

Décollement  
Consulting  
Inc.



Scale: 5" / 100'  
Measured Depth Log

Well Name State Seventy Holes 34-31-6HNB

Location SESE Sec 6 T4N R62W

State Colorado

Country USA

API Number 05-123-37914-00

County Weld

Rig Number Ensign 136

Field DJ. Basin

Spud Date 9/16/2013

Drilling Completed 9/23/2013

Surface Coordinates 430 FSL X 1134 FEL

Ground Elevation 4530'

K.B. Elevation 4543'

Logged Interval 5800' To 10991'

Total Depth 10991'

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

BELLEMITE

BIOLCLASTIC

BRACHIOPOD

BRYOZOA

CEPHALOPD

CORAL

CRINOID

ECHINOID

FISH

FORAMINIFERA

ANHYDRITIC

- ARGILLACEOUS

/ ARGILLITE GRAIN

B BENTONITE

BITUMENOUS SUBSTANCE

BRECCIA FRAGMENTS

1 CALCAREOUS

■ CARBONACEOUS FLAKES

▲ CHERT

— COAL - THIN BEDS

▲ DOLOMITIC

+ FELDSPAR

● FERRUGINOUS PELLET

▲ FERRUGINOUS

▽ GLAUCONITE

▨ GYPSIFEROUS

† HEAVY MINERAL

† KAOLIN

† MARLSTONE

✱ MINERAL CRYSTALS

● NODULES

● PHOSPHATE PELLET

† PYRITE

⦿ 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

MIN DEPTH

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

## Slide/Rotate

Decollement on location  
09/18/2013 Start logging @  
5800'

Bit #:	2
Type:	MP516
Size:	8.75
Depth In:	482

MW. 9.5 VIS 46

WOB 20  
RPM 0/50  
SPP 2407  
SPM 105/105

**ROP**

ROF —

GAMMA - - -

GR —

### Total Gas & Chromatograph

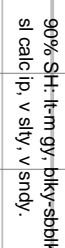
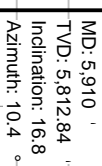
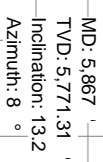
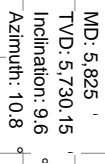
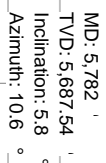
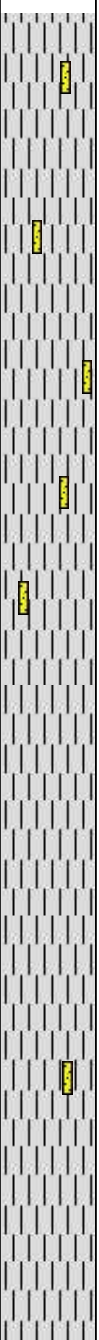
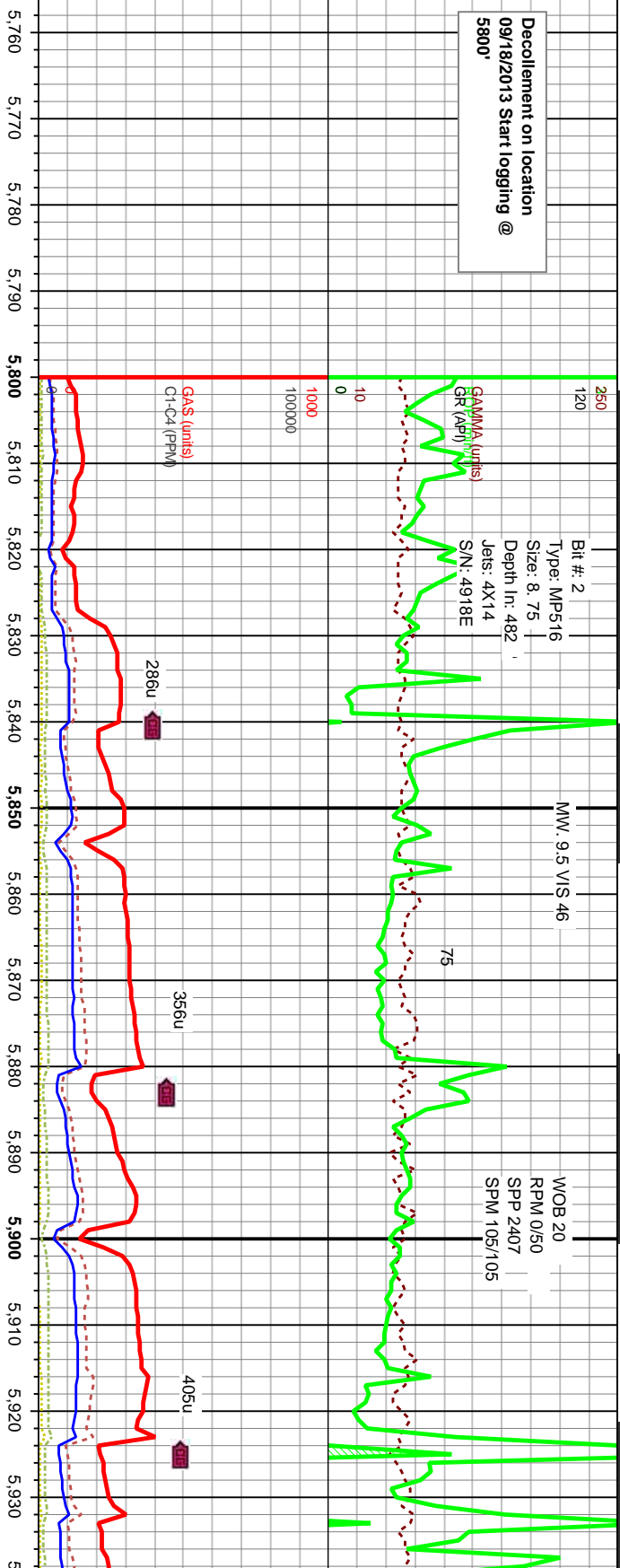
## Depth Labels

**Interp Lith**

**Well Bore**  
**TVD** —

## Oil Show

## Images



20% SS: It-m gy, trans ip, fri-hd ip, m (l)-vf (l),  
sb ang-sb md, mod srt, arg, no flor.

10% SS: It-m gy, trans ip, fri-hd ip, m (l)-vf (l),  
sb ang-sb rnd, mod srt, arg, no flör.

