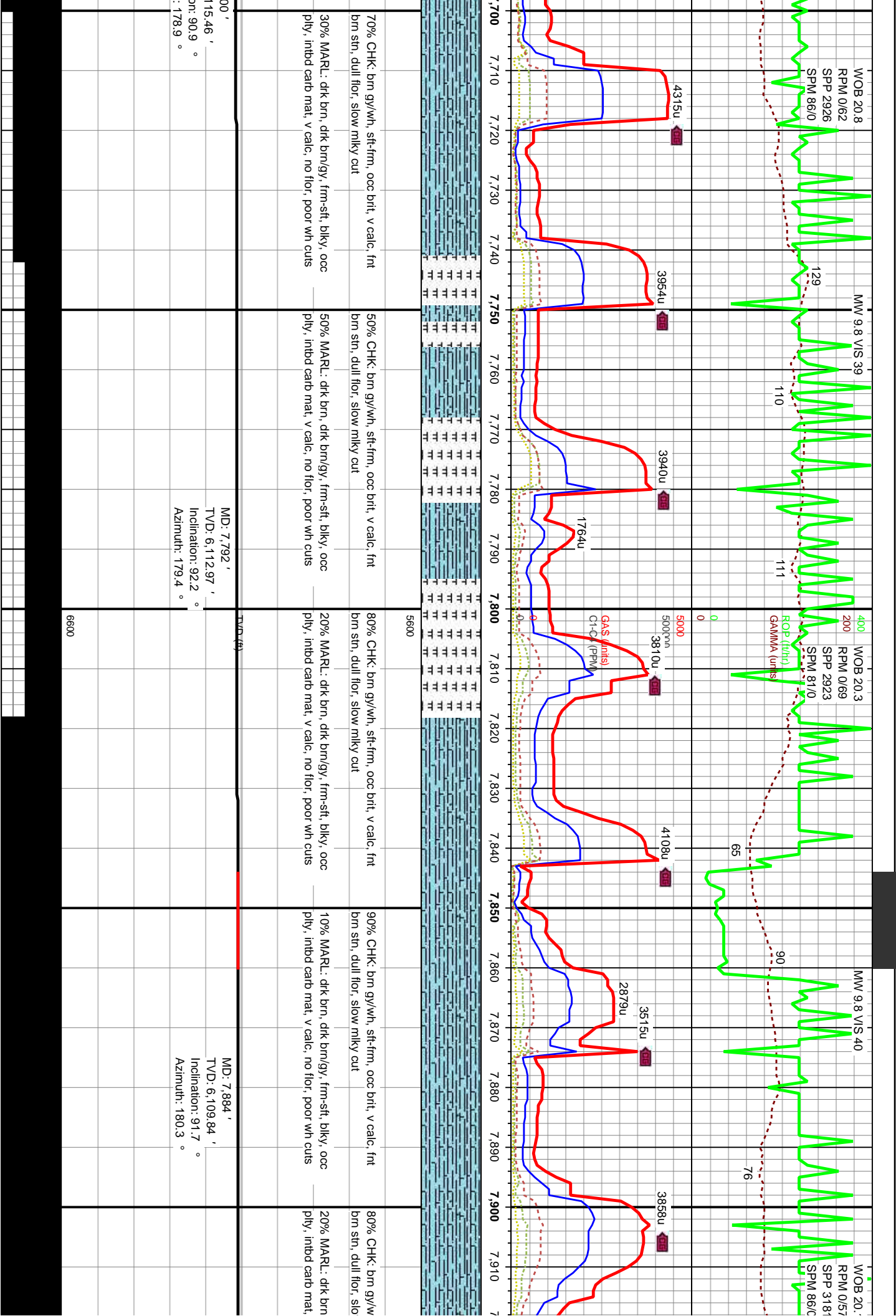




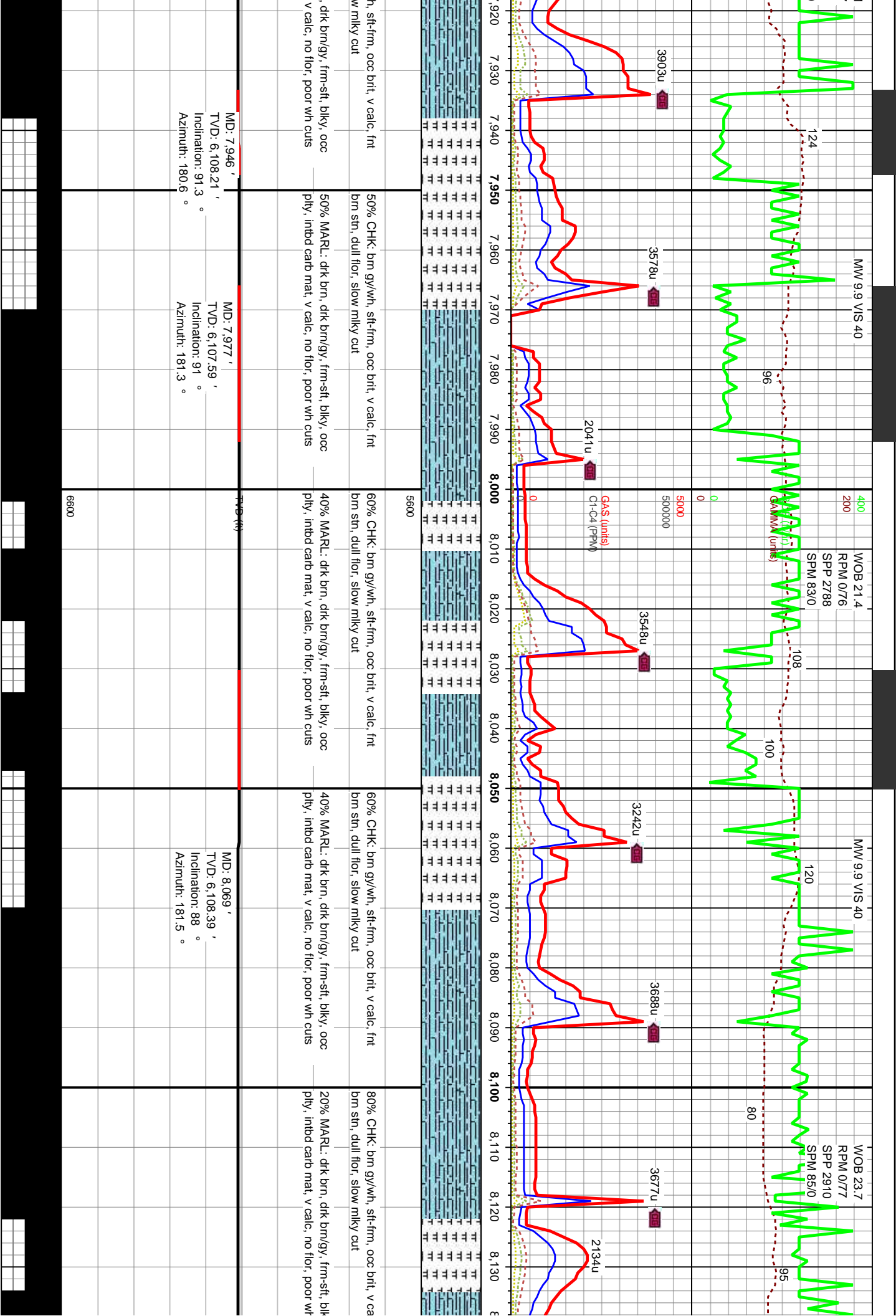




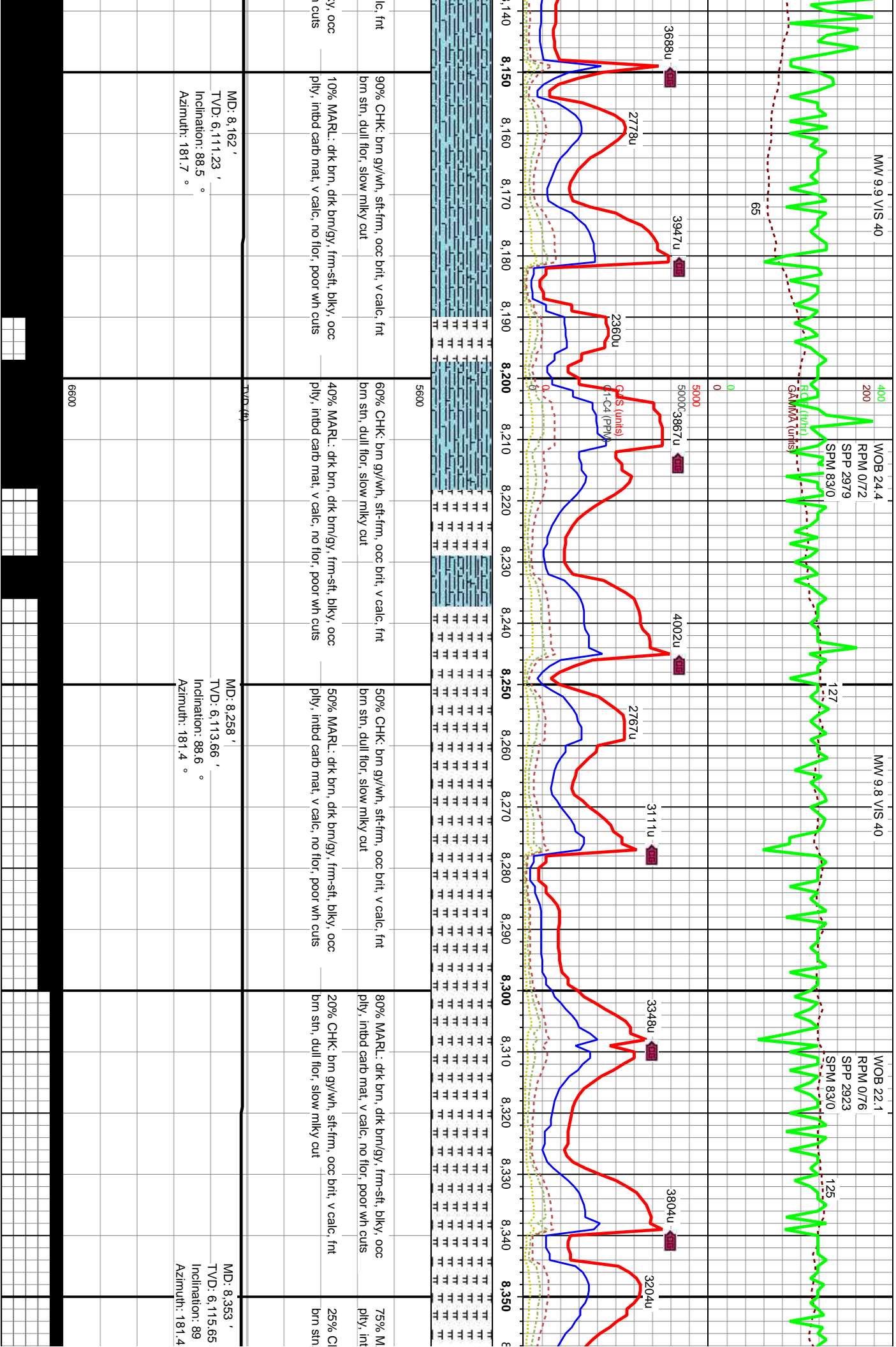


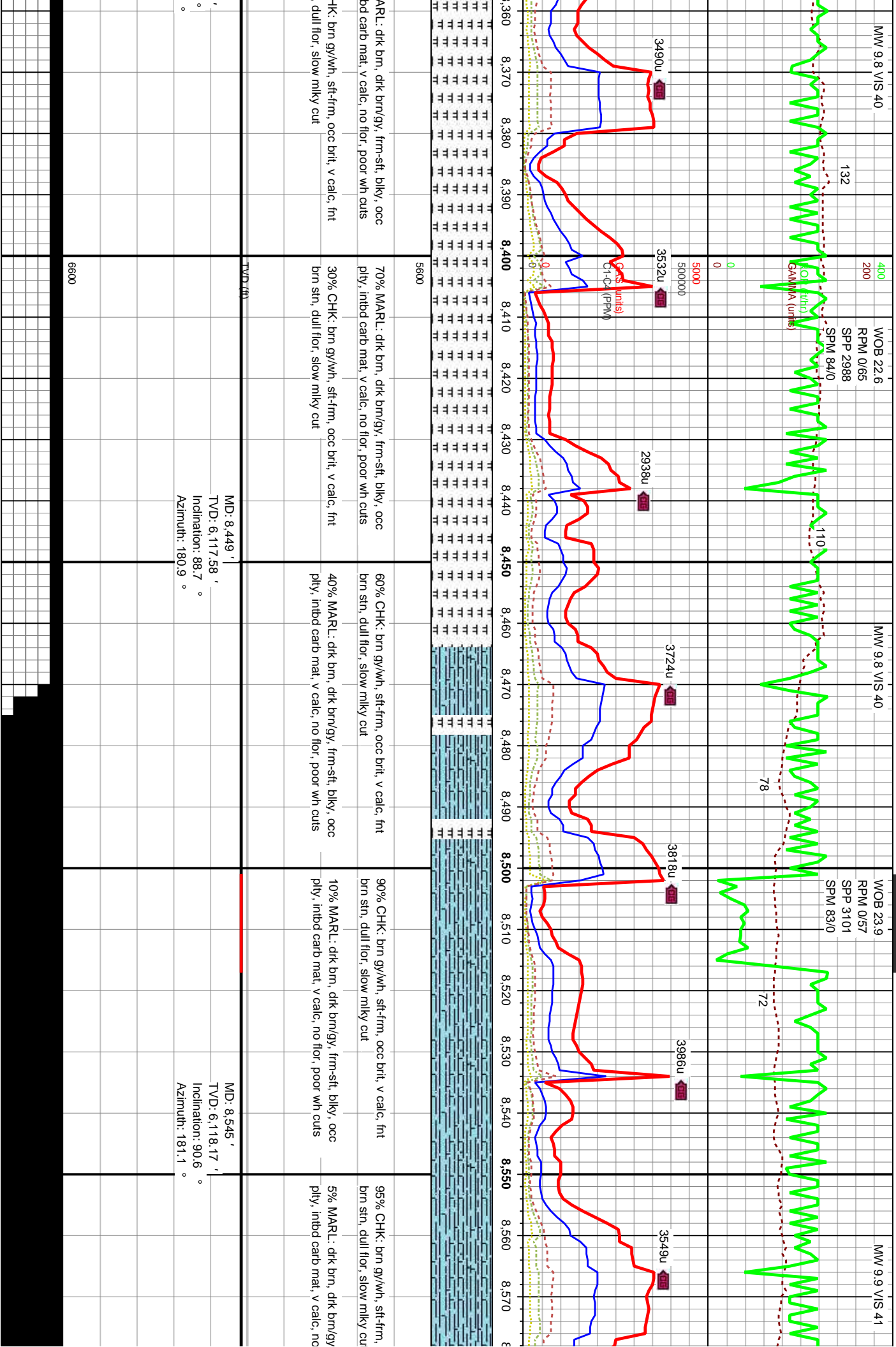


