

Décollement
Consulting
Inc.



Scale: 5" / 100'
Measured Depth Log

Well Name Antelope U-Y-17HNB

Location NWNE SEC 17 T5N R62W

State Colorado

Country USA

API Number 05-123-37651-00

County Weld

Rig Number Ensign 136

Field D.J. Basin

Spud Date 8/25/2013

Drilling Completed 9/1/2013

Surface Coordinates 500 FNL X 1409 FEL

Ground Elevation 4695'

K.B. Elevation 4707'

Logged Interval 5800' To 11136'

Total Depth 11136'

Formation Niobrara "B" Chalk.

Type of Drilling Fluid WBM

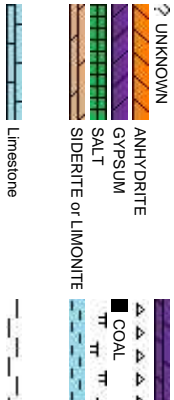
Company Bonanza Creek Energy

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

F FOSSIL

GASTROPD

ALGAE

AMPHIPORA

BELLENITE

BIOLCLASTIC

BRACHIOPOD

BRYOZOA

CEPHALOPD

CORAL

CRINOID

ECHINOID

FISH

FORAMINIFERA

- ARGILLACEOUS

/ ARGILLITE GRAIN

B BENTONITE

BITUMENOUS SUBSTANCE

BRECCIA FRAGMENTS

C CALCAREOUS

CARBONACEOUS FLAKES

C CHTDK

C CHTLT

- COAL - THIN BEDS

/ DOLOMITIC

+ FELDSPAR

• FERRUGINOUS PELLET

/ FERRUGINOUS

^ GLAUCONITE

// GYPSIFEROUS

† HEAVY MINERAL

K KAOLIN

T MARLSTONE

✱ MINERAL CRYSTALS

• NODULES

• PHOSPHATE PELLET

P PYRITE

田 SALT CAST

: SANDY

~ SILTY

^ TUFFACEOUS

Stringer

ANHYDRITE STRINGER

BENTONITE STRINGER

COAL STRINGER

DOLOMITE STRINGER

GYPSUM STRINGER

LIMESTONE STRINGER

MARLSTONE (CALC) STRG

MARLSTONE (DOL) STRG

SANDSTONE STRINGER

SHALE STRINGER

SILTSTONE STRINGER

Other Symbols

O ORGANIC

P PINPOINT

D DEAD

EVEN

O QUESTIONABLE

SPOTTED STAINING

GAS SHOW

P PINPOINT

V VUGGY

NORMAL FAULT

OIL SHOW

OVERTURNED STRATA

REVERSE FAULT

SIDEWALL CORE (LEFT)

SIDEWALL CORE (RIGHT)

SLIDE

SURVEY

TRIP GAS

WIRELINE TESTED - LEFT

WIRELINE TESTED - RT

L LITHOGRAPHIC

MX MICROXLN

MMS MUDSTONE

R ROUNDED

a SUBANG

r SUBRAND

BBS BOUNDSTONE

P POOR

C CHALKY

CX CRYPTOXLN

E EARTHY

FX FINELYXLN

BS GRAINSTONE

L LITHOGRAPHIC

Sorting

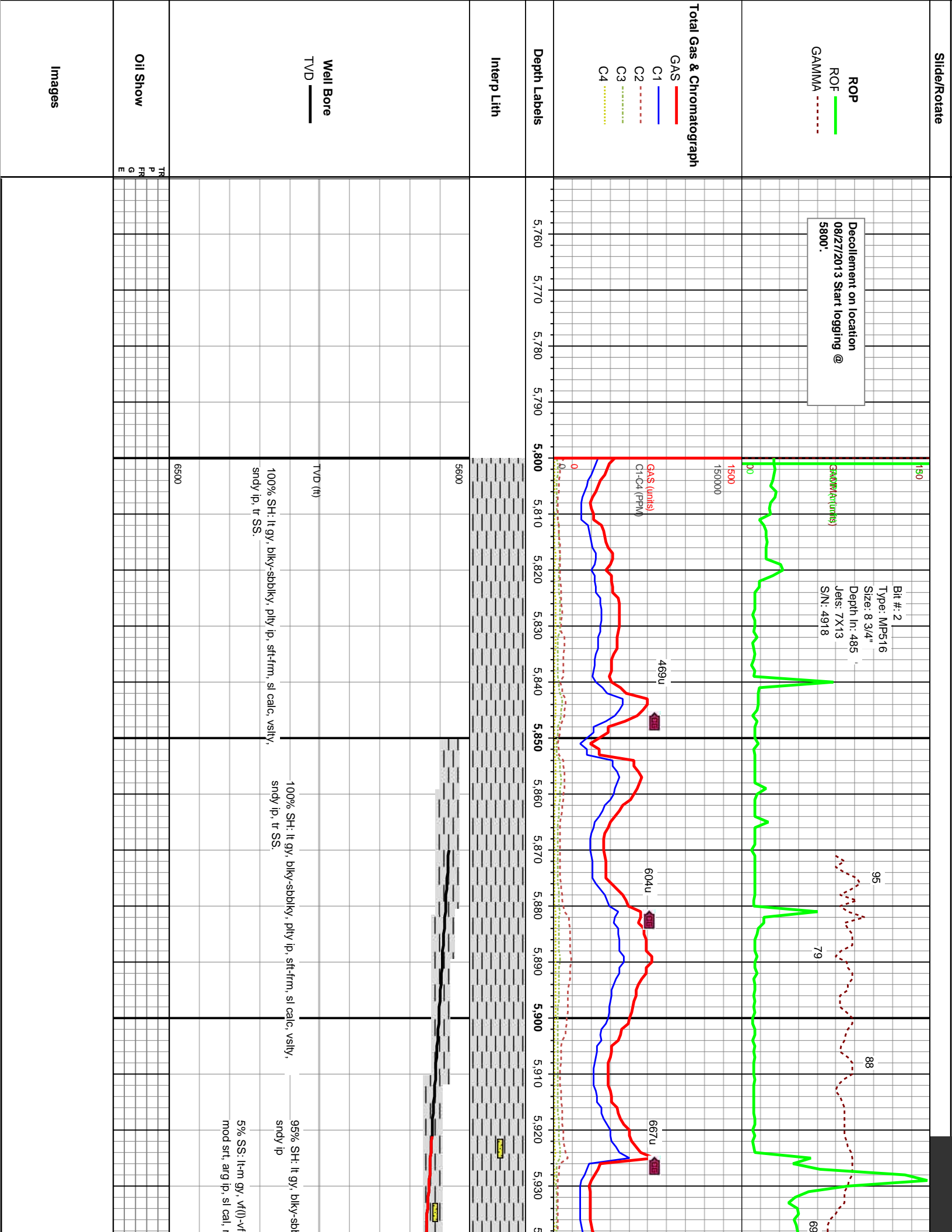
M MODERATE

P POOR

W WELL

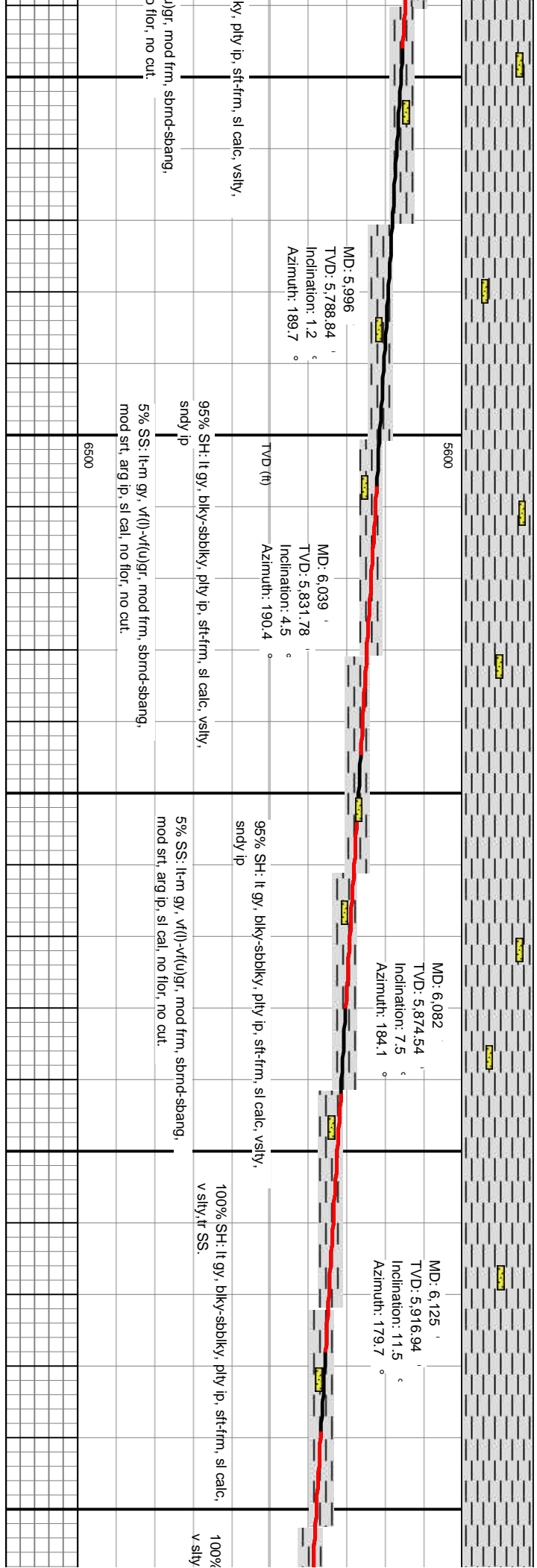
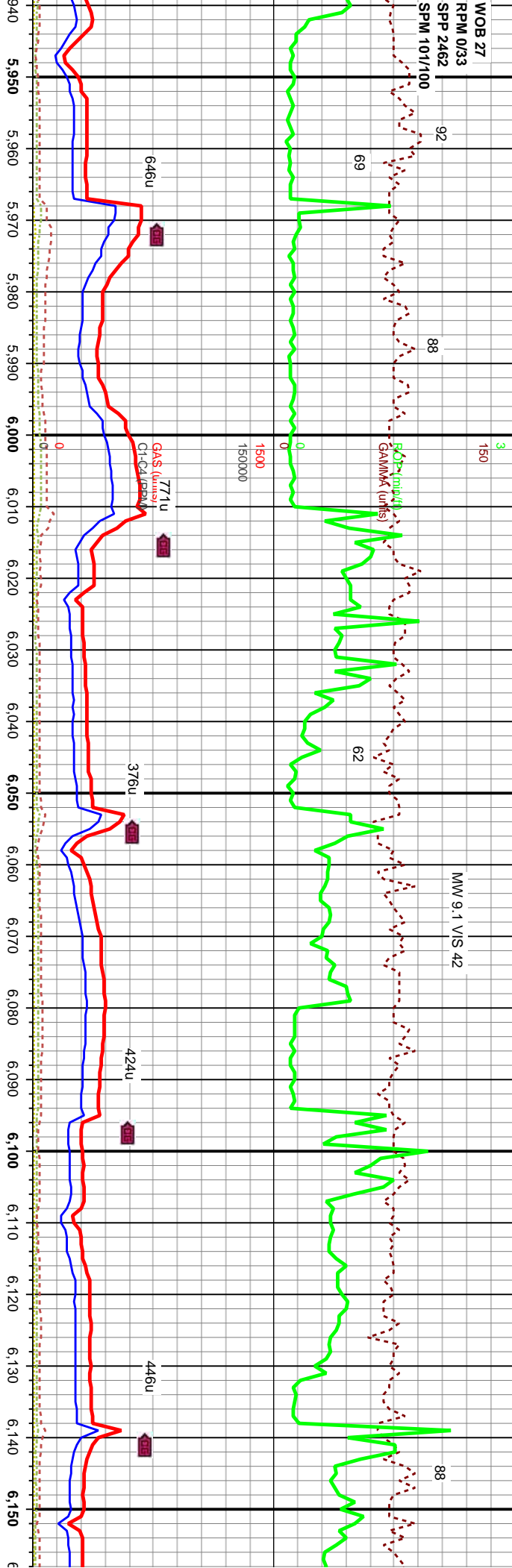
Chalk

Rounding



WOB 27
RPM 0/33
SPP 2462
SPM 101/100

NW 9.1 VIS 42



MD: 5,996
TVD: 5,788.84
Inclination: 1.2
Azimuth: 189.7

MD: 6,039
TVD: 5,831.78
Inclination: 4.5
Azimuth: 190.4

MD: 6,082
TVD: 5,874.54
Inclination: 7.5
Azimuth: 184.1

MD: 6,125
TVD: 5,916.94
Inclination: 11.5
Azimuth: 179.7

ply, ply ip, st-frm, sl calc, vsily,

95% SH: lt gy, blk-ssbiky, ply ip, st-frm, sl calc, vsily,
sny ip

(u)gr, mod frm, sbnd-sbang,
no flr, no cut.

