

Décollement
Consulting
Inc.



Scale: 5" / 100'
Measured Depth Log

Well Name State Antelope E-12-1XRLNC

Location SESW Sec 12 T5N R62W

State Colorado

Country USA

API Number 05-123-38887-00

County Weld

Rig Number Cade 22

Field D.J. Basin

Spud Date 3/19/2014

Drilling Completed 4/1/2014

Surface Coordinates 330 FSL X 1390 FWL

Ground Elevation 4575'

K.B. Elevation 4592'

Logged Interval 5700'

To 15989'

Total Depth 15989'

Formation Niobrara "C"

Type of Drilling Fluid WBM

Company Bonanza Creek Energy

Address 410 17th Street, Suite 1100
Denver, CO 80202

Name Leo Carrasco/Chris Irwin

Company Décollement Consulting

Address 13300 Braun Road
Golden, CO 80401



Operator

500

Geologist

Inc.

Rock Types

DOLomite

CHERT

MARLSTONE

CLAYSTONE

SHALE

SHALE GRAY

SHALE COLORED

SILTSTONE

SANDSTONE

CONGLOMERATE

TILL

BENTONITE

TUFF

IGNEOUS

METAMORPHIC

BRECCIA

Chalk

Accessories

Fossils

F FOSSIL

GASTROPD

ALGAE

AMPHIPORA

BELLENITE

BIOLCLASTIC

BRACHIOPOD

BRYOZOA

CEPHALOPD

CORAL

CRINOID

ECHINOID

FISH

FORAMINIFERA

Minerals

ANHYDRITIC

FERRUGINOUS

TUFFACEOUS

SILTY

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

Fossils

F FOSSIL

GASTROPD

ALGAE

AMPHIPORA

BELLENITE

BIOLCLASTIC

BRACHIOPOD

BRYOZOA

CEPHALOPD

CORAL

CRINOID

ECHINOID

FISH

FORAMINIFERA

Minerals

ANHYDRITIC

FERRUGINOUS

TUFFACEOUS

SILTY

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

Oil Show

ORGANIC

P PINPOINT

DEAD

EVEN

QUESTIONABLE

SPOTTED STAINING

Engineering

BIT

CONNECTION (LEFT)

CONNECTION (RIGHT)

E EARTHY

F FENESTRAL

F FRACTURE

INTERCRYSTALLINE

INTEROOLITIC

MOLDIC

Textures

B\$ BOUNDSTONE

C CHALKY

CX CRYPTOXLN

E EARTHY

FX FINELYXLN

B\$ GRAINSTONE

L LITHOGRAPHIC

Sorting

MX MICROXLN

M\$ MUDSTONE

R ROUNDED

a SUBANG

r SUBRND

M MODERATE

P POOR

W WELL

Rounding

A ANGULAR

R ROUNDED

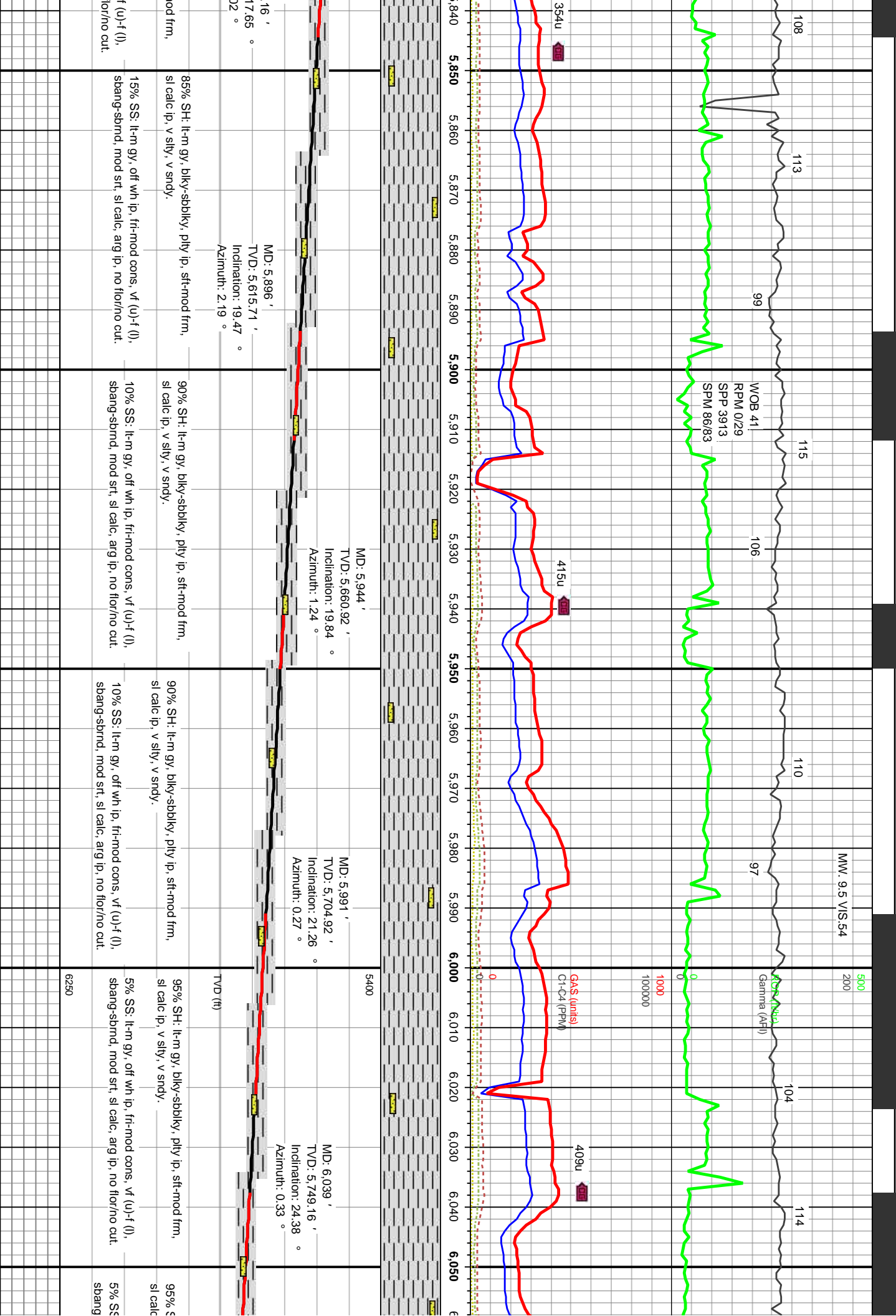
a SUBANG

r SUBRND

M MODERATE

P POOR

W WELL



MND @ 6119' 3/24/2014

MW. 9.2 VIS. 45

103

108

115

WOB 61

RPM 0/34

SPP 1972

SPM 114/0

WOB 28

RPM 0/34

SPP 3520

SPM 84/83

113

SGRIP (API)

Gas Scale Change

ON ONE PUMP

ON TWO PUMP

443u

GAAS (units)

C1-C4 (PPM)

6.060 6.070 6.080 6.090 6.100 6.110 6.120 6.130 6.140 6.150 6.160 6.170 6.180 6.190 6.200 6.210 6.220 6.230 6.240 6.250 6.260 6.270

5400

MD: 6.086 '
 TVD: 5.791.3 '
 Inclination: 28.18 °
 Azimuth: 1.48 °

MD: 6.134 '
 TVD: 5.832.83 '
 Inclination: 31.96 °
 Azimuth: 0.86 °

MD: 6.182 '
 TVD: 5.872.75 '
 Inclination: 35.49 °
 Azimuth: 2.57 °

TVD (ft)

MD: 6.230 '
 TVD: 5.910.83 '
 Inclination: 39.48 °
 Azimuth: 1.4 °

MD: 6.277 '
 TVD: 5.946.
 Inclination: 4
 Azimuth: 35

lt-m gy, blk-y-sbblky, ply ip, sft-mod frm, ip, v sfty, v sndy.

90% SH: lt-m gy, blk-y-sbblky, ply ip, sft-mod frm, sl calc ip, v sfty, v sndy.

lt-m gy, off wh ip, fti-mod cons, v' (u)-f (l), -sbnd, mod srt, sl calc, arg ip, no flor/no cut.

10% SS: lt-m gy, off wh ip, fti-mod cons, v' (u)-f (l), spang-sbnd, mod srt, sl calc, arg ip, no flor/no cut.

100% SH: m-gy, blk-y-sbblky -ply ip, wxy ip, sl carb ip, tr SS, pale yel flr ip, slow wh cut.

100% SH: m-dk gy, blk-y-sbblky -ply ip, wxy ip, sl carb ip, tr SS, pale yel flr ip, slow wh cut.

100% SH: m-dk gy, blk-y-sbblky ip, tr SS, pale yel flr ip, slow wh cut.

6250

TV-D 6279' MD

WOB 30
RPM 0/34
SPP 3520
SPM 84/83

NIORARA "A" Chalk @ 6028' TVD, 6415' MD

MW 9.2/VIS 42

162

500	Chai
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NIOBARRA "A" Mari @ 6040' TVD, 6423' MD

186

Go Through Out Gas Buster No flare

GAS (units)
C1-C4 (PPM)

Gas Scale Change

GAS (units)
C1 C4 (PPM)

100% SH: m-dk gy, blkyy-sbbkly-pty ip, wxy ip, sl carb p, tr SS, pale yel flor ip, slow wh cut.

5400

70% CHKL: lt-md gy, off wh, stf-mod frm, bly-sbbly, calt, wxy ip, no flr, wh cut, bl res ring.	
--	--

30% MR.L: m-dk gy, sft-fm, sbolky, occ specs, v calc, tr Chalk, tr-fos, no flr, diffuse wh cuts.

100% MRL: m-dk gy, stf-firm, sbblky, occ specs, v calc, tr Chalk, tr-fos, no flor, diffuse wh cuts.

MD: 6,325 '
TVD: 5,979.64 '
Inclination: 47.62
Azimuth: 0.28 °

MD: 6,372 '
 TVD: 6,010.17 '
 Inclination: 51.34 °
 Azimuth: 359.87 °

TVD (ft)	MD: 6,420 TVD: 6,038
	Inclination:
	Azimuth: 0

MD: 6,467 '
 TVD: 6,064.36 '
 Inclination: 58.36 °
 Azimuth: 357.94 °

-pty ip, wxy ip, sl carb
n cut.

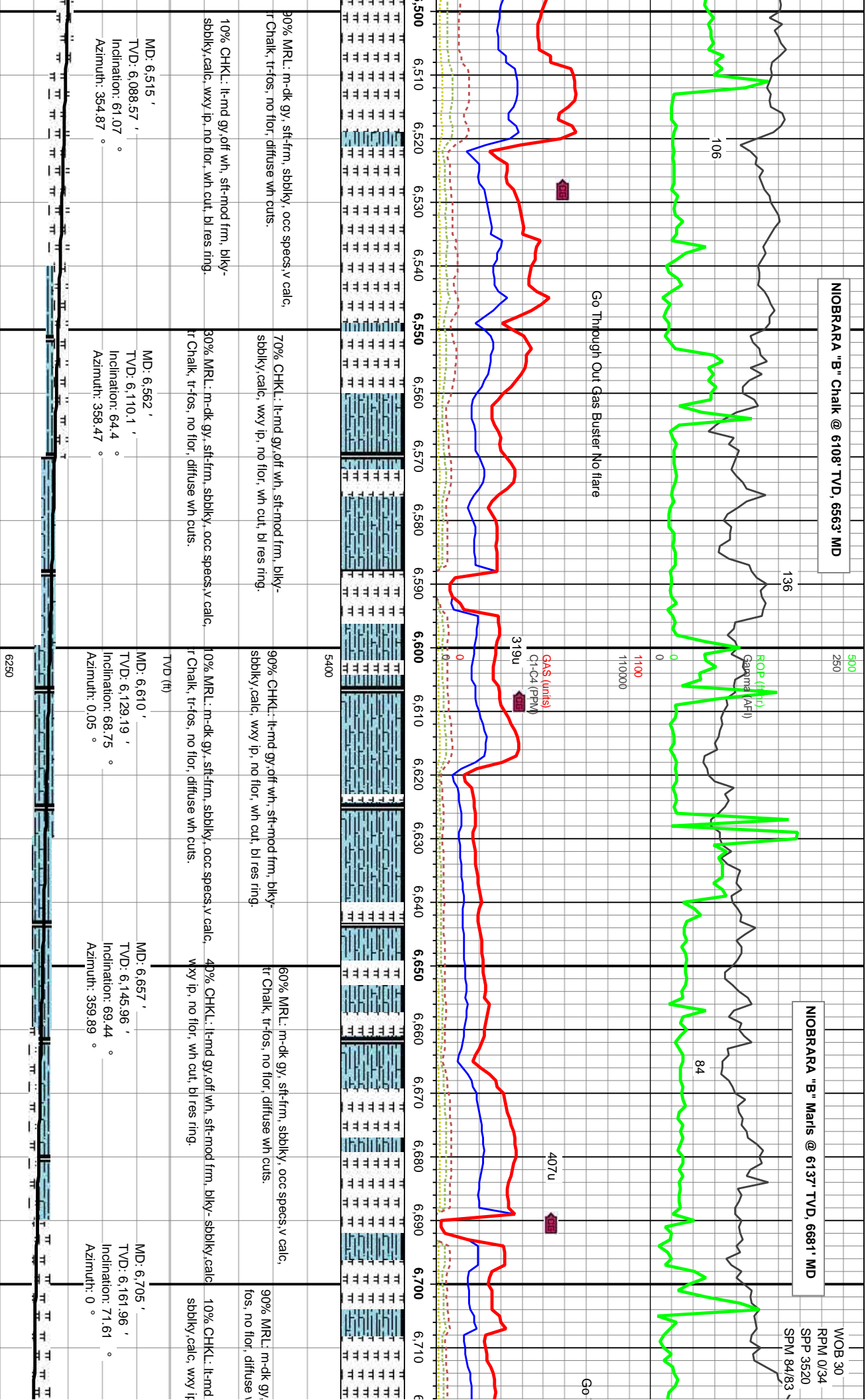
100% SH: m-dk gy, blk-y-sbblk-y-plt-y ip, wxy ip, sl carb ip, tr SS, pale yel flr ip, slow wh cut.

6250

NIORARA "B" Chaik @ 6108' TVD, 6563' MD

NIORARA "B" Marls @ 6137' TVD, 6681' MD

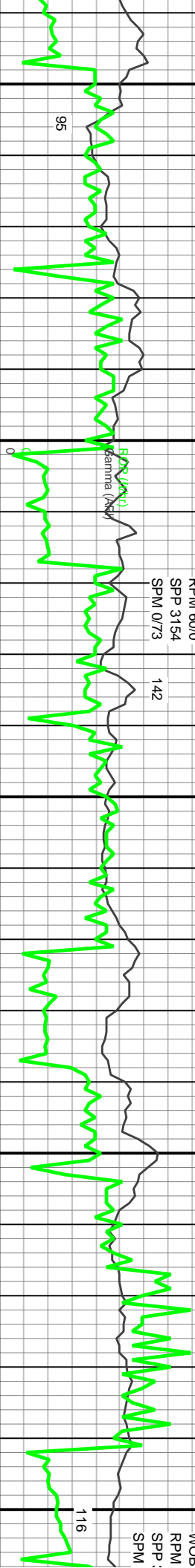
WOB 30
RPM 0/34
SP 3520
SPM 84/83



500
250

WOB 60
RPM 60/0
SP 3154
SPM 0/73
142

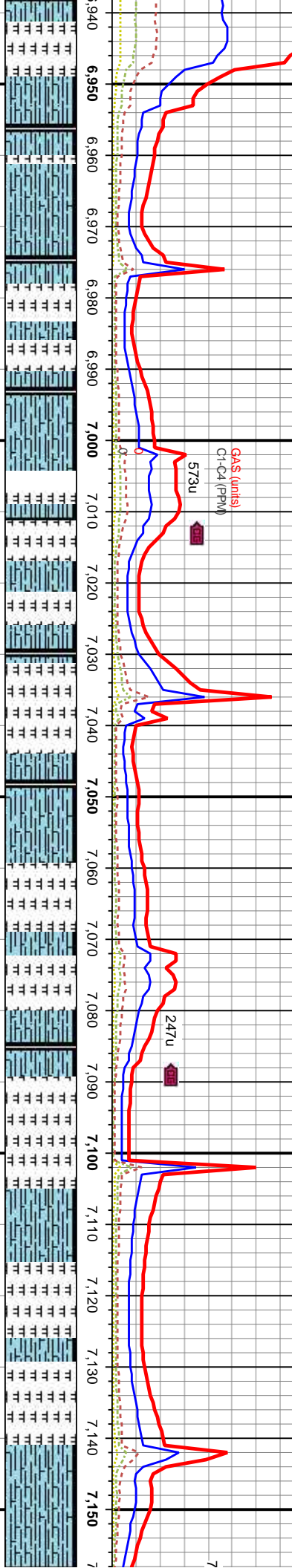
WOB
RPM
SP
SPM



Go Through Out Gas Buster No flare

Gas (units)
C1-C4 (PPM)
573u

247u



5400

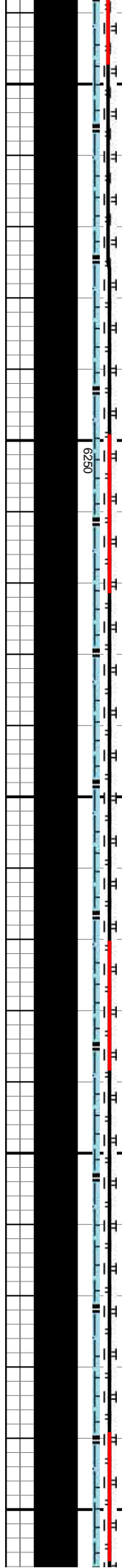
85% CHKL: lt-md gy, off wh, sft-mod frm, blk- sbbly, calc, wxy ip, no flor, wh cut, bl res ring.	60% CHKL: lt-md gy, off wh, sft-mod frm, blk- sbbly, calc, wxy ip, no flor, wh cut, bl res ring.	75% CHKL: lt-md gy, off wh, sft-mod frm, blk- sbbly, calc, wxy ip, no flor, wh cut, bl res ring.	70% CHKL: lt-md gy, off wh, sft-mod frm, blk- sbbly, calc, wxy ip, no flor, wh cut, bl res ring.	70% CHKL: lt-md gy, off wh, sft-mod frm, blk- sbbly, calc, wxy ip, no flor, wh cut, bl res ring.
15% MRL: m-dk gy, sft-frm, sbbly, occ specs, v calc, tr-fos, no flor, diffuse wh cuts.	40% MRL: m-dk gy, sft-frm, sbbly, occ specs, v calc, tr-fos, no flor, diffuse wh cuts.	25% MRL: m-dk gy, sft-frm, sbbly, occ specs, v calc, tr-fos, no flor, diffuse wh cuts.	30% MRL: m-dk gy, sft-frm, sbbly, occ specs, v calc, tr-fos, no flor, diffuse wh cuts.	30% MRL: m-dk gy, sft-frm, sbbly, occ specs, v calc, tr-fos, no flor, diffuse wh cuts.