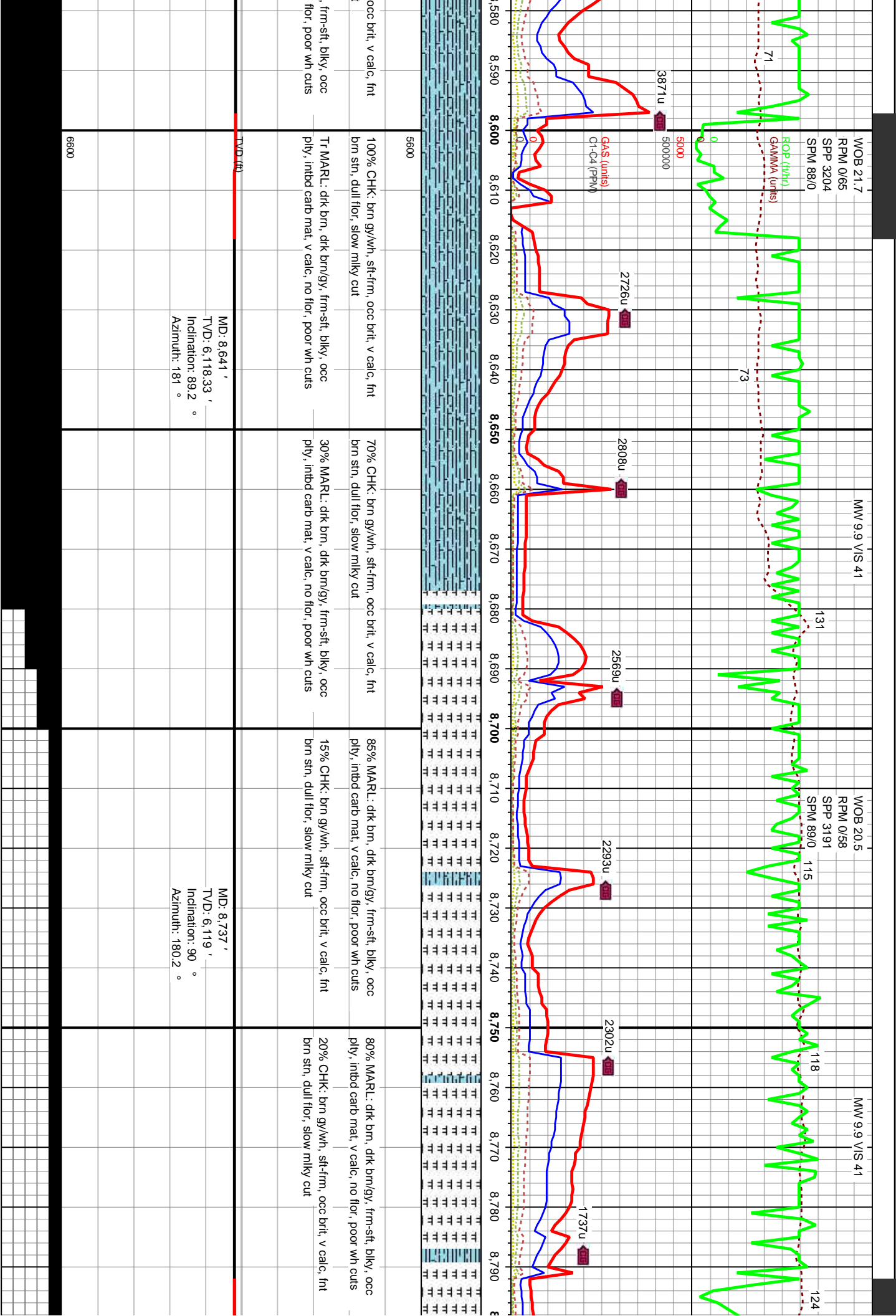






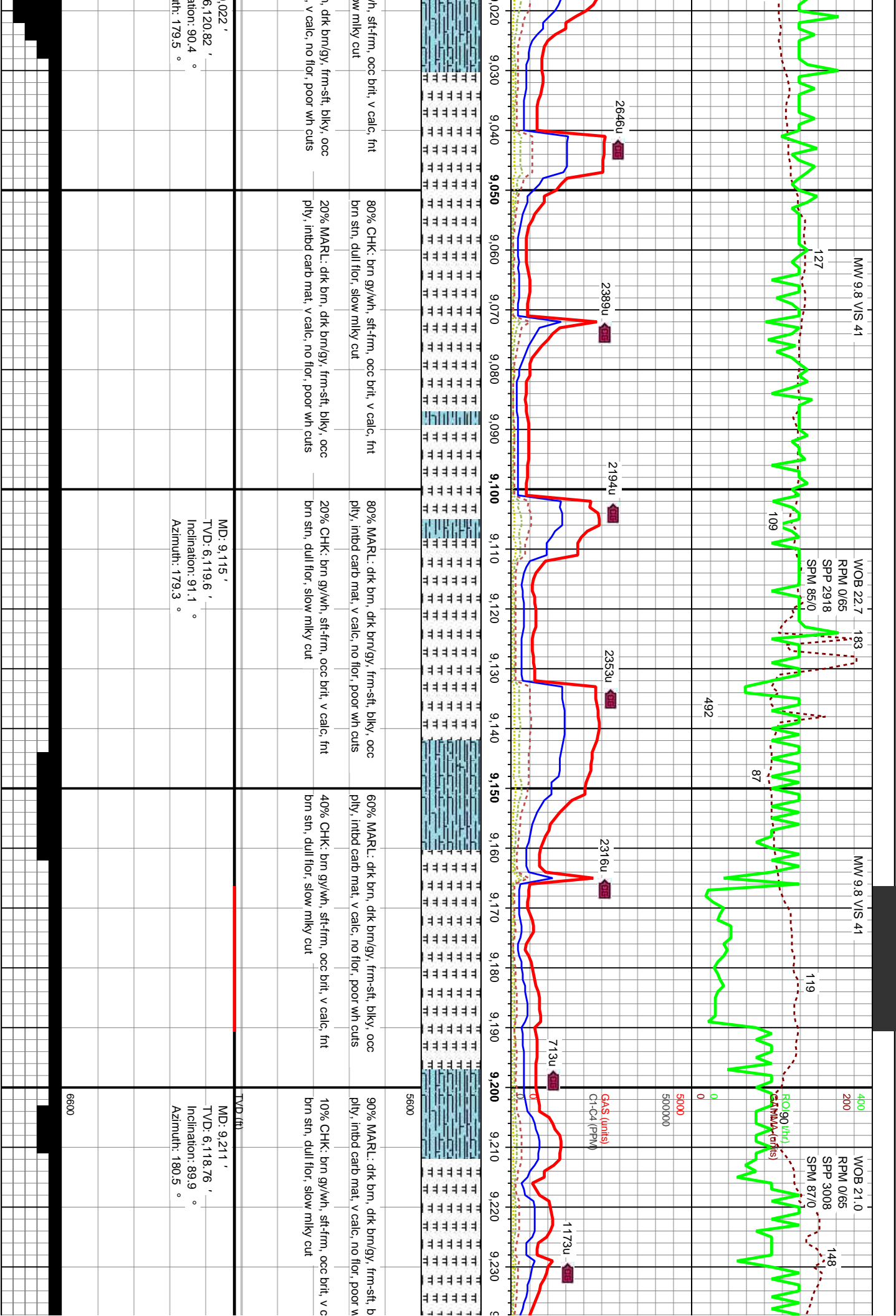




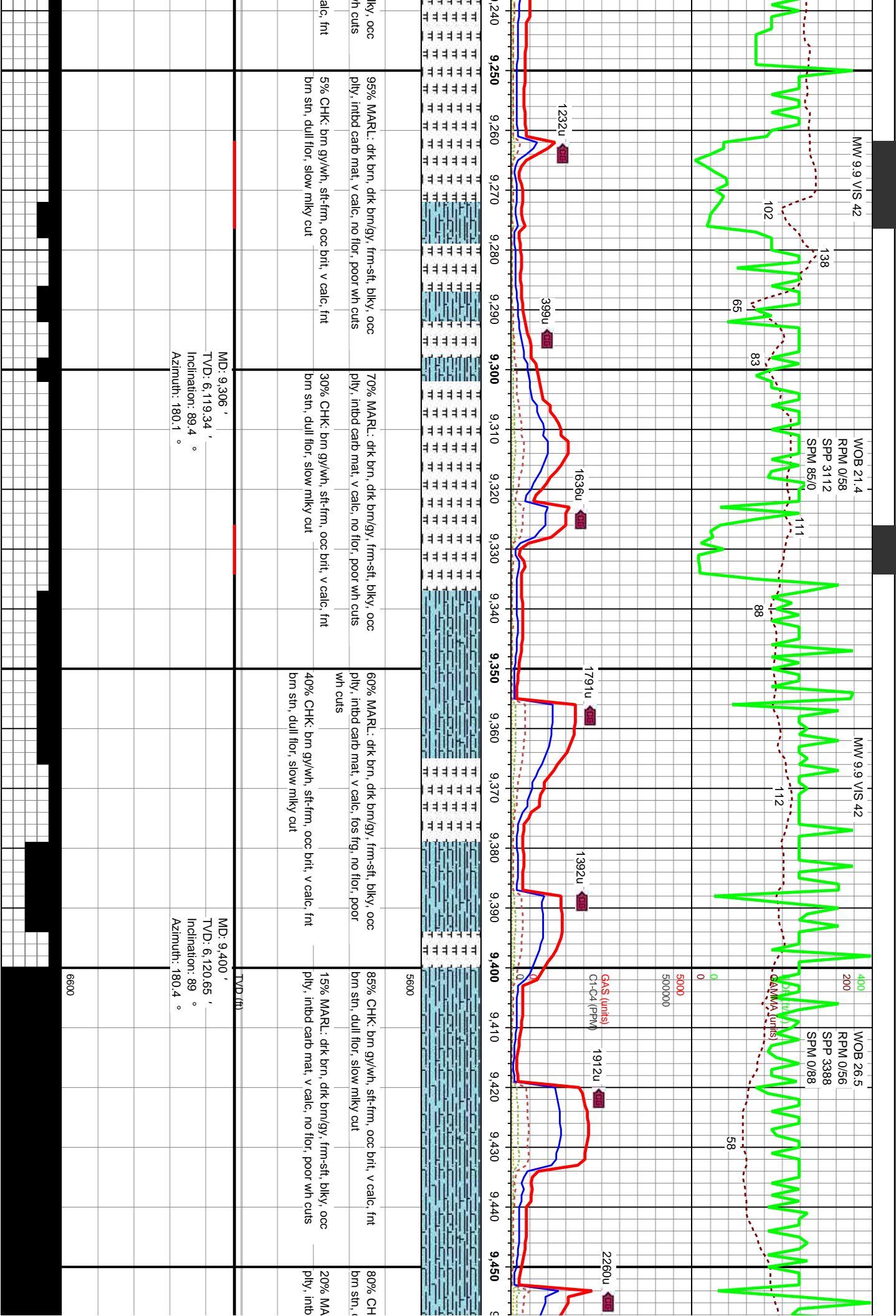


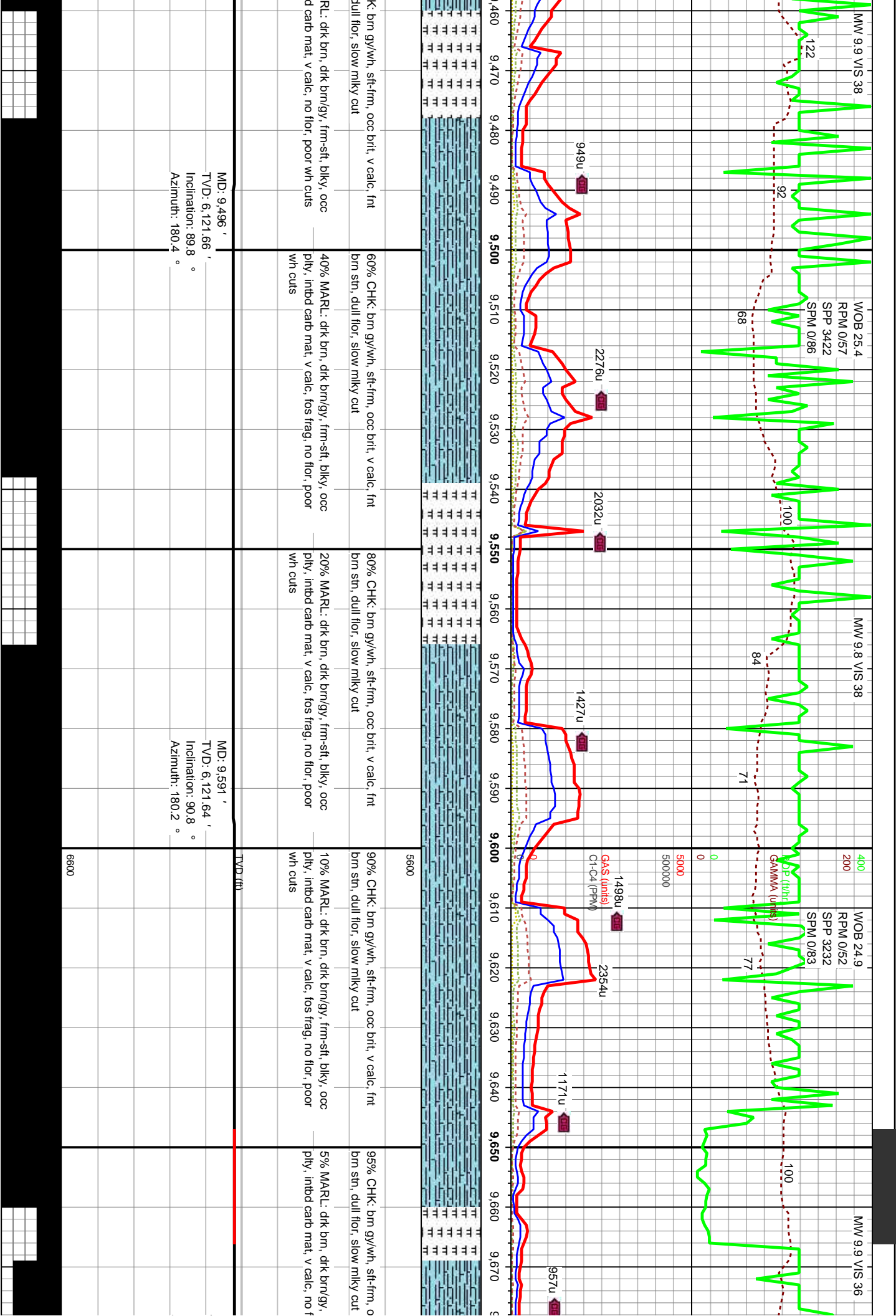












MW 9.9 VIS 38

WOB 25.4

RPM 0/57

SPP 3422

SPM 0/86

MW 9.8 VIS 38

WOB 24.9

RPM 0/52

SPP 3232

SPM 0/83

MW 9.9 VIS 36

122

92

68

100

84

71

77

100

9490

2276u

2032u

1427u

1498u

2354u

1171u

967u

60% CHK: brn gy/wh, sft-frn, occ brit, v calc, fnt  
brn stn, dull flr, slow milky cut

80% CHK: brn gy/wh, sft-frn, occ brit, v calc, fnt  
brn stn, dull flr, slow milky cut

90% CHK: brn gy/wh, sft-frn, occ brit, v calc, fnt  
brn stn, dull flr, slow milky cut