5% SS: lt-m gy, v(l)-v(u)gr, mod frm, sbnd-sbang,
mod srt, arg ip, sl cal, no flr, no cut.

6500

100% SH: lt gy, blk-ssbiky, ply ip, st-frm, sl calc,
v sily, tr SS.

100%
v sily

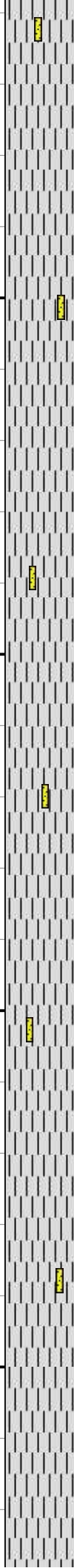
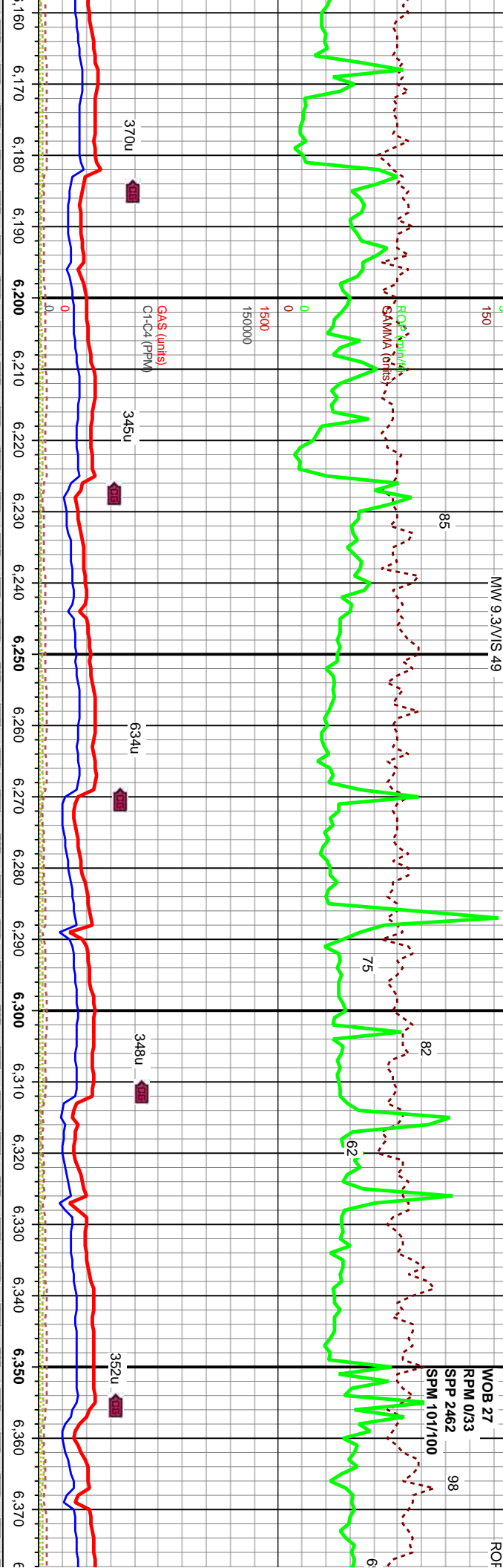
MW 9.3/VIS 49

MOB 27

RPM 0/33
SPM 2462
SPM 101/100

98

ROF



MD: 6.167 TVD: 5.957.82 Inclination: 15 ° Azimuth: 178.3 °	MD: 6.210 TVD: 5.998.95 Inclination: 18.8 ° Azimuth: 181.5 °	MD: 6.253 TVD: 6.039.18 Inclination: 22.6 ° Azimuth: 187.1 °	MD: 6.296 TVD: 6.078.23 Inclination: 26.8 ° Azimuth: 190.8 °	MD: 6.338 TVD: 6.114.96 Inclination: 31.2 ° Azimuth: 192.9 °	MD: 6.381 TVD: 6.15 Inclination: Azimuth: °
SH: It gy, blk-y-sbblky, pily ip, sft-frm, sl calc, tr SS.	100% SH: It gy, blk-y-sbblky, pily ip, sft-frm, sl calc, v silty, tr SS.	95% SH: It gy, blk-y-sbblky, pily ip, sft-frm, sl calc, v silty.	5% SS: It-m gy, v(l)-v(f)(u)gr, mod frm, sbnd-sbang, mod str, arg ip, sl cal, no flor, no cut.	95% SH: It gy, blk-y-sbblky, pily ip, sft-frm, sl calc, v silty.	5% SS: It-m gy, v(l)-v(f)(u)gr, mod frm, sbnd-sbang, mod str, arg ip, sl cal, no flor, no cut.
	TVD (ft)				
	6500				

Scale Change

3 SHARON SPRINGS @
6166' TVD 6412' MD

NIOBRARA "A" Chalk
@ 6290' TVD, 6597' MD

ROP (m/hr)
SAMMA (units)

GA (m/125 s)

Gas Scale Change

0

0

5000

15000

500000

GA\$ (units)
C1-C4 (PPM)

GA\$ (units)
C1-C4 (PPM)

426u

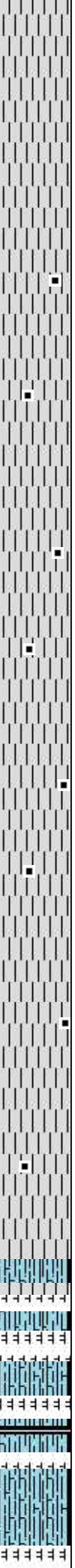
612u

771u

763u

1263u

6.380 6.390 6.400 6.410 6.420 6.430 6.440 6.450 6.460 6.470 6.480 6.490 6.500 6.510 6.520 6.530 6.540 6.550 6.560 6.570 6.580 6.590



5600
100% SH: m-dk gy, blk-y-sbbkly -ply ip, wxy ip, sl
carb, tr-bent, pale yel flr, slw wh cut.

100% SH: m-dk gy, blk-y-sbbkly -ply ip, wxy ip, sl
carb, tr-bent, pale yel flr, slw wh cut.

100% SH: m-dk gy, blk-y-sbbkly -ply ip, wxy ip,
carb ip, tr-bent, pale yel flr, wh/bl cut, bl res ring.

80% CHK: lt-m gy, oft wt, sft-mod frm, blk-y-sbbkly, calc,
wxy ip, tr Bent, no flr, wh/bl cut, bl res ring.
20% MRL: m-dk gy, sft-frm, sbbkly, ooc specs, v calc, no wxy
flr, diffuse wh cuts.

0.72
36.2
91.3

MD: 6.424
TVD: 6,184.25
Inclination: 41.3
Azimuth: 189.4

MD: 6.467
TVD: 6,215.33
Inclination: 46.1
Azimuth: 189.2

MD: 6.510
TVD: 6,243.59
Inclination: 51.7
Azimuth: 186.4

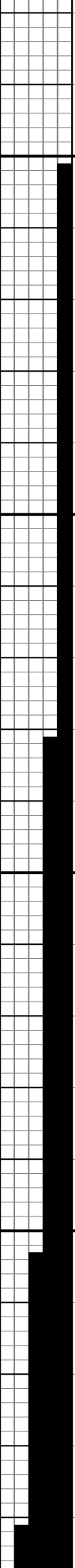
MD: 6.552
TVD: 6,267.97
Inclination: 57.3
Azimuth: 182

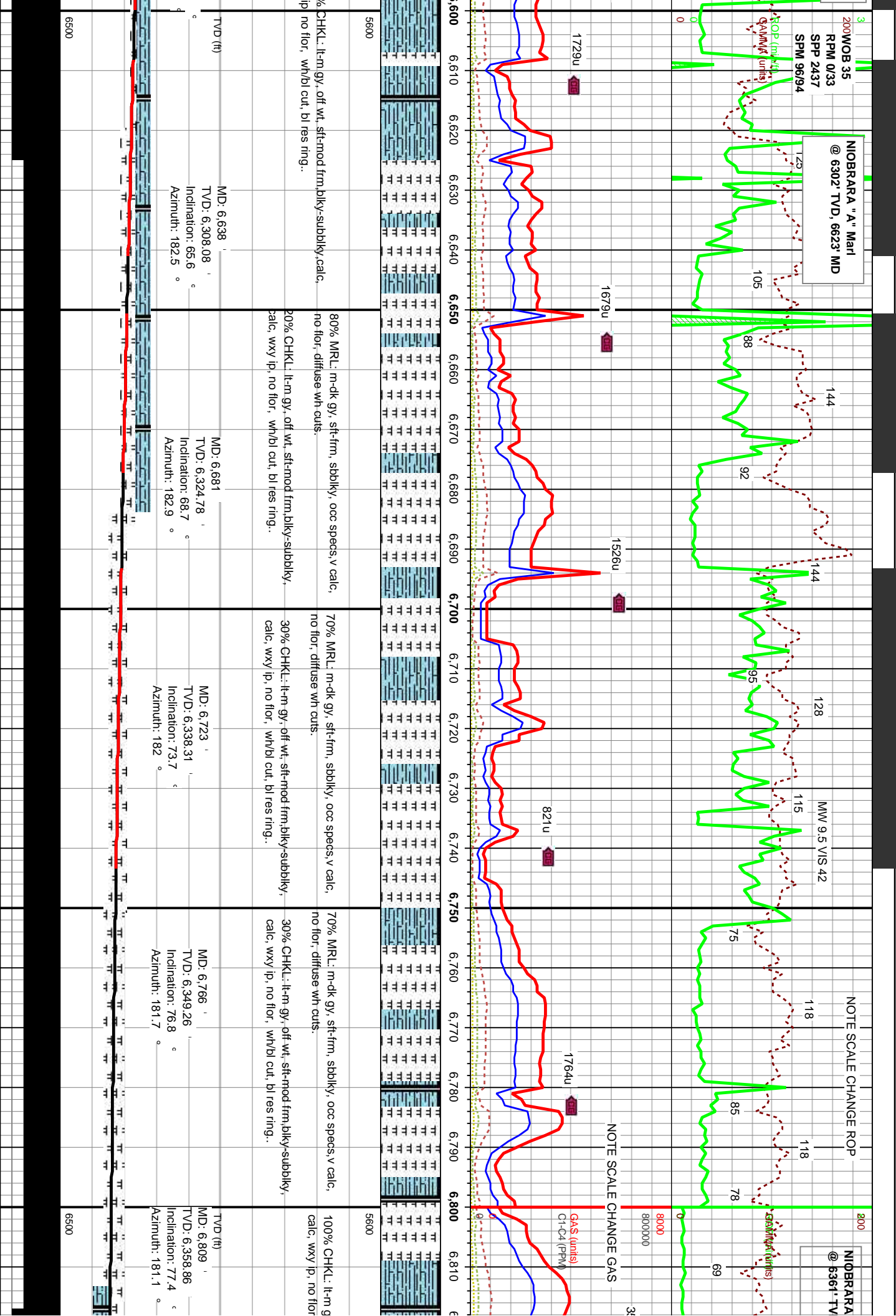
MD: 6.595
TVD: 6,289.4
Inclination: 62.2
Azimuth: 181.2

blkly ip, sft-frm, sl calc,

mod frm, sbrnd-sbang,
r, no cut.