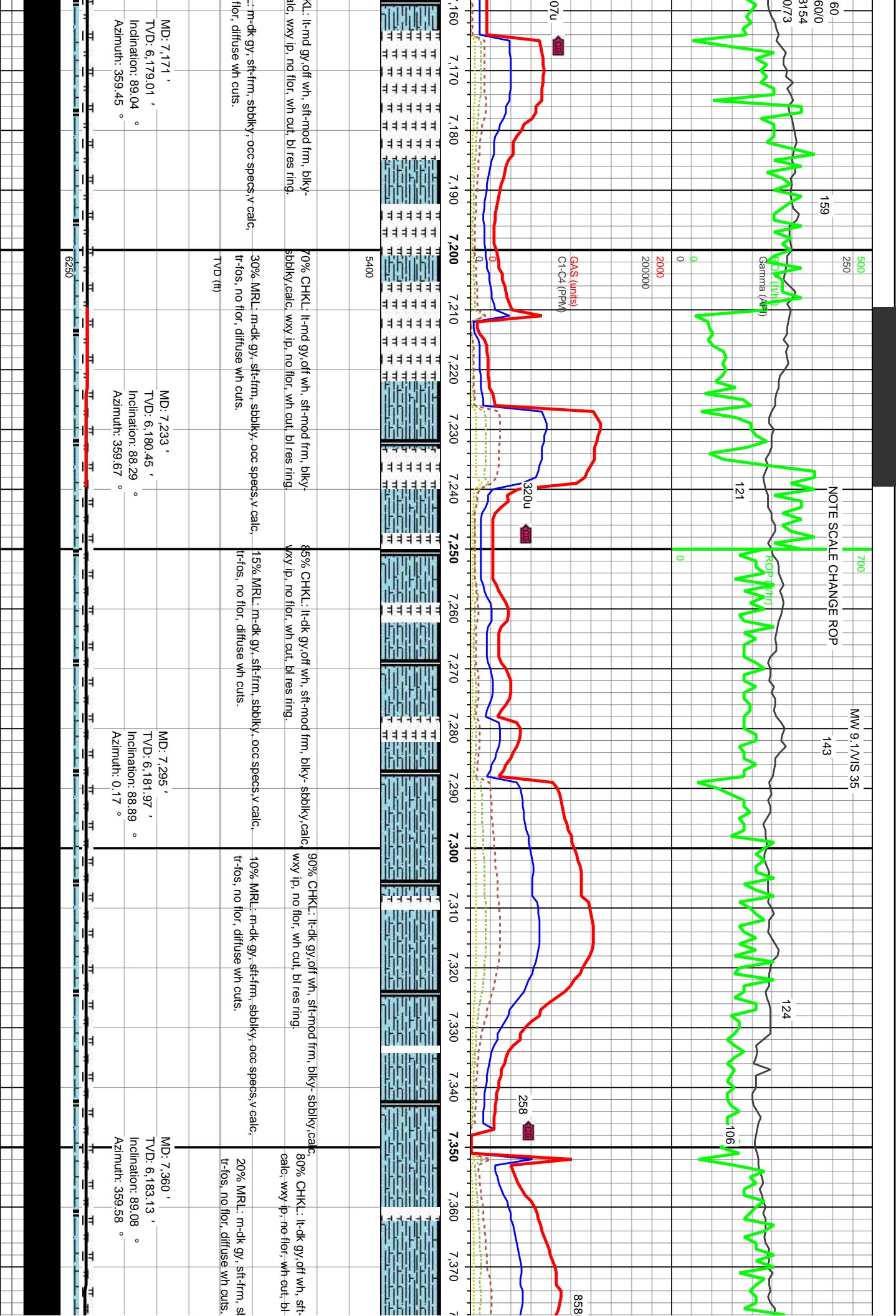
MD: 6,985 '
TVD: 6,179.94 '
Inclination: 91.32 °
Azimuth: 357.77 °

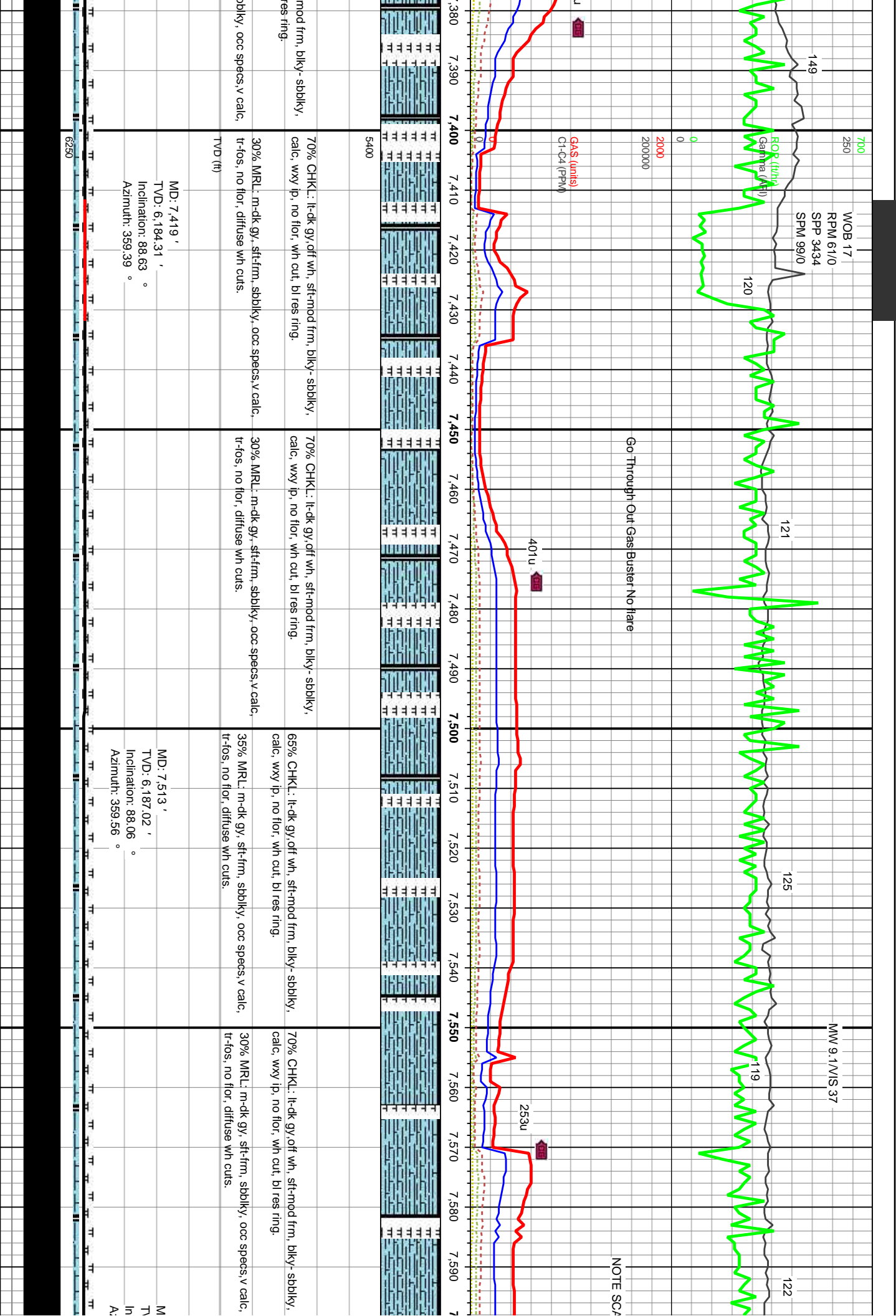
MD: 7,047 '
TVD: 6,178.84 '
Inclination: 90.71 °
Azimuth: 358.06 °

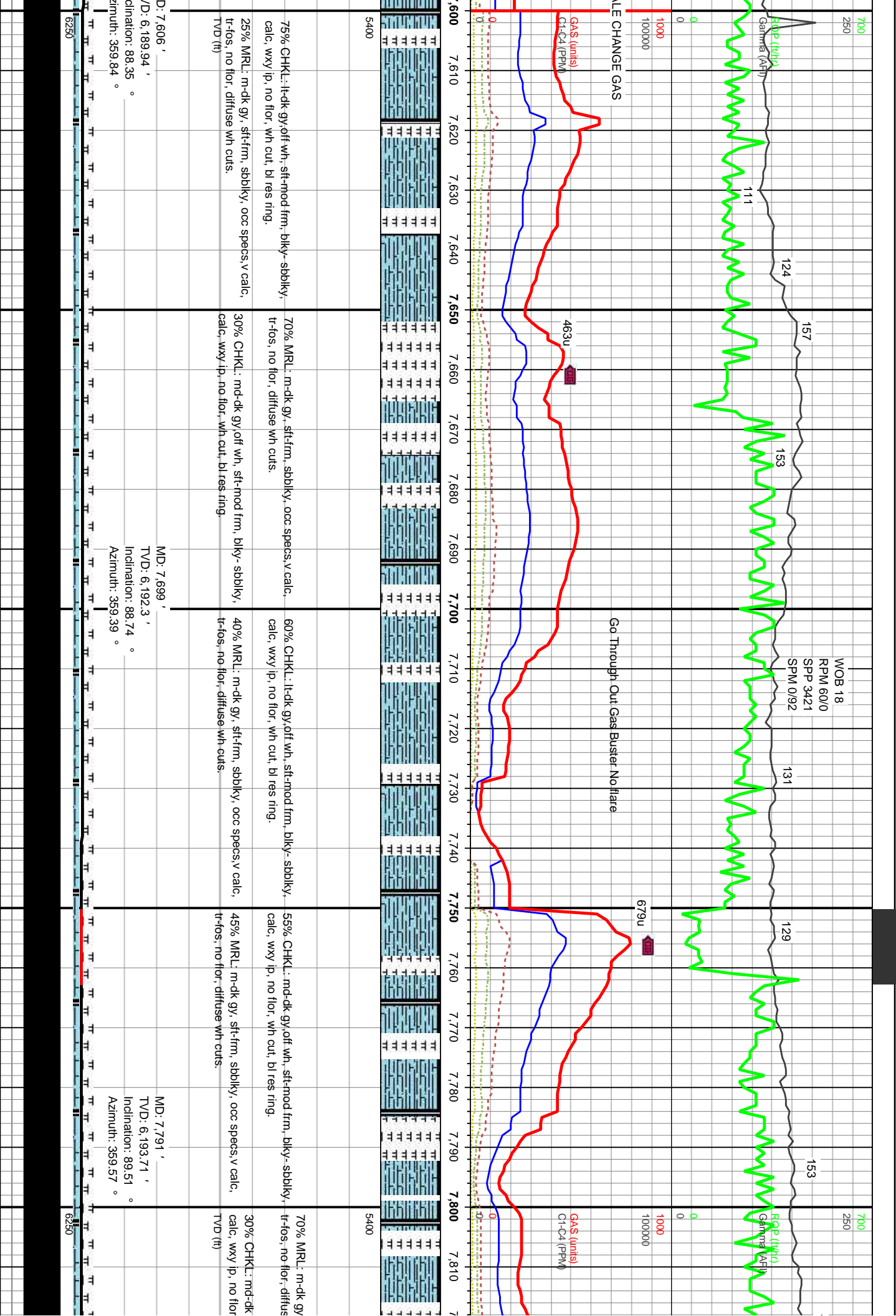
MD: 7,109 '
TVD: 6,178.47 '
Inclination: 89.97 °
Azimuth: 359 °