10% SS: lt-m gy, wh ip, S&sbang-sbrnd, mod srt, arg i

6300

TR  
P  
FR  
G  
E

TR  
P  
FR  
G  
E

MMW 9.5V/S 49

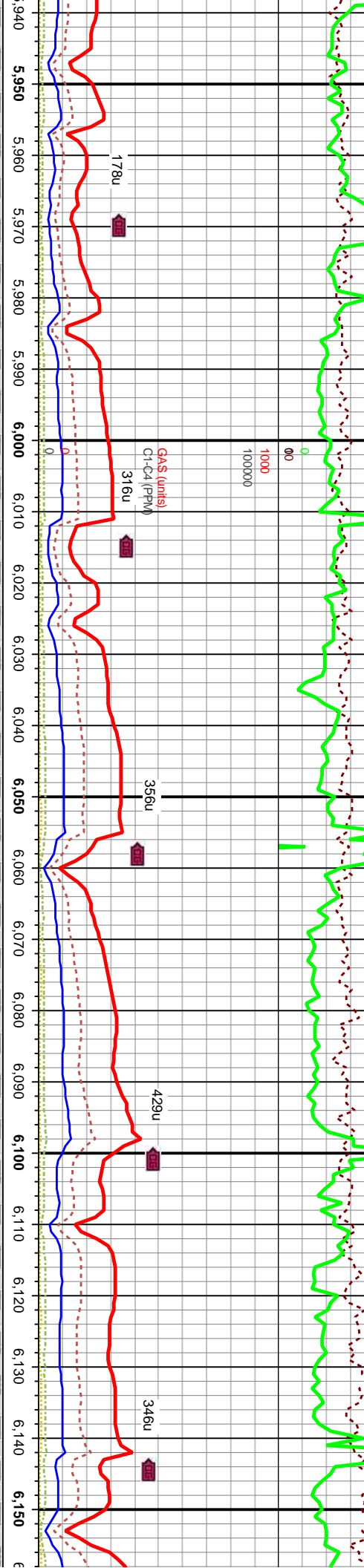
200  
250  
0  
1000  
100000

GOP (units)  
GAP (units)  
GAMMA (units)

82

108

91



MD: 5.953  
TVD: 5.853.7  
Inclination: 19.5  
Azimuth: 9.2

MD: 5.996  
TVD: 5.893.76  
Inclination: 23.1  
Azimuth: 4.6

MD: 6.038  
TVD: 5.931.78  
Inclination: 27.1  
Azimuth: 2

MD: 6.081  
TVD: 5.969.39  
Inclination: 30.9  
Azimuth: 0.8

MD: 6.124  
TVD: 6.005.44  
Inclination: 35.1  
Azimuth: 358.8

90% SH: lt-m gy, blk-y-sbbkly, pily ip, sft-mnd frm,  
sl calc ip, v sily, v sndy.

90% SH: lt-m gy, blk-y-sbbkly, pily ip, sft-mnd frm,  
sl calc ip, v sily, v sndy.

90% SH: lt-m gy, blk-y-sbbkly, pily ip, sft-mnd frm,  
sl calc ip, v sily, v sndy.

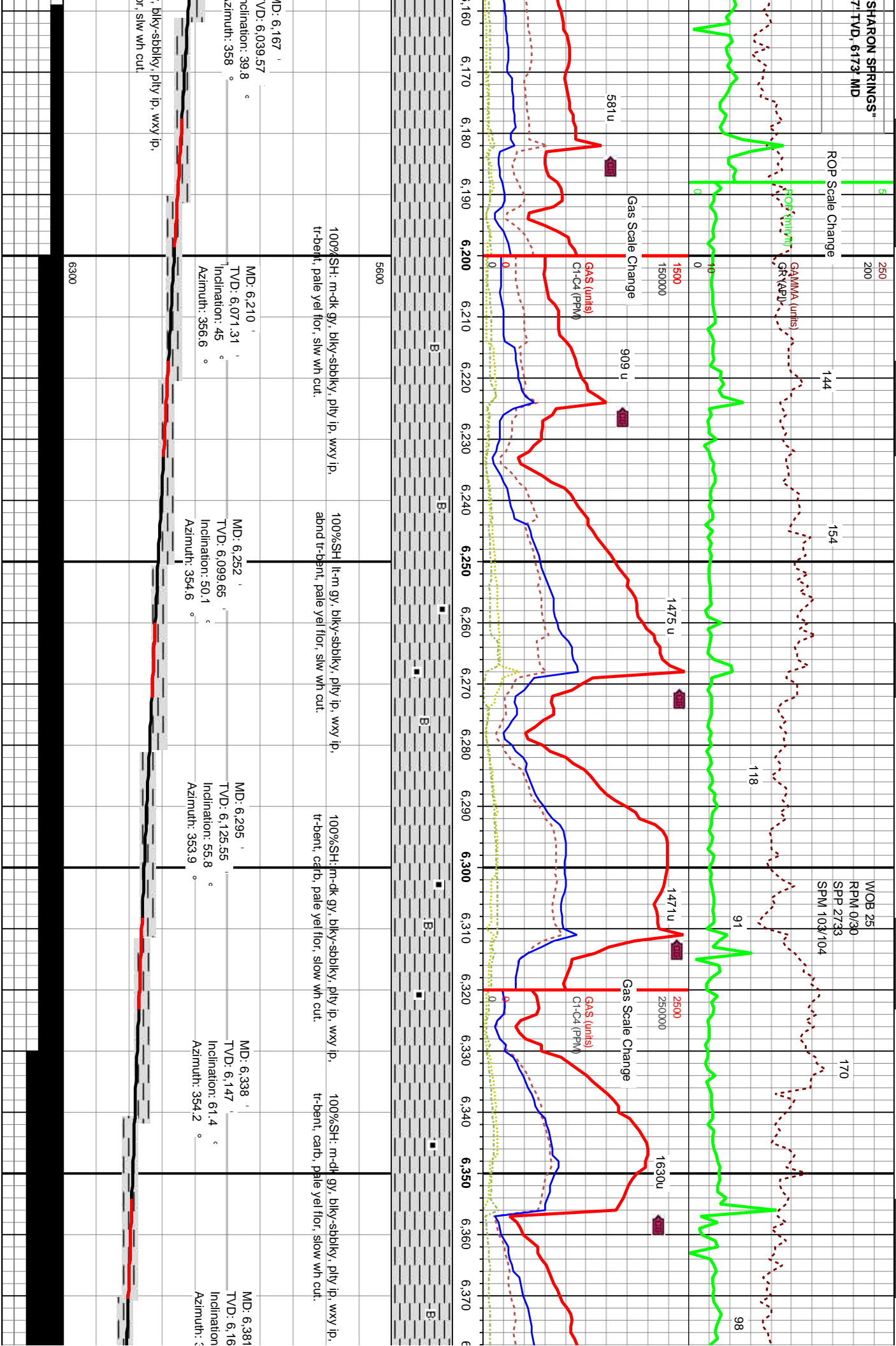
100% SH: lt-m gy, blk-y-sbbkly, pily ip, sft-mnd  
frm, sl calc, v sily, r SS aa.