6500





"B" Chalk
D. 6819' MD

WOB 35
RPM 0/33
SPM 2437
SPM 96/94

111

59

62

111

MND @ 6942' 08/30/2013

TD @ 6942' 08/28/2013
22:25 hr.

ROP (min/ft)

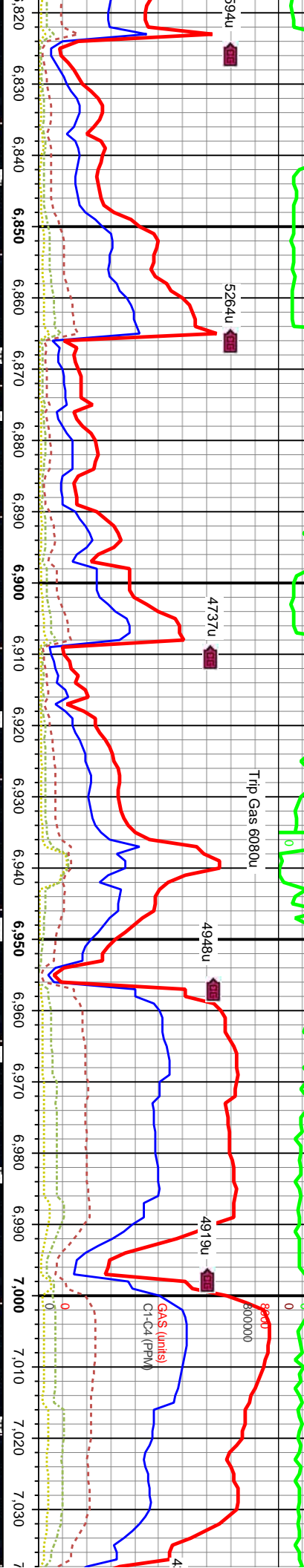
Set 7" Csg @ 6929'

Resume Drilling 08/3/2013
05:50 hr.

ROP (min/ft)
GAMMA (units)

72

MW 9.7/VS 58



90% CHKL: lt-m gy, off wt, sft-mod frm, biky-subbiky, calc, wxy ip, no flr, wh/bl cut, bl res ring.
10% MRL: m-dk gy, sft-frm, sbiky, occ specs, v calc, no flr, diffuse wh cuts.

95% CHKL: lt-dk gy, off wh, sft-mod frm, biky-subbiky, calc, wxy ip, no flr, wh/bl cut, bl res ring.
5% MRL: m-dk gy, sft-frm, sbiky, occ specs, v calc, no flr, diffuse wh cuts.

85% CHKL: lt-m gy, off wh, sft-mod frm, biky-subbiky, calc, wxy ip, no flr, wh/bl cut, bl res ring.
15% MRL: m-dk gy, sft-frm, sbiky, occ specs, v calc, no flr, diffuse wh cuts.

100% CHKL: lt-m gy, off wh, sft-mod frm, bl calc, wxy ip, tr Mants, no flr, wh/bl cut, bl

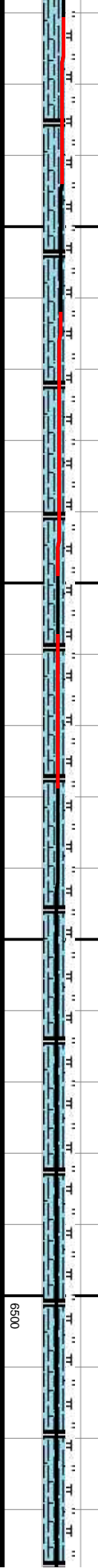
MD: 6.852
TVD: 6.367.17
Inclination: 80.3 °
Azimuth: 180.3 °

MD: 6.887
TVD: 6.371.89
Inclination: 84.2 °
Azimuth: 179.2 °

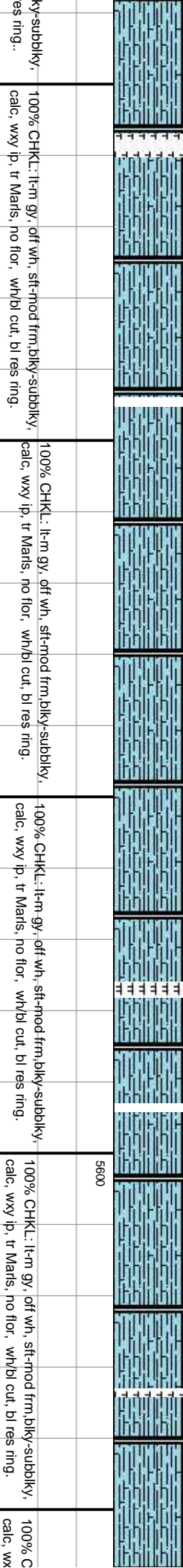
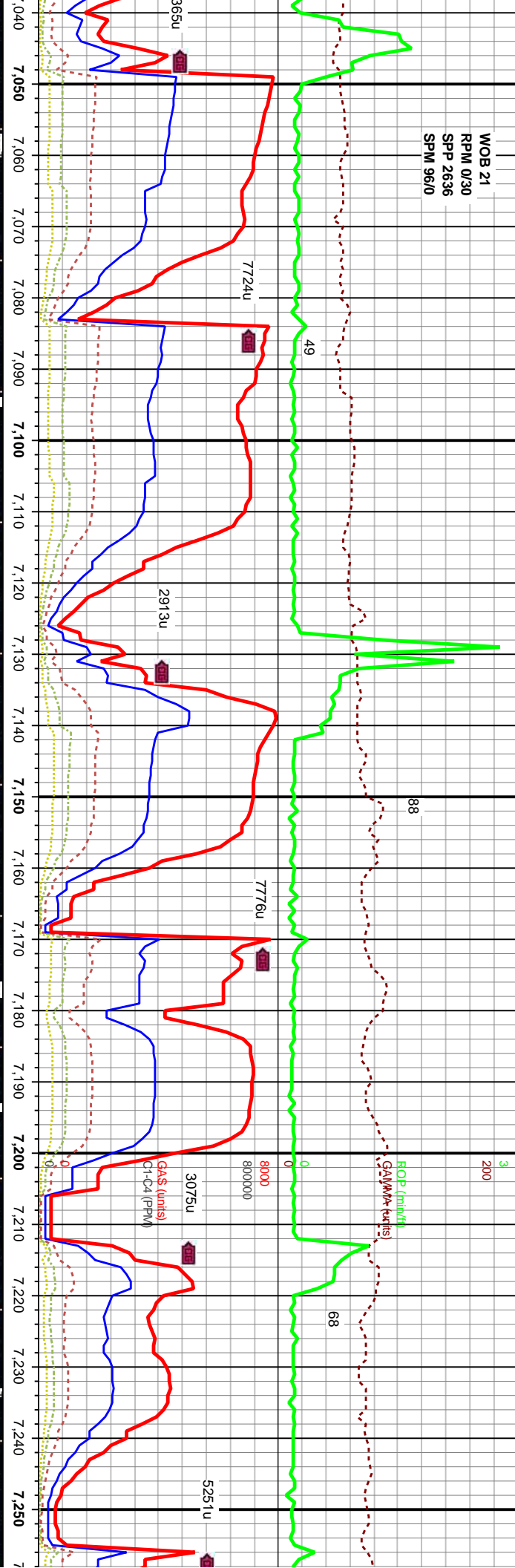
MD: 6.942
TVD: 6.375.72
Inclination: 87.8 °
Azimuth: 178.7 °

MD: 6.985
TVD: 6.377.23
Inclination: 88.2 °
Azimuth: 179 °
VS: 498.16

MD: 7.027
TVD: 6.378.4
Inclination: 88.6 °
Azimuth: 179 °
VS: 538.73



WOB 21
RPM 0/30
SPM 2636
SPM 96/0



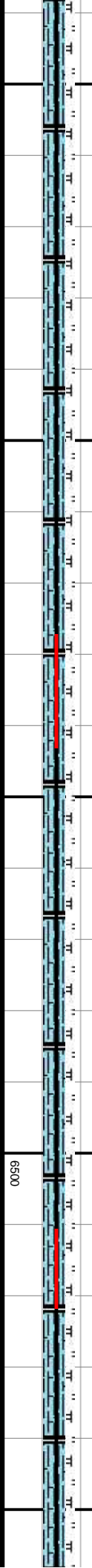
MD: 7.069
TVD: 6.378.87
Inclination: 90.1
Azimuth: 178.8
VS: 579.33

MD: 7.112
TVD: 6.378.5
Inclination: 90.9
Azimuth: 178.7
VS: 620.93

MD: 7.154
TVD: 6.377.88
Inclination: 90.8
Azimuth: 179.4

MD: 7.196
TVD: 6.377.33
Inclination: 90.7
Azimuth: 179.2

MD: 7.239
TVD: 6.377.1
Inclination: 89.9
Azimuth: 179



6500

WOB 21
RPM 0/30
SPP 2636
SPM 96/0

MW 9.3/VIS 43

3
200

EOP (min./ft)
GAMMA (units)

82

63

7382u

5746u

8000
800000

5945u

GAS (units)
C1-C4 (PPM)

1216u

2852u

5746u

5600

6500

HKL: lt-m gy, off wh, sft-mod frm, biky-subbiky,
y ip, tr Marls, no flor, wh/bl cut, bl res ring.

100% CHKL: lt-m gy, off wh, sft-mod frm, biky-subbiky,
calc, wxy ip, tr Marls, no flor, wh/bl cut, bl res ring.

100% CHKL: lt-m gy, off wh, sft-mod frm, biky-subbiky,
wxy ip, tr Marls, no flor, wh/bl cut, bl res ring.

100% CHKL: lt-m gy, off wh, sft-mod frm, biky-subbiky,
wxy ip, tr Marls, no flor, wh/bl cut, bl res ring.

100% CHKL: lt-m gy, off wh, sft-mod frm, biky-subbiky,
wxy ip, no flor, wh/bl cut, bl res ring.