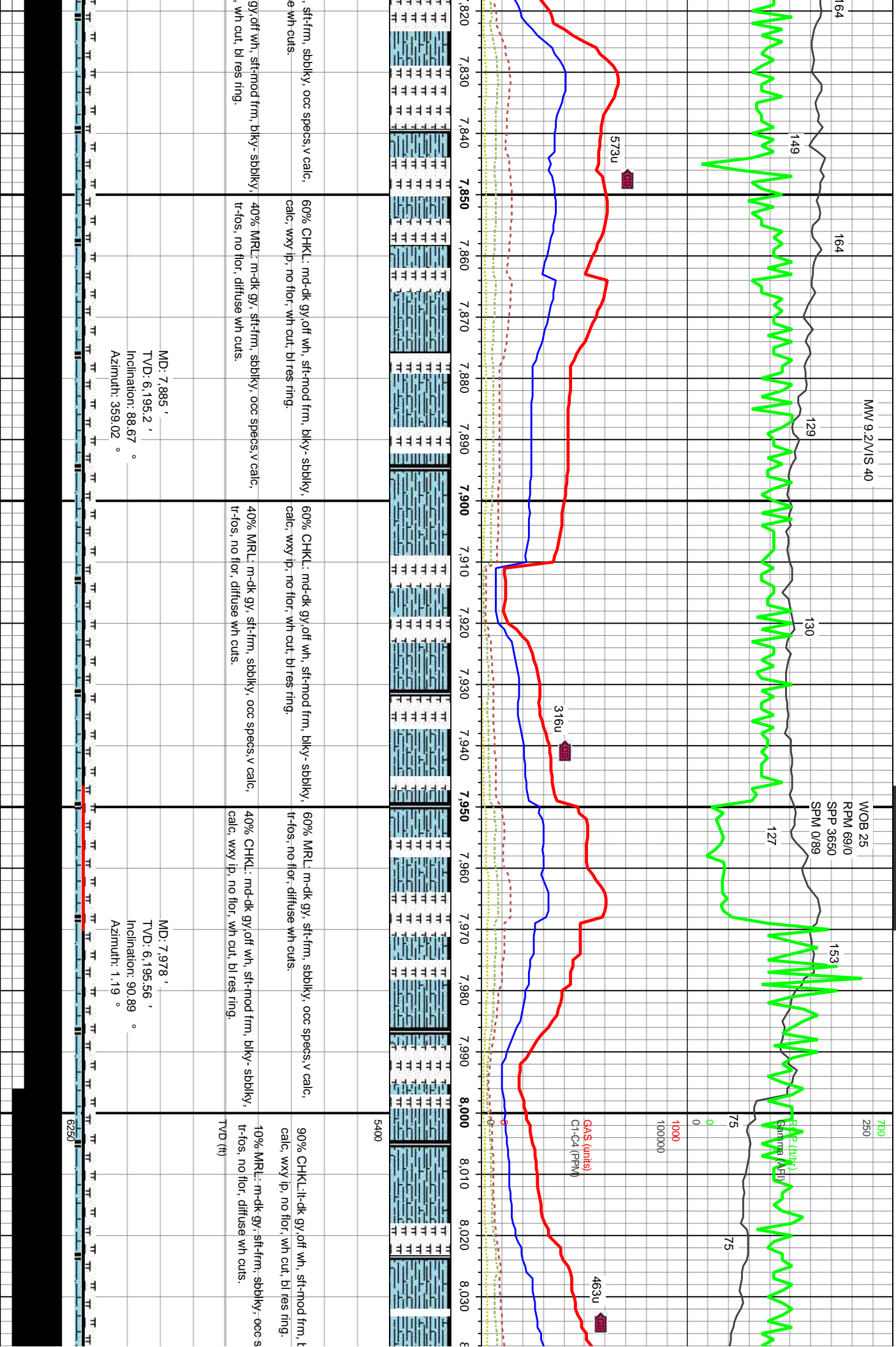
6250

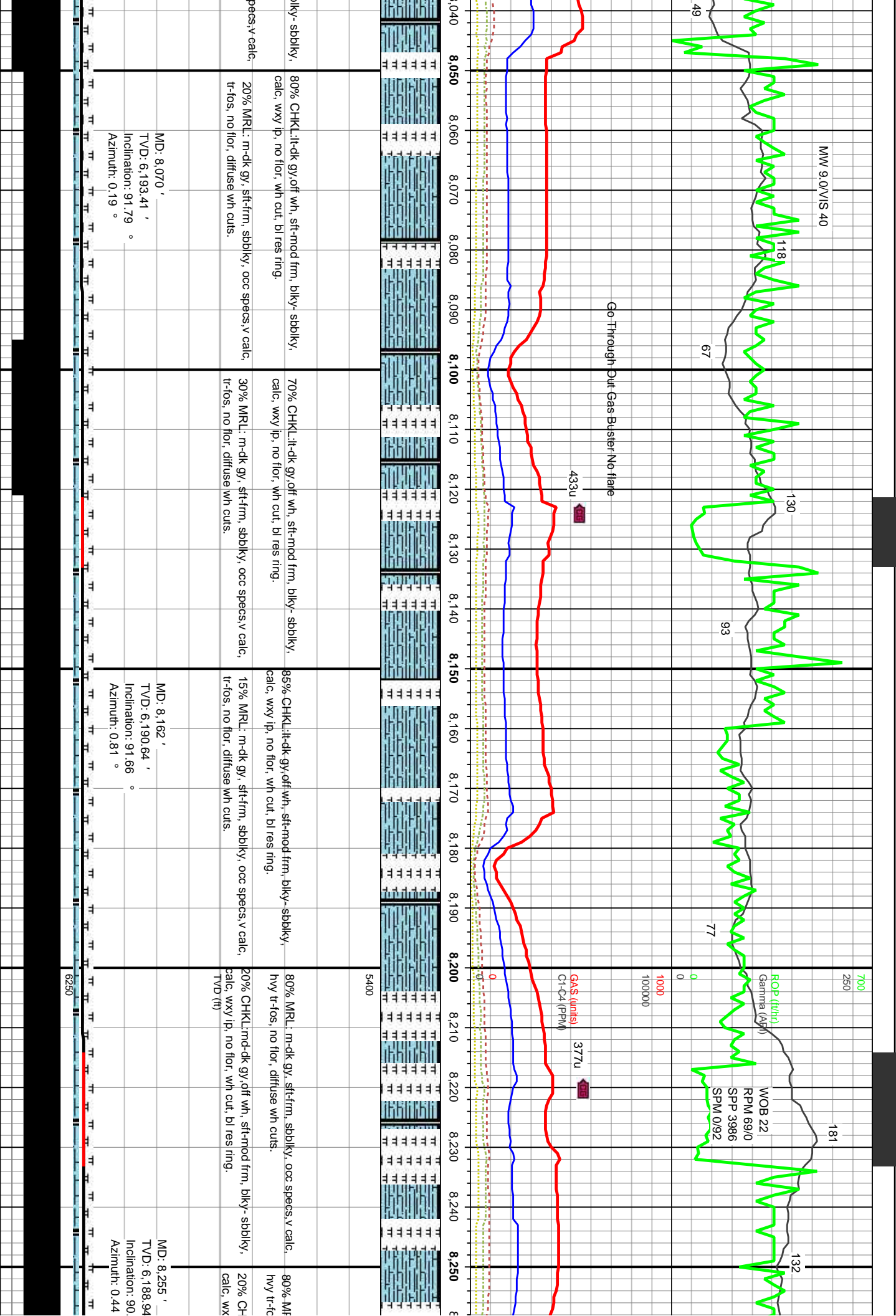


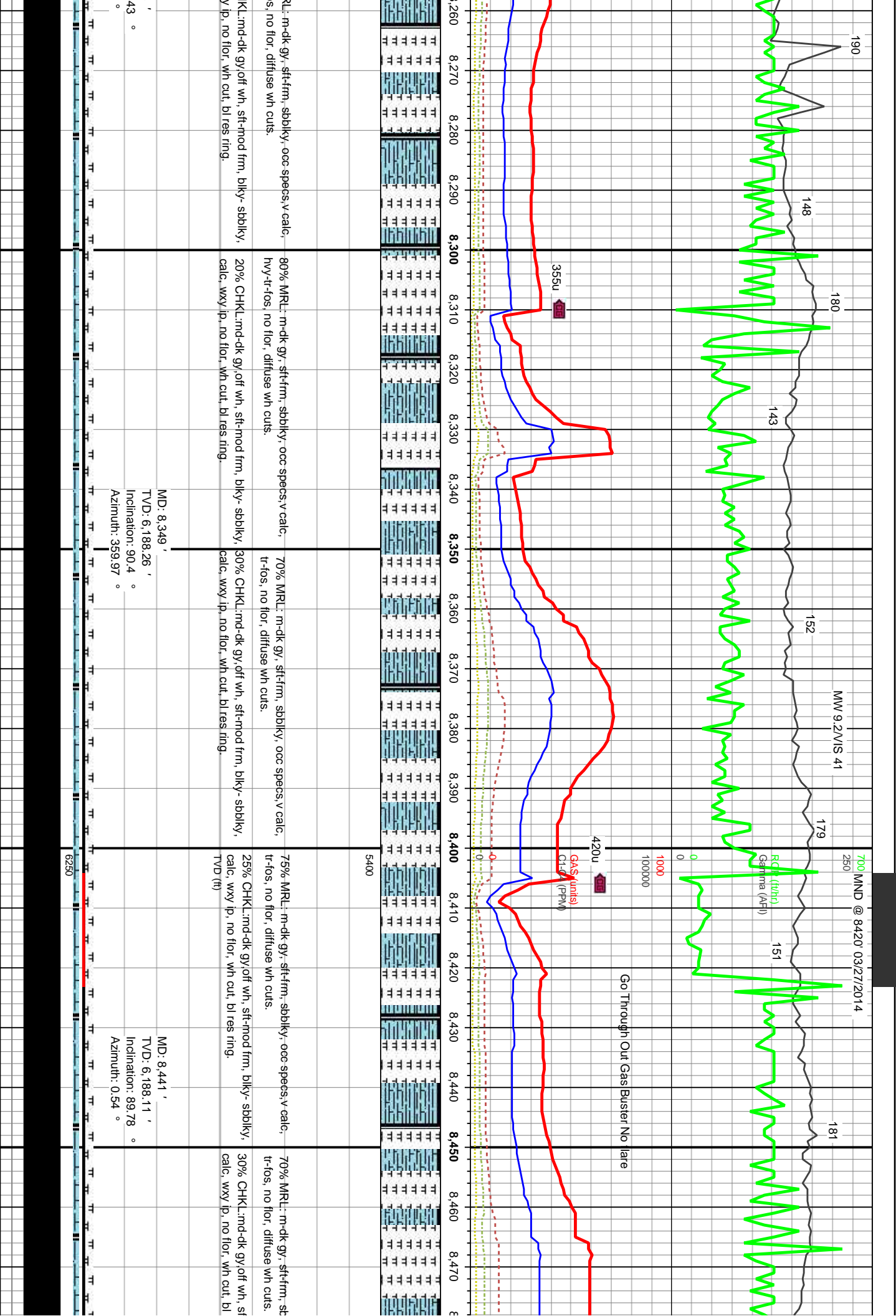


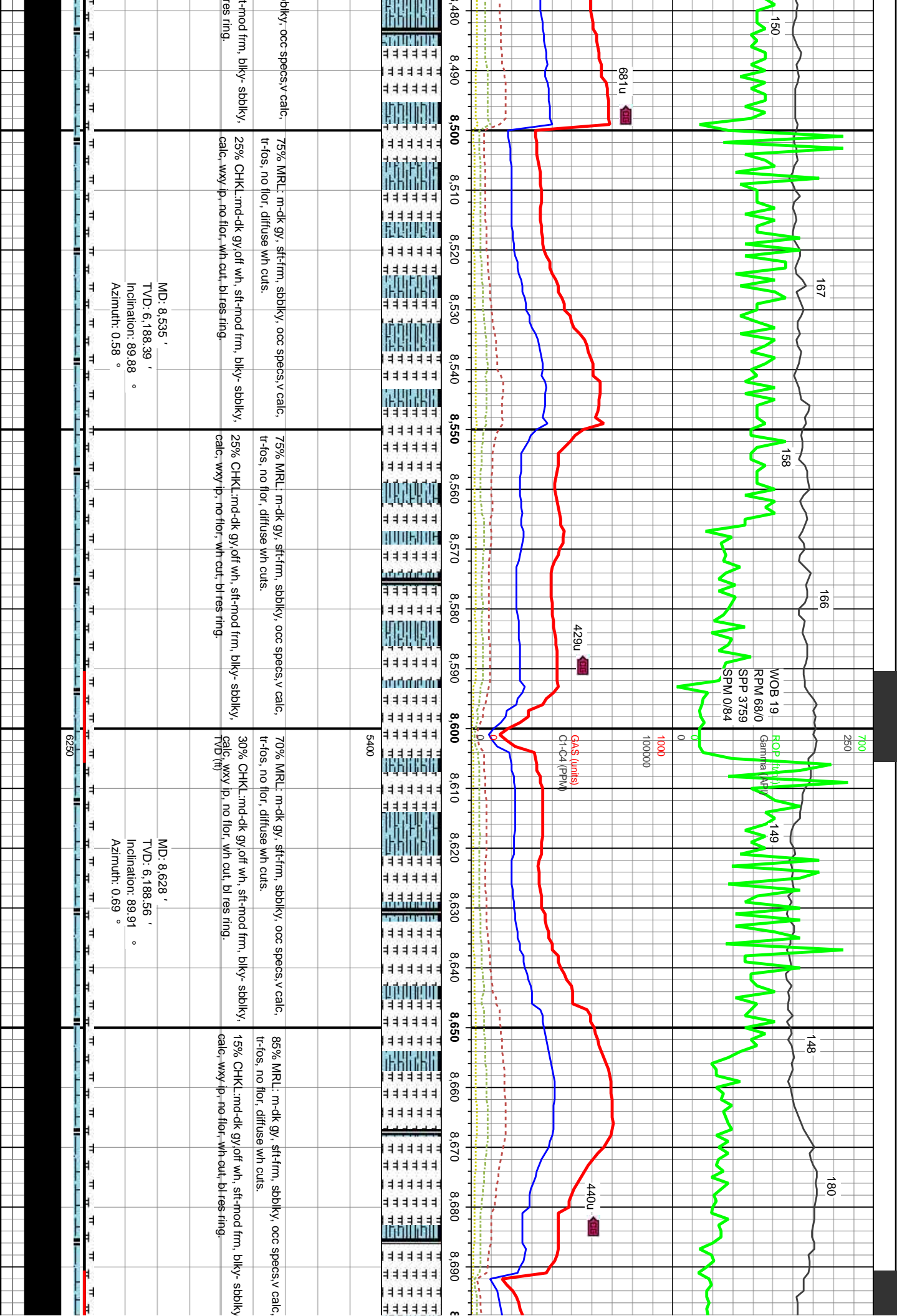


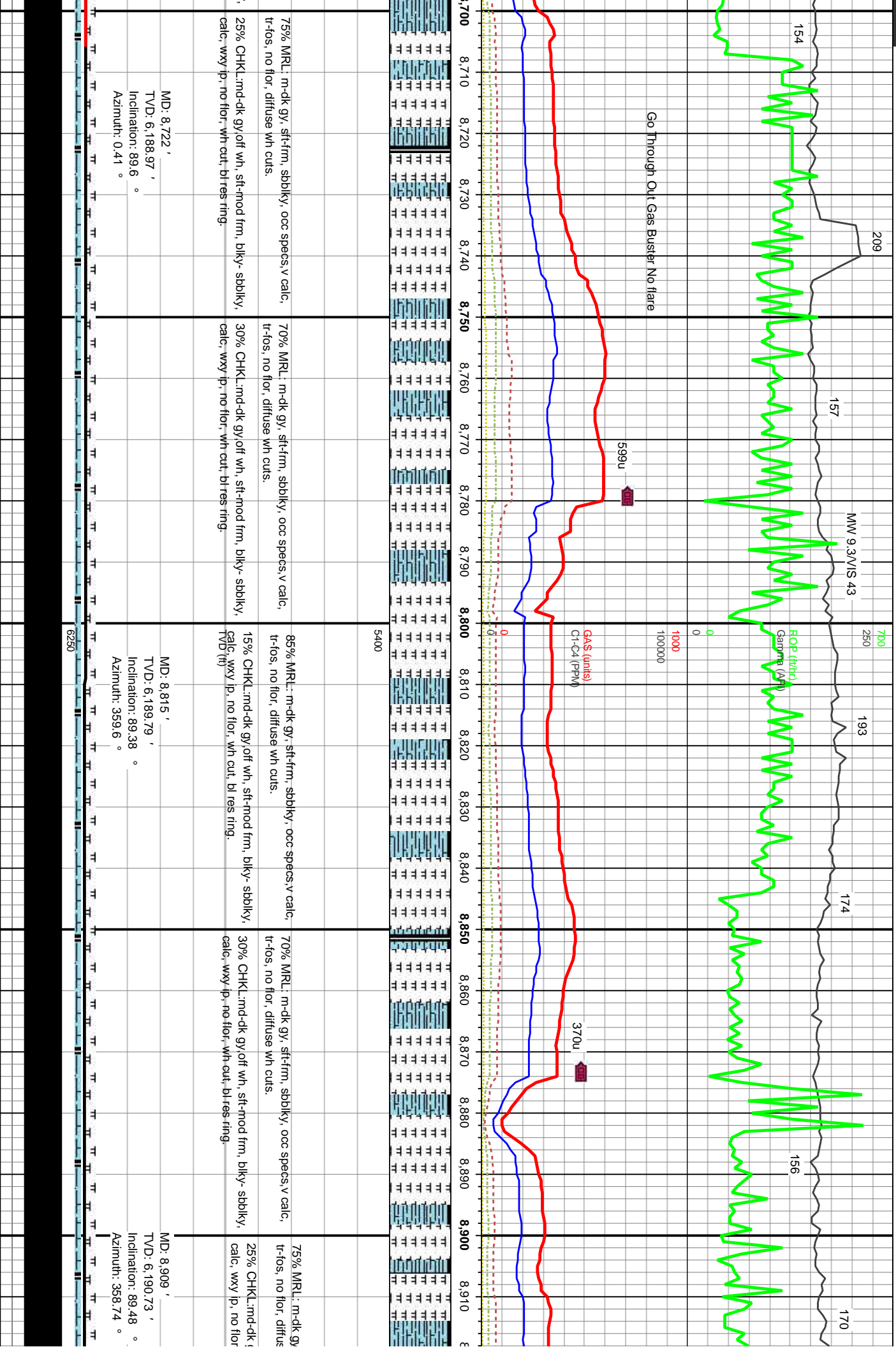


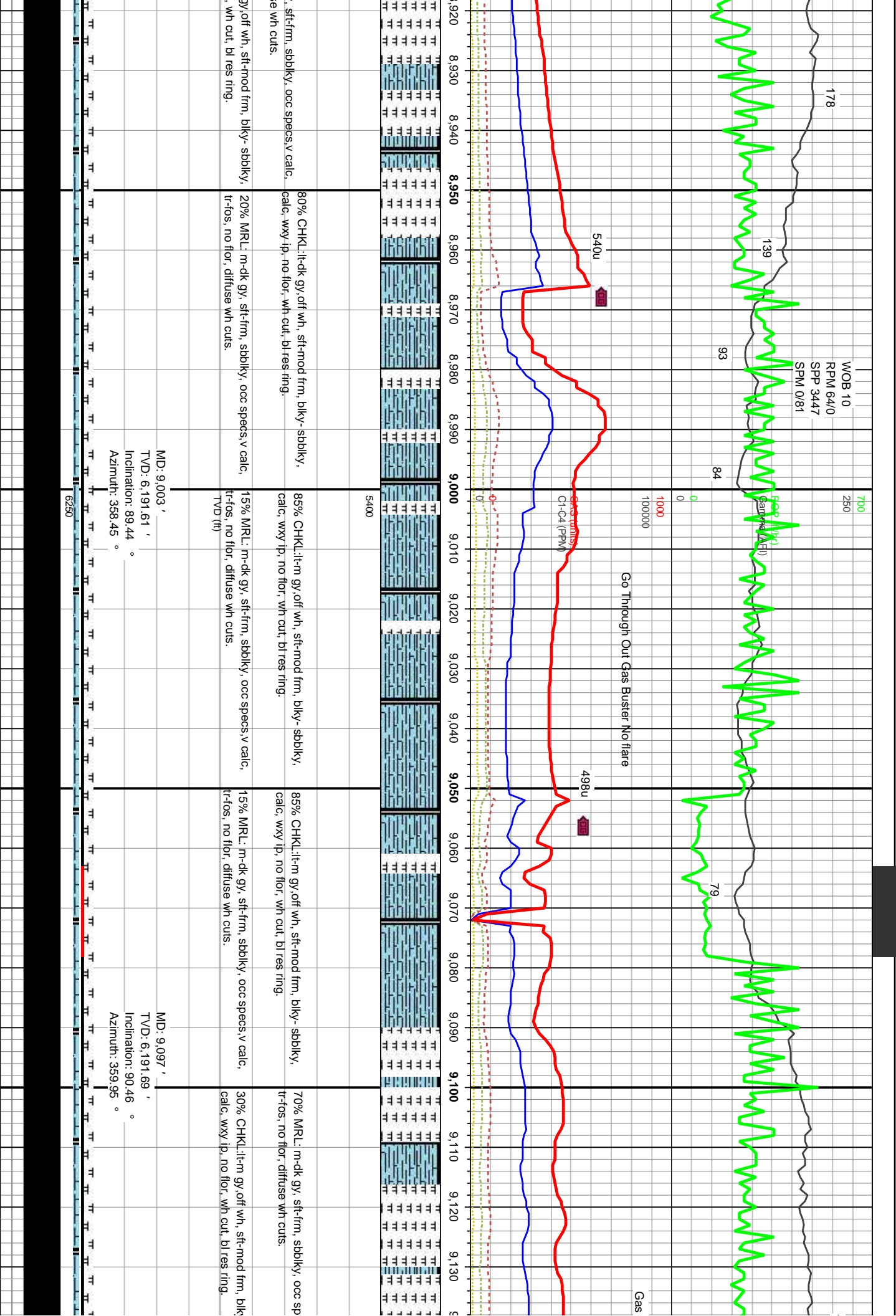


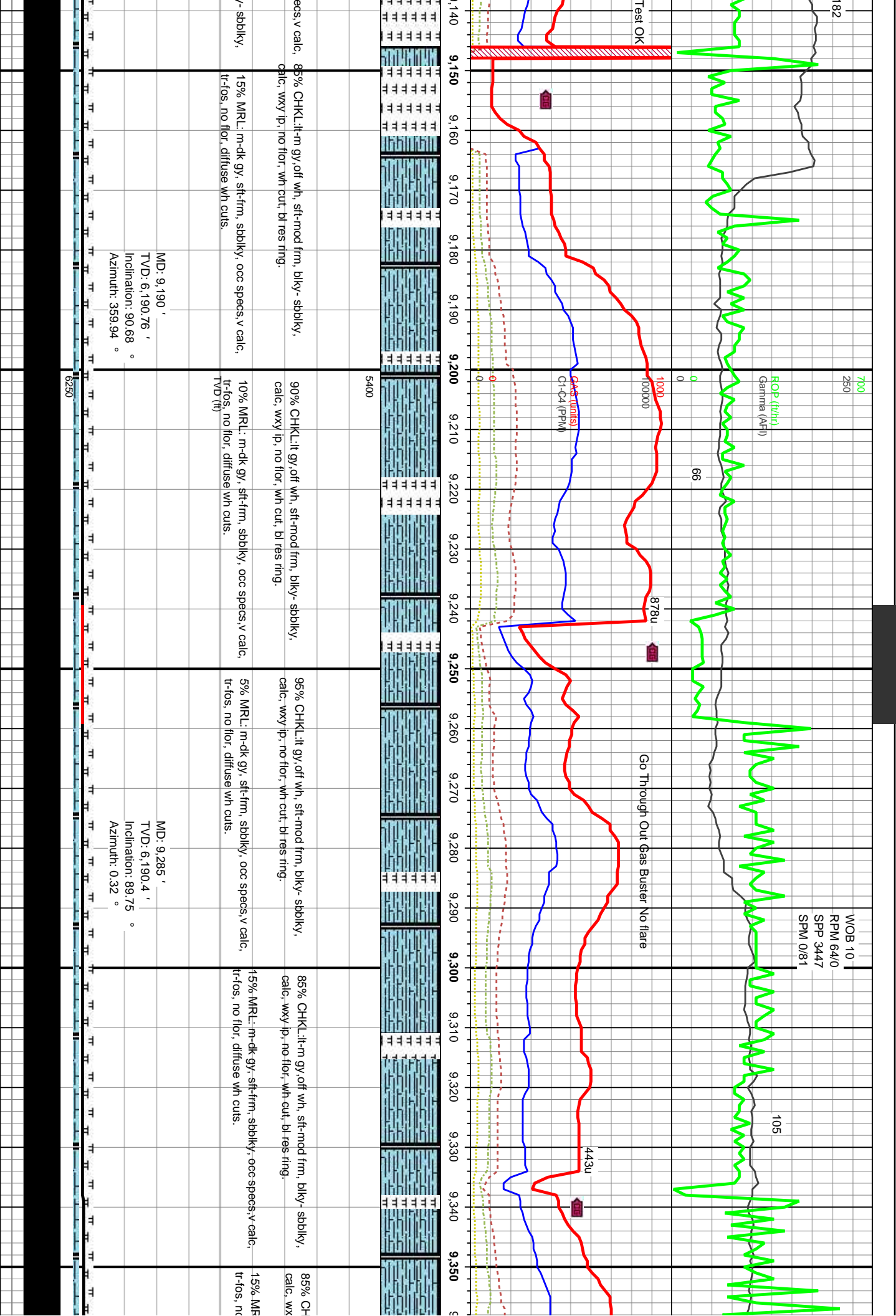


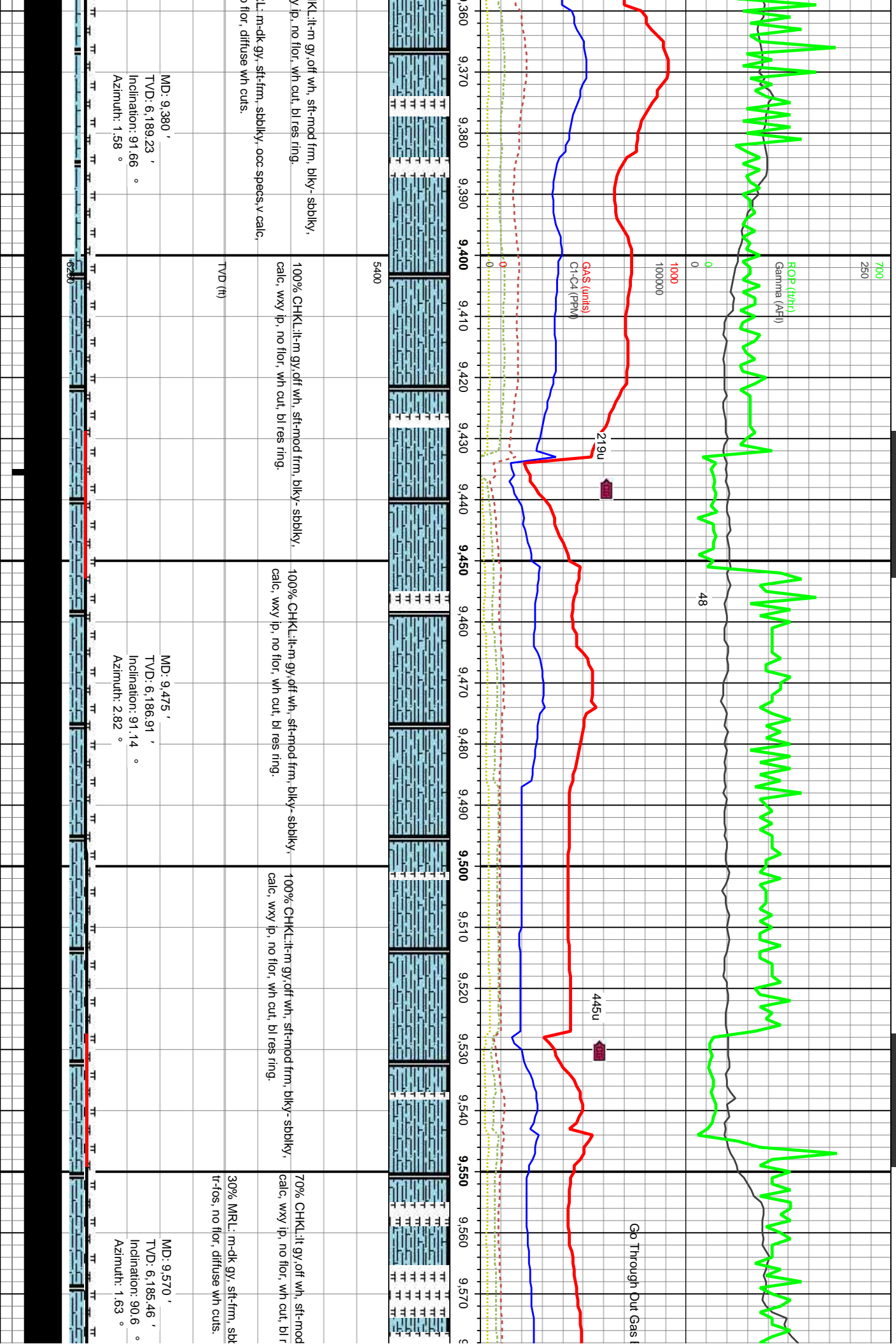


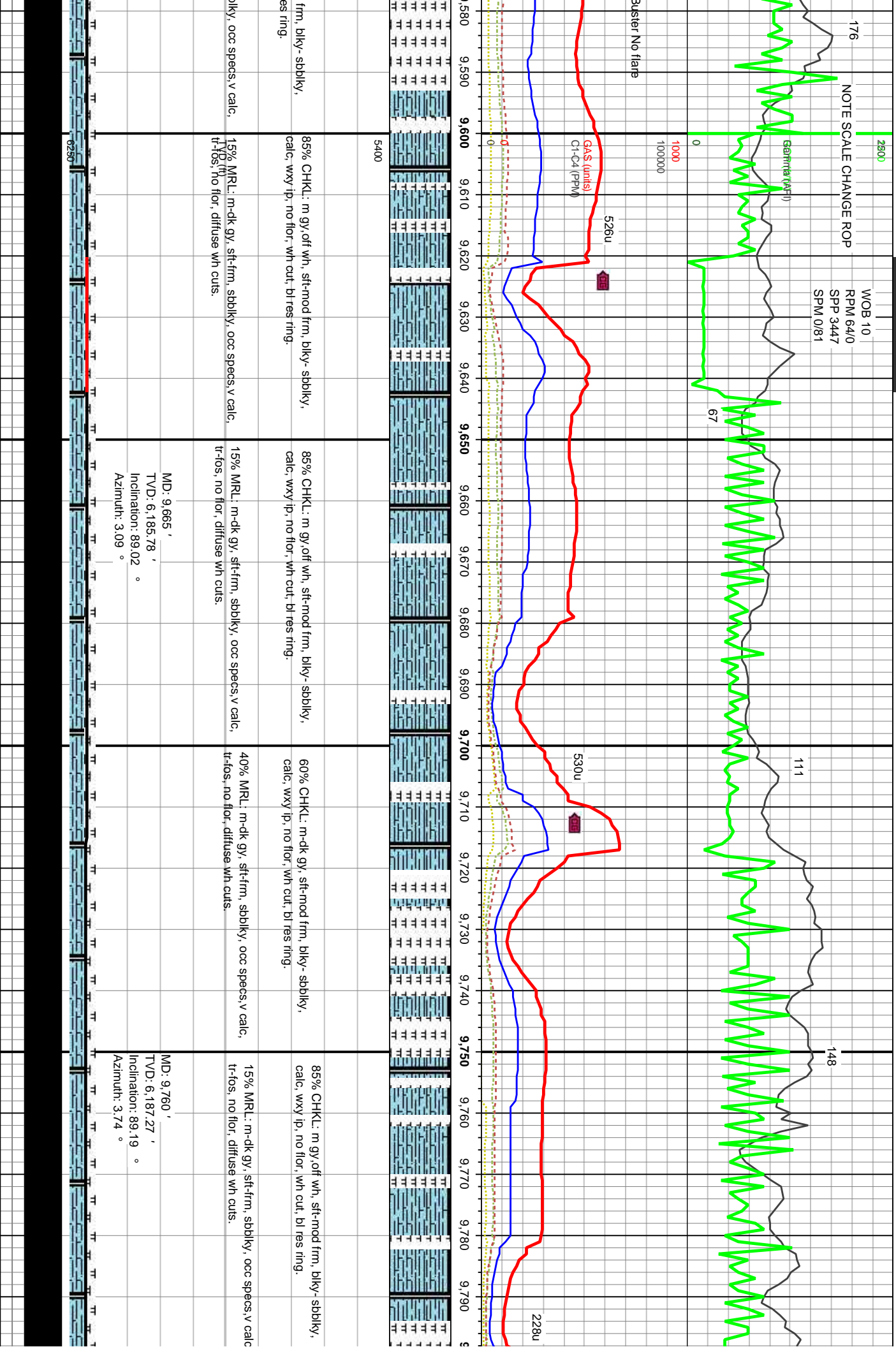


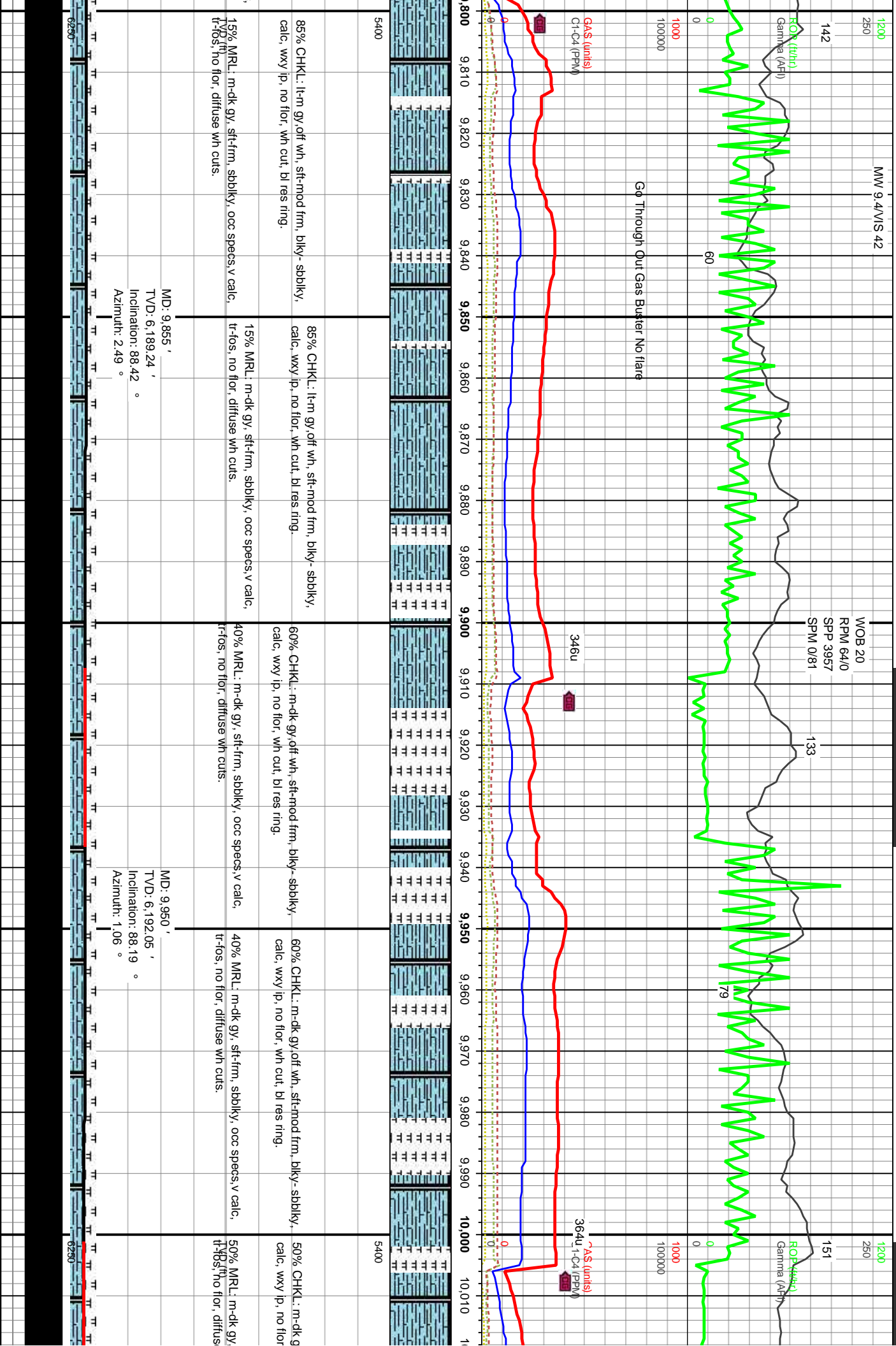


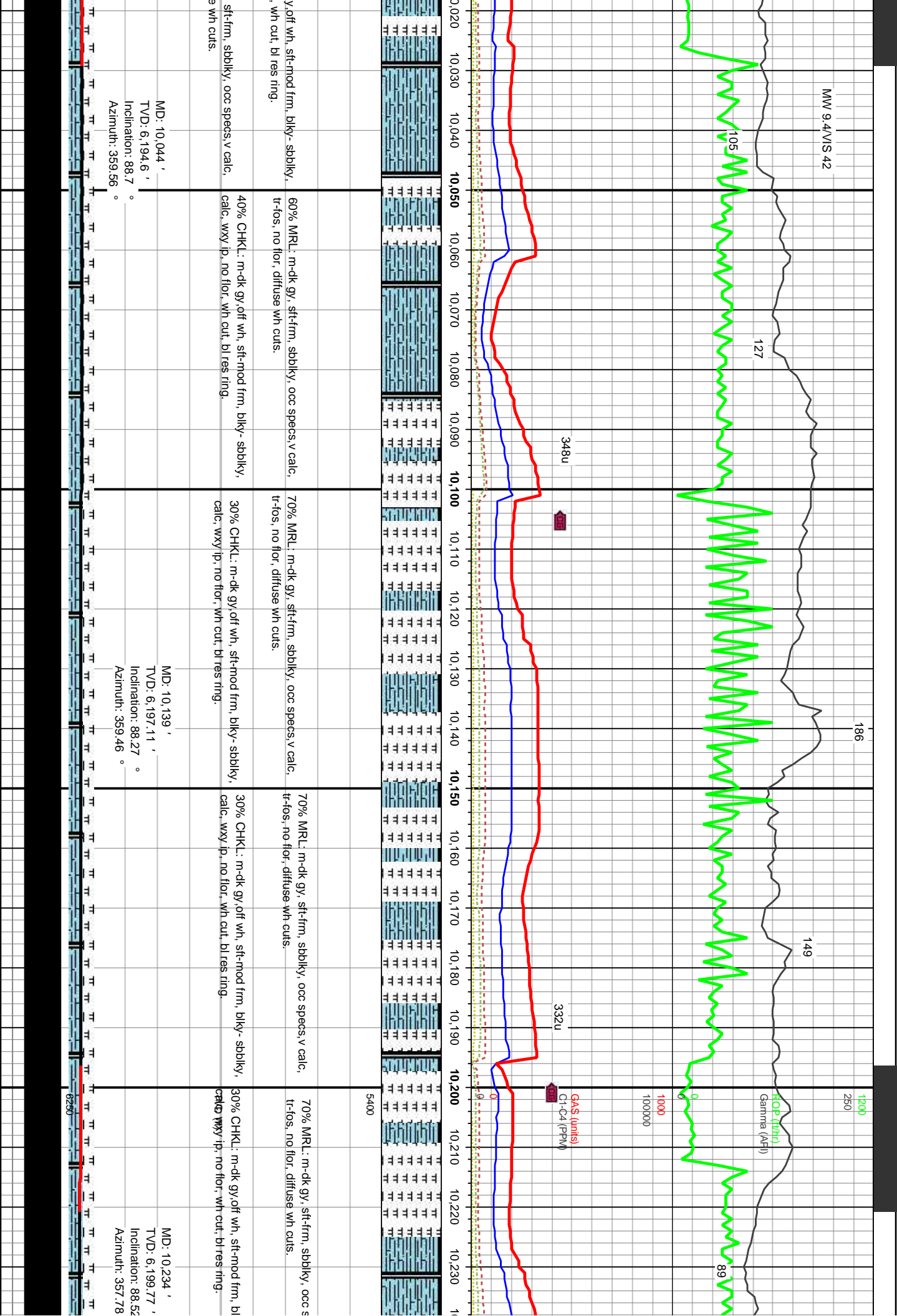


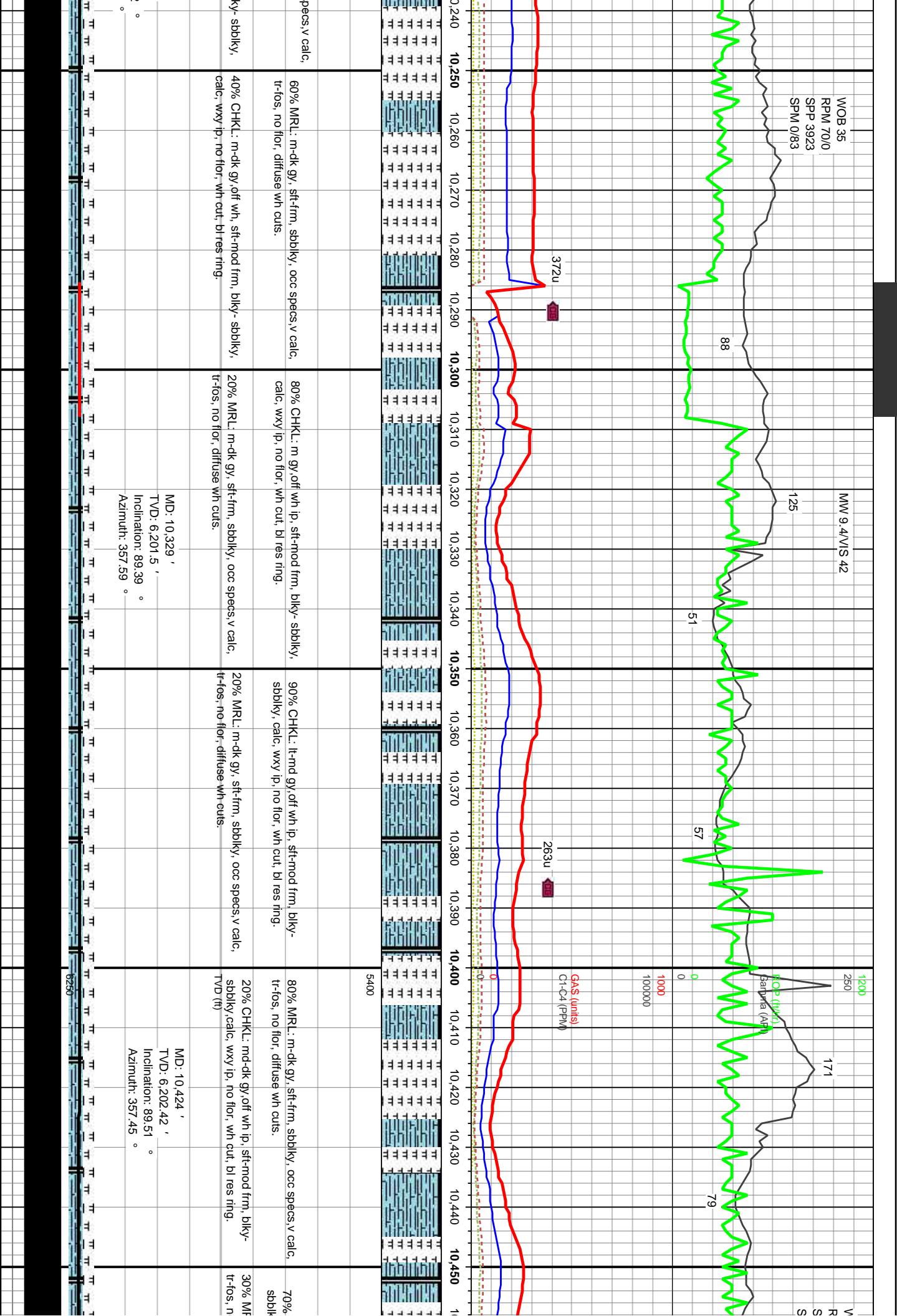








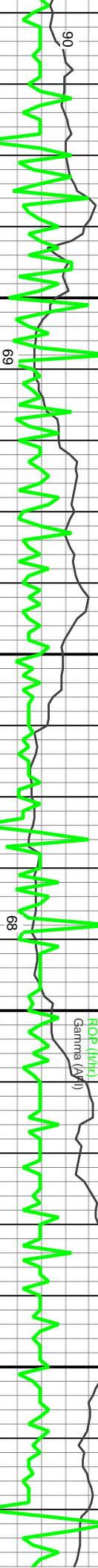




MW 9.4/VIS 42

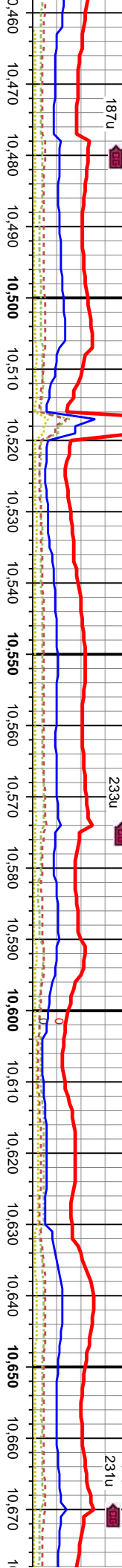
155

ROP (t/hr)
Gamma (API)



0
1000
100000

GAS (units)
C1-C4 (PPM)



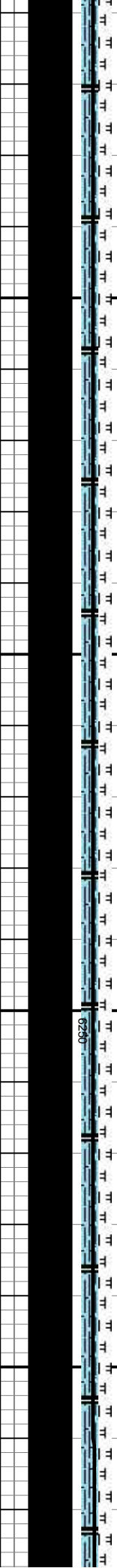
5400

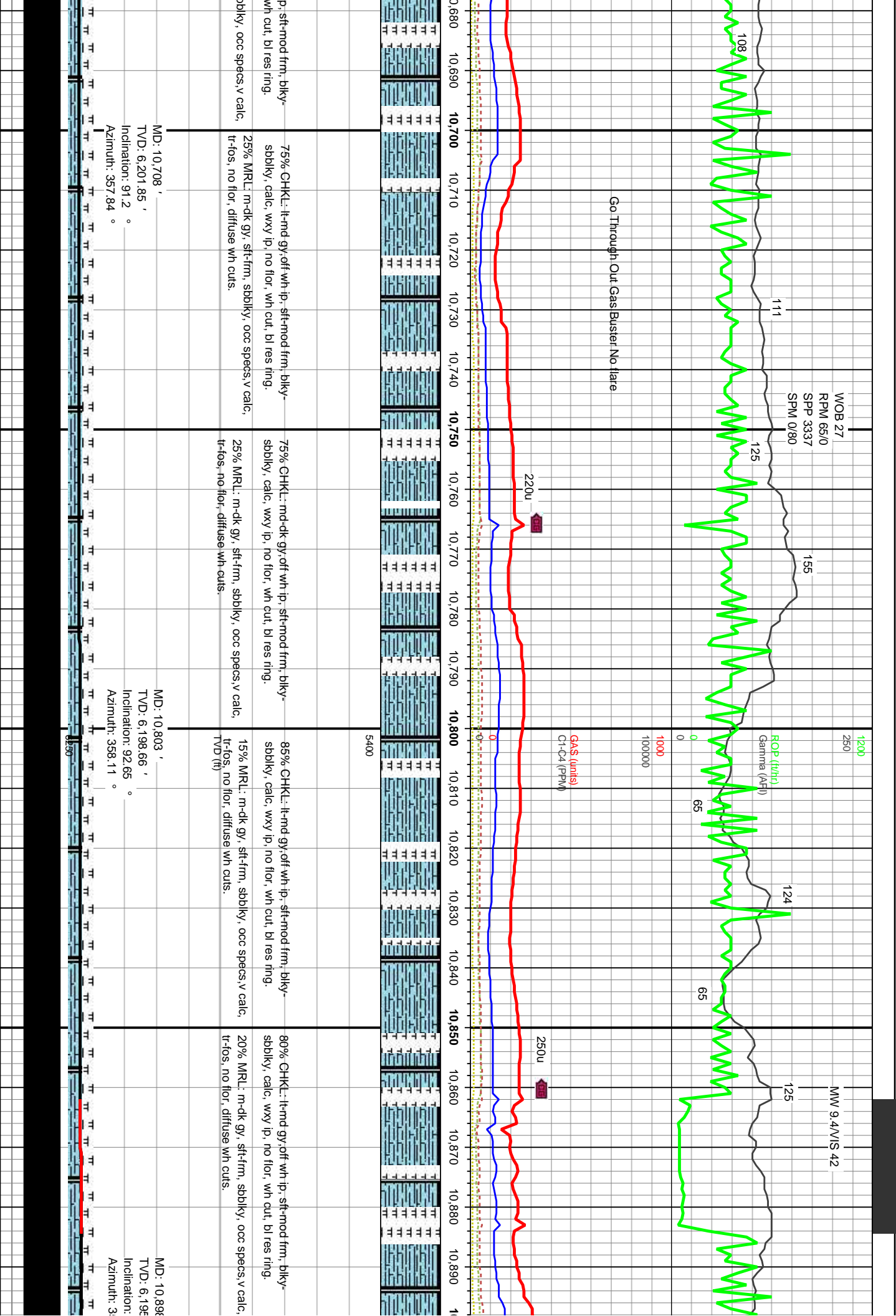
