

Décollement
Consulting
Inc.



Scale: 5" / 100'
Measured Depth Log

Well Name Latham O-K-2HNB

Location SWSE Sec 2, T4N, R63W

State Colorado

Country USA

API Number 05-123-37287-00

County Weld

Rig Number Ensign 136

Field DJ. Basin

Spud Date 6/1/2013

Drilling Completed 6/10/2013

Surface Coordinates 296 FSL X 2162 FEL

Ground Elevation 4521'

K.B. Elevation 4533'

Logged Interval 5800' To 10917'

Total Depth 10917'

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

M MARLSTONE

✓ MINERAL CRYSTALS

✓ NODULES

• PHOSPHATE PELLET

P PYRITE

田 SALT CAST

: SANDY

✓ SILTY

✓ TUFFACEOUS

ANHYDRITE STRINGER

BENTONITE STRINGER

COAL STRINGER

DOLOMITE STRINGER

GYPSUM STRINGER

L LESTONE 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

✓ 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

M MUDSTONE

R ROUNDED

a SUBANG

n SUBRAND

B BOUNDSTONE

P POOR

C CHALKY

CX CRYPTOXLN

E EARTHY

FX FINELYXLN

G GRAINSTONE

L LITHOGRAPHIC

Sorting

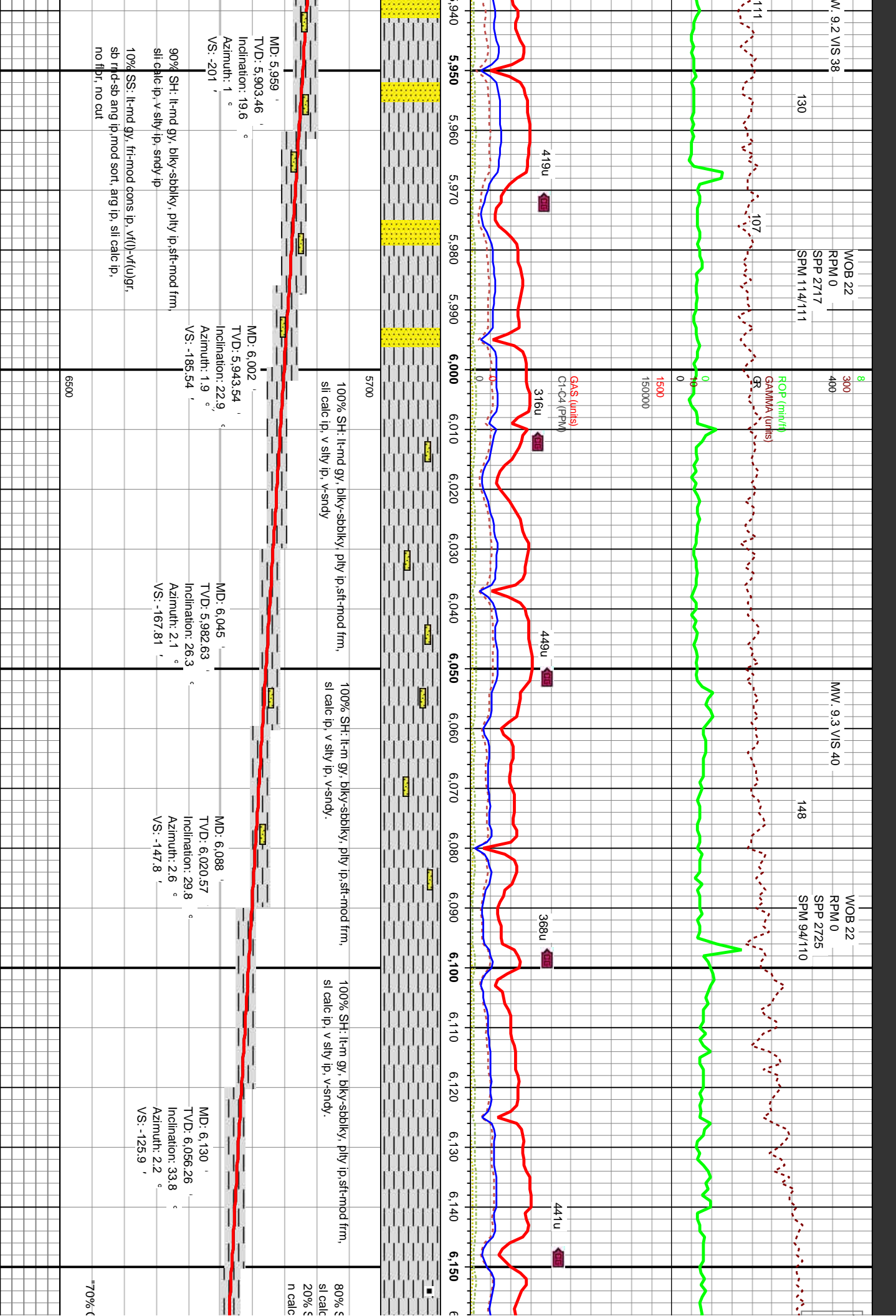
M MODERATE

P POOR

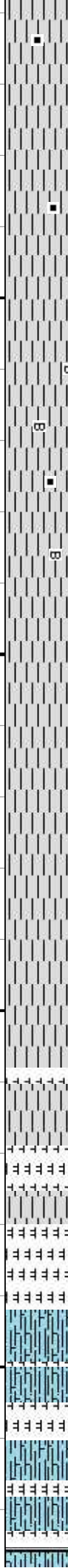
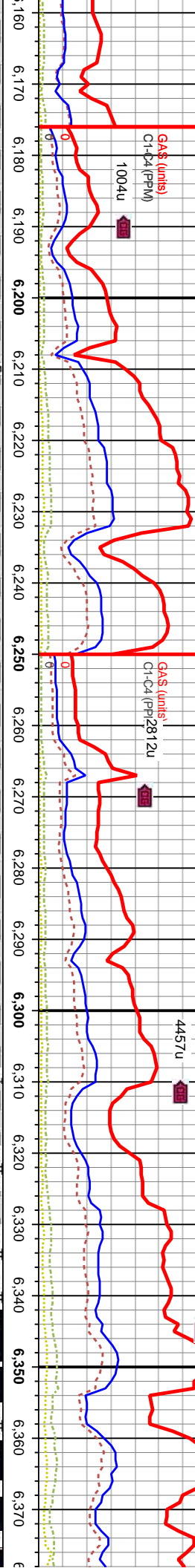
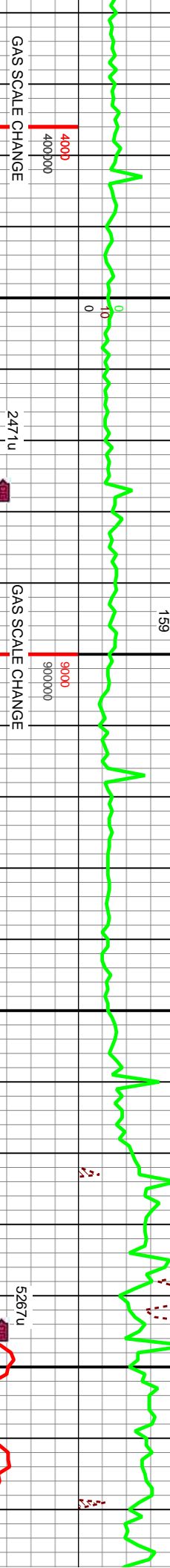
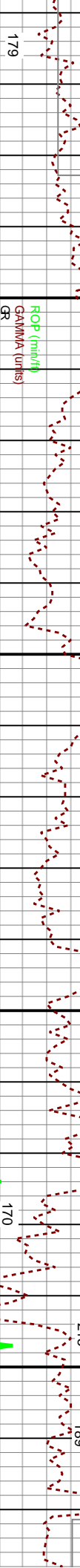
W WELL

Chalk

Rounding



Top Sharron Springs @ 6167' MD, 6087' TVD



SH: lt-m gy, blk-y-sbbkly, pily ip, sft-mod frm, ip, v silty ip, v-sndy.
SH: m-dk gy, blk-y-sbbkly, pily ip, sft, carb, wxy ip, no flr.