95% CHK: brn gy/wh, sft-frn, o  
brn stn, dull flr, slow milky cut

40% MARL: dk brn, dk brn/gy, frm-sft, blk, occ  
ply, inbd carb mat, v calc, fos frag, no flr, poor  
wh cuts

20% MARL: dk brn, dk brn/gy, frm-sft, blk, occ  
ply, inbd carb mat, v calc, fos frag, no flr, poor  
wh cuts

10% MARL: dk brn, dk brn/gy, frm-sft, blk, occ  
ply, inbd carb mat, v calc, fos frag, no flr, poor  
wh cuts

5% MARL: dk brn, dk brn/gy,  
ply, inbd carb mat, v calc, no f

MD: 9.496'

TVD: 6,121.66'

Inclination: 89.8°

Azimuth: 180.4°

MD: 9.591'

TVD: 6,121.64'

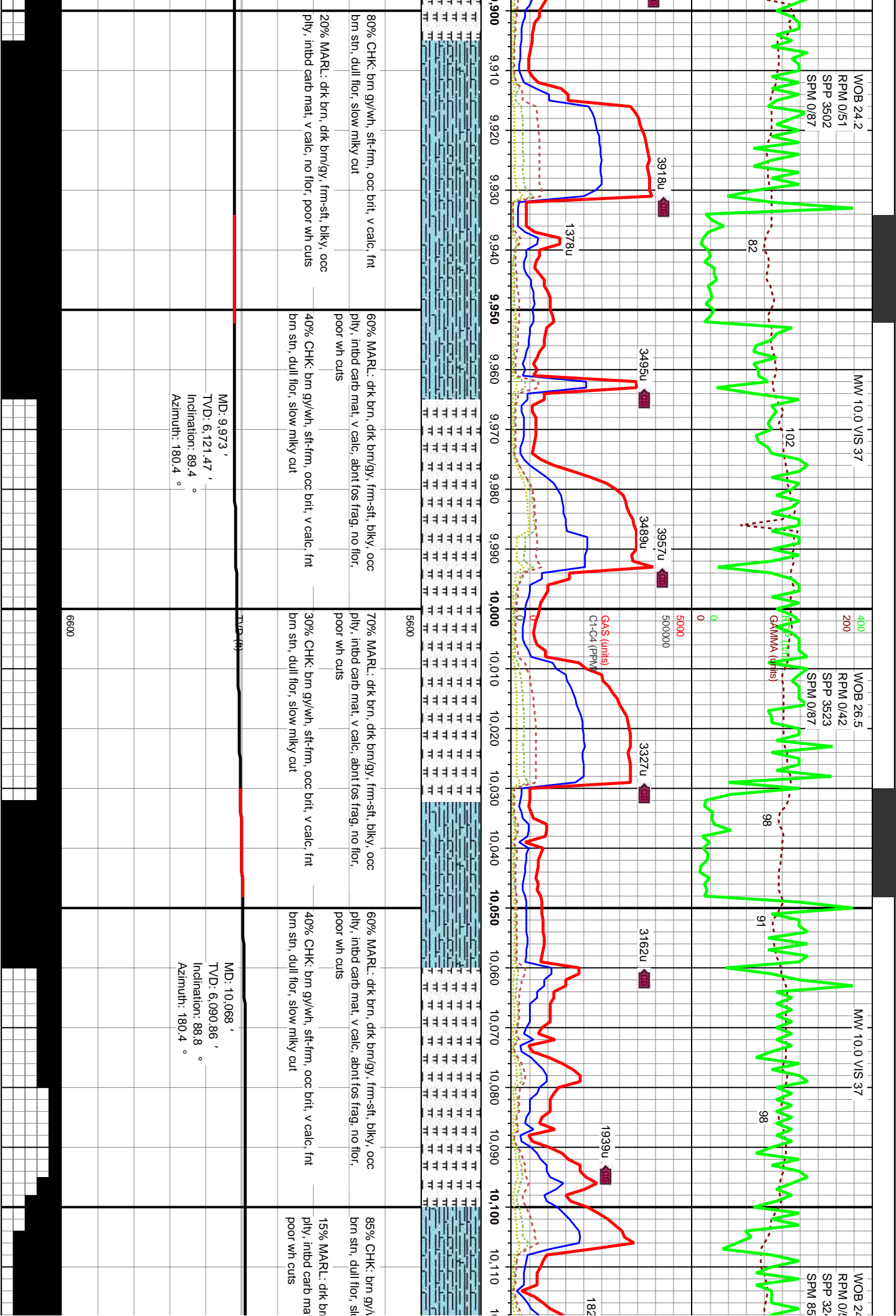
Inclination: 90.8°

Azimuth: 180.2°

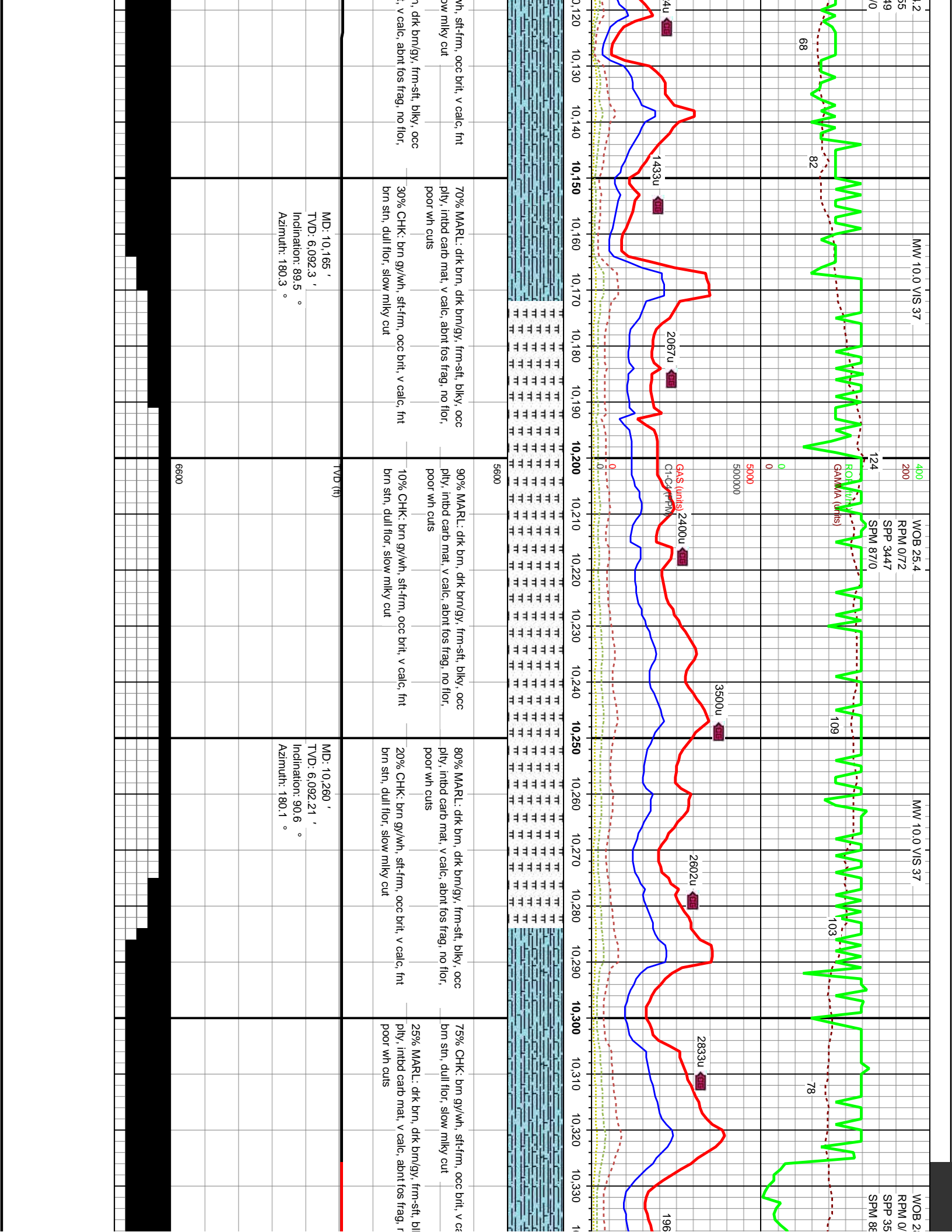
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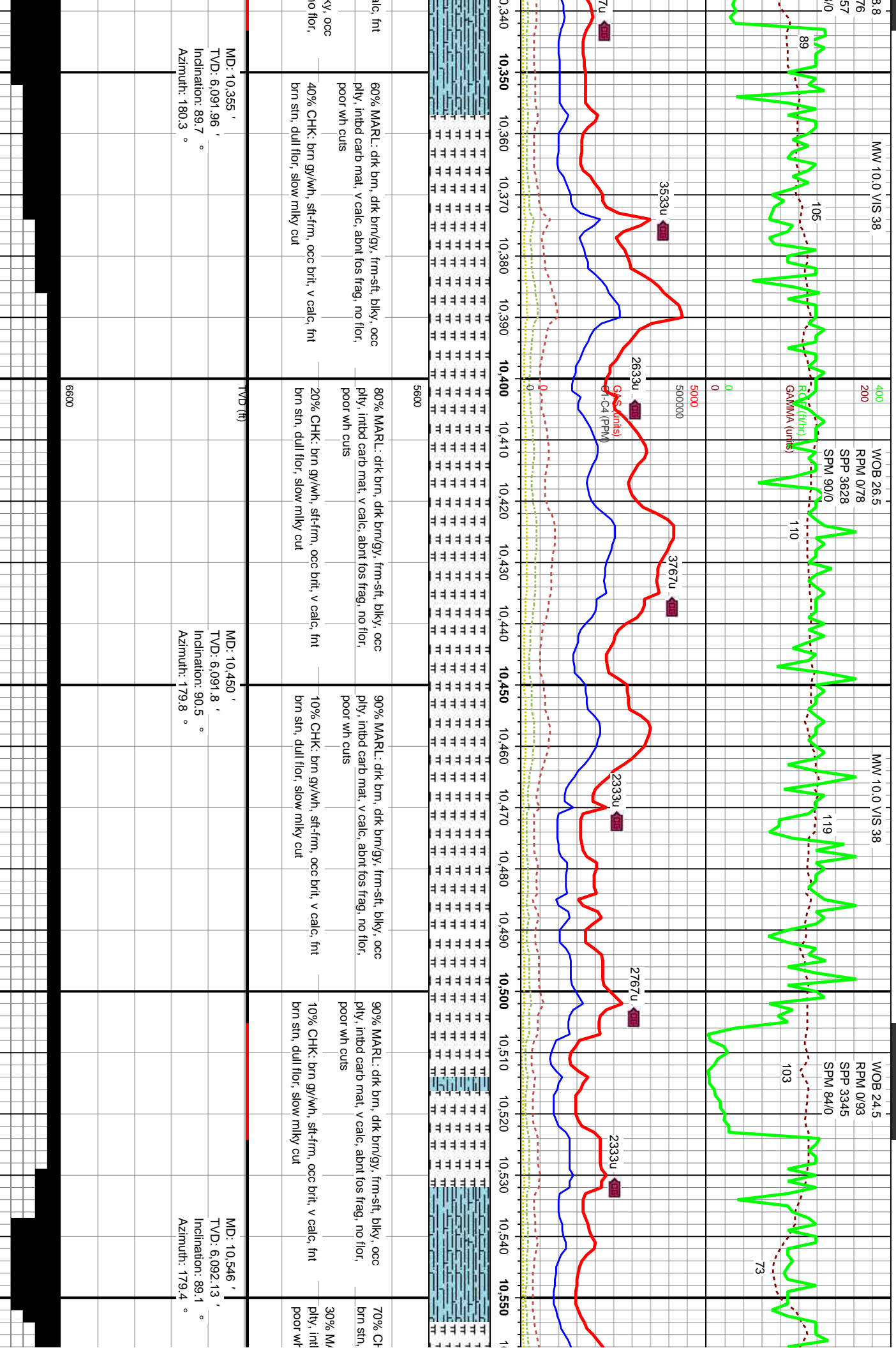