CHKL: lt-dk gy, off wh ip, sft-mod frm, blk-
y, calc, wxy ip, no flr, wh cut, bl res ring.
50% CHKL: lt-md gy, off wh ip, sft-mod frm, blk-
sbbky, calc, wxy ip, no flr, wh cut, bl res ring.
50% MRL: m-dk gy, sft-frm, sbbky, ooc specs, v calc.
tr-fos, no flr, diffuse wh cuts.

TVD (ft)

MD: 10,615 '
TVD: 6,202.98 '
Inclination: 90.19 °
Azimuth: 357.68 °

6250





150

NOTE SCALE CHANGE GAMMA

149

111

68

WOB 27
RPM 71/0
SPM 3340
SPM 0/81

1200

150

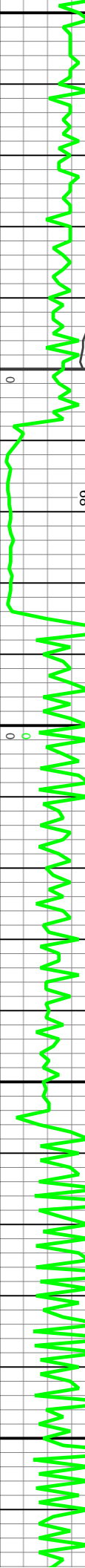
110

70

73

73

ROP (ft/hr)
Gamma (API)

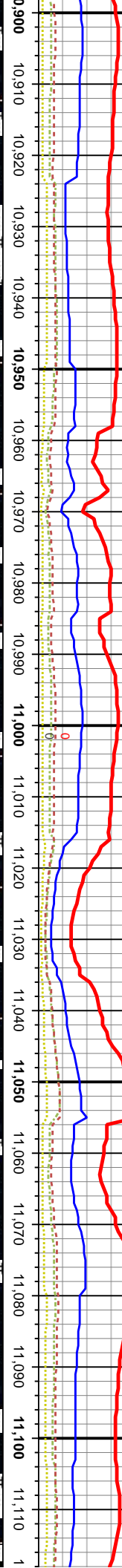


0
10000
100000

328u

GAS (units)
C1-C4 (PPM)

351u



5400

70% CHKL: lt-md gy, off wh ip, sft-mod frm, blk-
sbbly, calc, wxy ip, no flor, wh cut, bl res ring.
30% MRL: m-dk gy, sft-frm, sbbly, occ specs, v calc,
tr-fos, no flor, diffuse wh cuts.