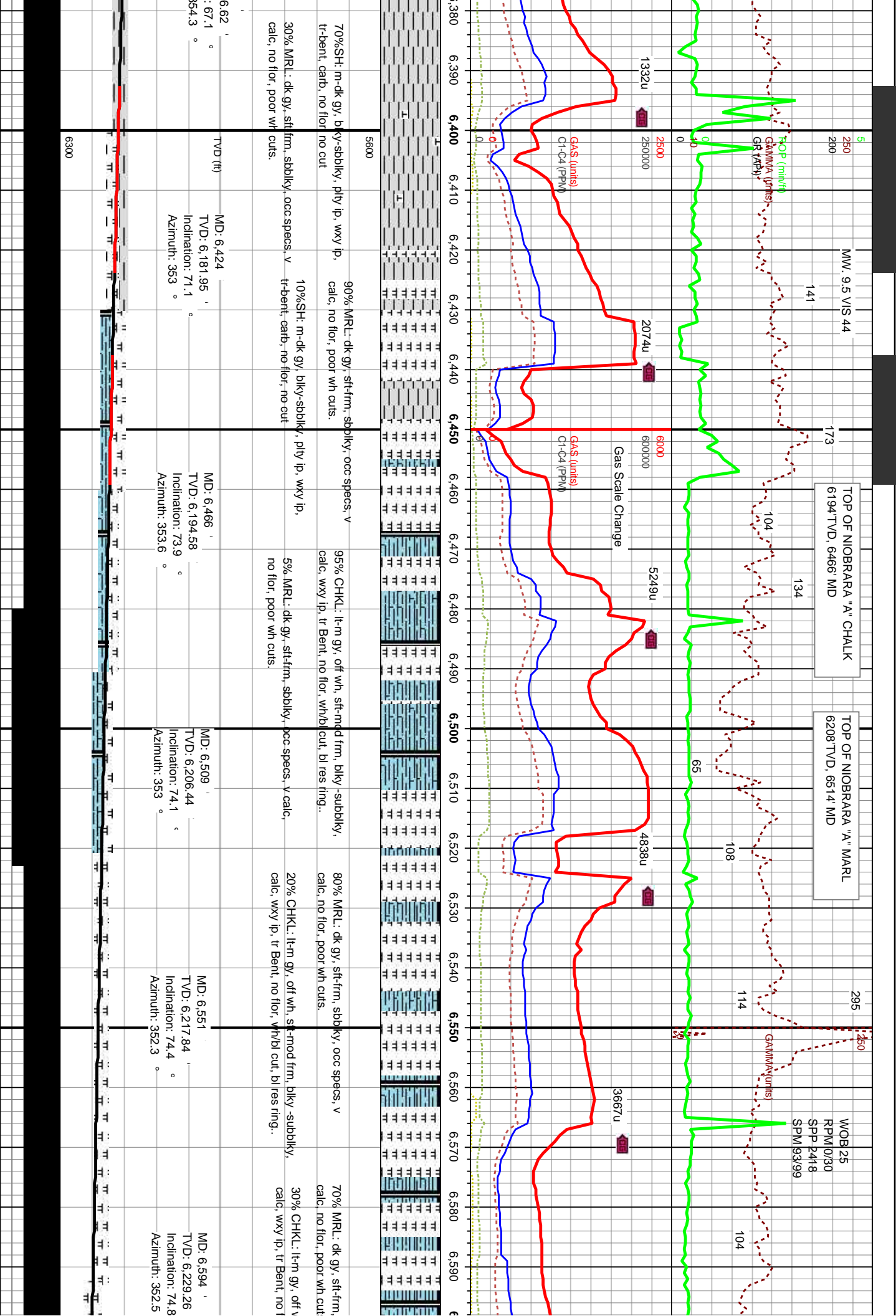
100% SH: m-dk gy,  
tr-bent, pale yel fll