MD: 6.173
TVD: 6.091.15
Inclination: 37.7 °
Azimuth: 2.2 °
VS: -101.02 °

MD: 6.216
TVD: 6.124.13
Inclination: 42.1 °
Azimuth: 2.4 °
VS: -73.72 °

MD: 6.259
TVD: 6.154.87
Inclination: 46.6 °
Azimuth: 2.4 °
VS: -43.98 °

MD: 6.302
TVD: 6.183.07
Inclination: 51.4 °
Azimuth: 2.6 °

MD: 6.344
TVD: 6.207.81
Inclination: 56.4 °
Azimuth: 2.8 °

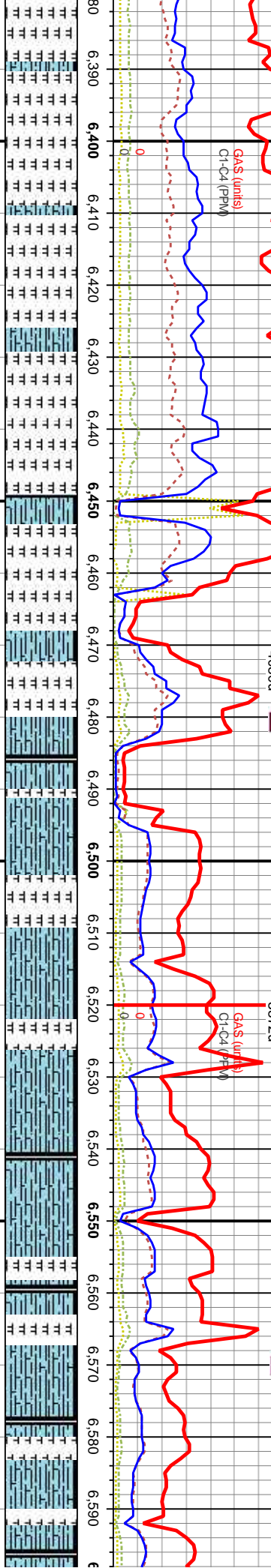
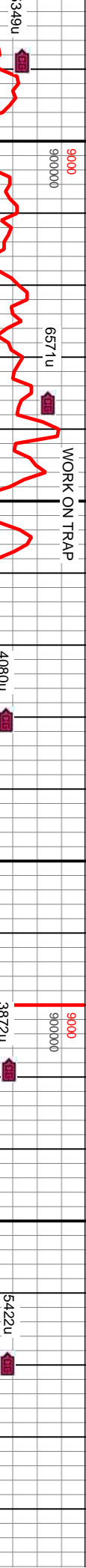
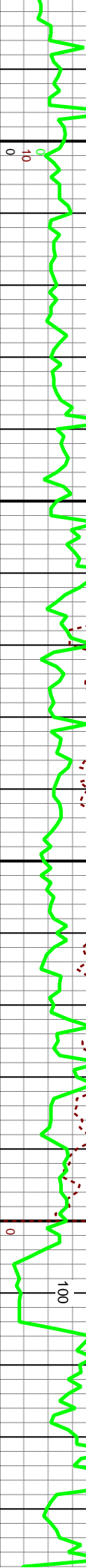
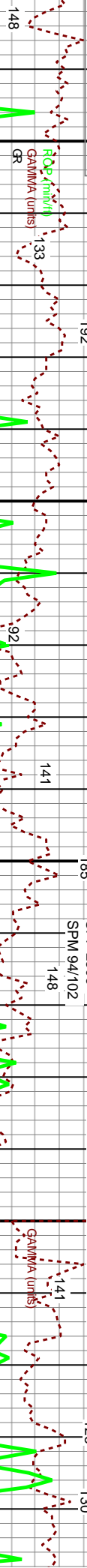
OBRAARA "A" Mar @
MD, 6210' TVD