90% CHKL: lt-md gy, off wh ip, sft-mod frm, blk-
sbbly, calc, wxy ip, no flor, wh cut, bl res ring.
10% MRL: m-dk gy, sft-frm, sbbly, occ specs, v calc,
tr-fos, no flor, diffuse wh cuts.

90% CHKL: lt-md gy, off wh ip, sft-mod frm, blk-
sbbly, calc, wxy ip, no flor, wh cut, bl res ring.
10% MRL: m-dk gy, sft-frm, sbbly, occ specs, v calc,
tr-fos, no flor, diffuse wh cuts.

90% CHKL: lt-md gy, off wh ip, sft-mod frm, blk-
sbbly, calc, wxy ip, no flor, wh cut, bl res ring.
10% MRL: m-dk gy, sft-frm, sbbly, occ specs, v calc,
tr-fos, no flor, diffuse wh cuts.

80% CHKL: lt-md gy, off wh ip, sft-mod frm, blk-
sbbly, calc, wxy ip, no flor, wh cut, bl res ring.
20% MRL: m-dk gy, sft-frm, sbbly, occ specs, v calc,
tr-fos, no flor, diffuse wh cuts.

MD: 10,994 '

TVD: 6,193.29 '

Inclination: 90.34 °

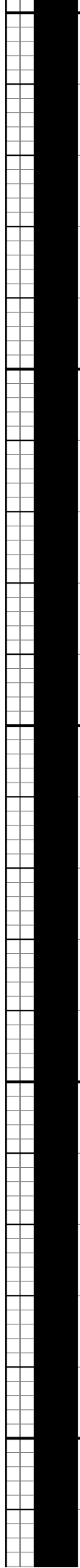
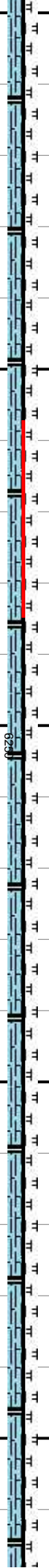
Azimuth: 358.9 °

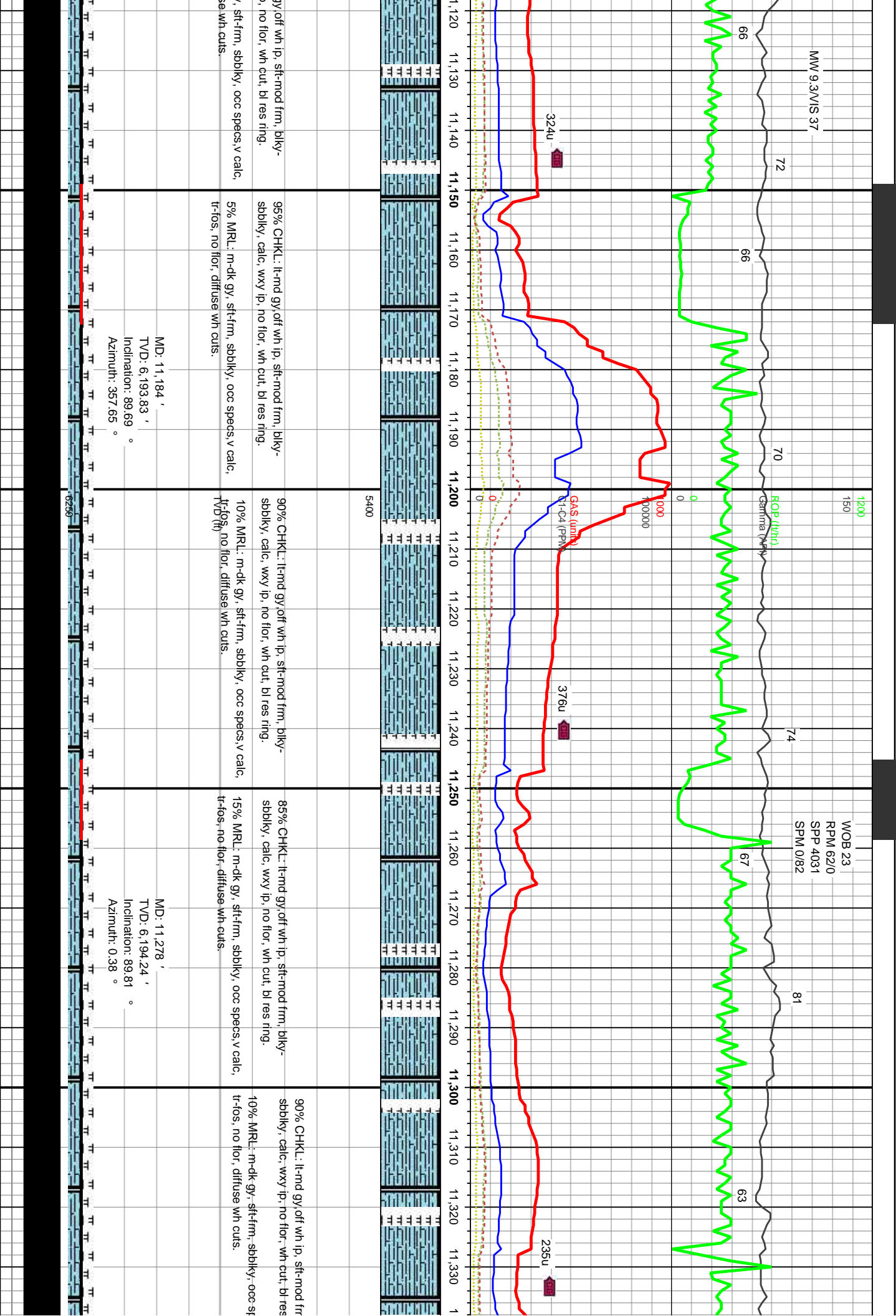
MD: 11,089 '

TVD: 6,193.29 '

Inclination: 89.66 °

Azimuth: 357.37 °





MW 9.4/VIS 37

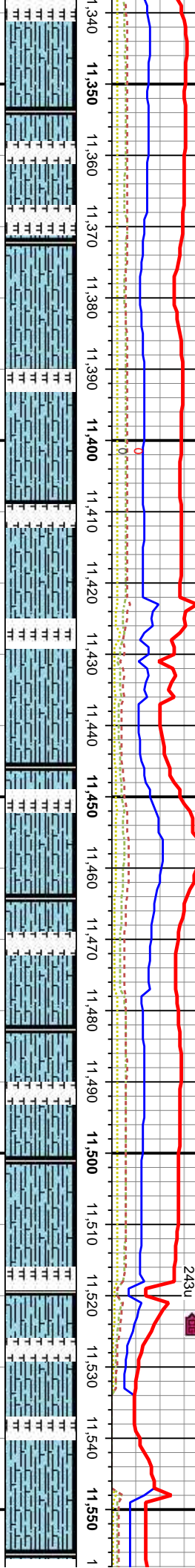
WOB 17
RPM 67/0
SPP 3764
SPM 0/79



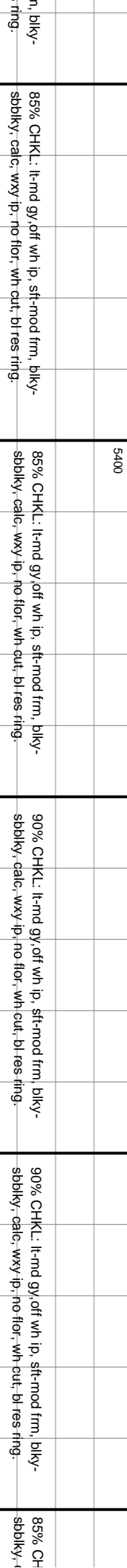
GRS (units)
C1-C4 (PPM)

314u

243u



5400



85% CHKL: lt-md gy, off wh ip, sft-mod frm, blk-
sblky, calc, wxy ip, no flor, wh cut, bl res ring.
15% MRL: m-dk gy, sft-frm, sblky, occ specs, v calc,
tr-fos, no flor, diffuse wh cuts.

85% CHKL: lt-md gy, off wh ip, sft-mod frm, blk-
sblky, calc, wxy ip, no flor, wh cut, bl res ring.
15% MRL: m-dk gy, sft-frm, sblky, occ specs, v calc,
tr-fos, no flor, diffuse wh cuts.

90% CHKL: lt-md gy, off wh ip, sft-mod frm, blk-
sblky, calc, wxy ip, no flor, wh cut, bl res ring.
10% MRL: m-dk gy, sft-frm, sblky, occ specs, v calc,
tr-fos, no flor, diffuse wh cuts.

90% CHKL: lt-md gy, off wh ip, sft-mod frm, blk-
sblky, calc, wxy ip, no flor, wh cut, bl res ring.
10% MRL: m-dk gy, sft-frm, sblky, occ specs, v calc,
tr-fos, no flor, diffuse wh cuts.

85% CH
sblky, v

MD: 11,373 '
TVD: 6,194.9 '
Inclination: 89.38 °
Azimuth: 359.41 °

MD: 11,468 '
TVD: 6,195.72 '
Inclination: 89.63 °
Azimuth: 0.06 °

MD: 11,468 '
TVD: 6,195.72 '
Inclination: 89.63 °
Azimuth: 0.06 °



1200

150

NW 9.4/VIS 35

71

67

RQP (ft/hr)
Gamma (API)

64

73

0

1000

100000

GAS (units)
C1-C4 (PPM)

166u

164u

11,560 11,570 11,580 11,590 11,600 11,610 11,620 11,630 11,640 11,650 11,660 11,670 11,680 11,690 11,700 11,710 11,720 11,730 11,740 11,750 11,760 11,770 1

5400

KL: lt-md gy, off wh ip, sft-mod frm, blk-
calc, wxy ip, no flor, wh cut, bl res ring.
LT: m-dk gy, sft-frm, sbbiky, occ specs, v calc,
no flor, diffuse wh cuts.

85% CHKL: lt-md gy, off wh ip, sft-mod frm, blk-
sbbiky, calc, wxy ip, no flor, wh cut, bl res ring.
15% MRL: m-dk gy, sft-frm, sbbiky, occ specs, v calc,
tr-fos, no flor, diffuse wh cuts.
TVD (ft)

90% CHKL: lt-md gy, off wh ip, sft-mod frm, blk-
sbbiky, calc, wxy ip, no flor, wh cut, bl res ring.
10% MRL: m-dk gy, sft-frm, sbbiky, occ specs, v calc,
tr-fos, no flor, diffuse wh cuts.

90% CHKL: lt-md gy, off wh ip, sft-mod frm, blk-
sbbiky, calc, wxy ip, no flor, wh cut, bl res ring.
10% MRL: m-dk gy, sft-frm, sbbiky, occ specs, v calc,
tr-fos, no flor, diffuse wh cuts.

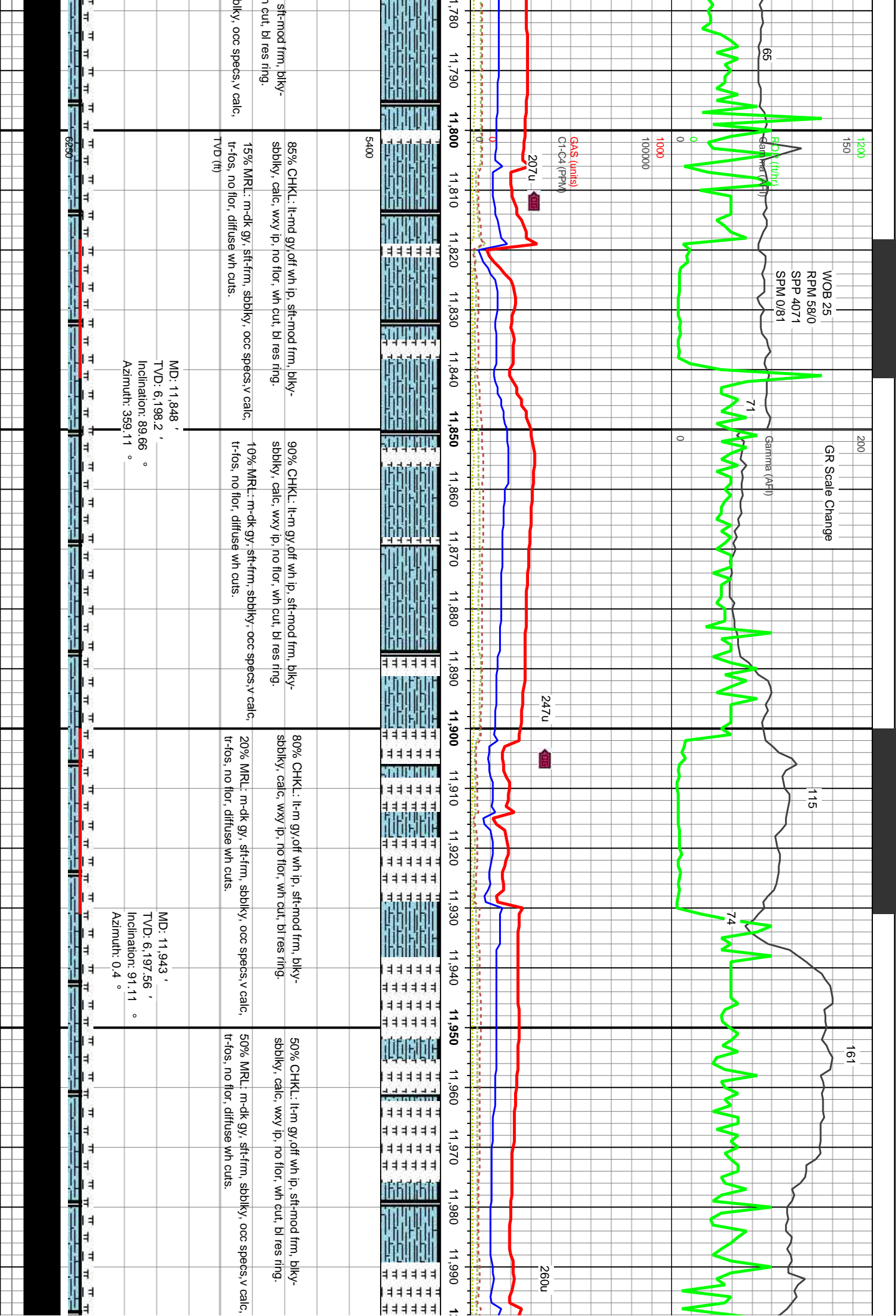
90% CHKL: lt-md gy, off wh ip, sft-mod frm, blk-
sbbiky, calc, wxy ip, no flor, wh cut, bl res ring.
10% MRL: m-dk gy, sft-frm, sbbiky, occ specs, v calc,
tr-fos, no flor, diffuse wh cuts.

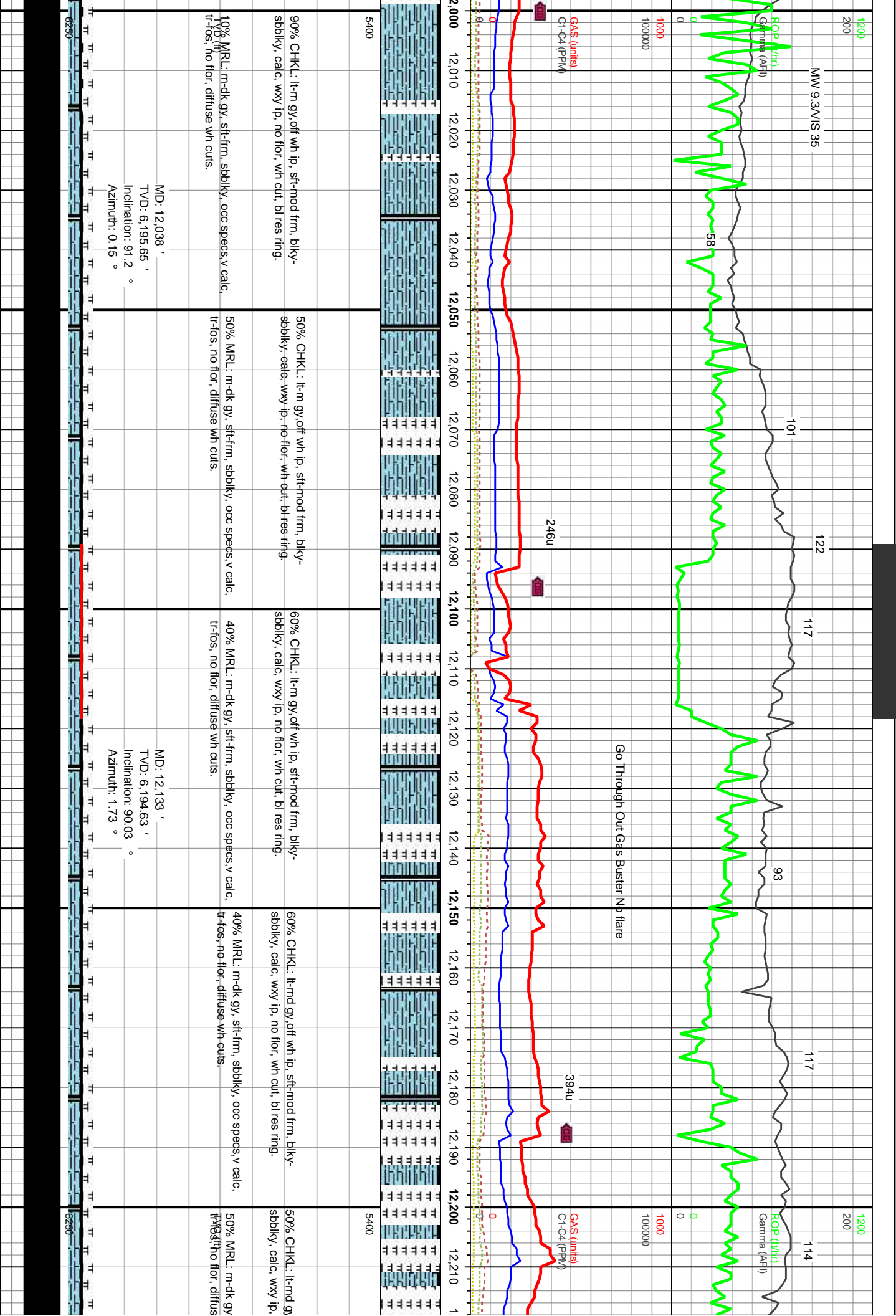
1,563 '
6,196.98 '
Inclination: 90.06 °
Azimuth: 0.21 °