P, fri-hd ip, v f (u-f(l), p, no flor, no cut.	6300
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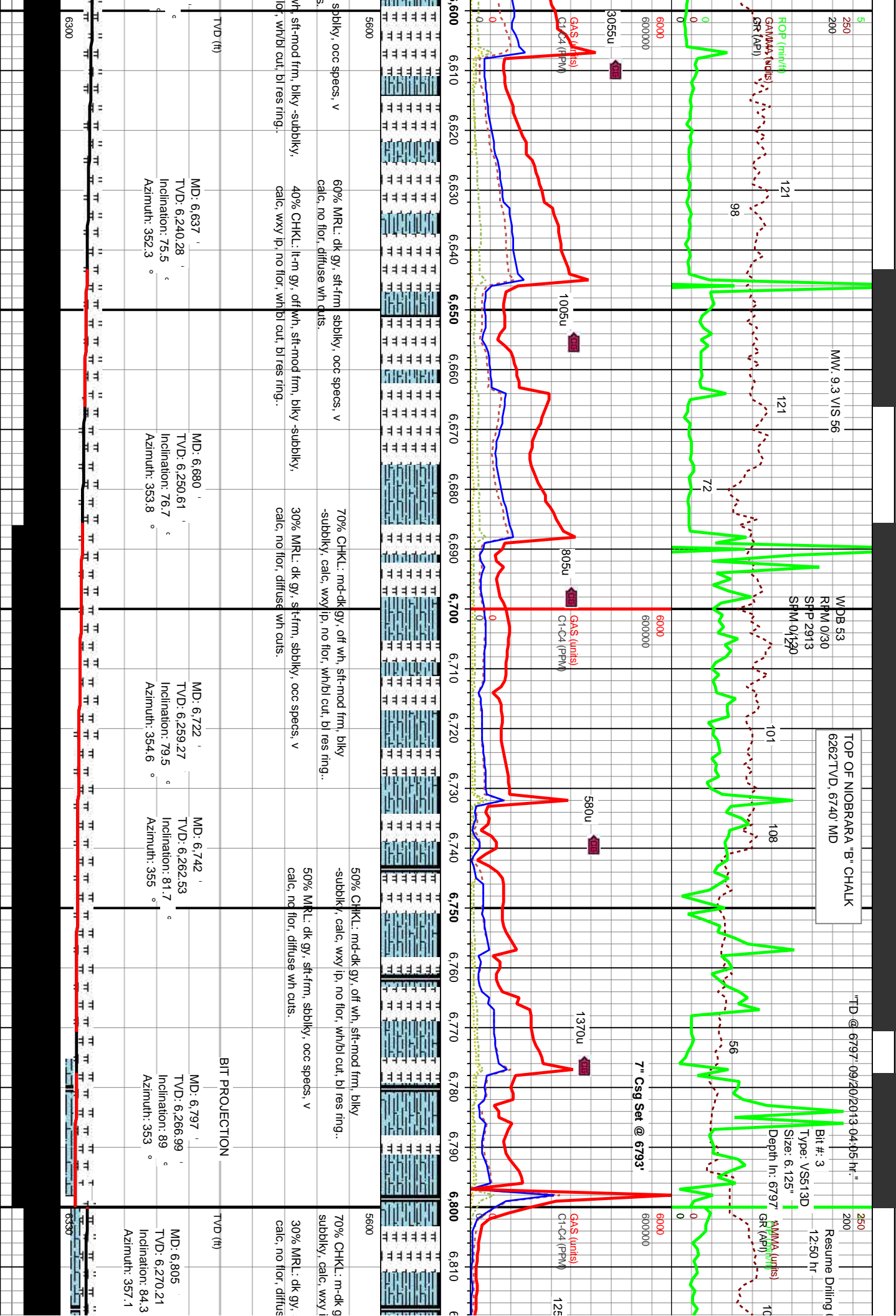
SHARON SPRINGS"  
7' TVD, 6173' MD

7' TVD, 6173' MD









119

106

112

119

97

114

104

125

99

86

106

112

119

97

114

104

125

99

119

106

112

119

97

114

104

125

99

119

106

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114

104

125

99

119

106

112

119

97

114

104

125

99

2071u

2480u

3350u

2637u

2199u

GAS (units)

C1-C4 (PPM)

0

0

2071u

2480u

3350u

2637u

2199u

GAS (units)

C1-C4 (PPM)

0

0

2071u

2480u

3350u

2637u

2199u

GAS (units)

C1-C4 (PPM)

0

0

2071u

2480u

3350u

2637u

2199u

GAS (units)

C1-C4 (PPM)

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2071u

2480u

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2637u

2199u

GAS (units)

C1-C4 (PPM)

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2071u

2480u

3350u

2637u

2199u

GAS (units)

C1-C4 (PPM)

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2071u

2480u

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2199u

GAS (units)

C1-C4 (PPM)

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2071u

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3350u

2637u

2199u

GAS (units)

C1-C4 (PPM)