MD: 7.282
TVD: 6.377.4
Inclination: 89.3
Azimuth: 178.5

MD: 7.325
TVD: 6.377.89
Inclination: 89.4
Azimuth: 179.7

MD: 7.368
TVD: 6.378.15
Inclination: 89.9
Azimuth: 179.9

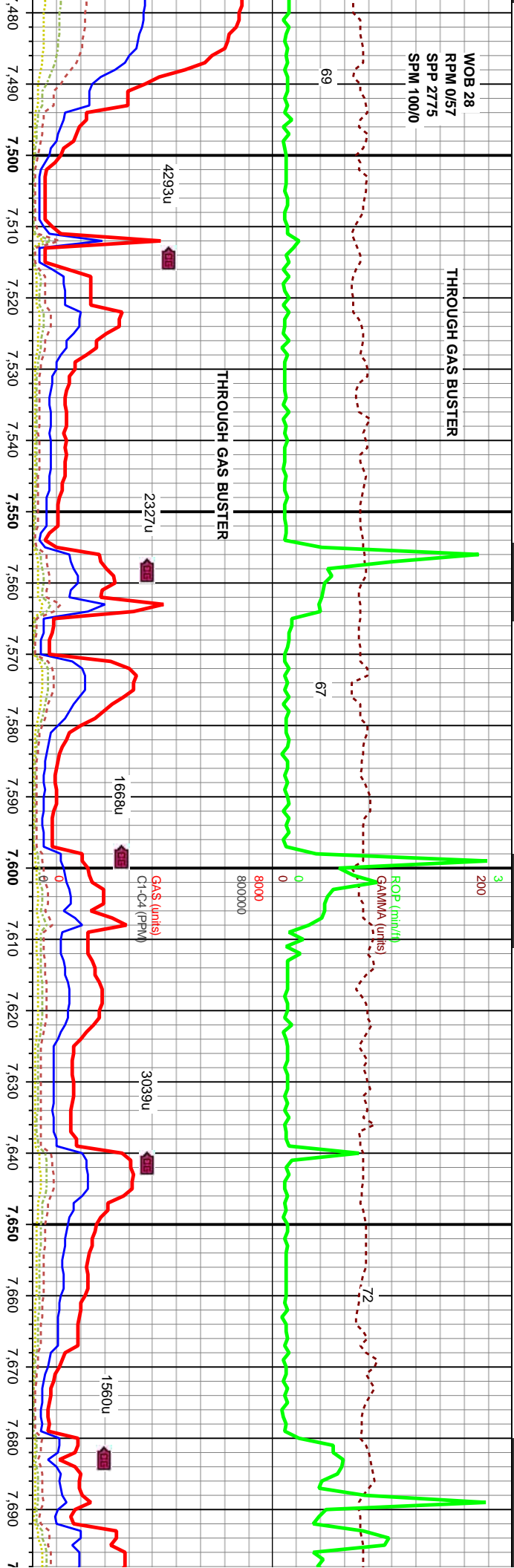
MD: 7.410
TVD: 6.378.45
Inclination: 89.3
Azimuth: 180.1

MD: 7.453
TVD: 6.378.75
Inclination: 89.9
Azimuth: 180.6

TVD (ft)

WOB 28
RPM 0/57
SPP 2775
SPM 100/0

THROUGH GAS BUSTER



wh, sft-mod frm, blkly-subblkly,
bl res ring.

100% CHKL: lt-m gy, off wh, sft-mod frm, blkly-subblkly,
wxy ip, tr Marls, no flor, wh/bl cut, bl res ring.

100% CHKL: lt-m gy, off wh, sft-mod frm, blkly-subblkly,
wxy ip, tr Marls, no flor, wh/bl cut, bl res ring.

100% CHKL: lt-m gy, off wh, sft-mod frm, blkly-subblkly,
wxy ip, tr Marls, no flor, wh/bl cut, bl res ring.

100% CHKL: lt-m gy, off wh, sft-mod frm, blkly-subblkly,
wxy ip, no flor, wh/bl cut, bl res ring.

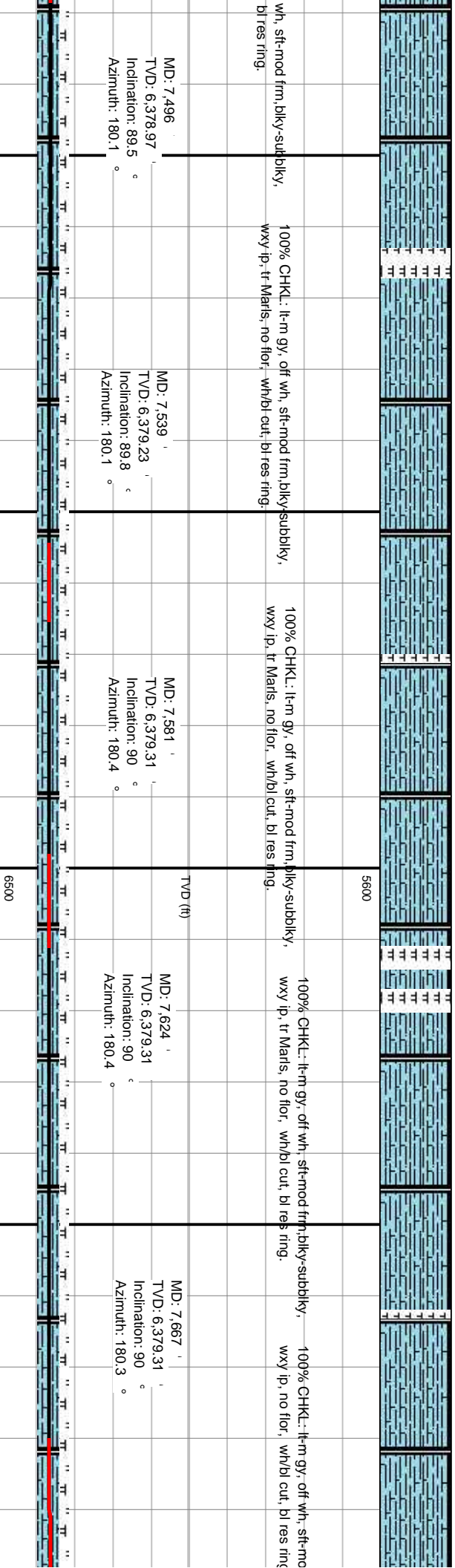
MD: 7.496
TVD: 6,378.97
Inclination: 89.5
Azimuth: 180.1

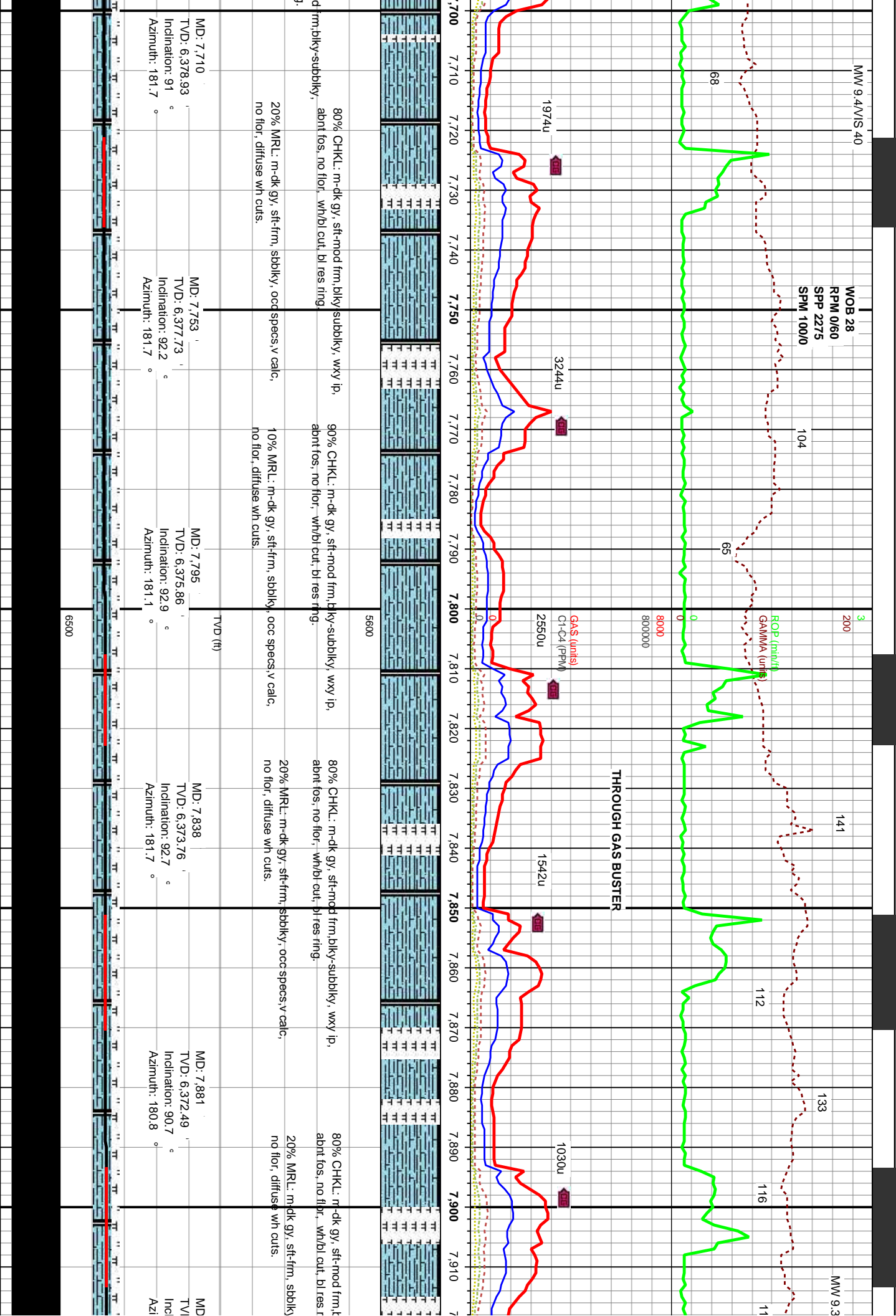
MD: 7.539
TVD: 6,379.23
Inclination: 89.8
Azimuth: 180.1

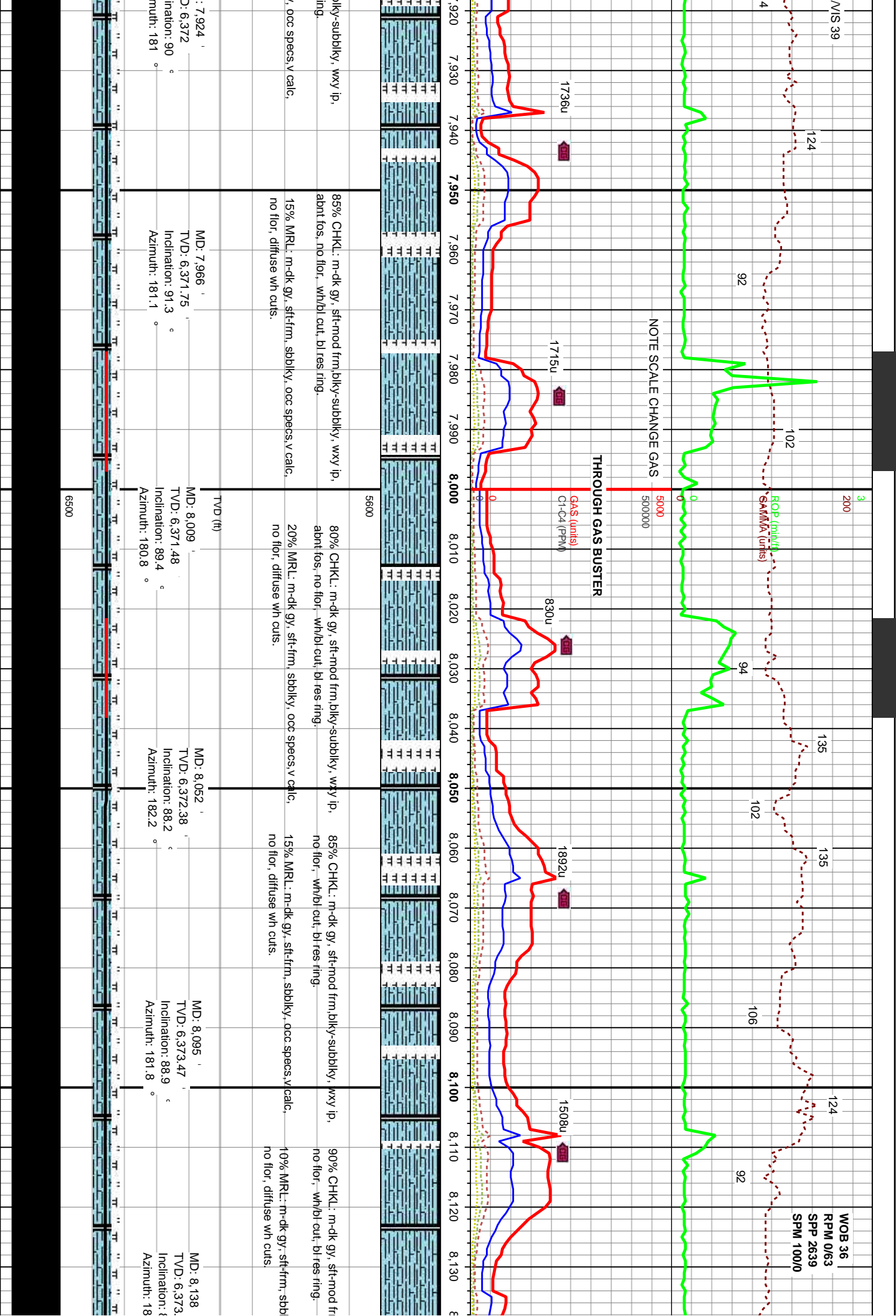
MD: 7.581
TVD: 6,379.31
Inclination: 90
Azimuth: 180.4