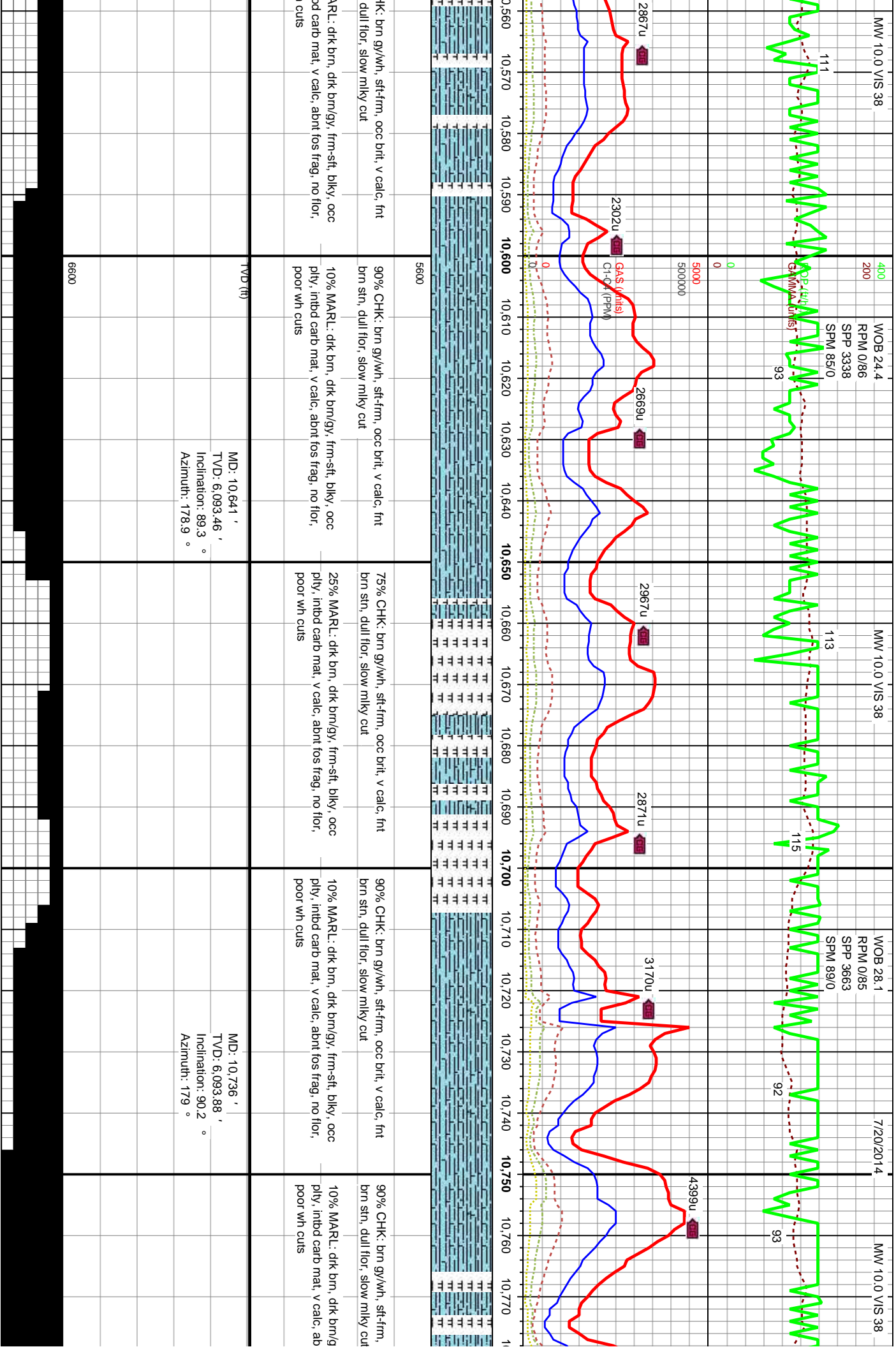












MW 10.0 VIS 38

WOB 24.4  
RPM 0/86  
SPP 3338  
SPM 85/0

MW 10.0 VIS 38

WOB 28.1  
RPM 0/85  
SPP 3663  
SPM 89/0

7/20/2014

MW 10.0 VIS 38

111

93

113

115

92

93

400  
200  
0  
50000  
500000

2867u

2302u

2669u

2967u

2871u

3170u

4399u

10,560 10,570 10,580 10,590 10,600 10,610 10,620 10,630 10,640 10,650 10,660 10,670 10,680 10,690 10,700 10,710 10,720 10,730 10,740 10,750 10,760 10,770

IK: brn gy/wh, sft-firm, occ brt, v calc, fnt  
dull flor, slow mlky cut

90% CHK: brn gy/wh, sft-firm, occ brt, v calc, fnt  
brn stn, dull flor, slow mlky cut

75% CHK: brn gy/wh, sft-firm, occ brt, v calc, fnt  
brn stn, dull flor, slow mlky cut

90% CHK: brn gy/wh, sft-firm, occ brt, v calc, fnt  
brn stn, dull flor, slow mlky cut

90% CHK: brn gy/wh, sft-firm, occ brt, v calc, fnt  
brn stn, dull flor, slow mlky cut

RL: drk brn, dtk brn/gy, frm-sft, blk, occ  
carb mat, v calc, abnt fos frag, no flor,  
cuts

10% MARL: dtk brn, dtk brn/gy, frm-sft, blk, occ  
ply, intbd carb mat, v calc, abnt fos frag, no flor,  
poor wh cuts

25% MARL: dtk brn, dtk brn/gy, frm-sft, blk, occ  
ply, intbd carb mat, v calc, abnt fos frag, no flor,  
poor wh cuts

10% MARL: dtk brn, dtk brn/gy, frm-sft, blk, occ  
ply, intbd carb mat, v calc, abnt fos frag, no flor,  
poor wh cuts

10% MARL: dtk brn, dtk brn/gy, frm-sft, blk, occ  
ply, intbd carb mat, v calc, abnt fos frag, no flor,  
poor wh cuts

TVD (ft)

MD: 10,641 '  
TVD: 6,093.46 '  
Inclination: 89.3 °  
Azimuth: 178.9 °

MD: 10,736 '  
TVD: 6,093.88 '  
Inclination: 90.2 °  
Azimuth: 179 °

6600