0

0

2071u

2480u

3350u

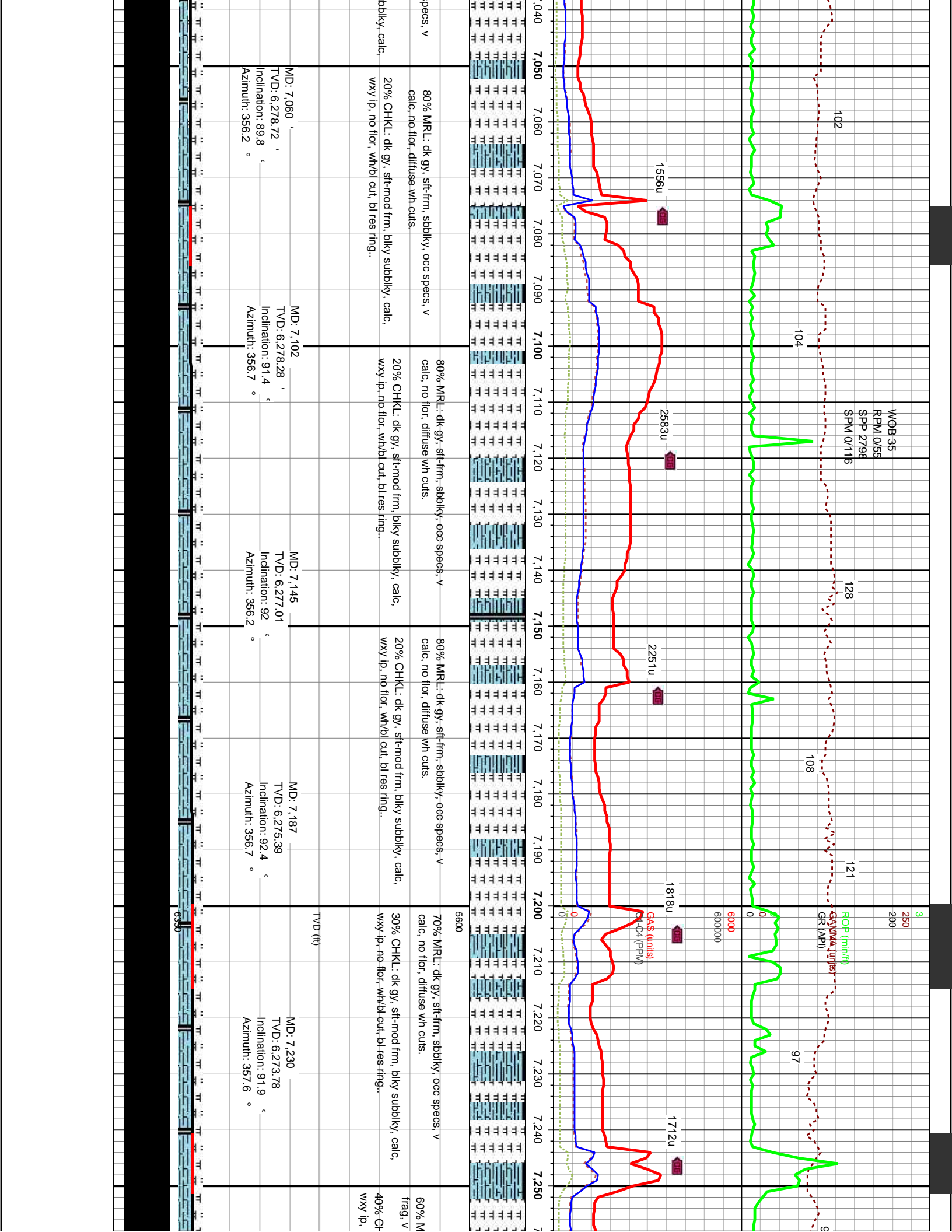
2637u

2199u

GAS (units)

C1-C4 (PPM)





MW 8.9V/S 30

3 250  
200

MOB 13  
RPM 0/5P  
SPP 2651  
SPM 114/0

ROP (m/h)  
GAMMA (units)  
GR (API)

84

72

88

95

78

86

78

108

75

2614u

1449u

3383u

3175u

3404u

GAS (units)  
C1-C4 (PPM)

7.260 7.270 7.280 7.290 7.300 7.310 7.320 7.330 7.340 7.350 7.360 7.370 7.380 7.390 7.400 7.410 7.420 7.430 7.440 7.450 7.460 7.470



R.L.: dk gy, sft-firm, sbblky, occ specs, tr-foss  
calcic, no flor, diffuse wh cuts.

75% CHKL: md-dk gy, sft-mod frm, blkyy subblky, calc,  
wxy ip, no flor, wh/bl cut, bl res ring.

70% CHKL: md-dk gy, sft-mod frm, blkyy subblky, calc,  
wxy ip, no flor, wh/bl cut, bl res ring.

5600

50% CHKL: md-dk gy, sft-mod frm, blkyy subblky, calc,  
wxy ip, no flor, wh/bl cut, bl res ring.

60% MRL: dk gy, sft-firm, sbb  
frag, v calc, no flor, diffuse wh

KL: dk gy, sft-mod frm, blkyy subblky, calc,  
no flor, wh/bl cut, bl res ring.

25% MRL: dk gy, sft-firm, sbblky, occ specs, tr-foss  
frag, v calc, no flor, diffuse wh cuts.

30% MRL: dk gy, sft-firm, sbblky, occ specs, tr-foss  
frag, v calc, no flor, diffuse wh cuts.

50% MRL: dk gy, sft-firm, sbblky, occ specs, tr-foss  
frag, v calc, no flor, diffuse wh cuts.