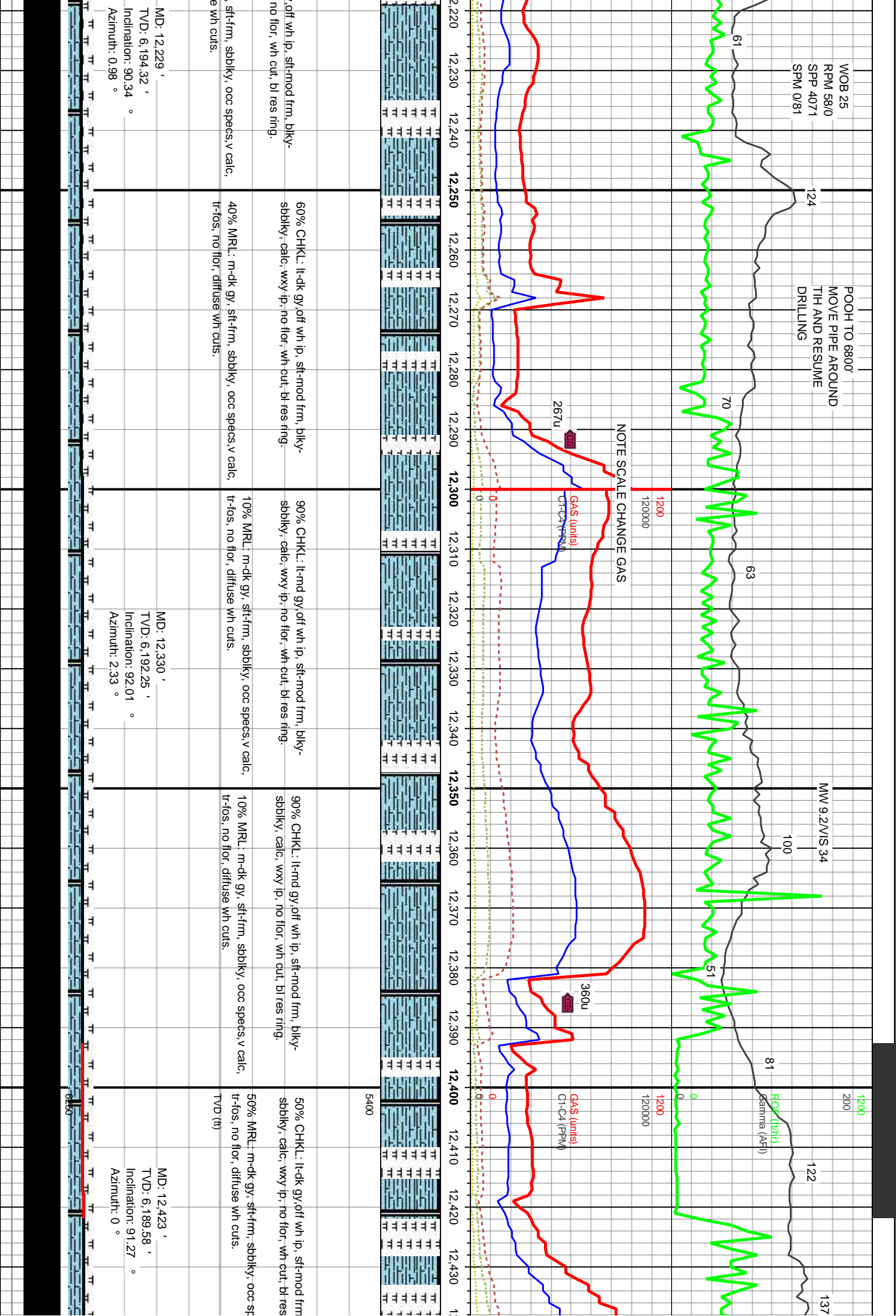
MD: 11,658 '
TVD: 6,196.39 '
Inclination: 89.45 °
Azimuth: 358.08 °

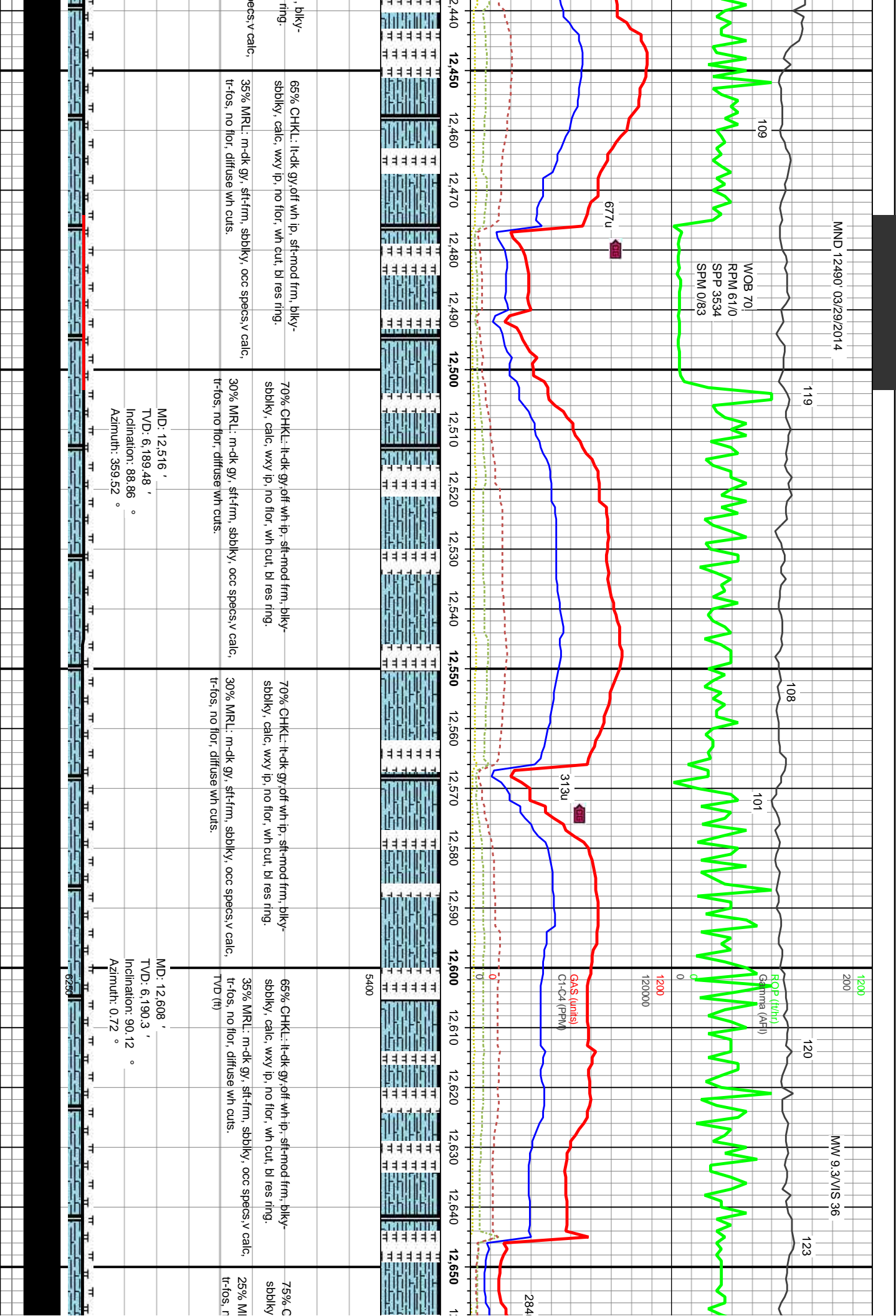
MD: 11,753 '
TVD: 6,197.38 '
Inclination: 89.35 °
Azimuth: 358.58 °