Top of B-Chalk @
6464' MD 6259' TVD

WOB 35
RPM 0
SPM 2306
SPM 94/102

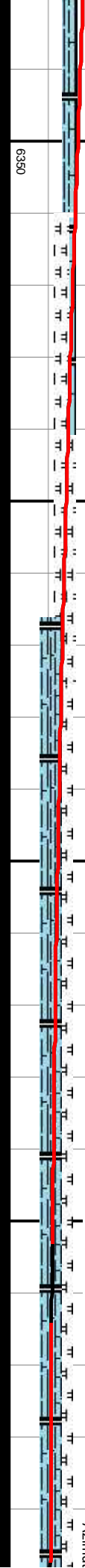
NOTE SCALE CHANGE GAMMA
MW, 9.4 VIS 45

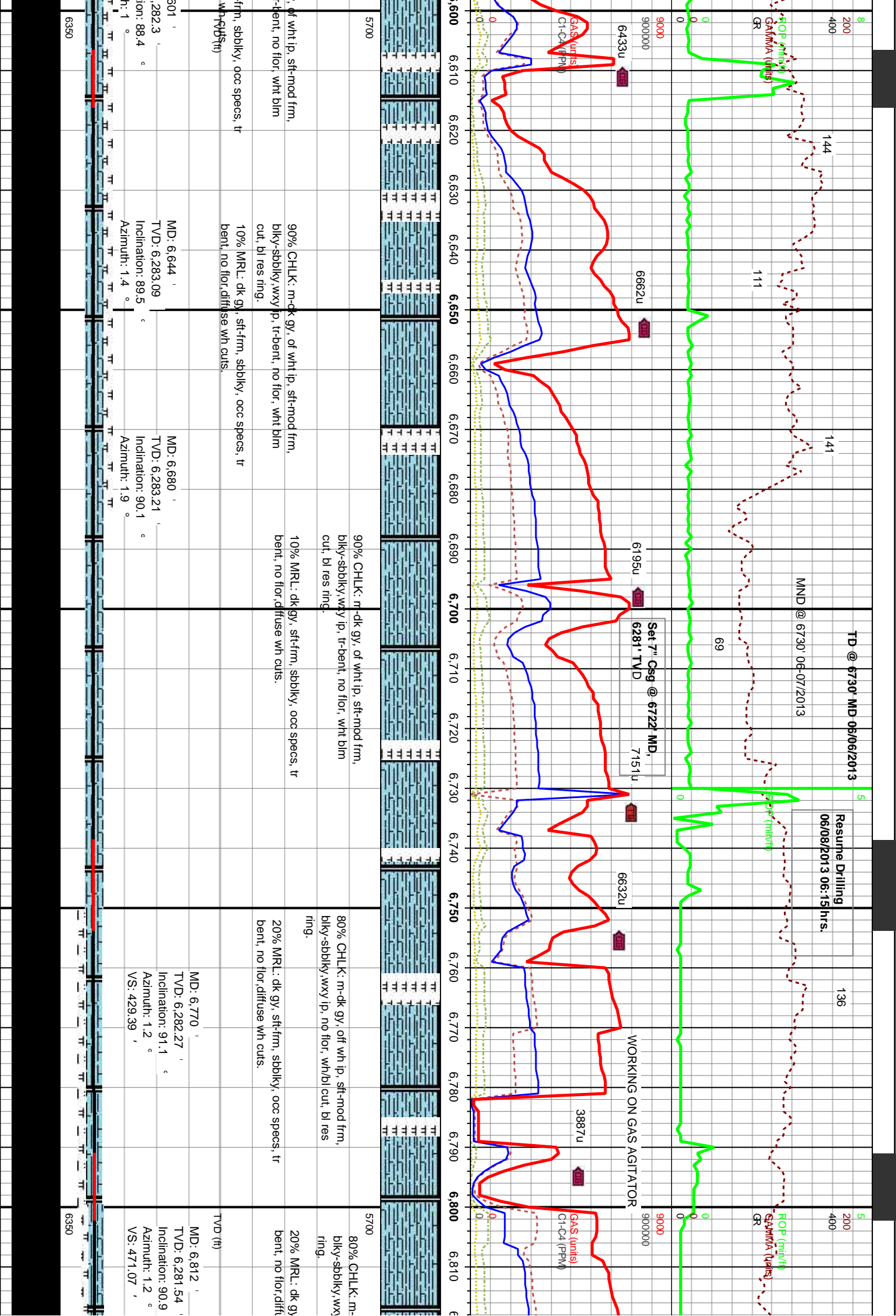
126
130



5700
85% MRL: dk gy, sft-frn, sbdkly, ooc specs, tr bent, no flor, diffuse wh cuts.
15% CHLK: m-dk gy, of wht ip, sft-mod frm, blkly-sbdkly, wxy ip, tr-bent, no flor, wht blm cut, bl res ring.
95% CHLK: m-dk gy, of wht ip, sft-mod frm, blkly-sbdkly, wxy ip, tr-bent, no flor, wht blm cut, bl res ring.
5% MRL: dk gy, sft-frn, sbdkly, ooc specs, tr bent, no flor, diffuse wh cuts.
100% CHLK: m-dk gy, of wht ip, sft-mod frm, blkly-sbdkly, wxy ip, tr-bent, no flor, wht blm cut, bl res ring.
95% CHLK: m-dk gy, blkly-sbdkly, wxy ip, tr-bent, no flor, wht cut, bl res ring.
5% MRL: dk gy, sft-frn, sbdkly, ooc specs, tr bent, no flor, diffuse wh cuts.

MD: 6,387
TVD: 6,229.95
Inclination: 61.6
Azimuth: 3.3
MD: 6,430
TVD: 6,248.45
Inclination: 67.4
Azimuth: 2.6
MD: 6,473
TVD: 6,263.01
Inclination: 73
Azimuth: 1.5
MD: 6,515
TVD: 6,273.21
Inclination: 78.9
Azimuth: 0.3
MD: 6,558
TVD: 6,279.52
Inclination: 84.2
Azimuth: 1
MD: 6,
TVD: 6,
Inclina
Azimut





WOB 20
RPM 65
SP 2945
SPM 112

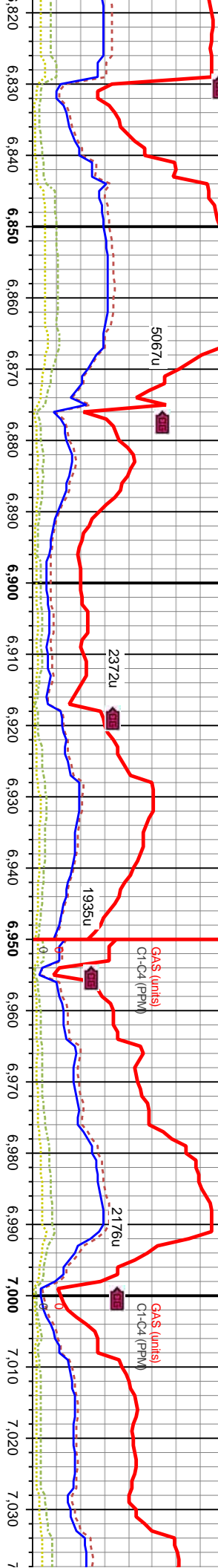
132

5
200
400
ROP (m/h)
GAMMA (units)
GR

GAS SCALE CHANGE

GAS (units)
C1-C4 (PPM)

GAS (units)
C1-C4 (PPM)



dk gy, off wh ip, sft-mod frm,
ip, no flr, wh/bl cut, bl res
sft-frm, sbblky, occ specs, tr
use wh cuts.

90% CHLK: m-dk gy, off wh ip, sft-mod frm,
biky-sbblky, wxy ip, no flr, wh/bl cut, bl res
ring.
10% MRL: dk gy, sft-frm, sbblky, occ specs, tr
bent, no flr, diffuse wh cuts.

80% CHLK: m-dk gy, off wh ip, sft-mod frm,
biky-sbblky, wxy ip, no flr, wh/bl cut, bl res
ring.
20% MRL: dk gy, sft-frm, sbblky, occ specs, tr
bent, no flr, wh cuts.

80% CHLK: m-dk gy, off wh ip, sft-mod frm,
biky-sbblky, wxy ip, no flr, wh/bl cut, bl res
ring.
20% MRL: dk gy, sft-frm, sbblky, occ specs, tr
bent, no flr, wh cuts.

80% CHLK: m-dk gy, off wh ip, sft-mod frm,
biky-sbblky, wxy ip, no flr, wh/bl cut, bl res
ring.
20% MRL: dk gy, sft-frm, sbblky, occ sp
bent, no flr, wh cuts.

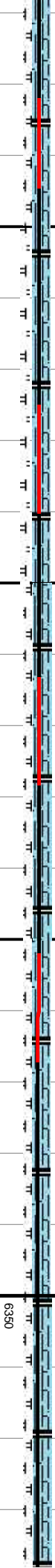
MD: 6,854
TVD: 6,281.06
Inclination: 90.4
Azimuth: 1.5
VS: 512.74

MD: 6,897
TVD: 6,281.13
Inclination: 89.4
Azimuth: 1.4
VS: 555.4

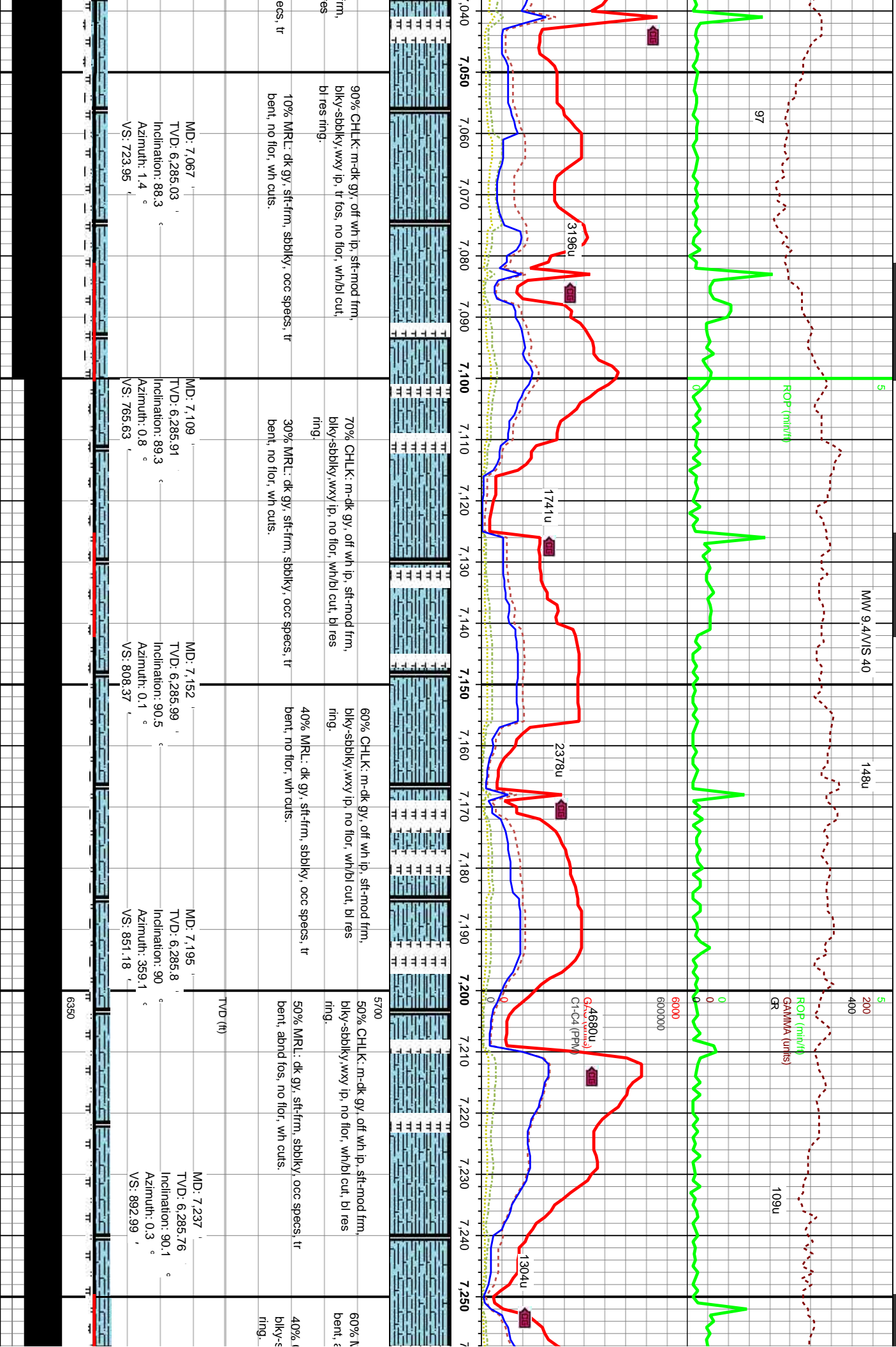
MD: 6,939
TVD: 6,281.65
Inclination: 89.2
Azimuth: 1.7
VS: 597.05