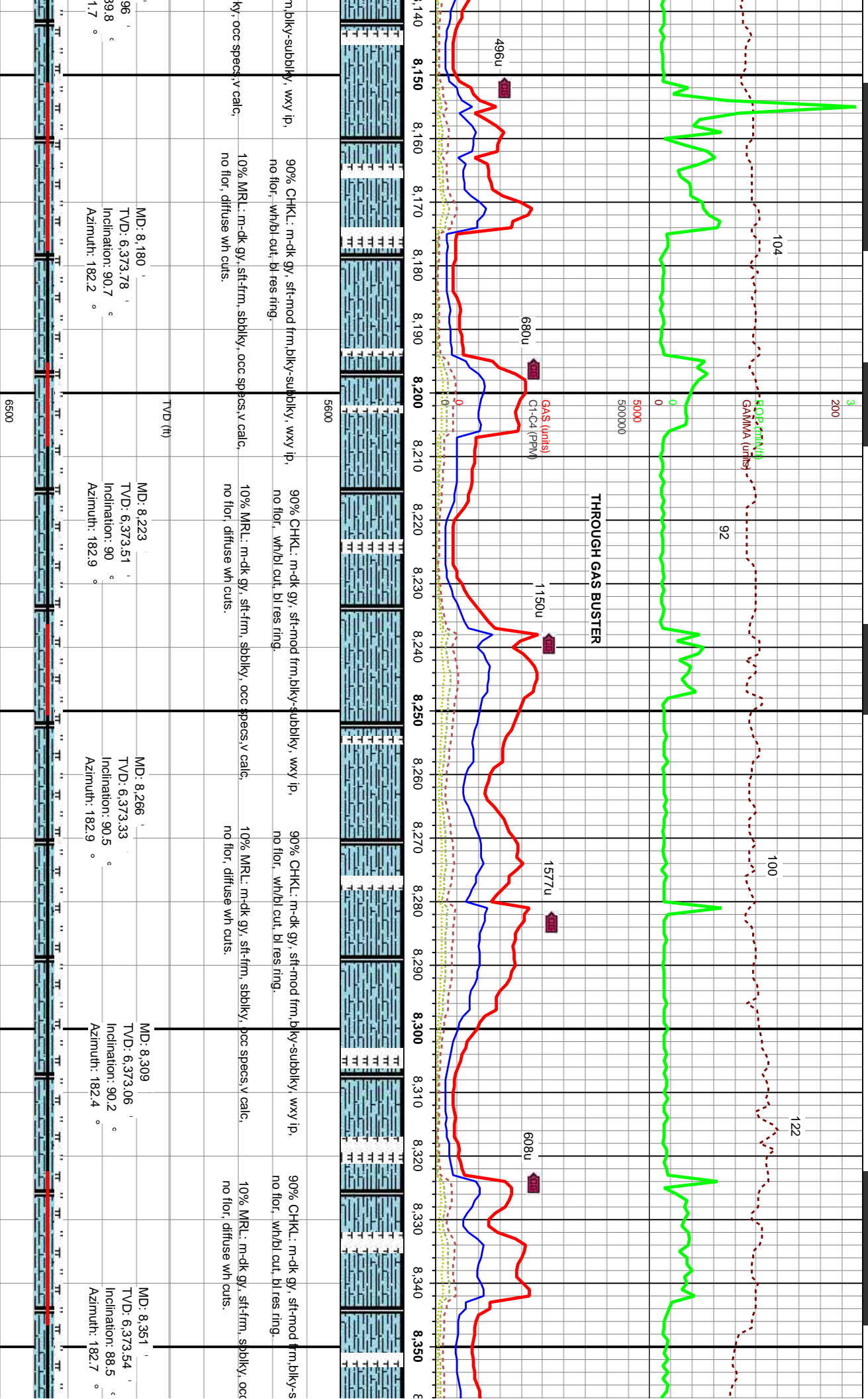
MD: 7.624
TVD: 6,379.31
Inclination: 90
Azimuth: 180.4

MD: 7.667
TVD: 6,379.31
Inclination: 90
Azimuth: 180.3





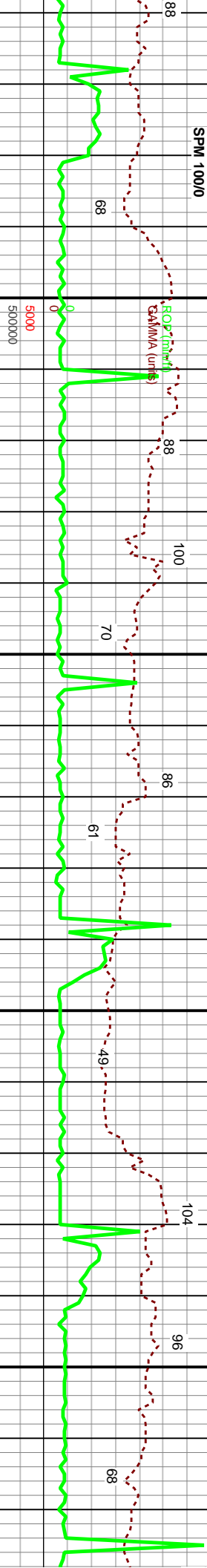




WOB 26
RPM 0/55
SPP 2594
SPM 100/0

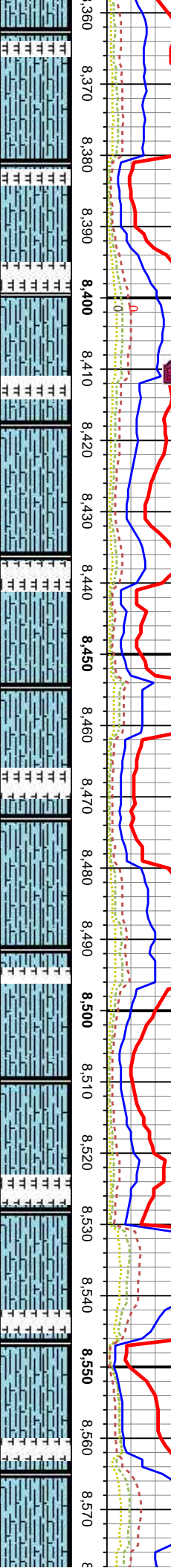
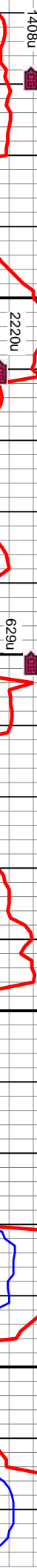
3

MW 9.2/VIS 46



THROUGH GAS BUSTER

GAS (units)
GMA (ft/m)



5600

subbky, wxy ip,
no floor, wh/bl cut, bl res ring.

90% CHKL: m-dk gy, sft-mod frm,blky-subbky, wxy ip,
10% MRL: m-dk gy, sft-frm, sbblky, occ specs,v calc,
no floor, diffuse wh cuts.

MD: 8,394
TVD: 6,375.15
Inclination: 87.2
Azimuth: 183.1

MD: 8,437
TVD: 6,377.22
Inclination: 87.3
Azimuth: 182.2

100% CHKL: lt-dk gy, sft-mod frm,blky-subbky, wxy ip,
no floor, wh/bl cut, bl res ring.

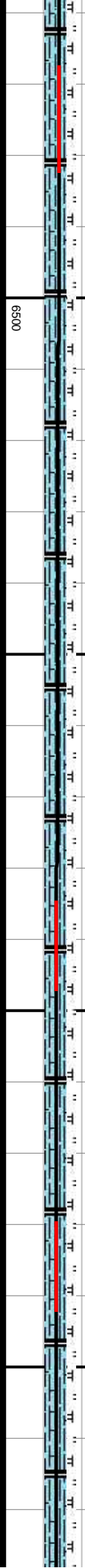
85% CHKL: lt-dk gy, sft-mod frm,blky-subbky, wxy ip,
15% MRL: m-dk gy, sft-frm, sbblky, occ specs,v calc,
no floor, diffuse wh cuts.

MD: 8,480
TVD: 6,379.13
Inclination: 87.6
Azimuth: 182.5

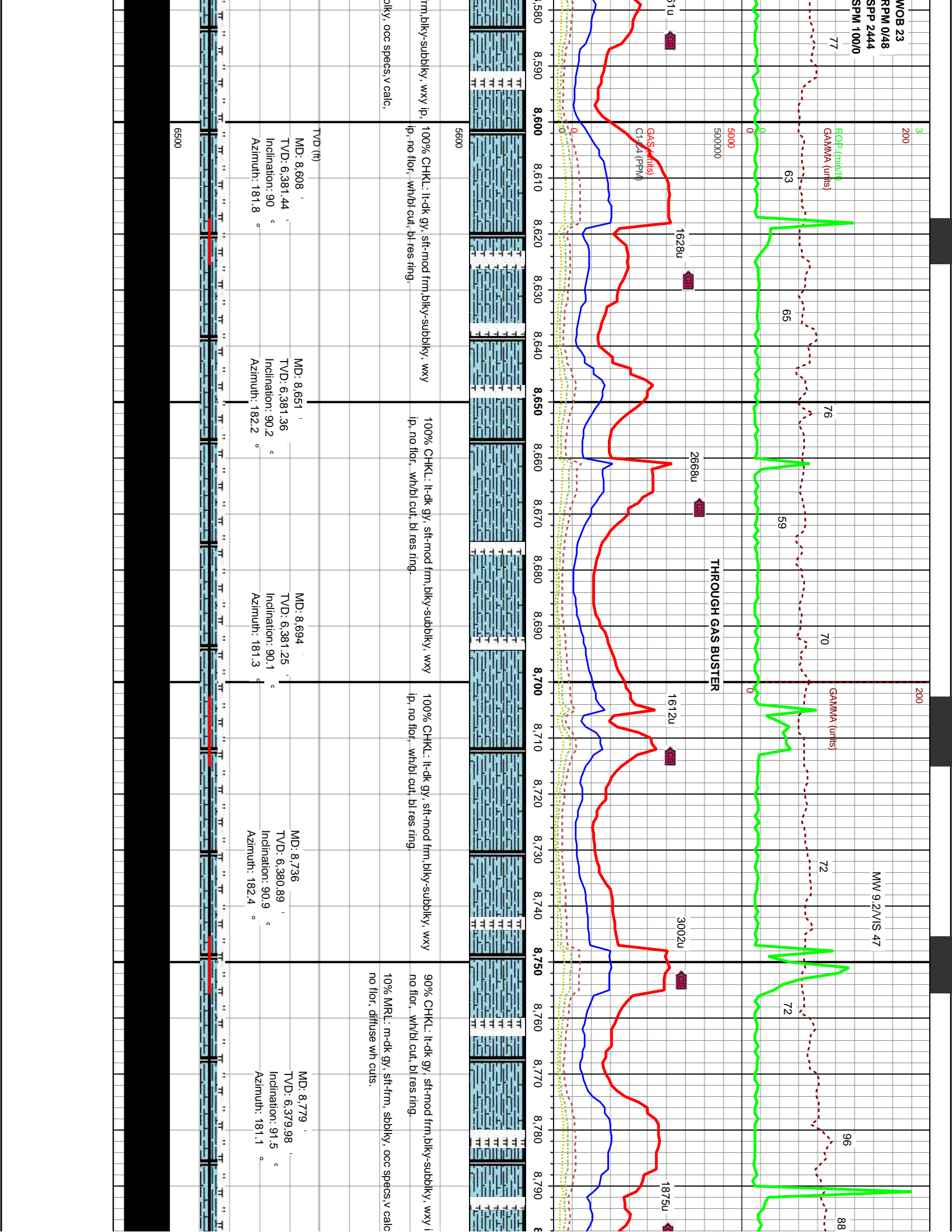
MD: 8,523
TVD: 6,380.59
Inclination: 88.5
Azimuth: 181.7

95% CHKL: lt-dk gy, sft-mod I
5% MRL: m-dk gy, sft-frm, sbblky, occ specs,v calc,
no floor, diffuse wh cuts.