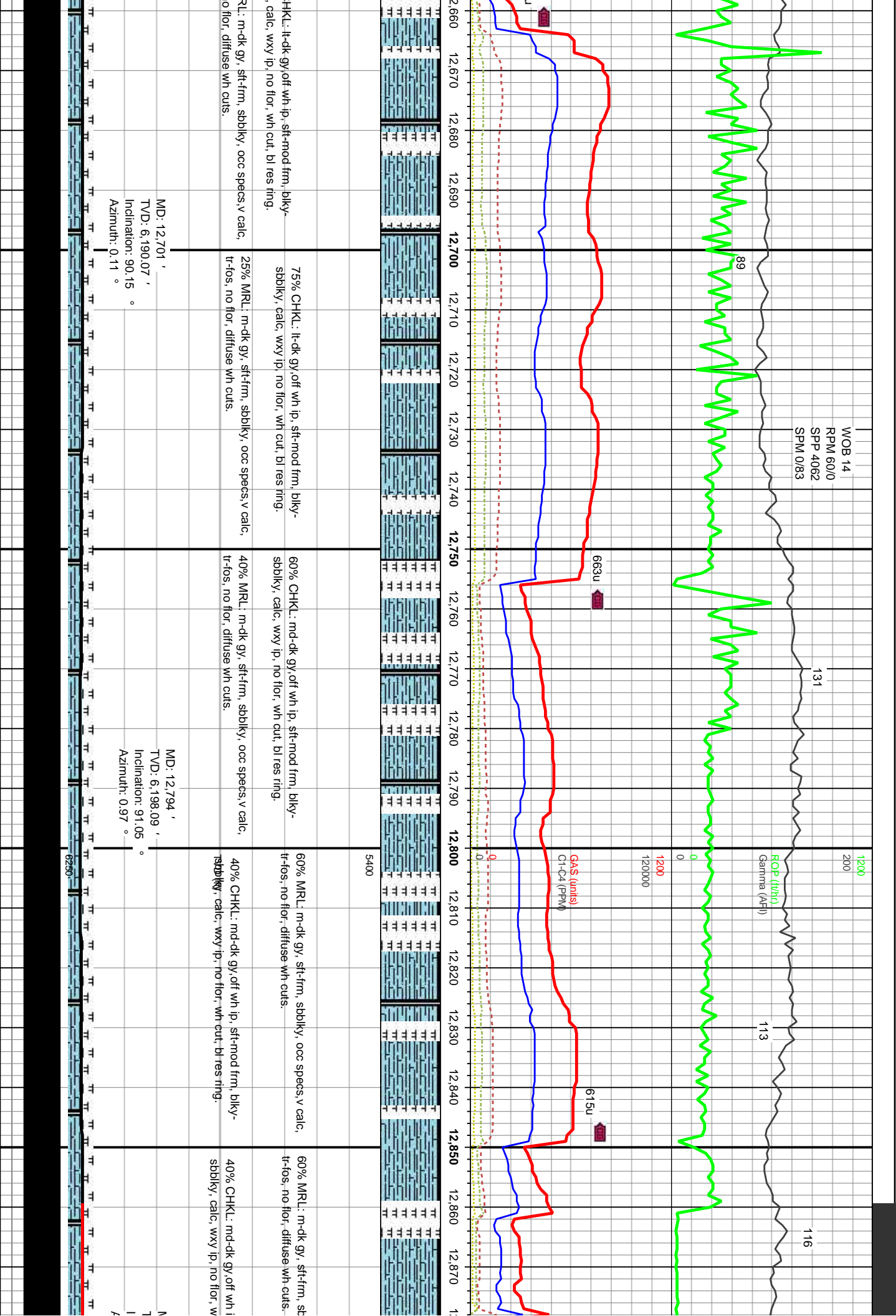
0250

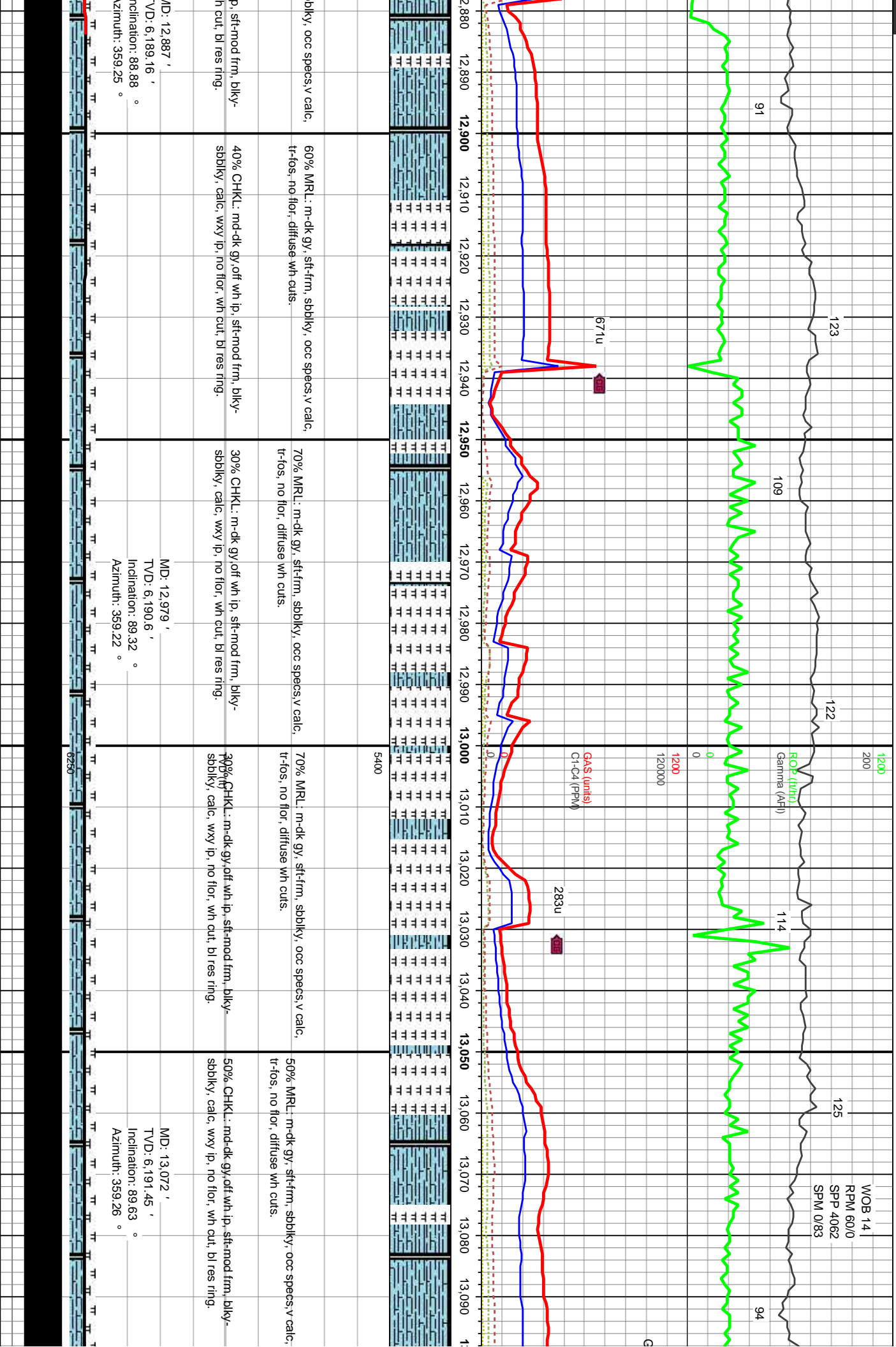


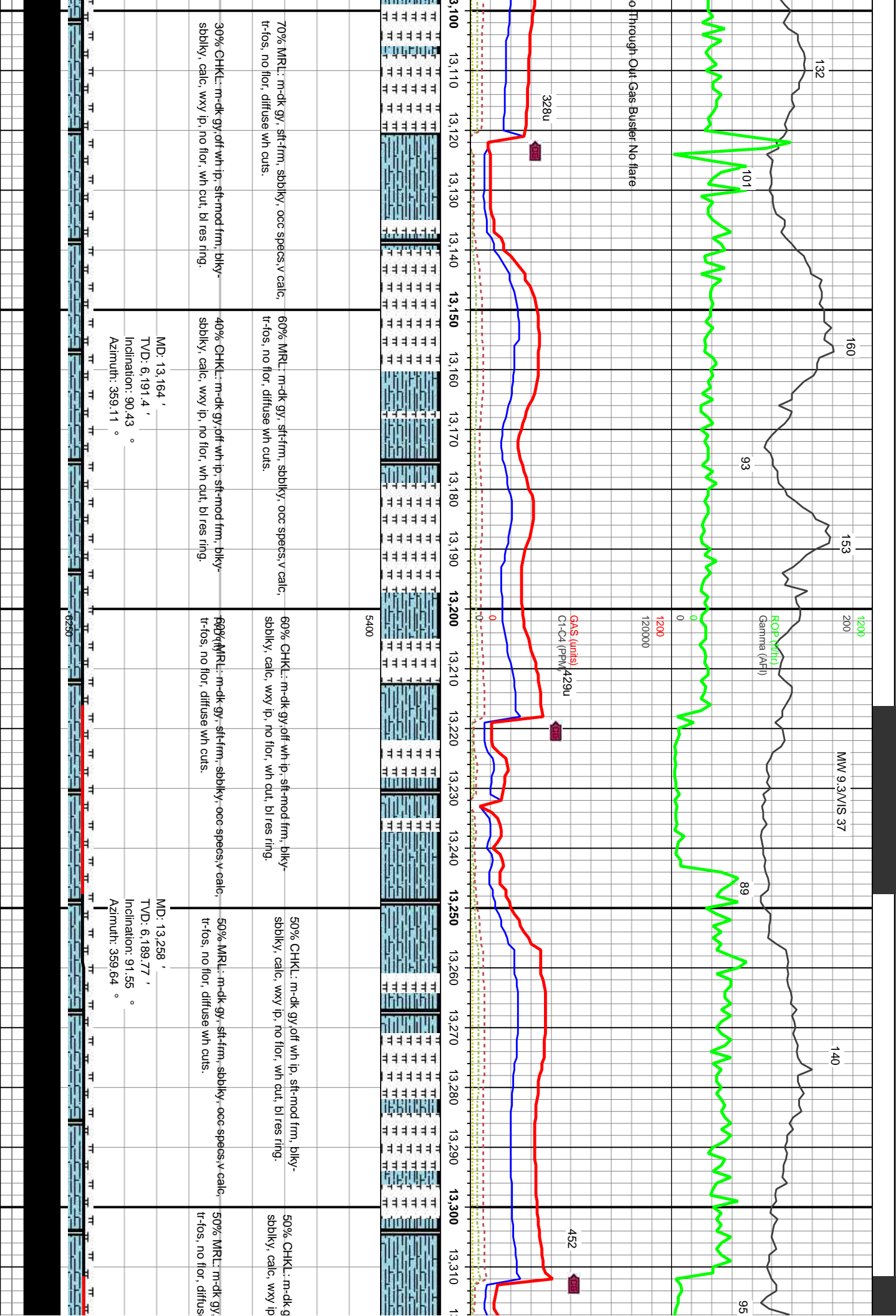


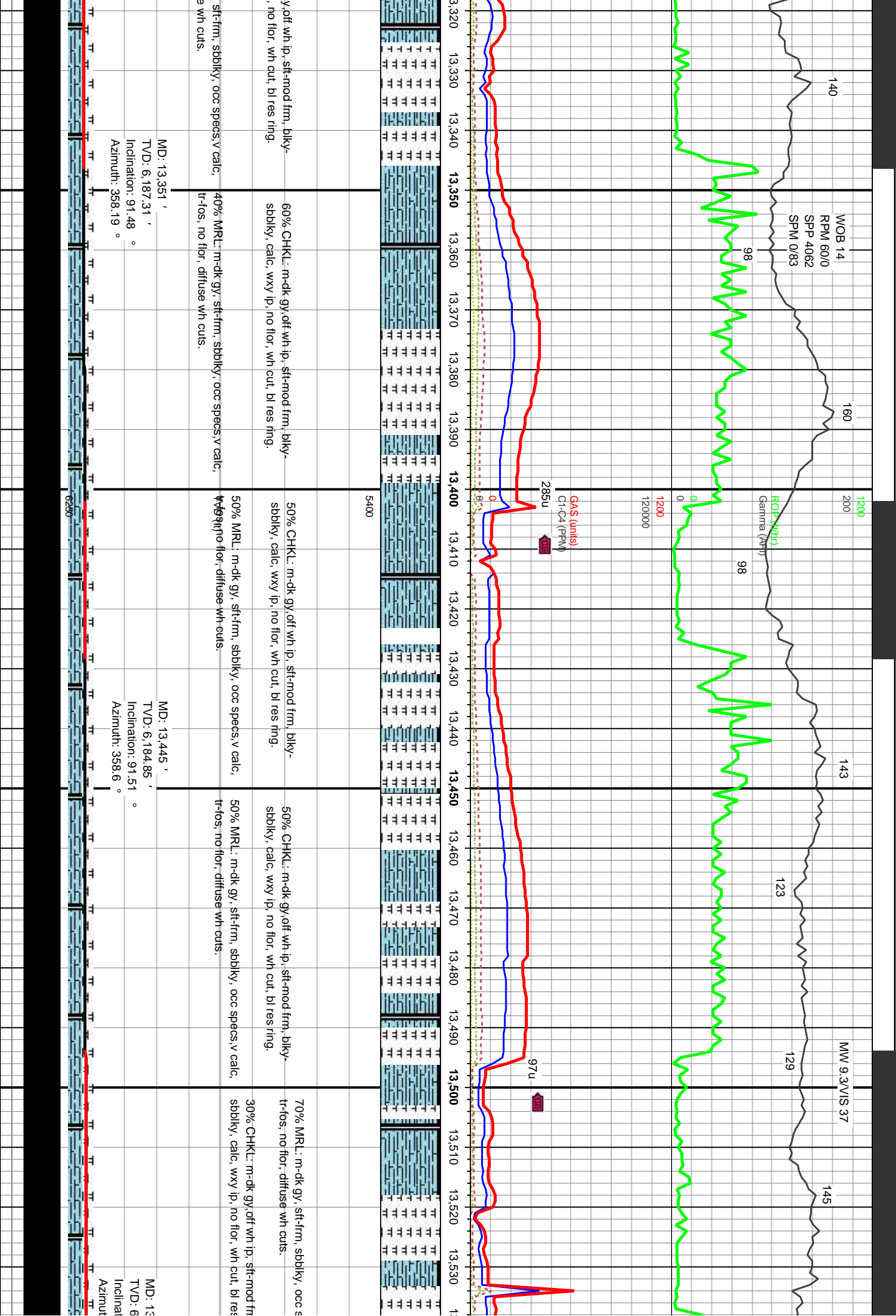


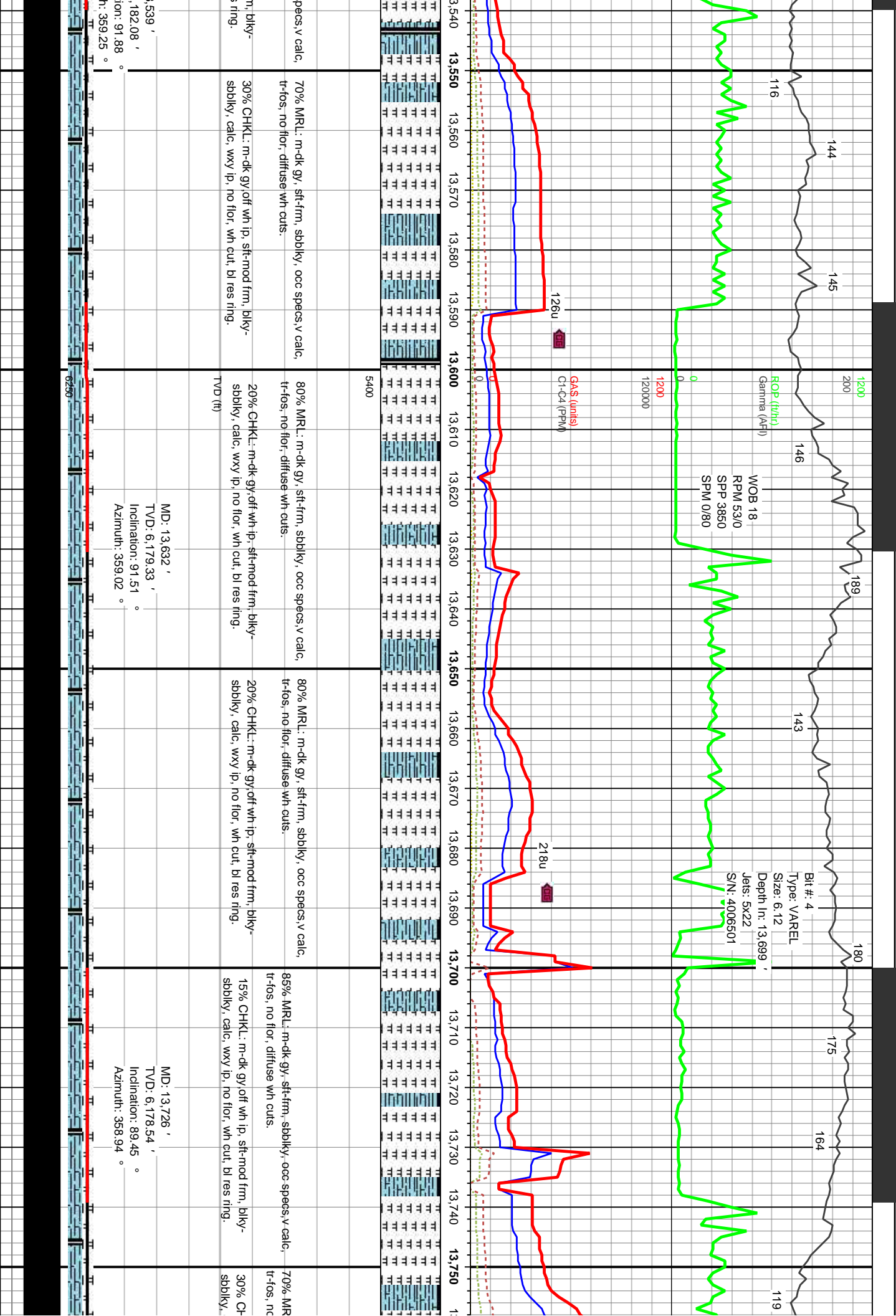












129

139

131

125

145

116

ROP (ft/hr)
Gamma (API)

WOB 31
RPM 60/0
SPP 3995
SPM 0/77

1200
1200
120000

387u

Gas (mils)
C1-C4 (ppmv)

333u

281u

13.760 13.770 13.780 13.790 13.800 13.810 13.820 13.830 13.840 13.850 13.860 13.870 13.880 13.890 13.900 13.910 13.920 13.930 13.940 13.950 13.960 13.970 1

5400

L: m-dk gy, sft-frm, sbblky, occ specs, v calc,
flor, diffuse wh cuts.

75% MRL: m-dk gy, sft-frm, sbblky, occ specs, v calc,
tr-fos, no flor, diffuse wh cuts.

70% MRL: m-dk gy, sft-frm, sbblky, occ specs, v calc,
tr-fos, no flor, diffuse wh cuts.

80% MRL: m-dk gy, sft-frm, sbblky, occ specs, v calc,
tr-fos, no flor, diffuse wh cuts.

70% MRL: m-dk gy, sft-frm, sb
tr-fos, no flor, diffuse wh cuts.

CHKL: m-dk gy, off wh ip, sft-mod frm, blk-
calc, wxy ip, no flor, wh cut, bl res ring.

25% CHKL: m-dk gy, off wh ip, sft-mod frm, blk-
sbbky, calc, wxy ip, no flor, wh cut, bl res ring.
TVD (ft)

30% CHKL: m-dk gy, off wh ip, sft-mod frm, blk-
sbbky, calc, wxy ip, no flor, wh cut, bl res ring.

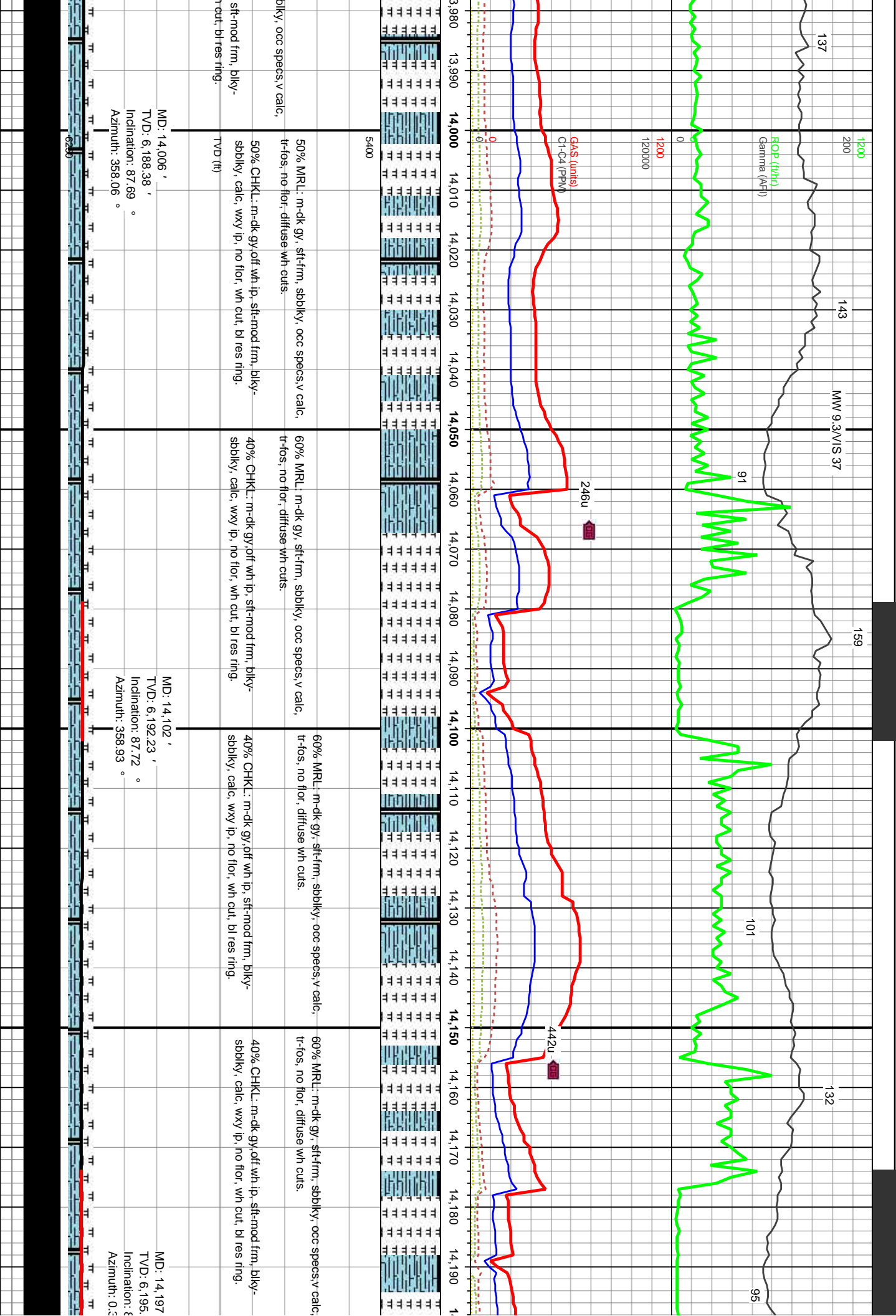
20% CHKL: m-dk gy, off wh ip, sft-mod frm, blk-
sbbky, calc, wxy ip, no flor, wh cut, bl res ring.

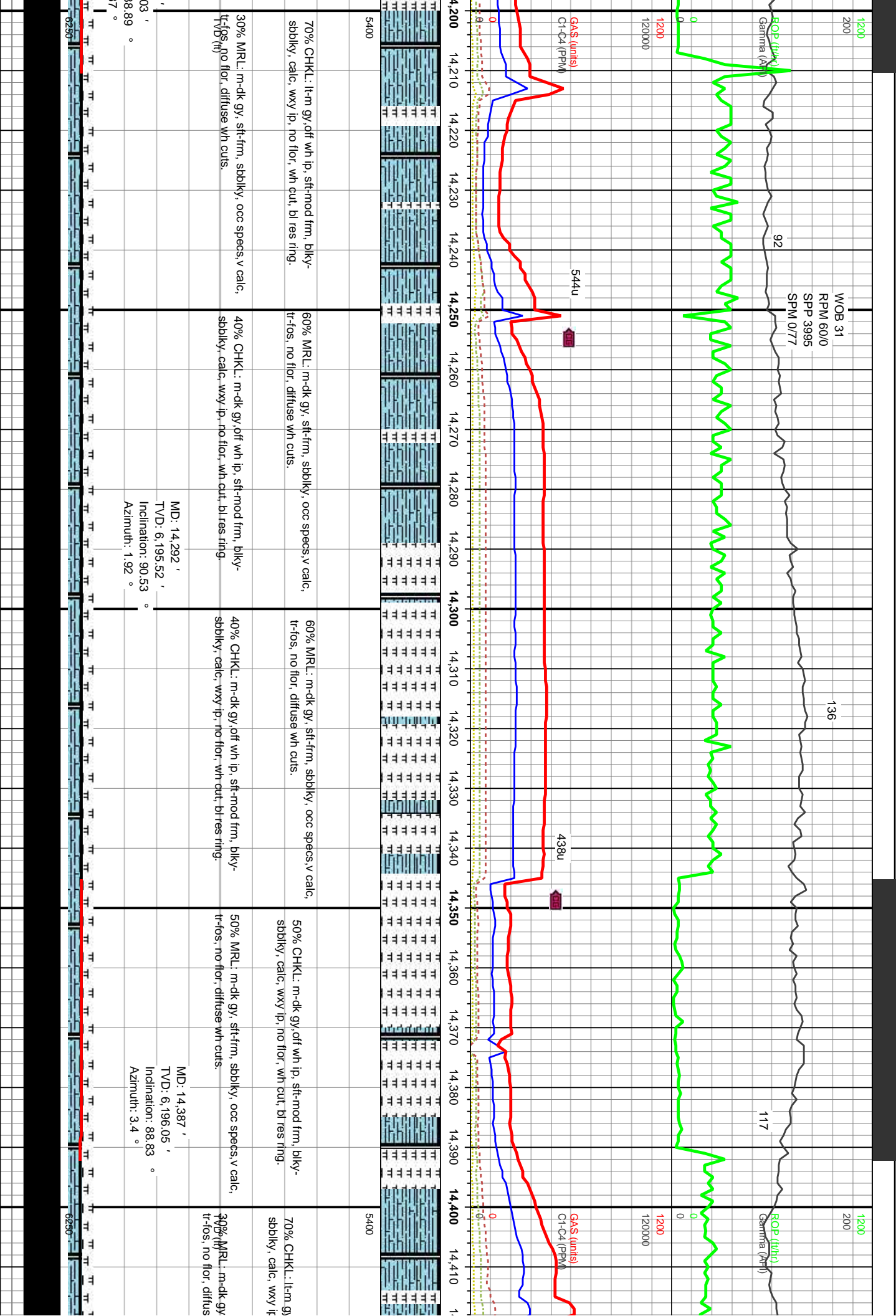
30% CHKL: m-dk gy, off wh ip,
sbbky, calc, wxy ip, no flor, wh

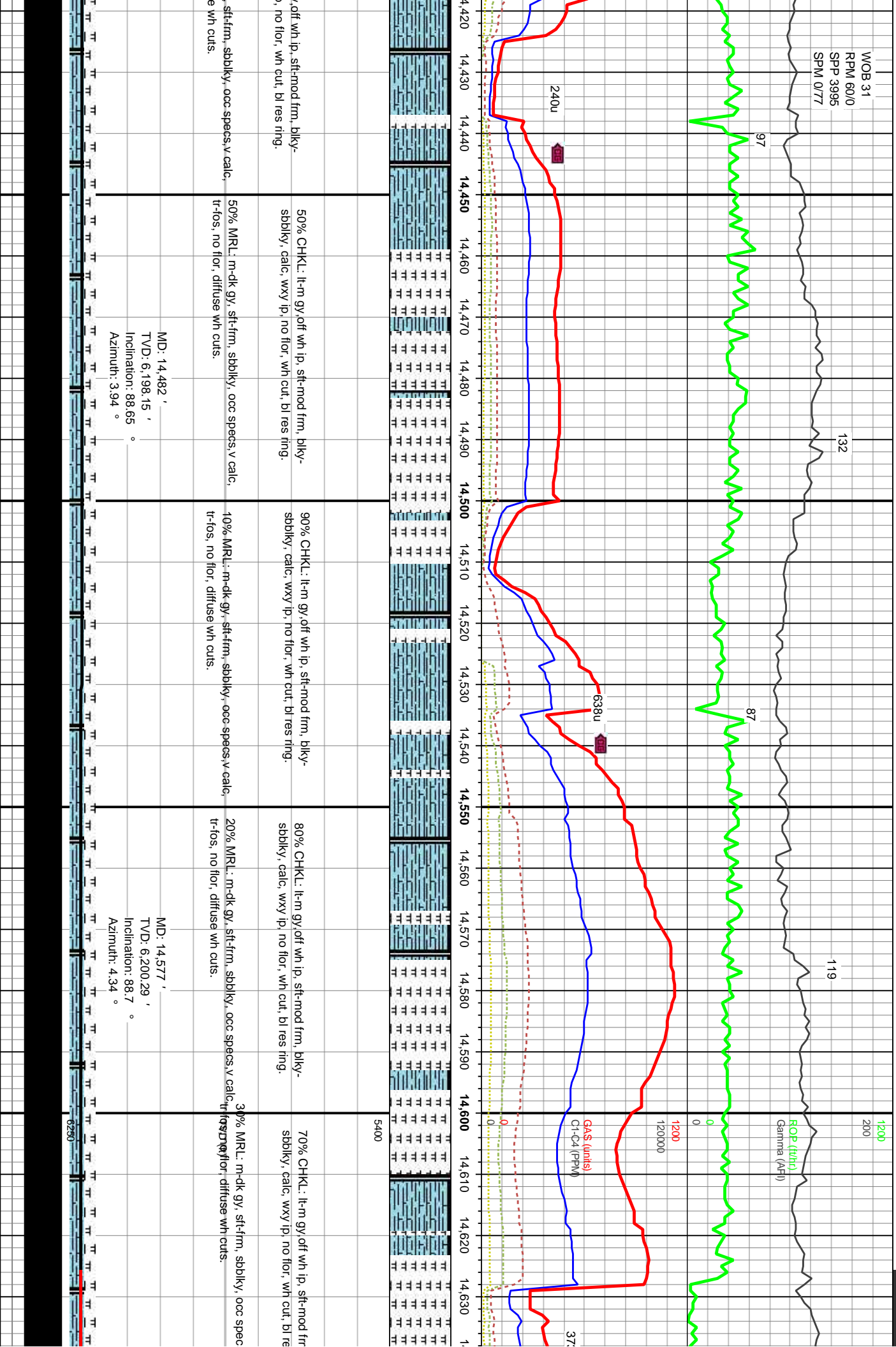
MD: 13,819 '
TVD: 6,180.92 '
Inclination: 87.62 °
Azimuth: 358.03 °

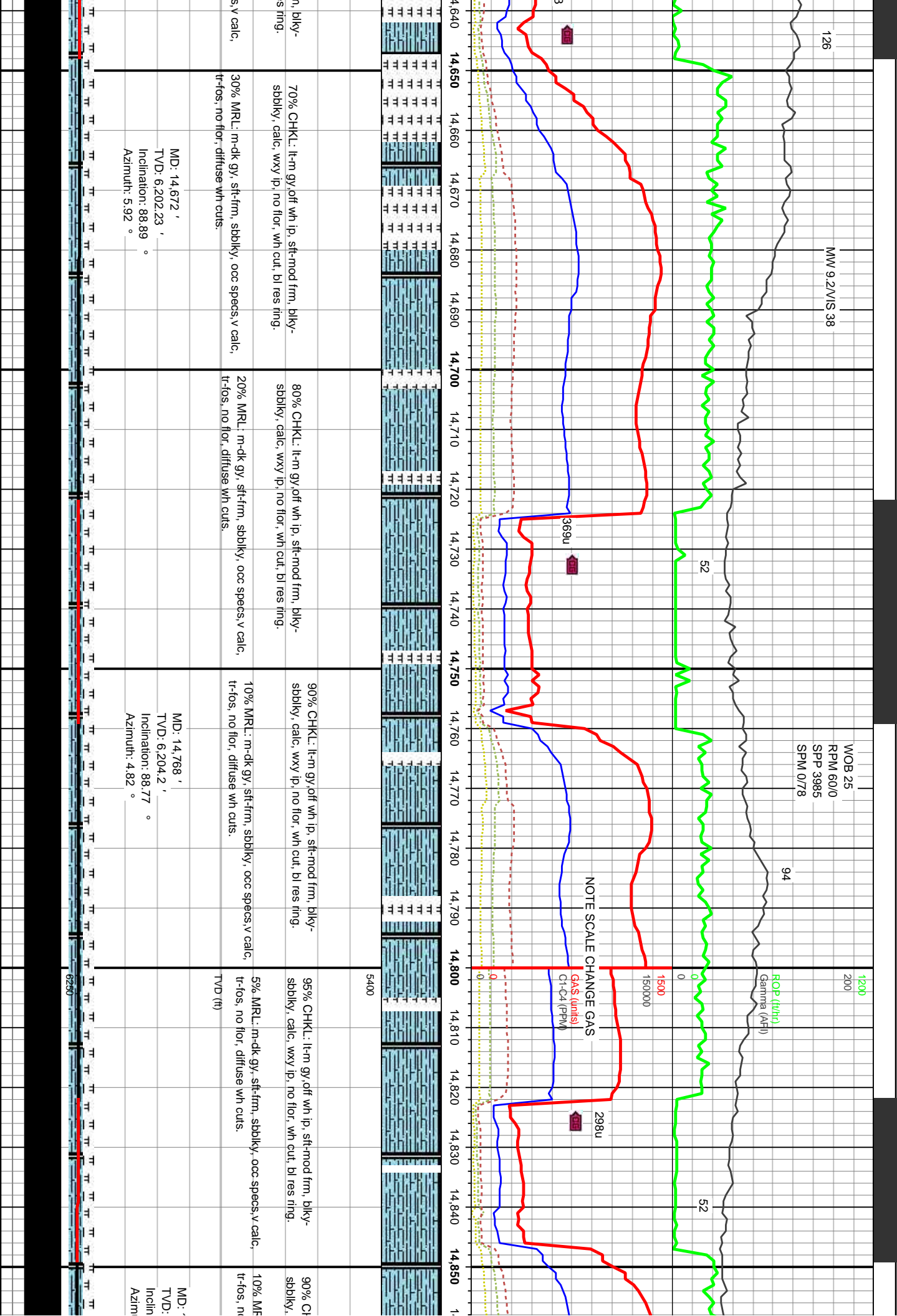
MD: 13,913 '
TVD: 6,184.7 '
Inclination: 87.77 °
Azimuth: 358.78 °