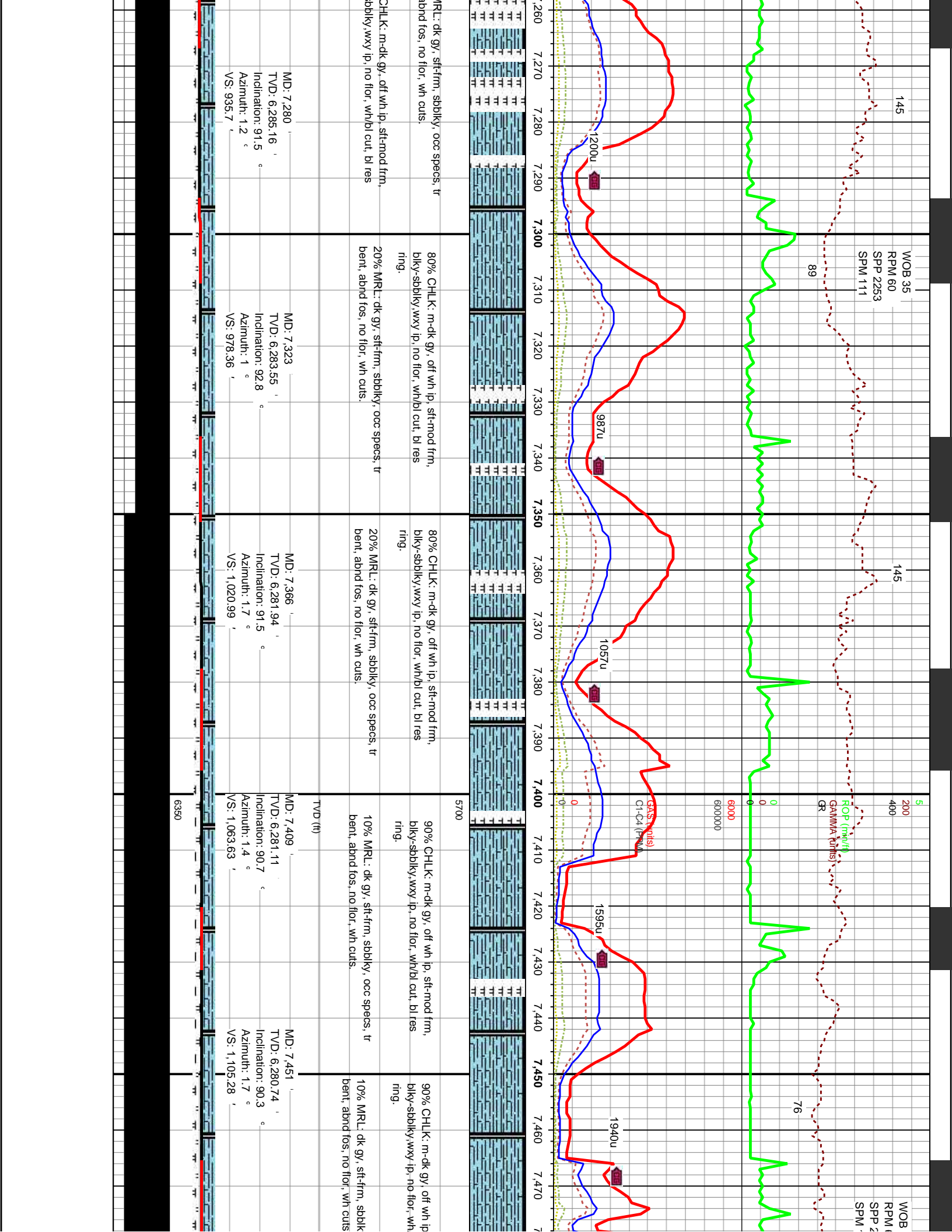
MD: 6,982
TVD: 6,282.51
Inclination: 88.5
Azimuth: 1.7
VS: 639.67

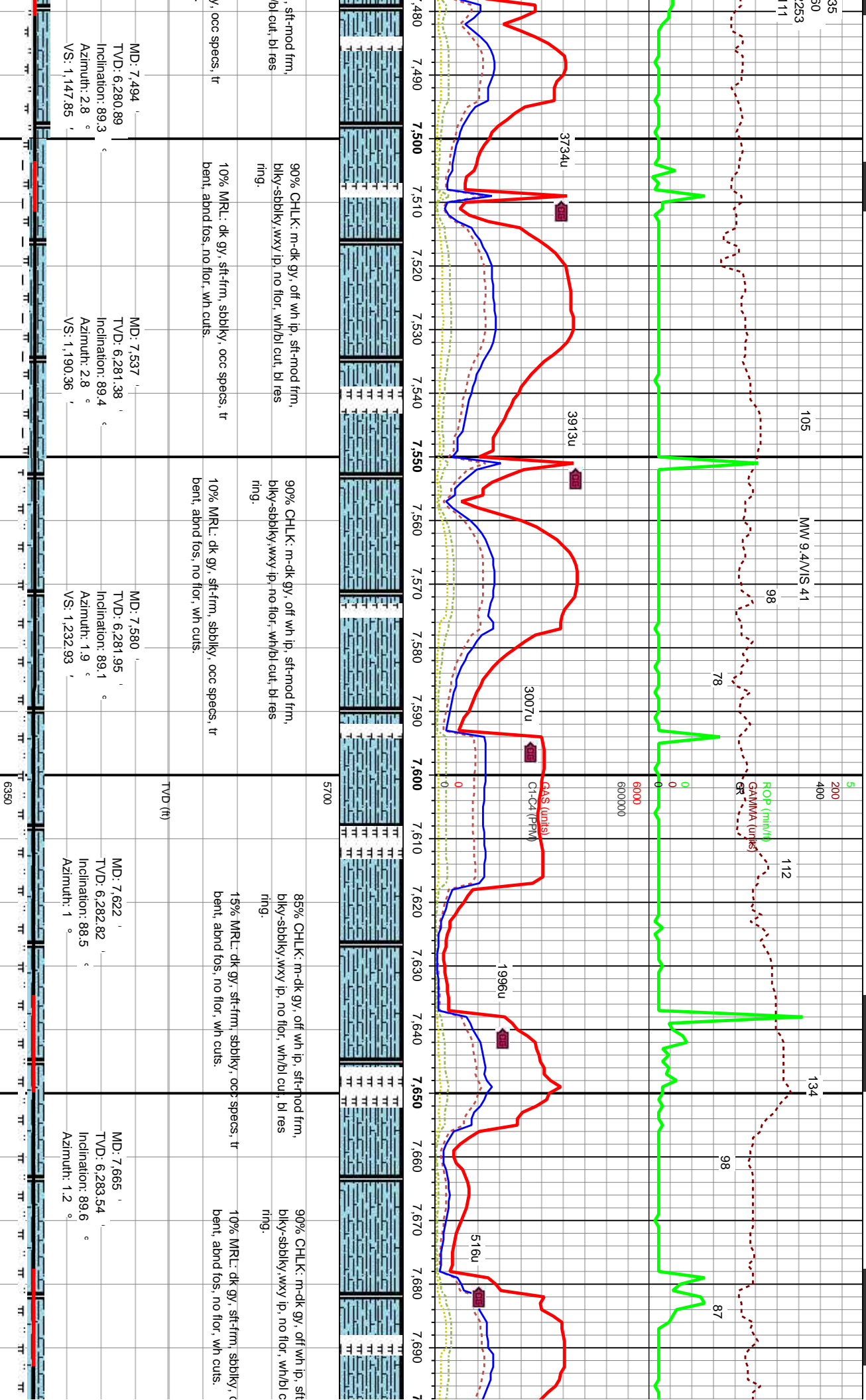
MD: 7,024
TVD: 6,283.72
Inclination: 88.2
Azimuth: 1.4
VS: 681.31