MD: 8,565
TVD: 6,381.29
Inclination: 89.6
Azimuth: 181.8



6500



MOB 24
RPM 0/48
SPP 2704
SPM 10000

5
200

ROP (min/ft)
GAMMA (units)

THROUGH GAS BUSTER

GAS (units)
C1-C4 (PPM)

5600

TVD (ft)

6500

MD: 9,036
TVD: 6,376.87
Inclination: 89.6
Azimuth: 179.4

MD: 9,079
TVD: 6,376.72
Inclination: 90.8
Azimuth: 179.4

MD: 9,122
TVD: 6,375.93
Inclination: 91.3
Azimuth: 179

MD: 9,164
TVD: 6,375.38
Inclination: 90.2
Azimuth: 179.9

MD: 9,207
TVD: 6,375.53
Inclination: 89.4
Azimuth: 179.4

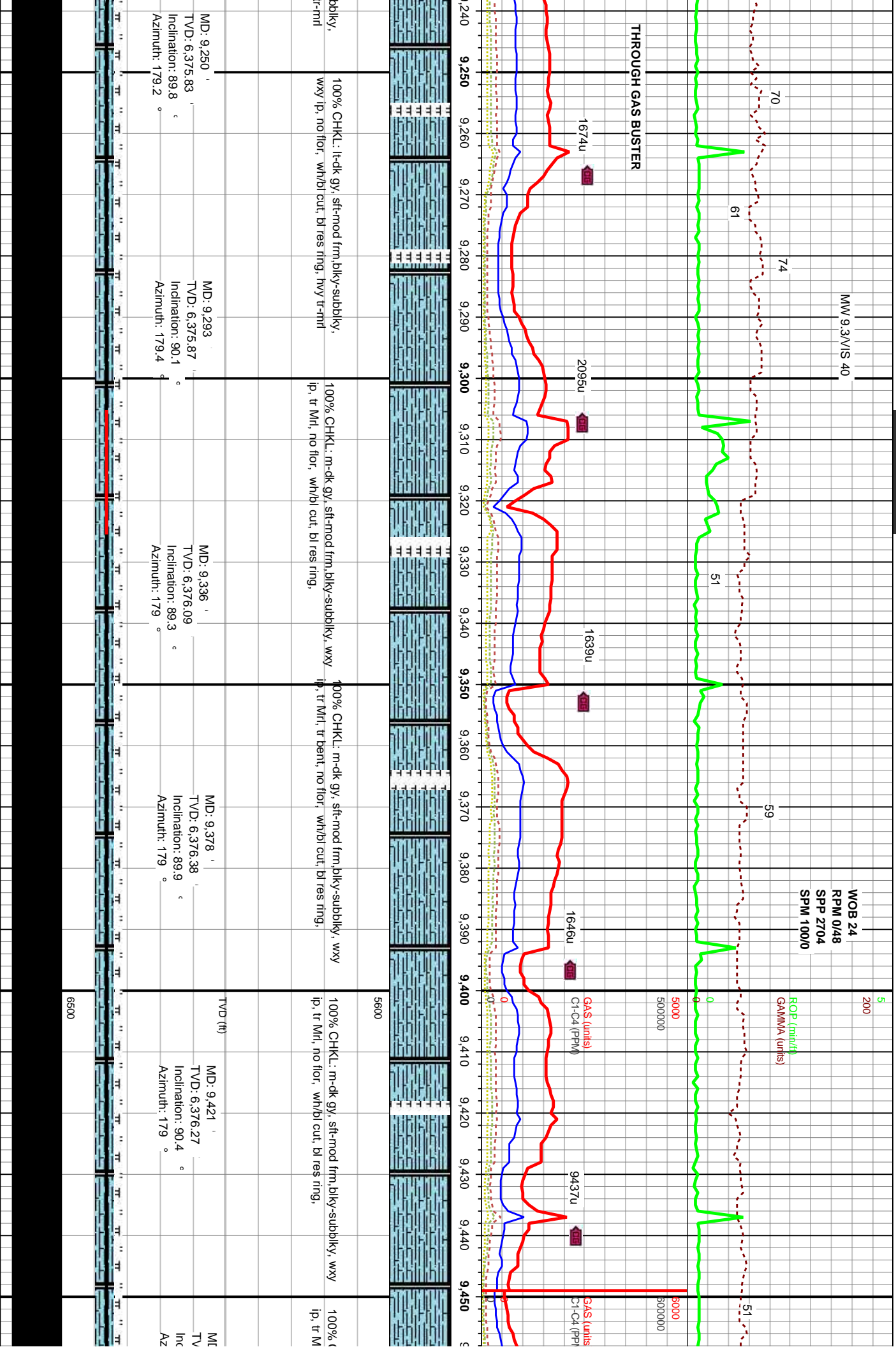
100% CHK: It-dk gy, sft-mod frm, biky-subbiky,
wxy ip, no flr, wh/bl cut, bl res ring, hvy tr-mtl

100% CHK: It-dk gy, sft-mod frm, biky-subbiky,
wxy ip, no flr, wh/bl cut, bl res ring, hvy tr-mtl

100% CHK: It-dk gy, sft-mod frm, biky-subbiky,
wxy ip, no flr, wh/bl cut, bl res ring, hvy tr-mtl

95% CHK: It-dk gy, sft-mod frm, biky-subbiky, wxy ip,
no flr, wh/bl cut, bl res ring.
5% MRL: m-dk gy, sft-frm, sbbiky, occ specs, v calc,
no flr, diffuse wth cuts.

100% CHK: It-dk gy, sft-mod frm, biky-subbiky,
wxy ip, no flr, wh/bl cut, bl res ring, hvy tr-mtl



MW 9.3/M/S 40

MW 9.3/M/S 40

WOB 24
RPM 0/48
SPP 2704
SPM 100/0

EOP (initial)
GAMMA (cps)

GAS (unit)
C1-C4 (PPM)

THROUGH GAS BUSTER

3638u

2730u

3264u

4812u 700

3816u

57

63

63

CHKL: m-dk gy, sft-mod frm,blky-subblky, wxy
ip, no flr, wh/bl cut, bl res ring,

100% CHKL: m-dk gy, sft-mod frm,blky-subblky, wxy
ip, tr Mfl, tr fos, no flr, wh/bl cut, bl res ring,

100% CHKL: m-dk gy, sft-mod frm,blky-subblky, wxy
ip, tr Mfl, tr fos, no flr, wh/bl cut, bl res ring,

100% CHKL: m-dk gy, off wh, sft-mod frm,blky-subblky,
wxy ip, tr Mfl, tr fos, no flr, wh/bl cut, bl res ring,

95% CHKL: m-dk gy, off wh,
wxy ip, no flr, wh/bl cut, bl
no flr, diffuse wh cuts.

MD: 9.464
D: 6.375.75
Inclination: 91
Azimuth: 179

MD: 9.507
TVD: 6.375.33
Inclination: 90.1
Azimuth: 179.2

MD: 9.549
TVD: 6.375.04
Inclination: 90.7
Azimuth: 179.6

MD: 9.592
TVD: 6.374.78
Inclination: 90
Azimuth: 180.8

MD: 9.635
TVD: 6.374.93
Inclination: 89.6
Azimuth: 181.8

MD: 9.671
TVD: 6.37
Inclination:
Azimuth:

MD: 9.507

MD: 9.549

MD: 9.592

MD: 9.635

MD: 9.671

MD: 9.507

MD: 9.549

MD: 9.592

MD: 9.635

MD: 9.671

MD: 9.507

MD: 9.549

MD: 9.592

MD: 9.635

MD: 9.671

MD: 9.507

MD: 9.549

MD: 9.592

MD: 9.635

MD: 9.671

MD: 9.507

MD: 9.549

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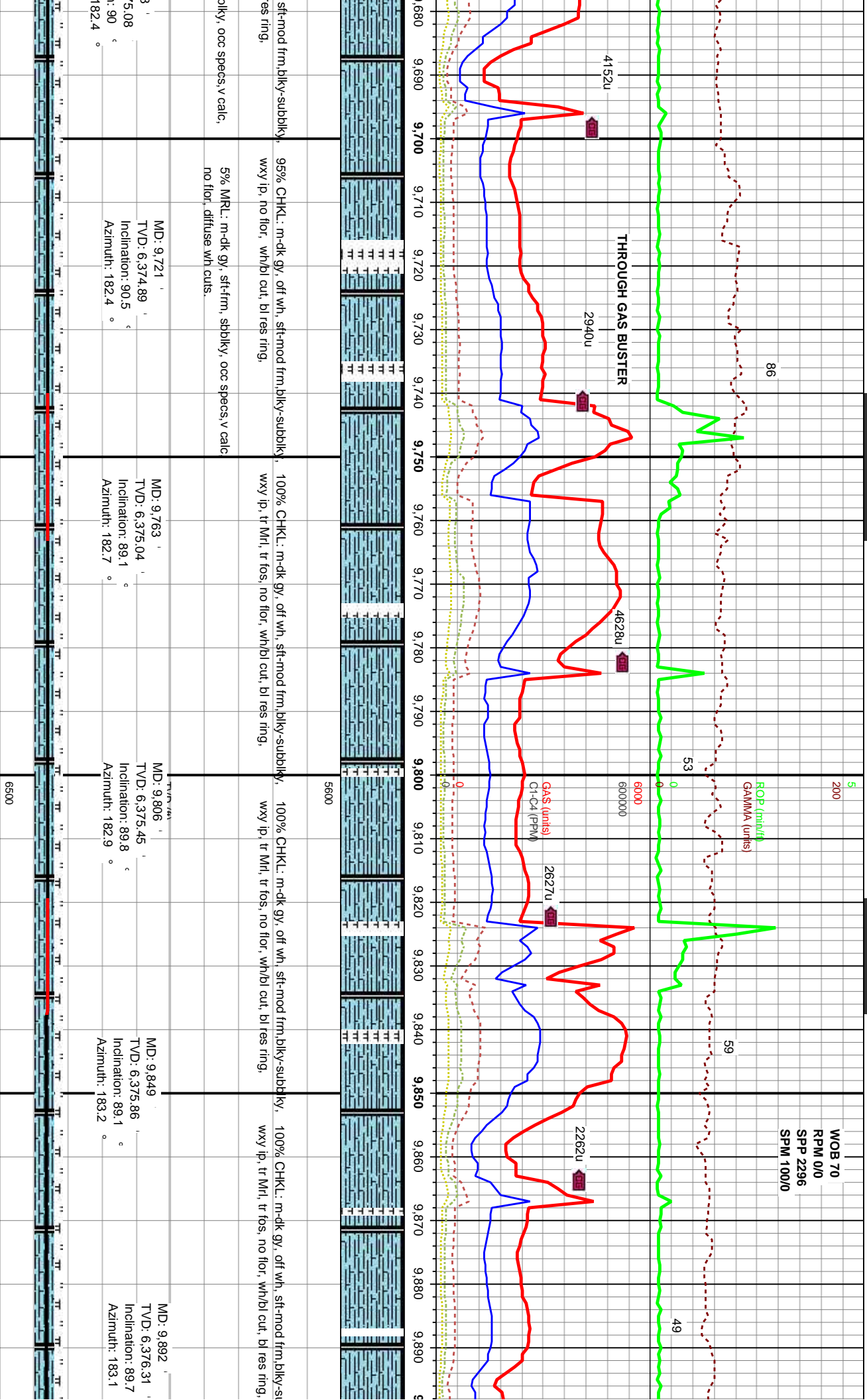
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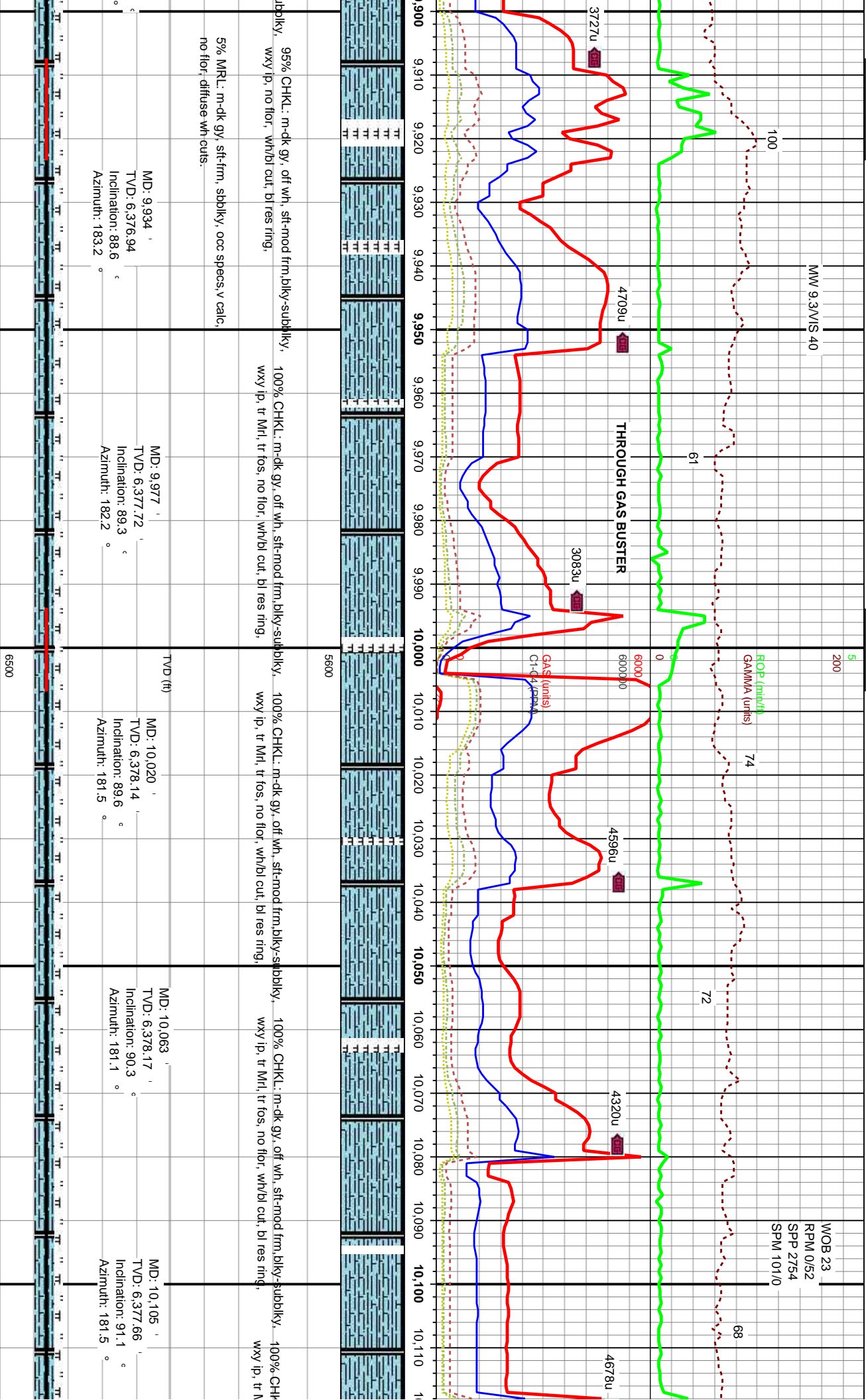
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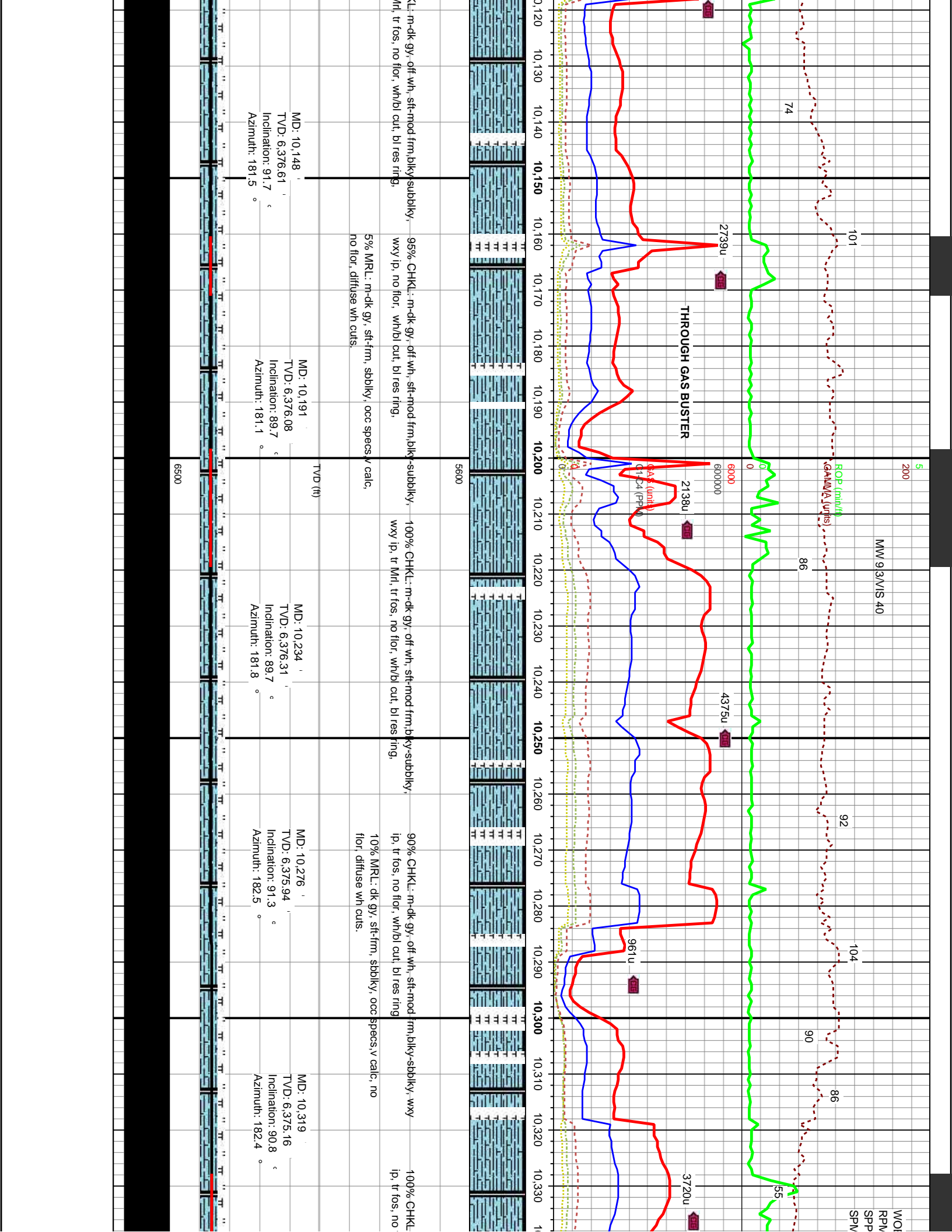
MD: 9.635

MD: 9.671

MD: 9.507







3 22
0/52
2712
100/0

5

200

EOP (min/hr)
GAMMA (units)

57

59

84

MMW 9.4/VIS 41

72

6000
600000

2399u

GAS (units)
C1-C4 (PPM)

1904u

2657u

4812u

1133u

10.340 10.350 10.360 10.370 10.380 10.390 10.400 10.410 10.420 10.430 10.440 10.450 10.460 10.470 10.480 10.490 10.500 10.510 10.520 10.530 10.540 10.550



m-dk gy, off wh, sft-mod frm, blk-y-sbbkly, wxy
lor, wh/bl cut, bl res ring.

100% CHKL: m-dk gy, off wh, sft-mod frm, blk-y-sbbkly, wxy
ip, tr fos, no flor, wh/bl cut, bl res ring.

100% CHKL: m-dk gy, off wh, sft-mod frm, blk-y-sbbkly, wxy
ip, tr fos, no flor, wh/bl cut, bl res ring.

95% CHKL: m-dk gy, off wh, sft-mod frm, blk-y-sbbkly, wxy
ip, tr fos, no flor, wh/bl cut, bl res ring.

95% CHKL: m-dk gy, off wh, sft-mod frm, blk-y-sbbkly, wxy
ip, tr fos, no flor, wh/bl cut, bl res ring.

5% MRL: dk gy, sft-frn, sbbkly, occ specs, v calc, no flor, diff

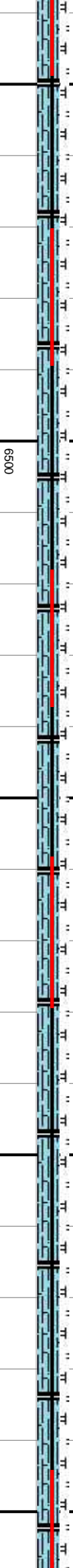
MD: 10.362
TVD: 6.374.33
Inclination: 91.4
Azimuth: 182.5

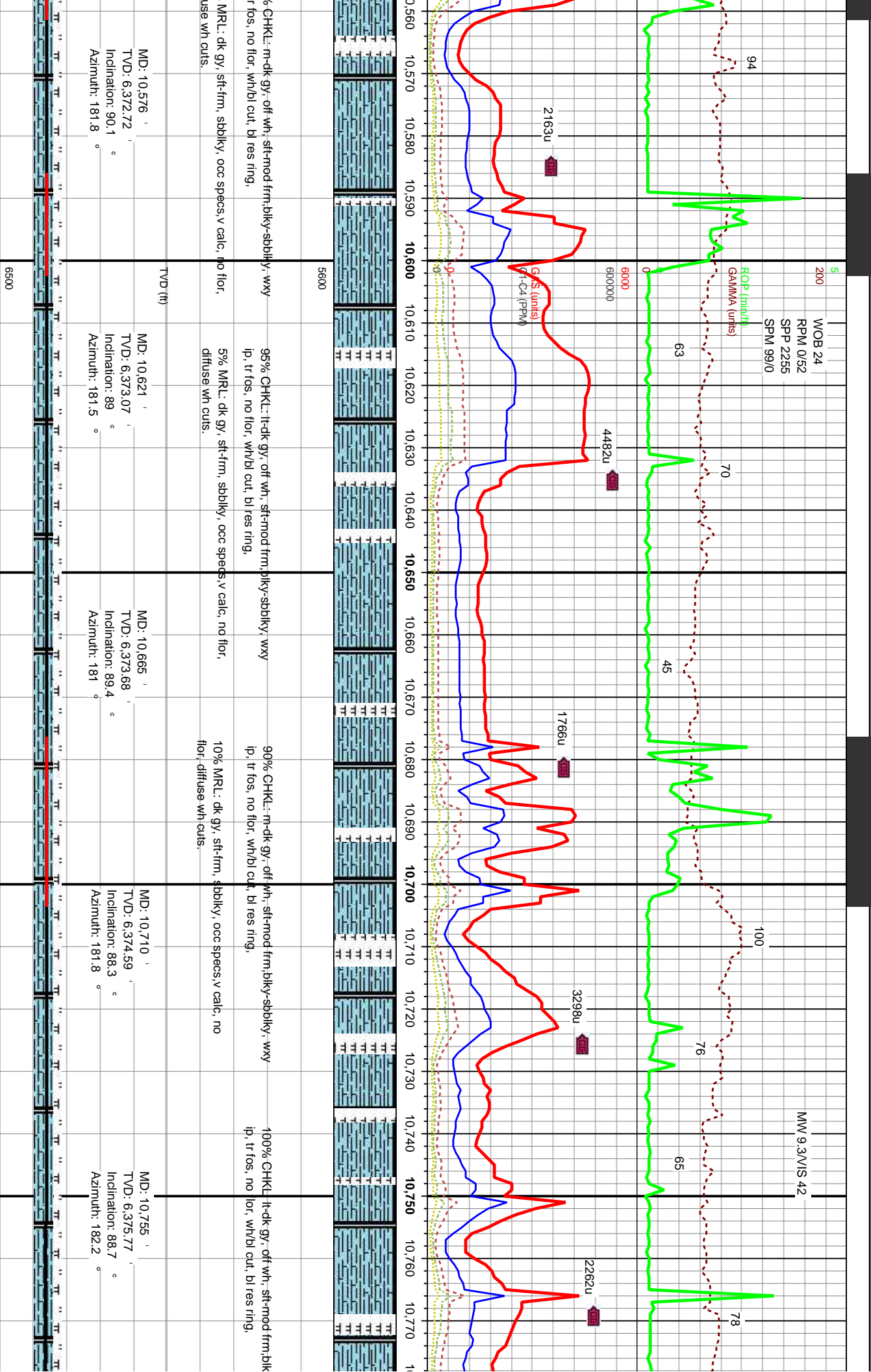
MD: 10.405
TVD: 6.373.35
Inclination: 91.2
Azimuth: 181.1