40% CHKL: dk gy, sft-mod frm  
wxy ip, no flor, wh/bl cut, bl res

MD: 7.273

TVD: 6.272.39

Inclination: 91.8 °

Azimuth: 357.8 °

MD: 7.315

TVD: 6.271.48

Inclination: 90.7 °

Azimuth: 357.3 °

MD: 7.358

TVD: 6.271.78

Inclination: 88.5 °

Azimuth: 357.3 °

MD: 7.401

TVD: 6.273.01

Inclination: 88.2 °

Azimuth: 357.1 °

MD: 7.444

TVD: 6.274.21

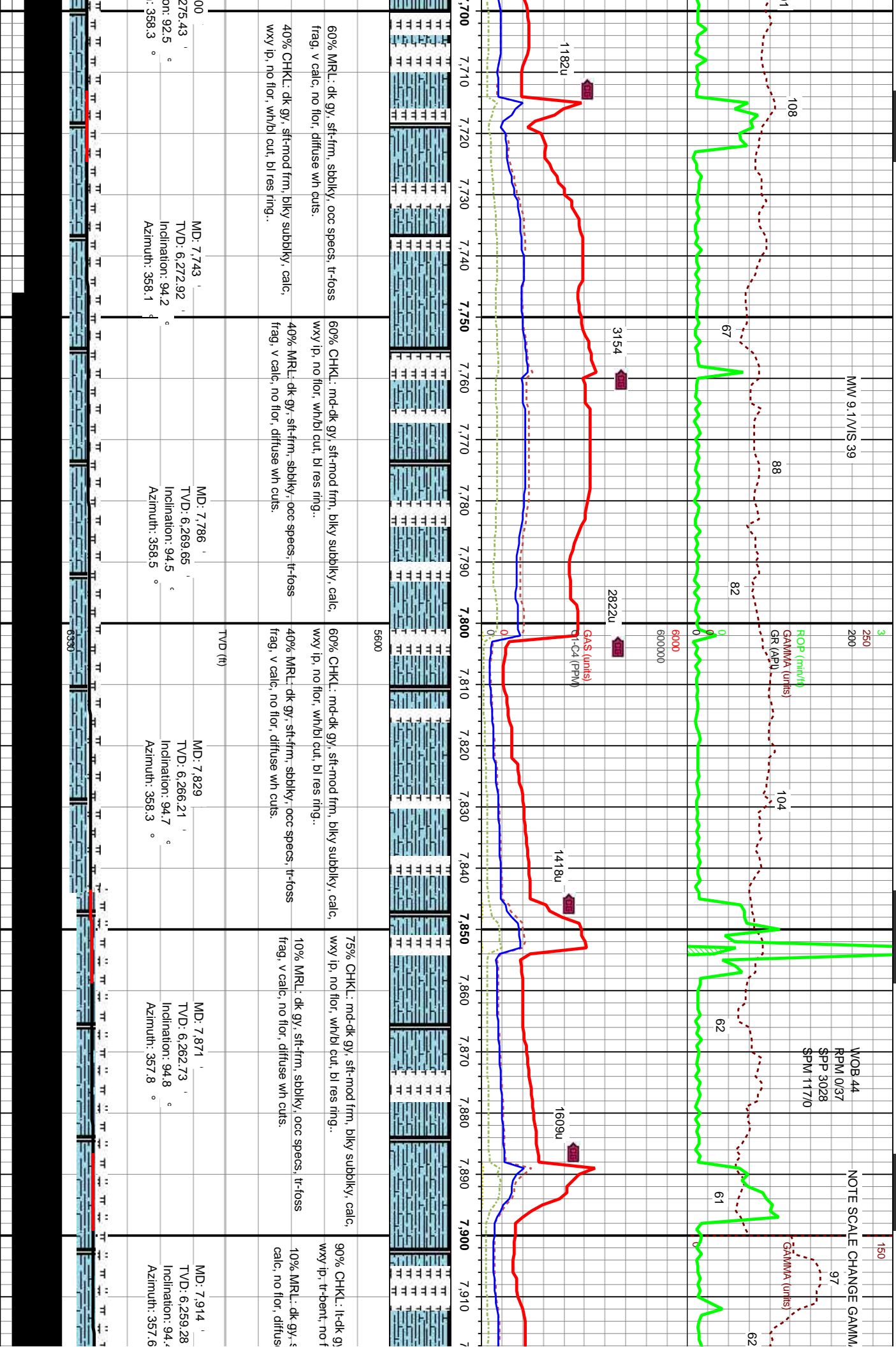
Inclination: 88.6 °