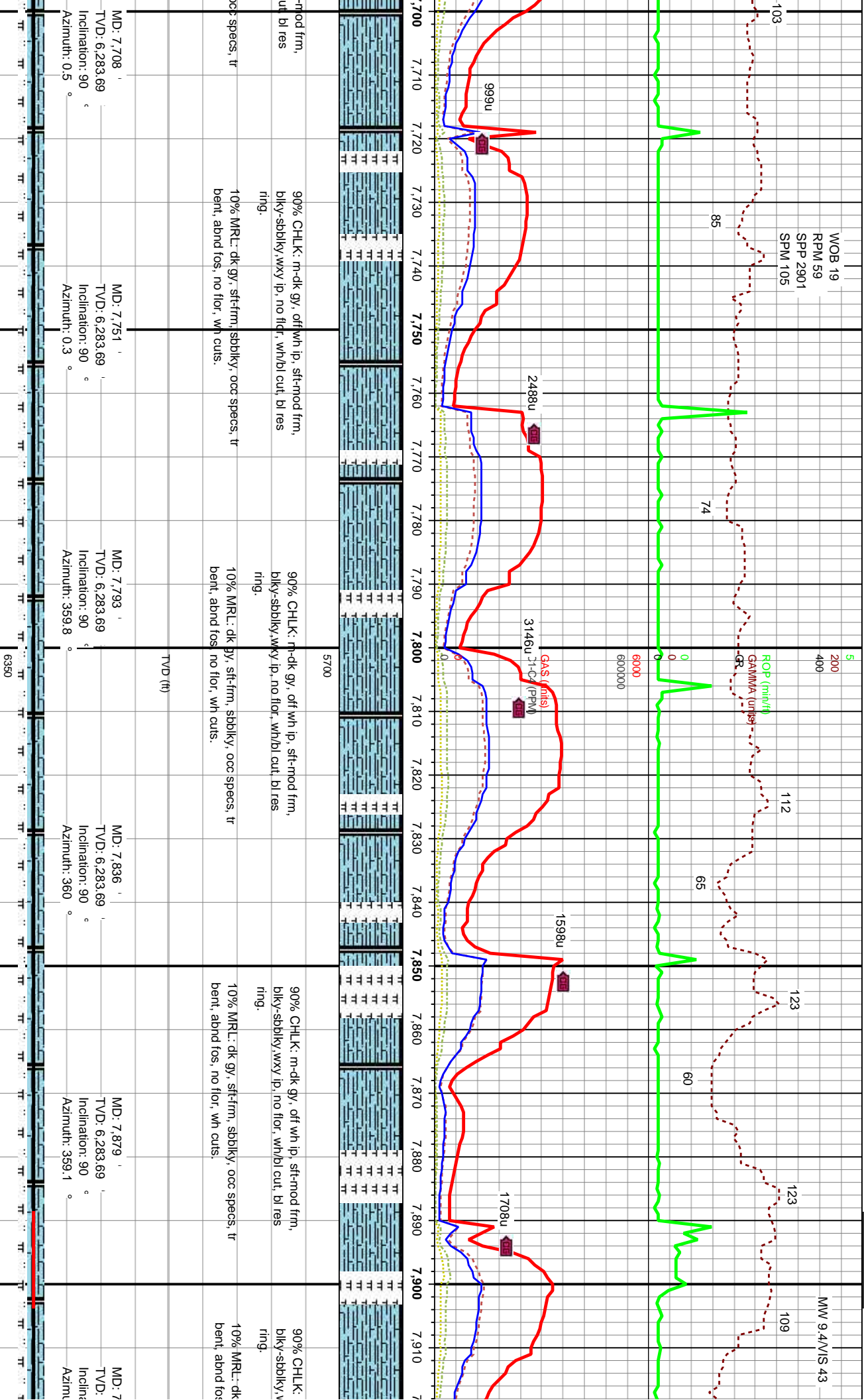


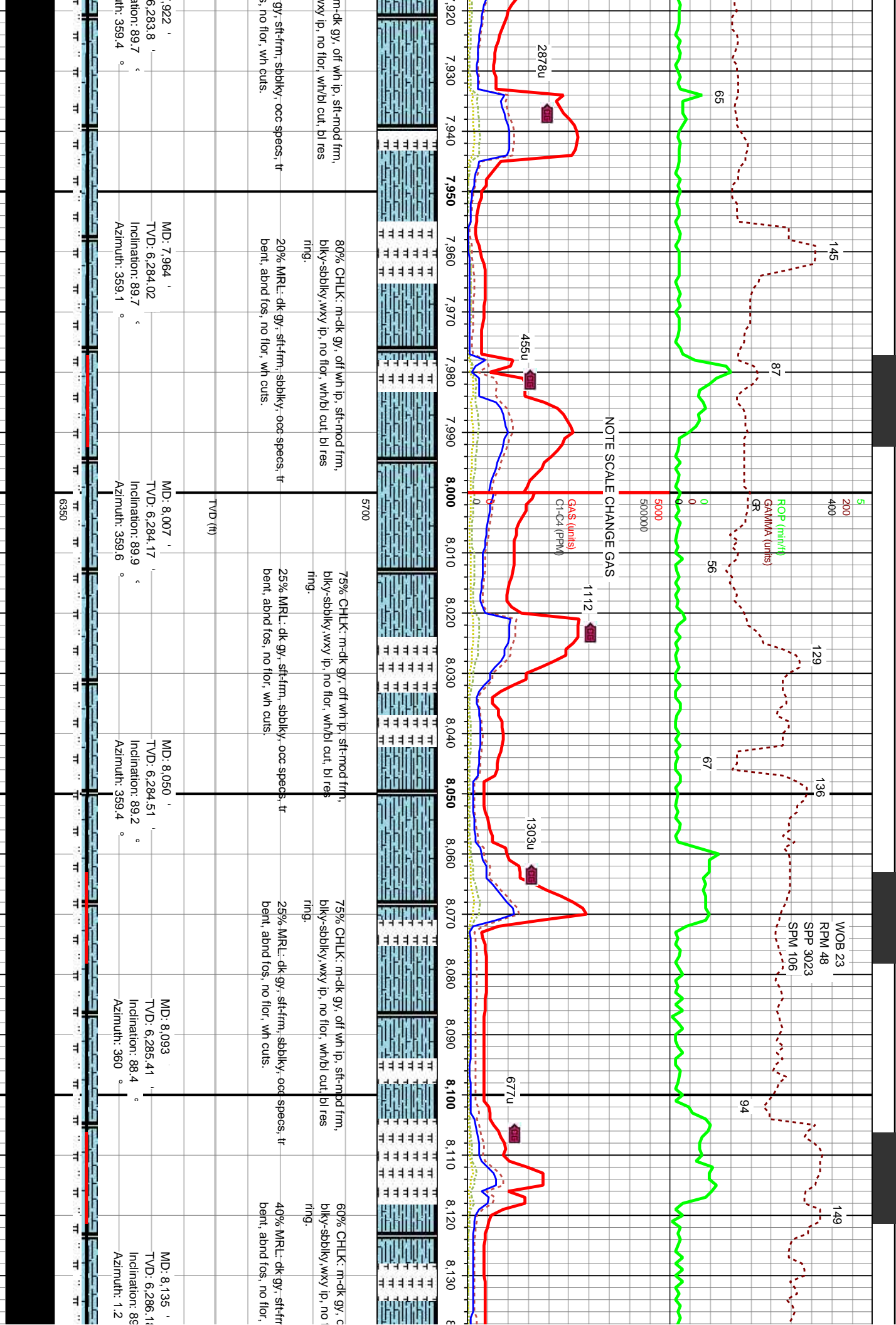
6350

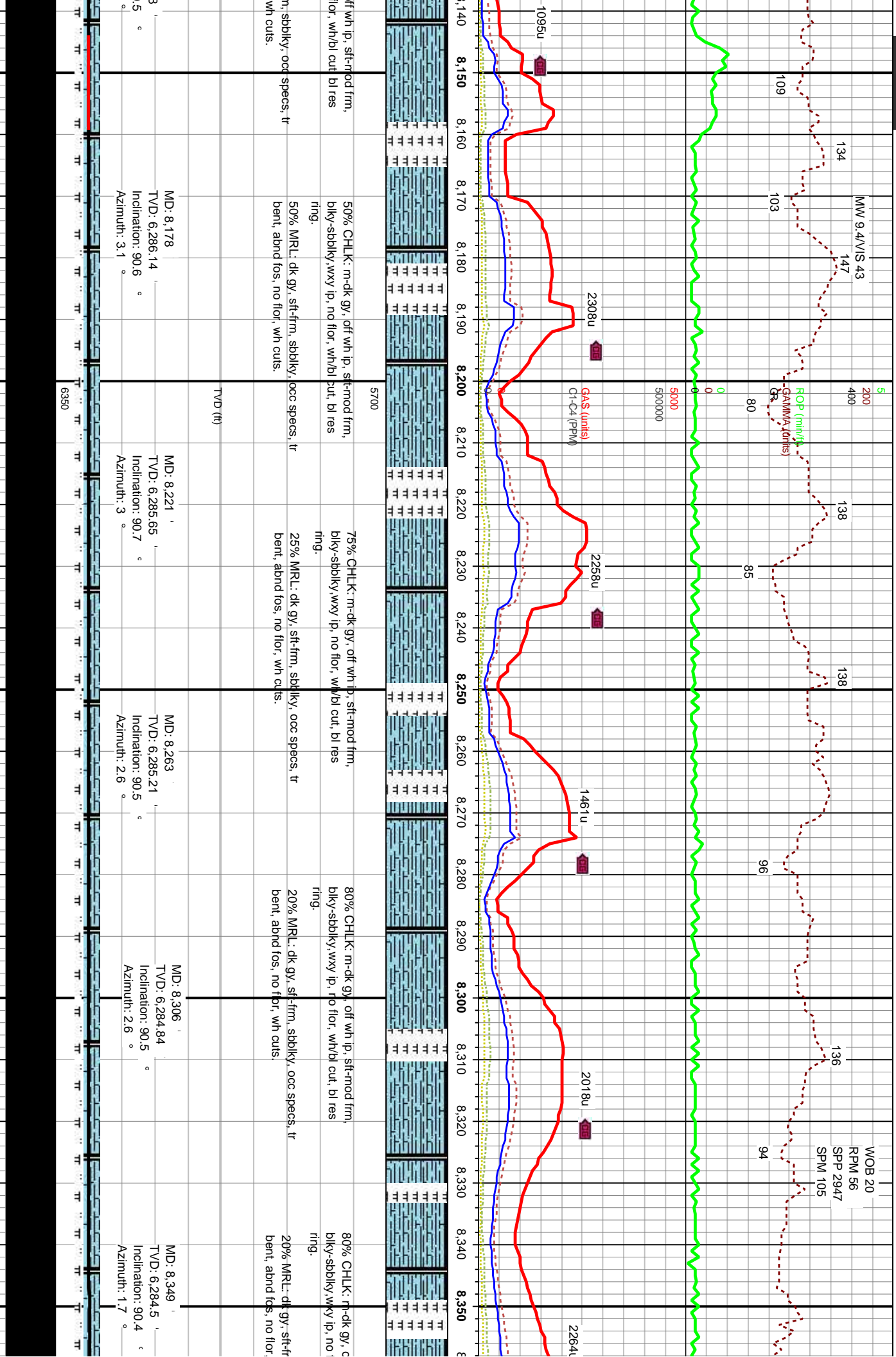


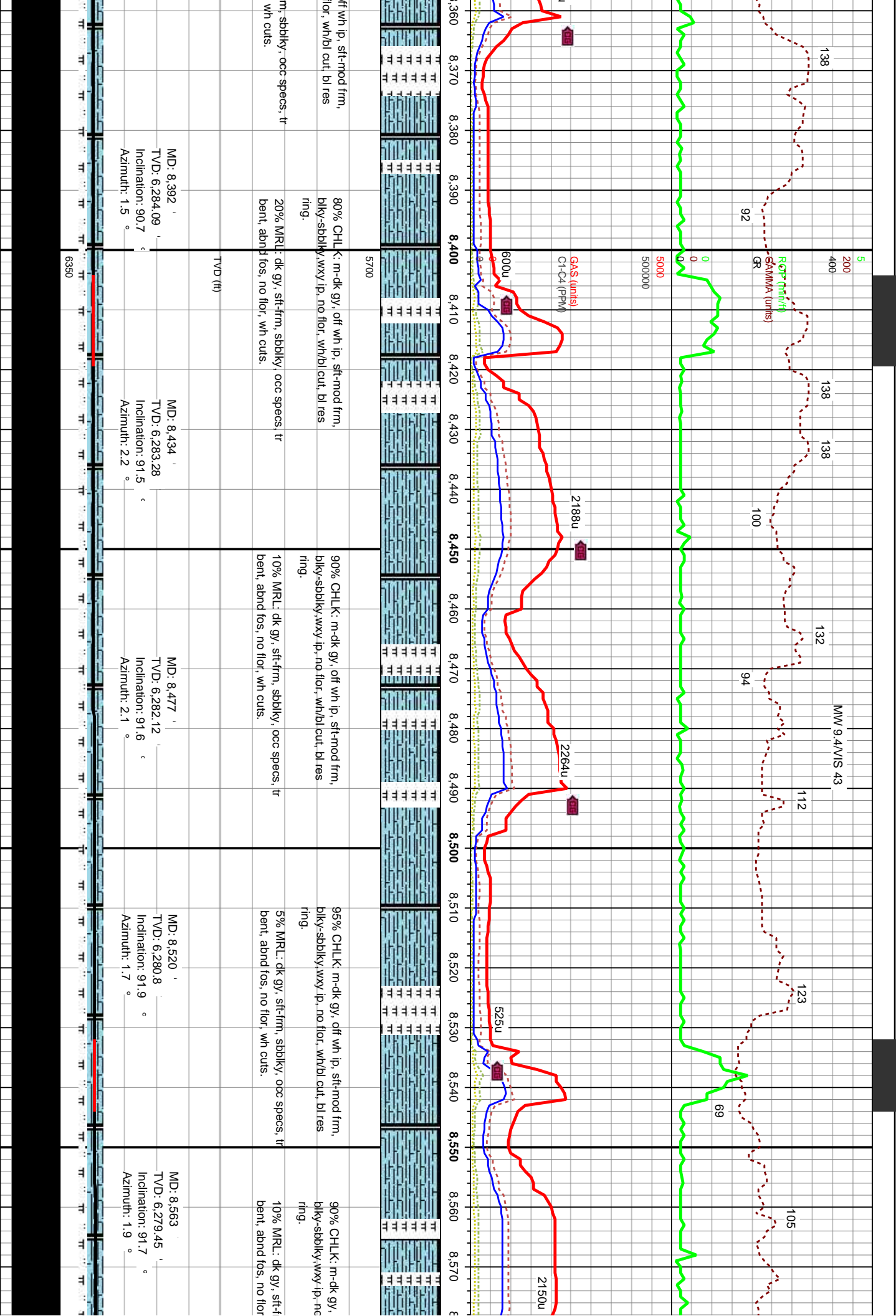


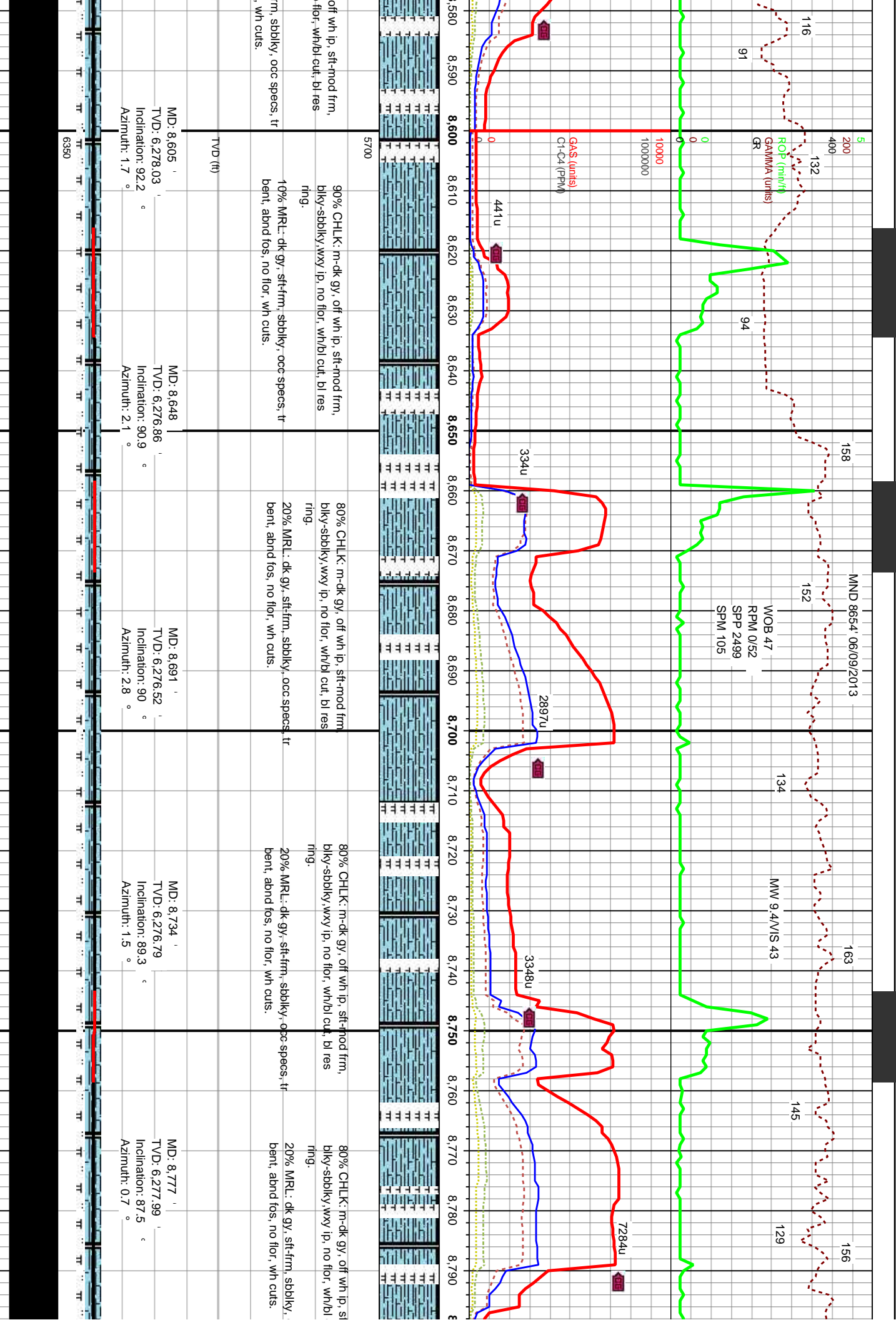


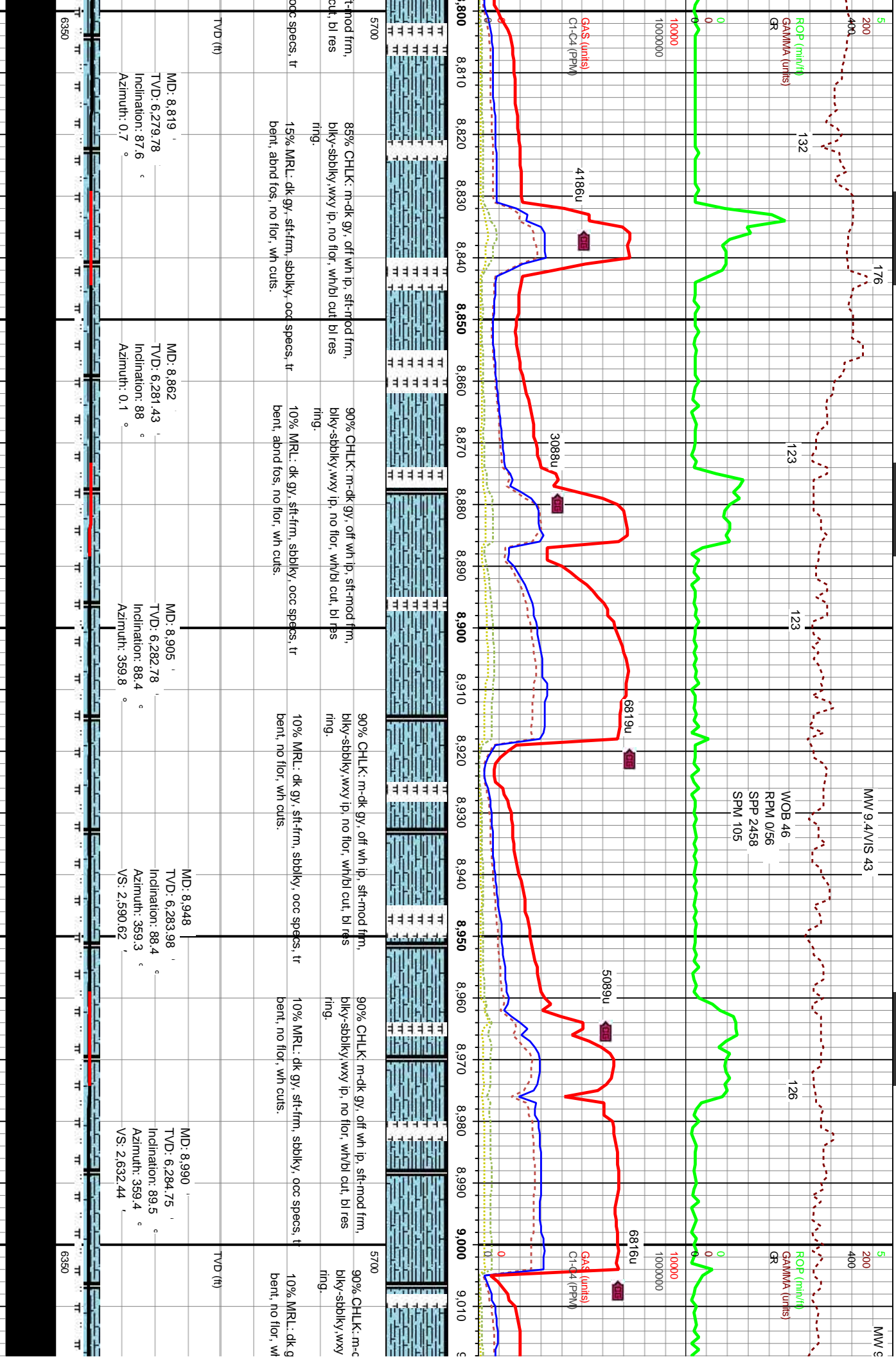






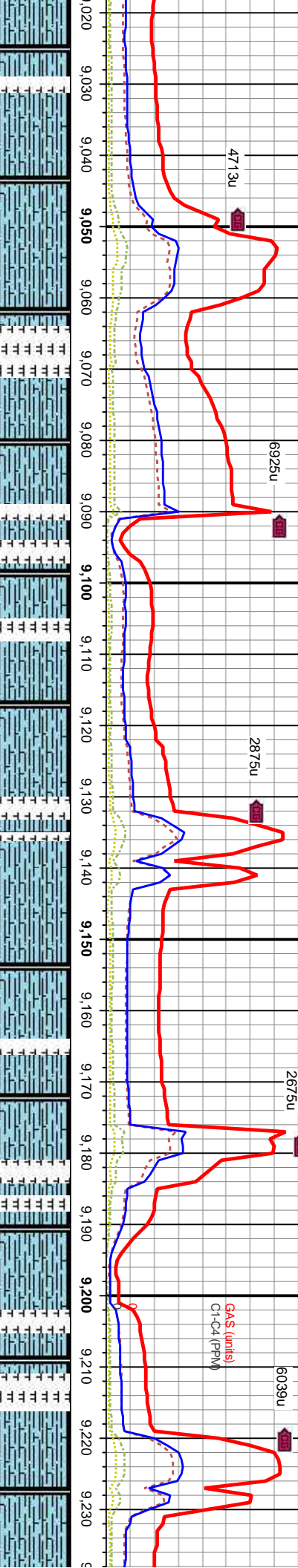