MD: 10.448
TVD: 6.372.75
Inclination: 90.4
Azimuth: 181

MD: 10.490
TVD: 6.372.75
Inclination: 89.6
Azimuth: 181.8

MD: 10.533
TVD: 6.372.83
Inclination: 90.2
Azimuth: 181.5





MIND @ 10838' 09/01/2013

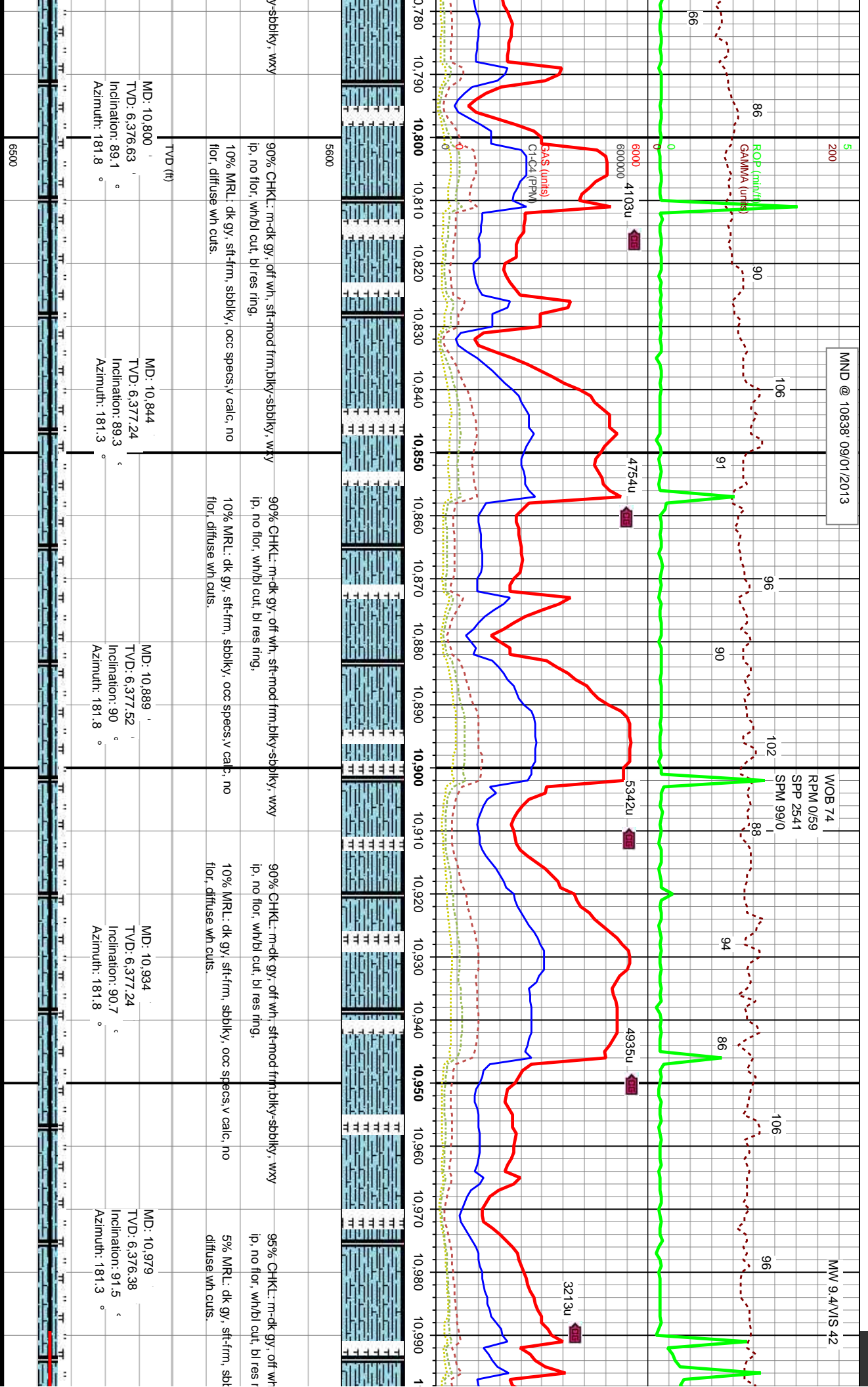
MW 9.4/VIS 42

WOB 74

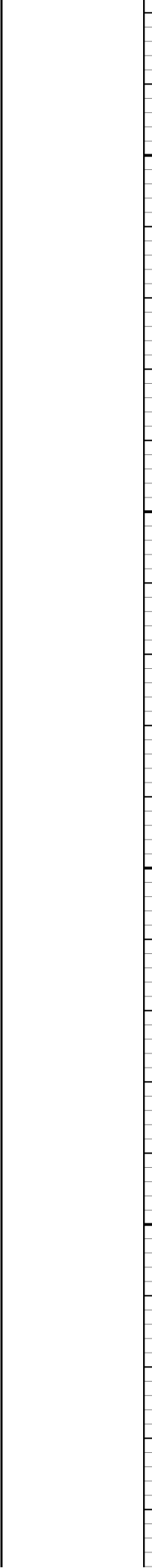
RPM 0/59

SPP 2541

SPM 99/0

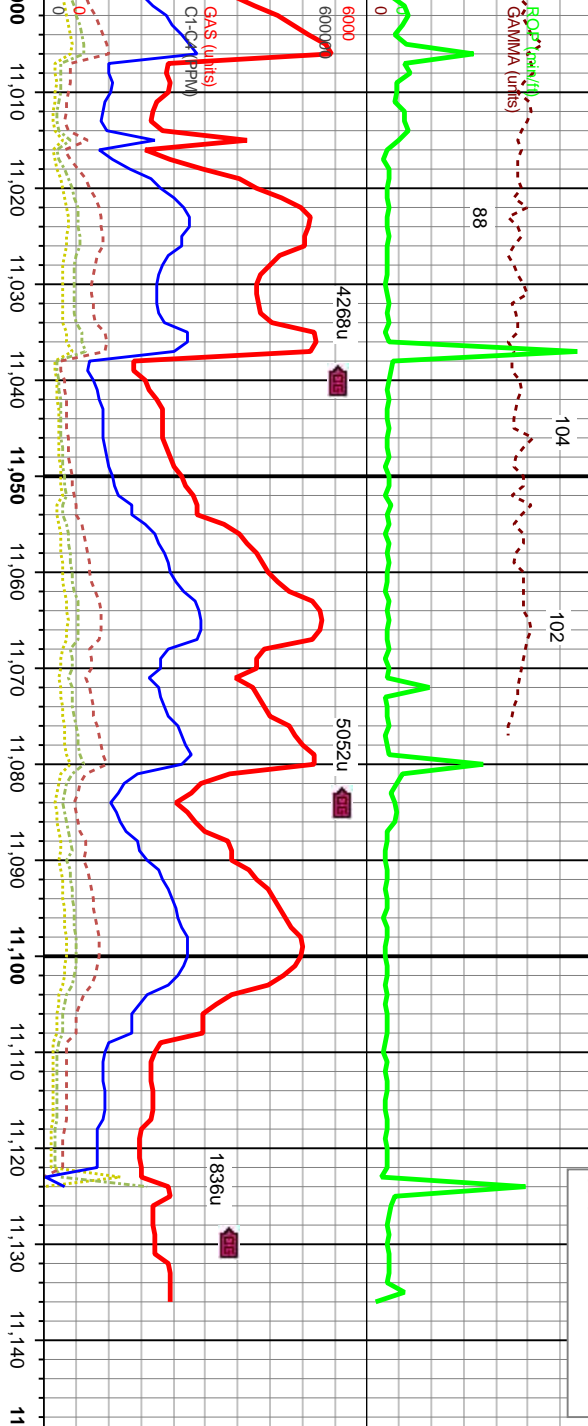


5600	90% CHKL: m-dk gy, off wh, sft-mod frm, blk-y-sbdky, wxy ip, no flr, wh/bl cut, bl res ring, 10% MRL: dk gy, sft-frm, sbdky, occ specs, v calc, no flr, diffuse wh cuts.	90% CHKL: m-dk gy, off wh, sft-mod frm, blk-y-sbdky, wxy ip, no flr, wh/bl cut, bl res ring, 10% MRL: dk gy, sft-frm, sbdky, occ specs, v calc, no flr, diffuse wh cuts.	90% CHKL: m-dk gy, off wh, sft-mod frm, blk-y-sbdky, wxy ip, no flr, wh/bl cut, bl res ring, 10% MRL: dk gy, sft-frm, sbdky, occ specs, v calc, no flr, diffuse wh cuts.	95% CHKL: m-dk gy, off wh ip, no flr, wh/bl cut, bl res r diffuse wh cuts.
MD: 10,800 TVD: 6,376.63 Inclination: 89.1 Azimuth: 181.8	MD: 10,844 TVD: 6,377.24 Inclination: 89.3 Azimuth: 181.3	MD: 10,889 TVD: 6,377.52 Inclination: 90 Azimuth: 181.8	MD: 10,934 TVD: 6,377.24 Inclination: 90.7 Azimuth: 181.8	MD: 10,979 TVD: 6,376.38 Inclination: 91.5 Azimuth: 181.3



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200

TD @ 11136' 09/01/2013
03.3 hr.



5600	90% CHK.: m-dk gy, off wh, sft-mod frm, blk-y-sbblk, wxy ip, no flor, wh/bl cut, bl res ring,	95% CHK.: m-dk gy, off wh, sft-mod frm, blk-y-sbblk, wxy ip, no flor, wh/bl cut, bl res ring,
blk-y, occ specs, v calc, no flor,	10% MRL: dk gy, sft-frm, sbblk, occ specs v calc, no flor, diffuse wh cuts.	5% MRL: dk gy, sft-frm, sbblk, occ specs, v calc, no flor, diffuse wh cuts.
TVD (ft)	MD: 11,024 TVD: 6,375.87 Inclination: 89.8 ° Azimuth: 181.8 °	MD: 11,081 TVD: 6,375.37 Inclination: 91.2 ° Azimuth: 182 °
BIT PROJECTION		
6500	MD: 11,136 TVD: 6,374.22 Inclination: 91.2 ° Azimuth: 182 °	