Azimuth: 356.9 °

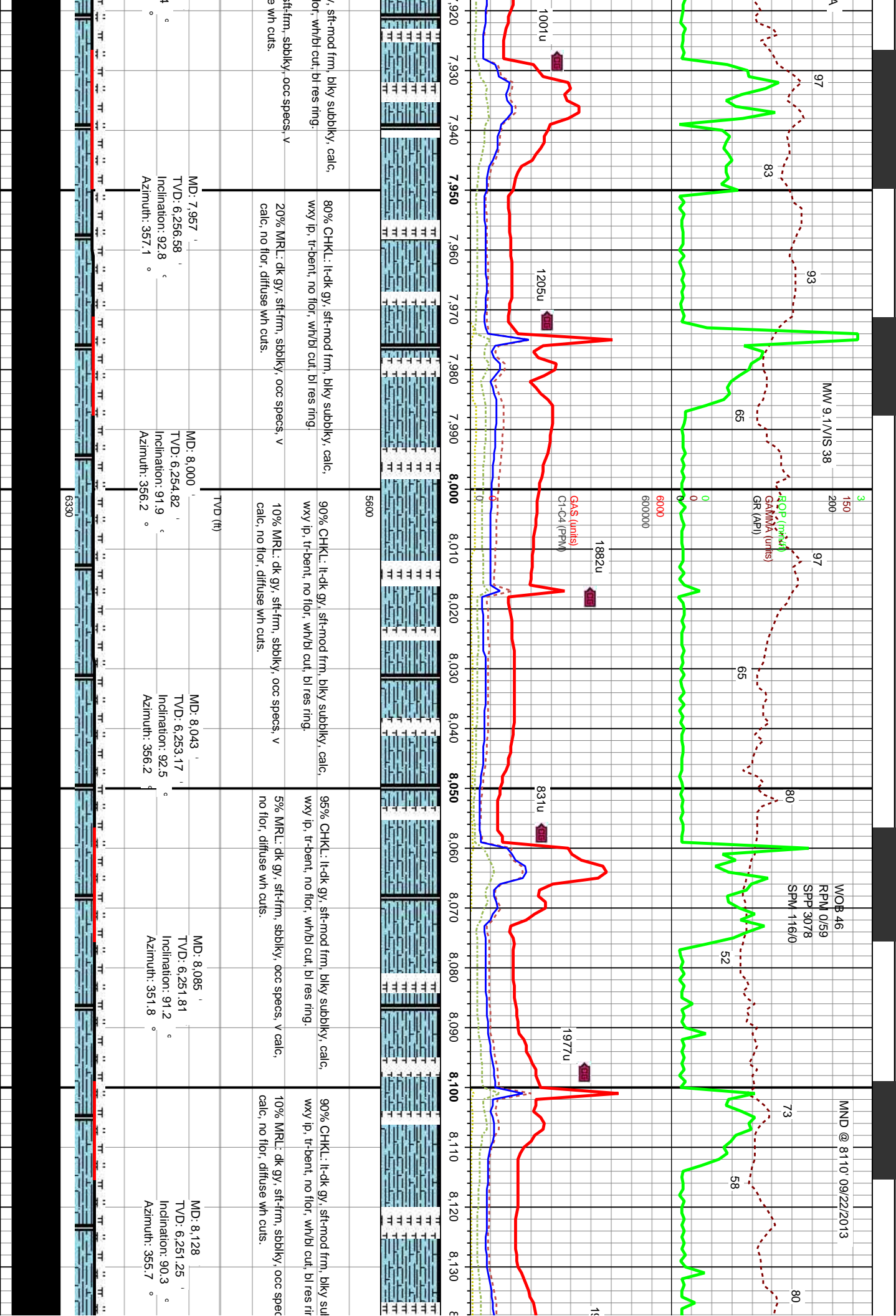


6350

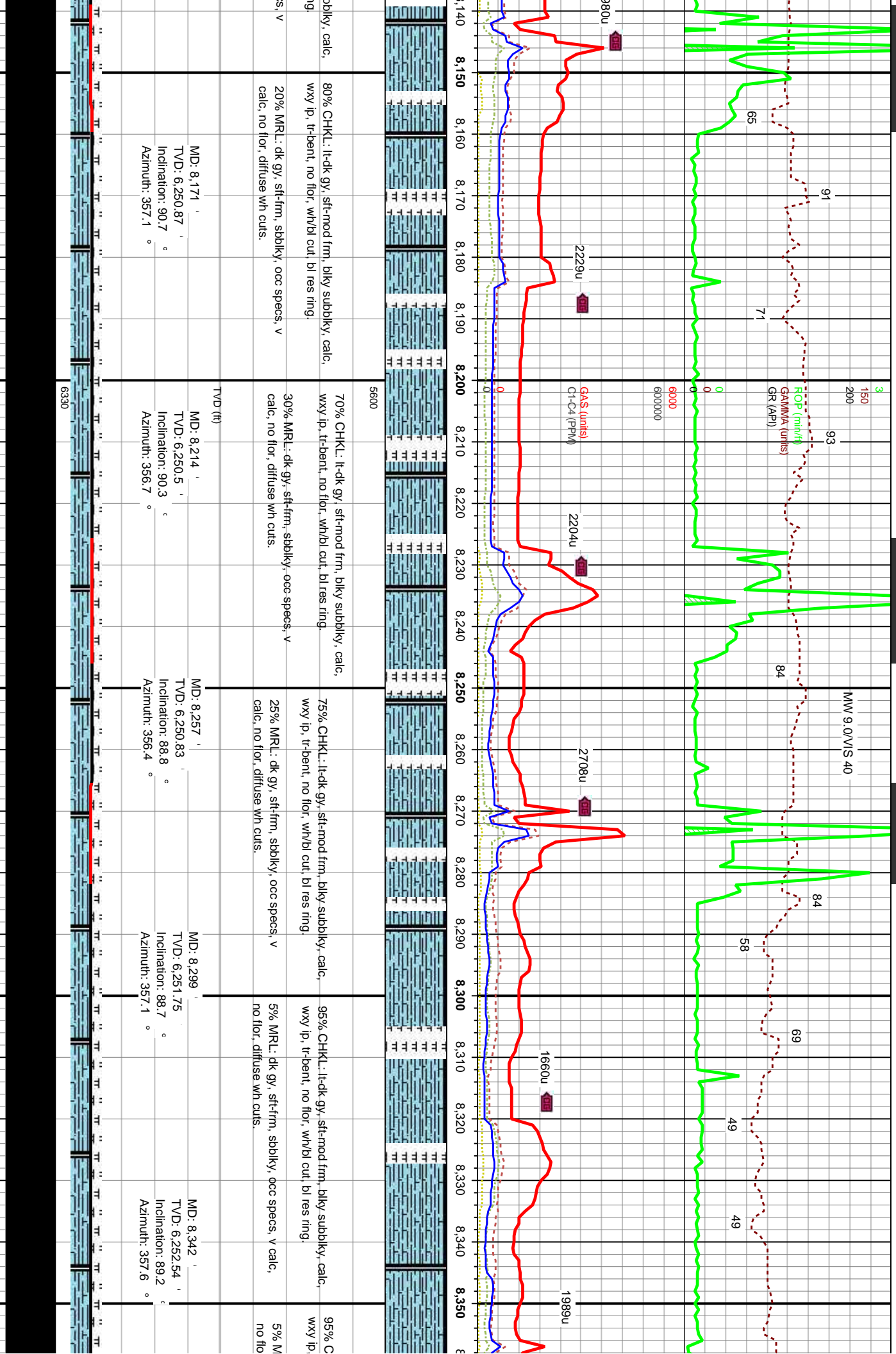


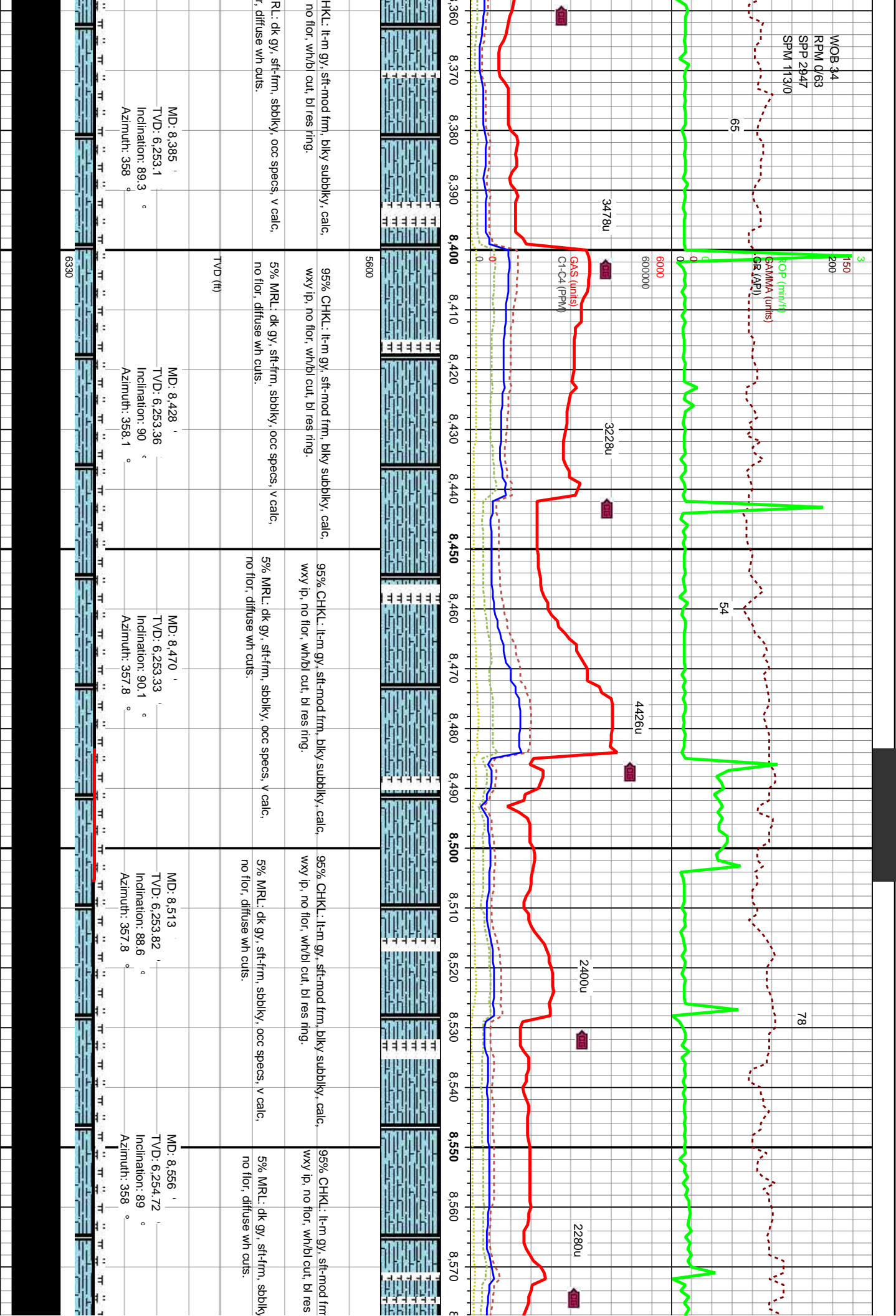


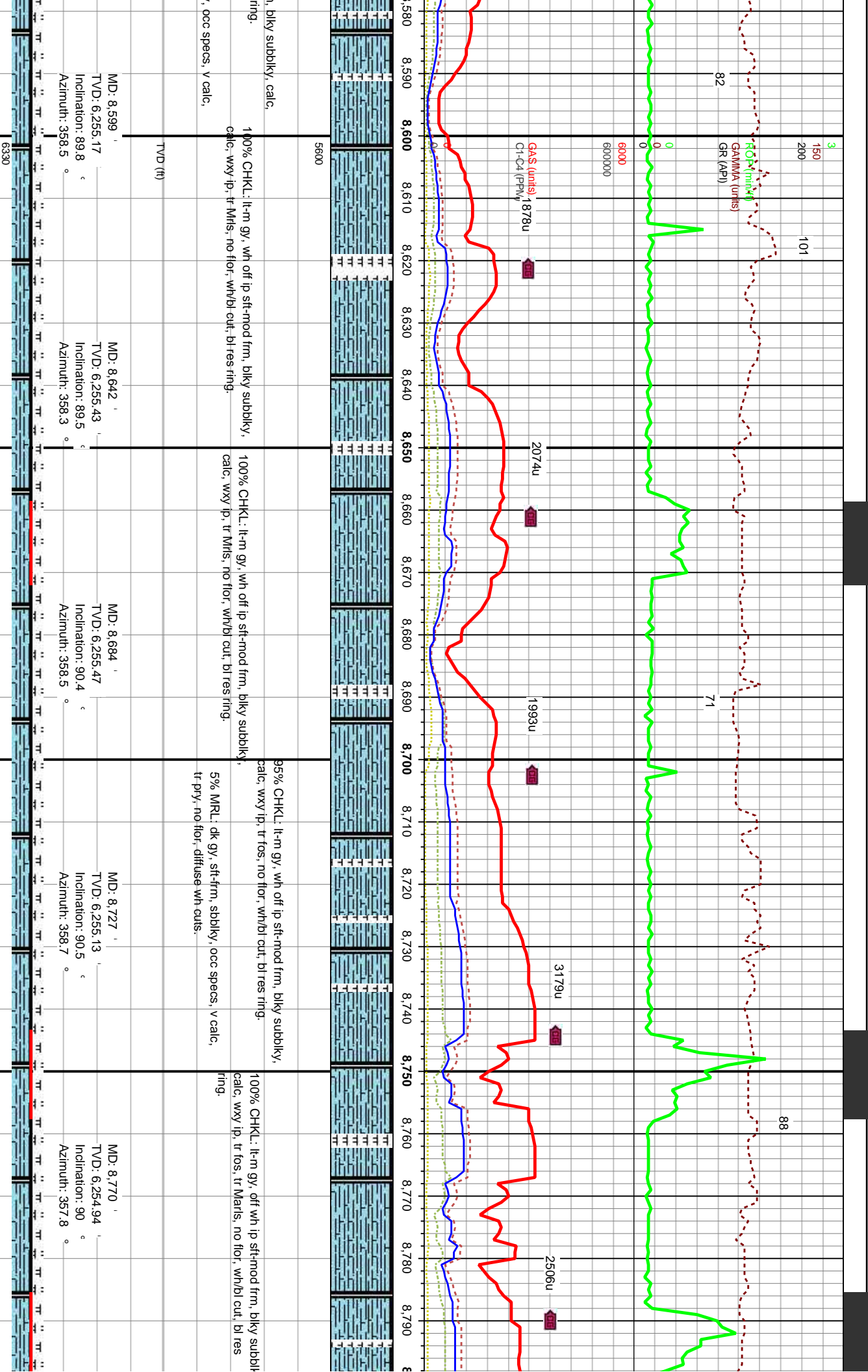












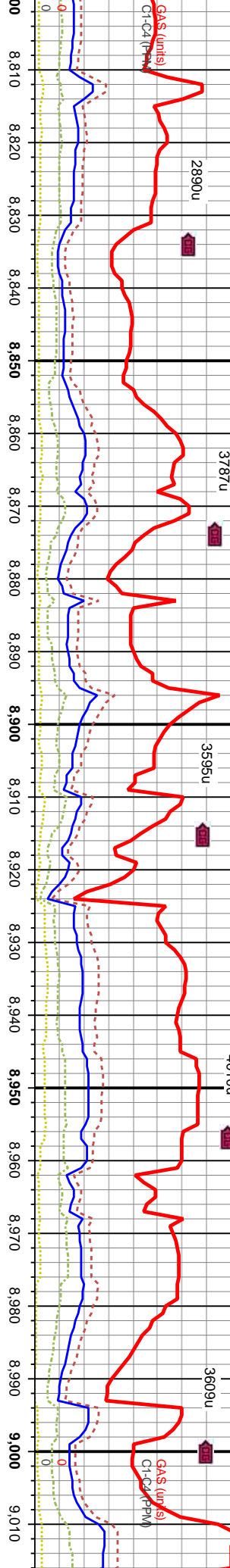
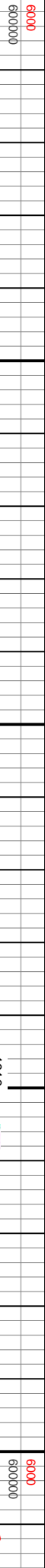
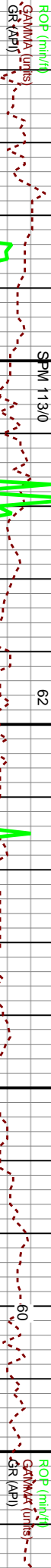


3150200

MOB 34  
RPM 0/63  
SPM 2947  
SPM 113/0

3150200

MMW 9



5600

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

5600

MD: 8,813  
TVD: 6,254.49  
Inclination: 91.2 °  
Azimuth: 356.9 °

MD: 8,856  
TVD: 6,253.51  
Inclination: 91.4 °  
Azimuth: 356.7 °

MD: 8,898  
TVD: 6,252.82  
Inclination: 90.5 °  
Azimuth: 356.4 °

MD: 8,941  
TVD: 6,252.63  
Inclination: 90 °  
Azimuth: 356.4 °

MD: 8,984  
TVD: 6,253.04  
Inclination: 88.9 °  
Azimuth: 356.2 °