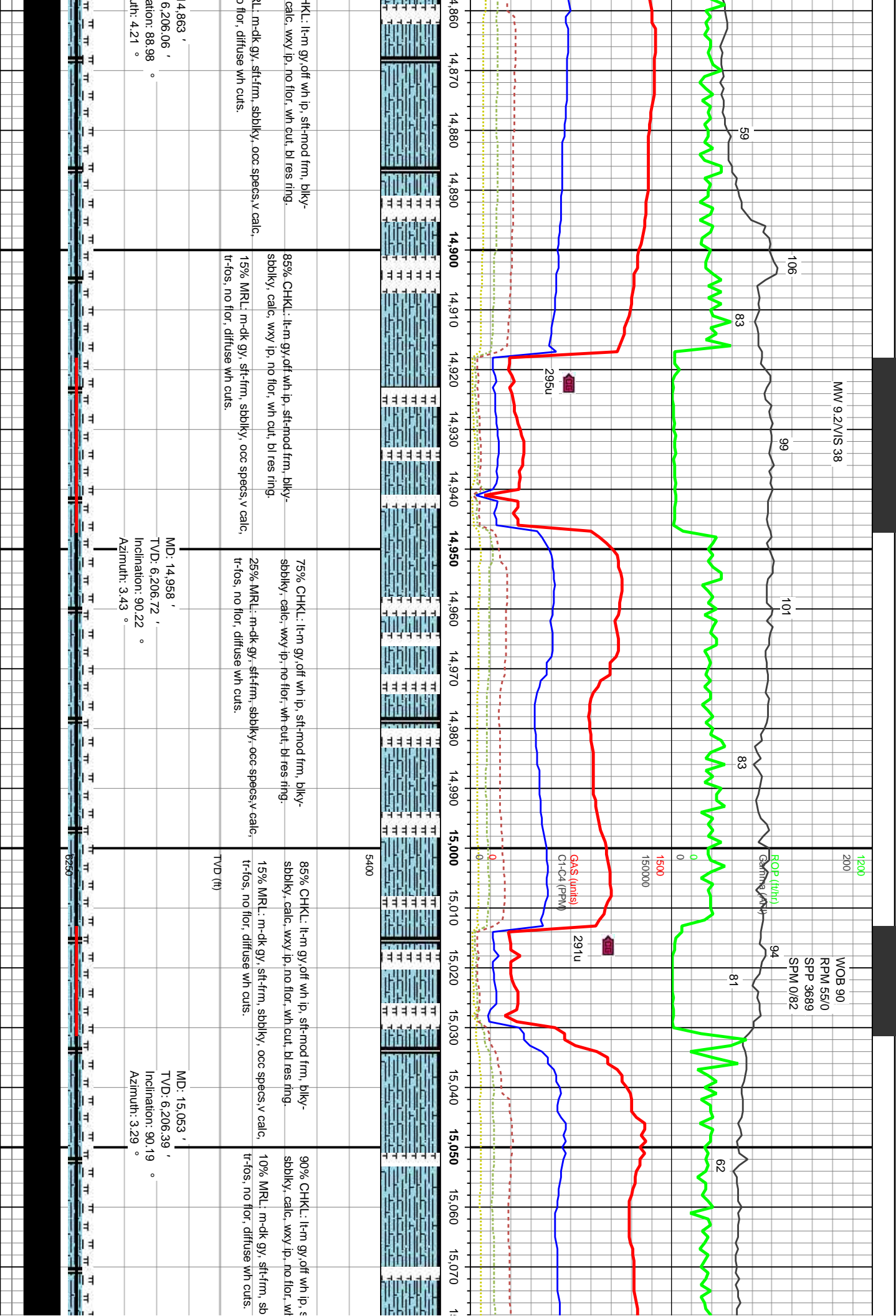
5250

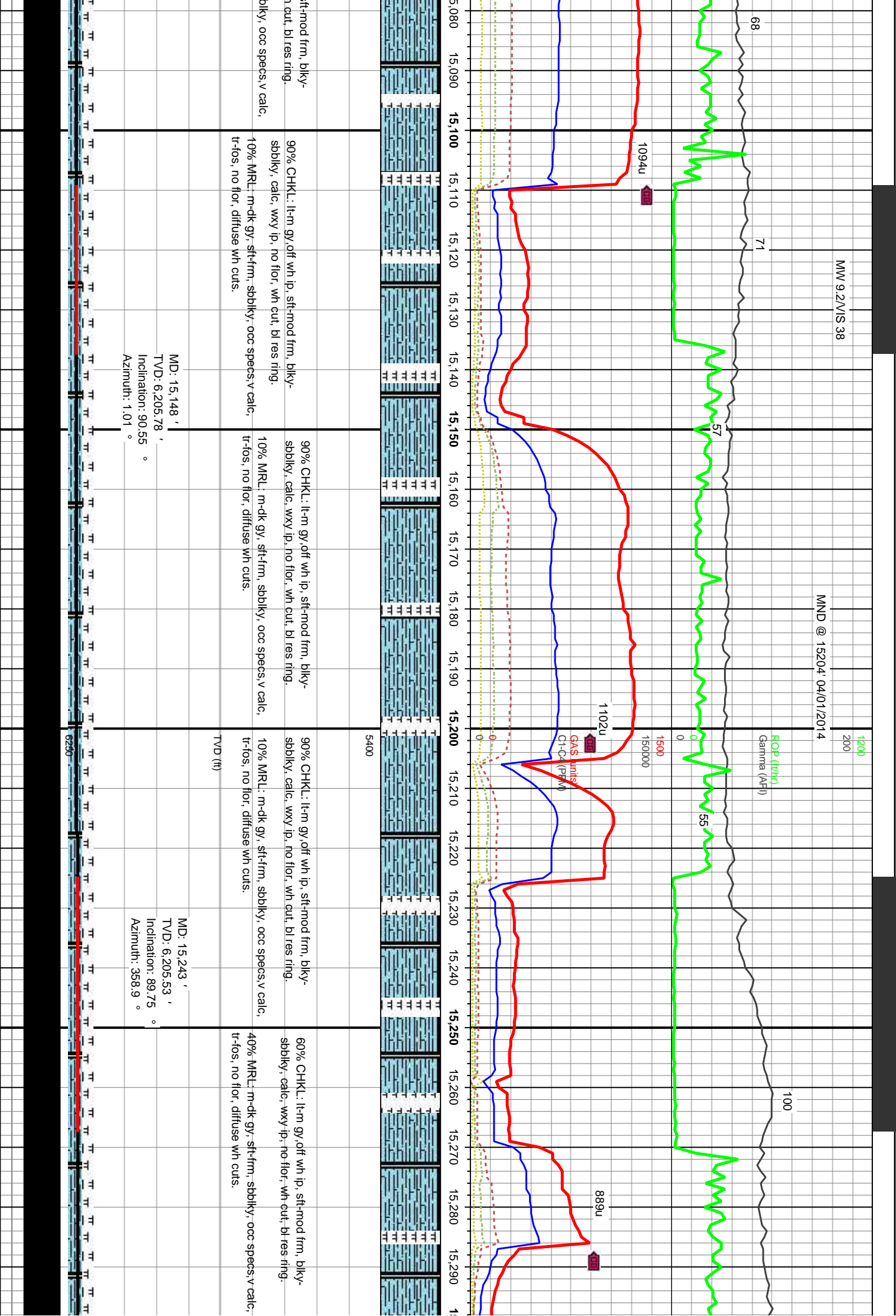


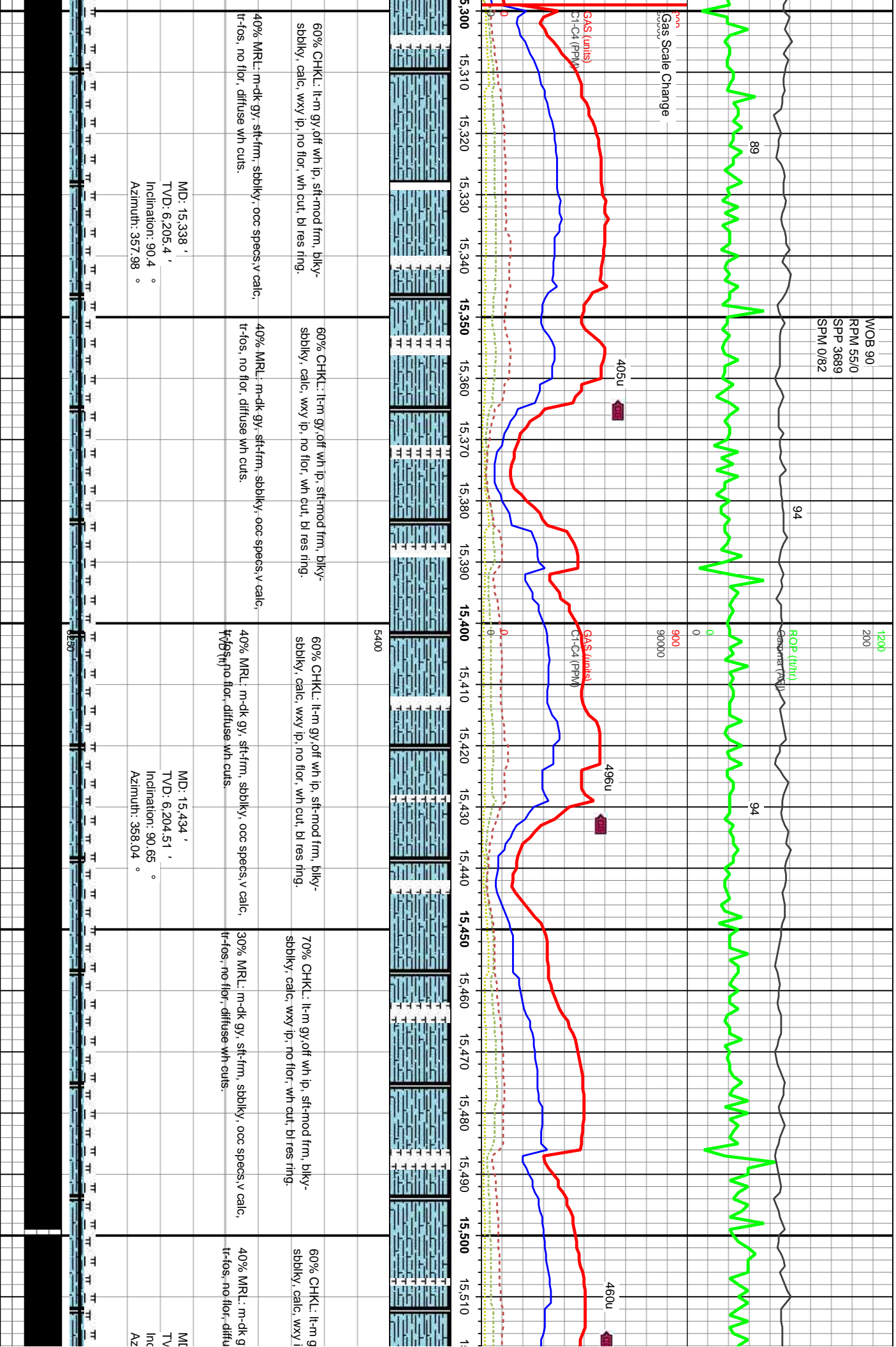












MOB 90
RPM 55.0
SPM 3689
SPM 0/82

1200
200

EOP (ft/h)
GAS (ft/h)

9000
90000

GAS (units)
C1-C4 (PPM)

405u

496u

460u

5400

60% CHKL: It-m gy, off wh ip, sft-mod frm, blk- sbbky, calc, wxy ip, no flor, wh cut, bl res ring.

60% CHKL: It-m gy, off wh ip, sft-mod frm, blk- sbbky, calc, wxy ip, no flor, wh cut, bl res ring.

60% CHKL: It-m gy, off wh ip, sft-mod frm, blk- sbbky, calc, wxy ip, no flor, wh cut, bl res ring.

70% CHKL: It-m gy, off wh ip, sft-mod frm, blk- sbbky, calc, wxy ip, no flor, wh cut, bl res ring.

60% CHKL: It-m g sbbky, calc, wxy i

40% MRL: m-dk gy, sft-frm, sbbky, occ specs, v calc, tr-fos, no flor, diffuse wh cuts.

40% MRL: m-dk gy, sft-frm, sbbky, occ specs, v calc, tr-fos, no flor, diffuse wh cuts.

40% MRL: m-dk gy, sft-frm, sbbky, occ specs, v calc, tr-fos, no flor, diffuse wh cuts.

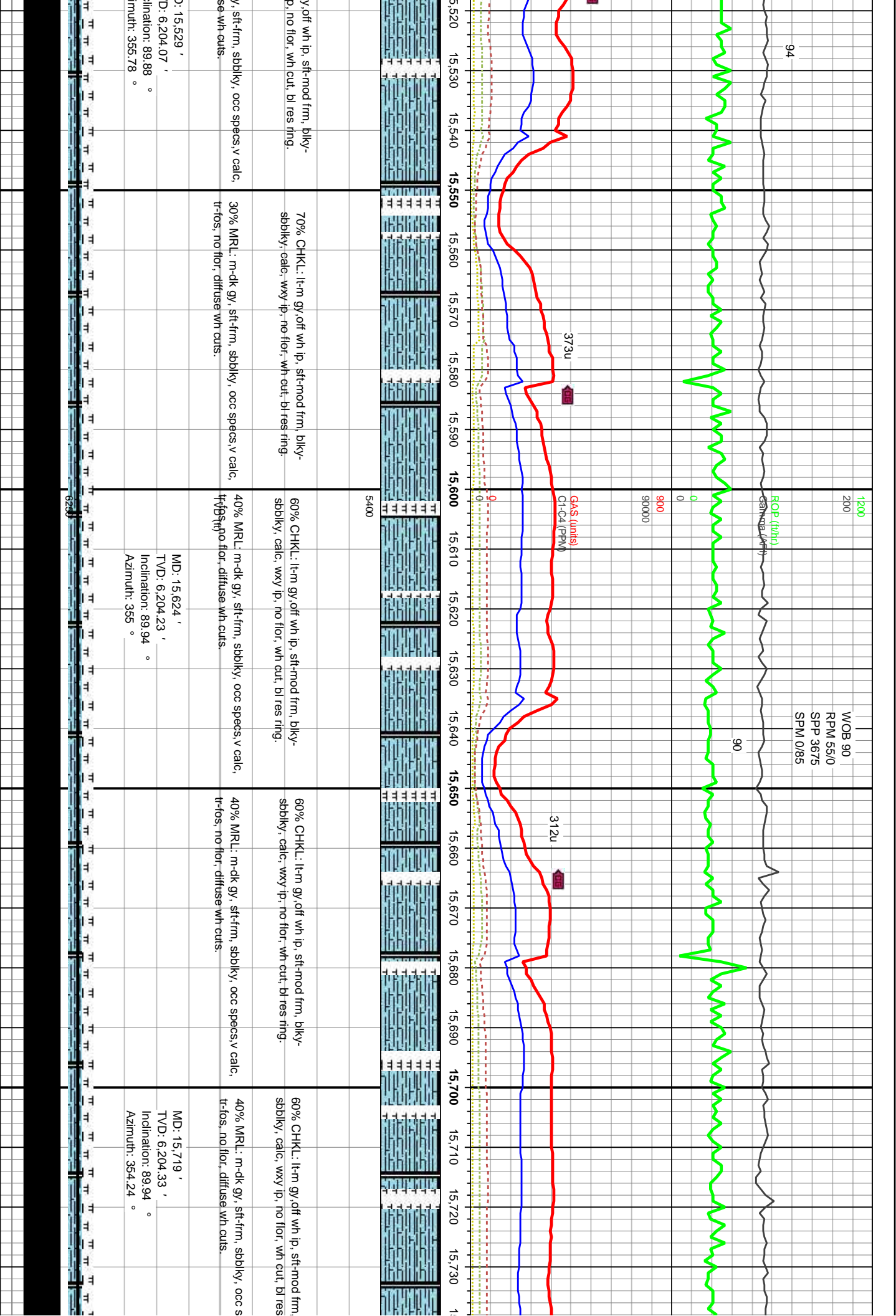
30% MRL: m-dk gy, sft-frm, sbbky, occ specs, v calc, tr-fos, no flor, diffuse wh cuts.

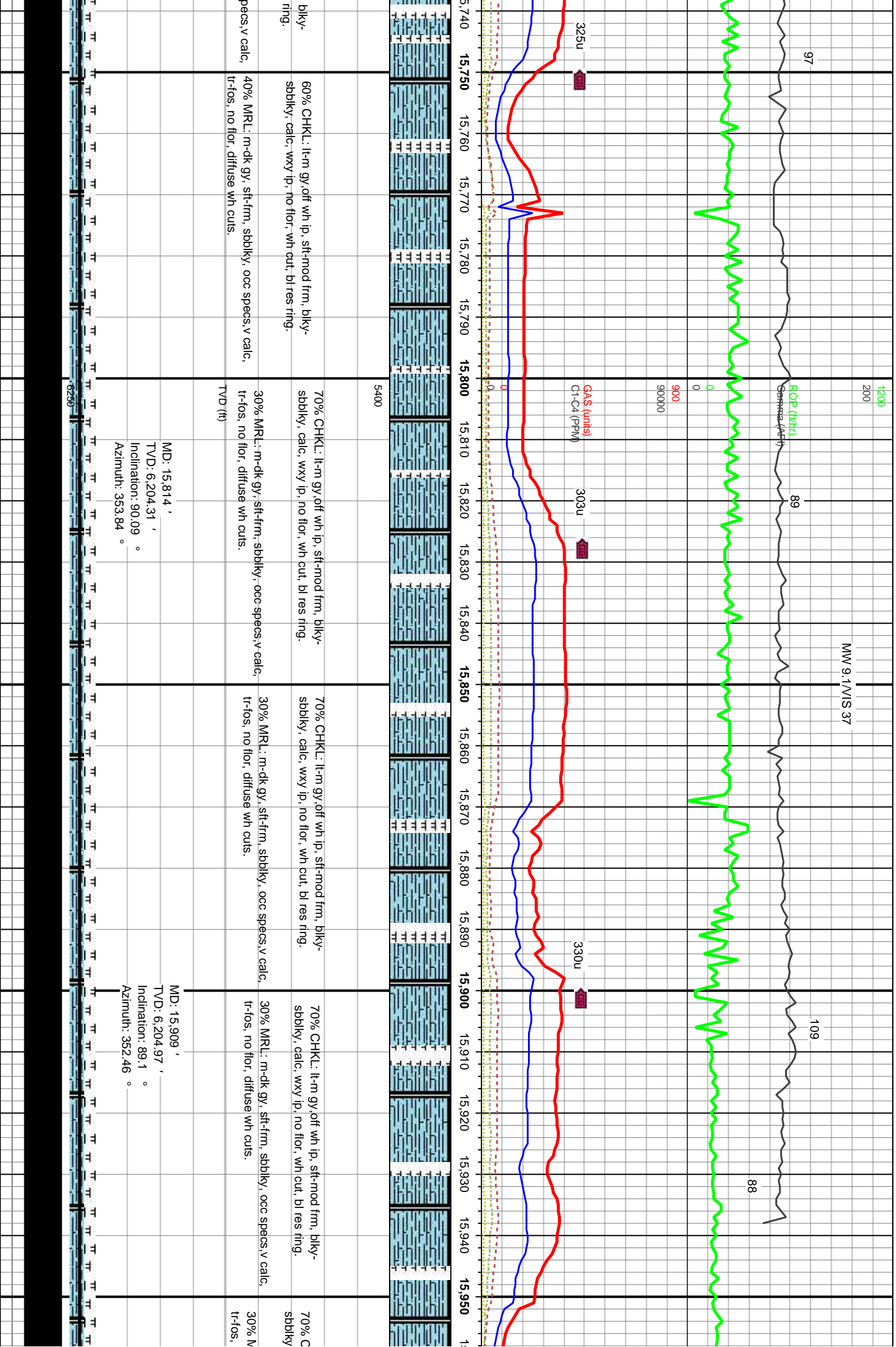
40% MRL: m-dk g tr-fos, no flor, diffu

MD: 15,338 '
TVD: 6,205.4 '
Inclination: 90.4 °
Azimuth: 357.98 °

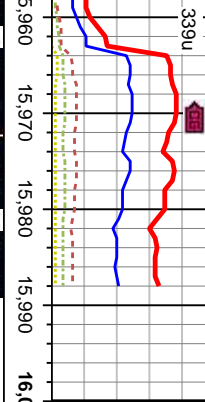
MD: 15,434 '
TVD: 6,204.51 '
Inclination: 90.65 °
Azimuth: 358.04 °

ML
TV
Inc
Az





TD @ 15989' 04/01/2014
11:00 am



HKL: lt-m gy, off wh ip, sft-mod frm, blk-
calc, wxy ip, no flr, wh cut, bl res frg.
RL: m-dk gy, sft-frm, sbblk, occ specs, v calc,
no flr, diffuse wh cuts.

Bit Projection

MD: 15,989 '
TVD: 6,202.82 '
Inclination: 88.64 °
Azimuth: 351.78 °