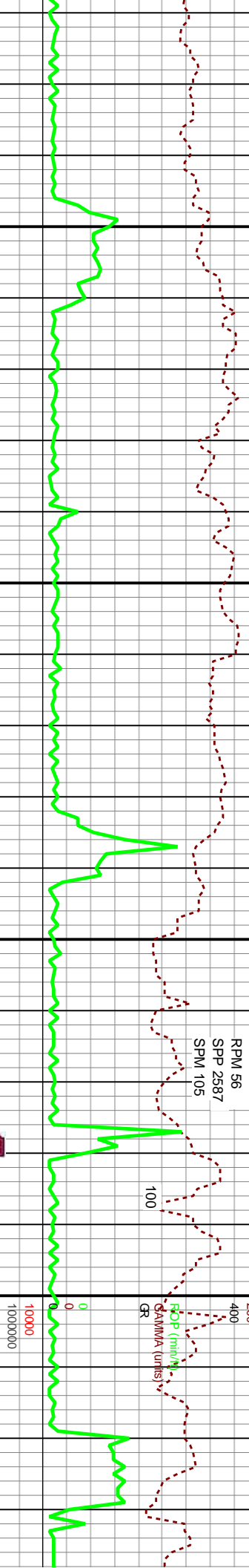






MOB 35
RPM 56
SPM 2587
SPM 105

5
200
400
1000000
GR
FOP (m/m)
SAMMA (turns)
GR



80% CHLK: m-dk gy, off wh ip, sft-mod frm, bky-sbdky, wxy ip, no flor, wh/bl cut, bl res ring.
20% MRL: dk gy, sft-frm, sbdky, occ specs, tr bent, no flor, wh cuts.
80% CHLK: m-dk gy, off wh ip, sft-mod frm, bky-sbdky, wxy ip, no flor, wh/bl cut, bl res ring.
20% MRL: dk gy, sft-frm, sbdky, occ specs, tr bent, no flor, wh cuts.
90% CHLK: m-dk gy, off wh ip, sft-mod frm, bky-sbdky, wxy ip, no flor, wh/bl cut, bl res ring.
10% MRL: dk gy, sft-frm, sbdky, occ specs, tr bent, no flor, wh cuts.
80% CHLK: m-dk gy, off wh ip, sft-mod frm, bky-sbdky, wxy ip, no flor, wh/bl cut, bl res ring.
20% MRL: dk gy, sft-frm, sbdky, occ specs, tr bent, no flor, wh cuts.

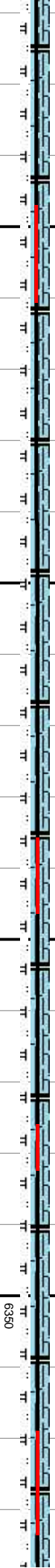
MD: 9.033
TVD: 6,284.87
Inclination: 90.2
Azimuth: 0.1
VS: 2,675.24

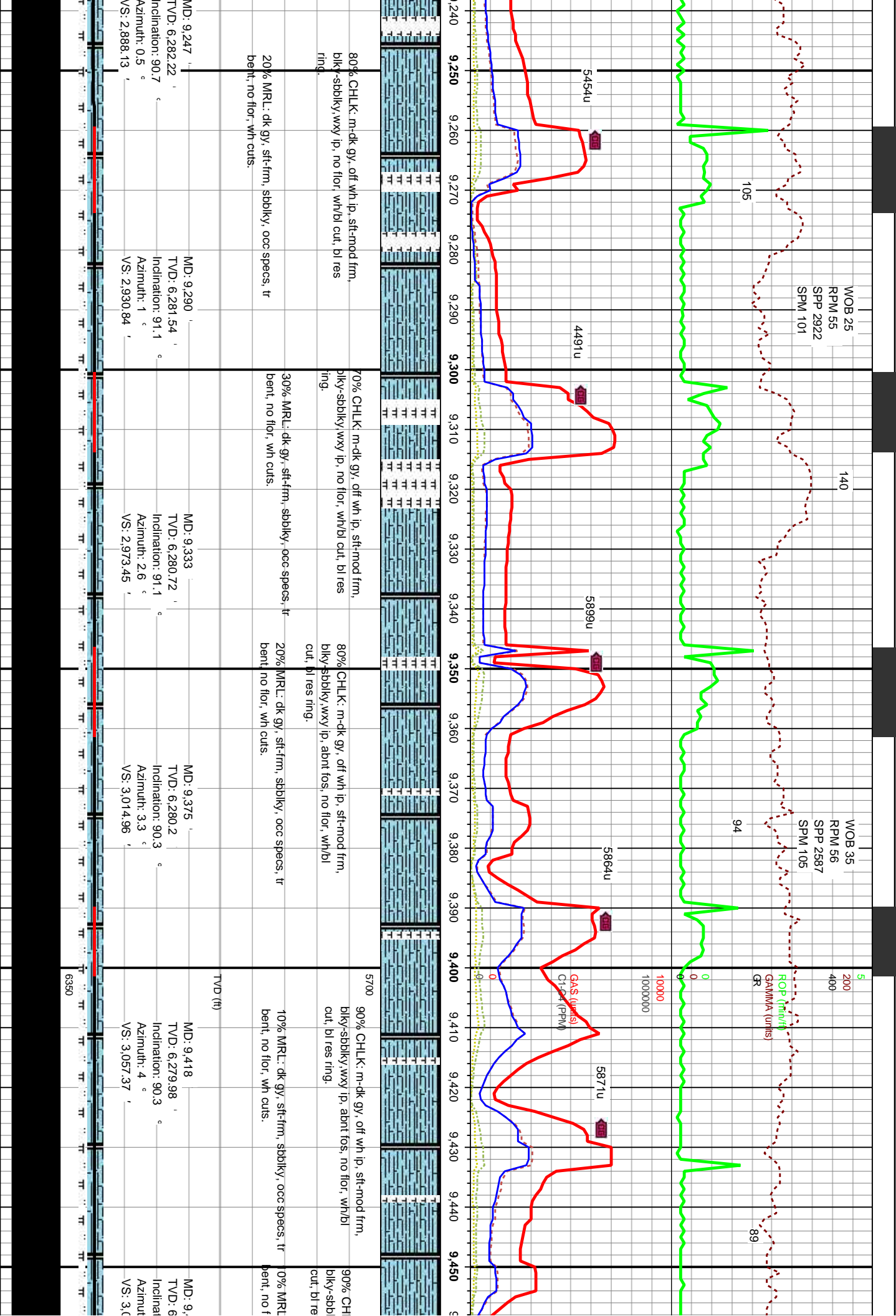
MD: 9.076
TVD: 6,284.64
Inclination: 90.4
Azimuth: 0.1
VS: 2,718.01

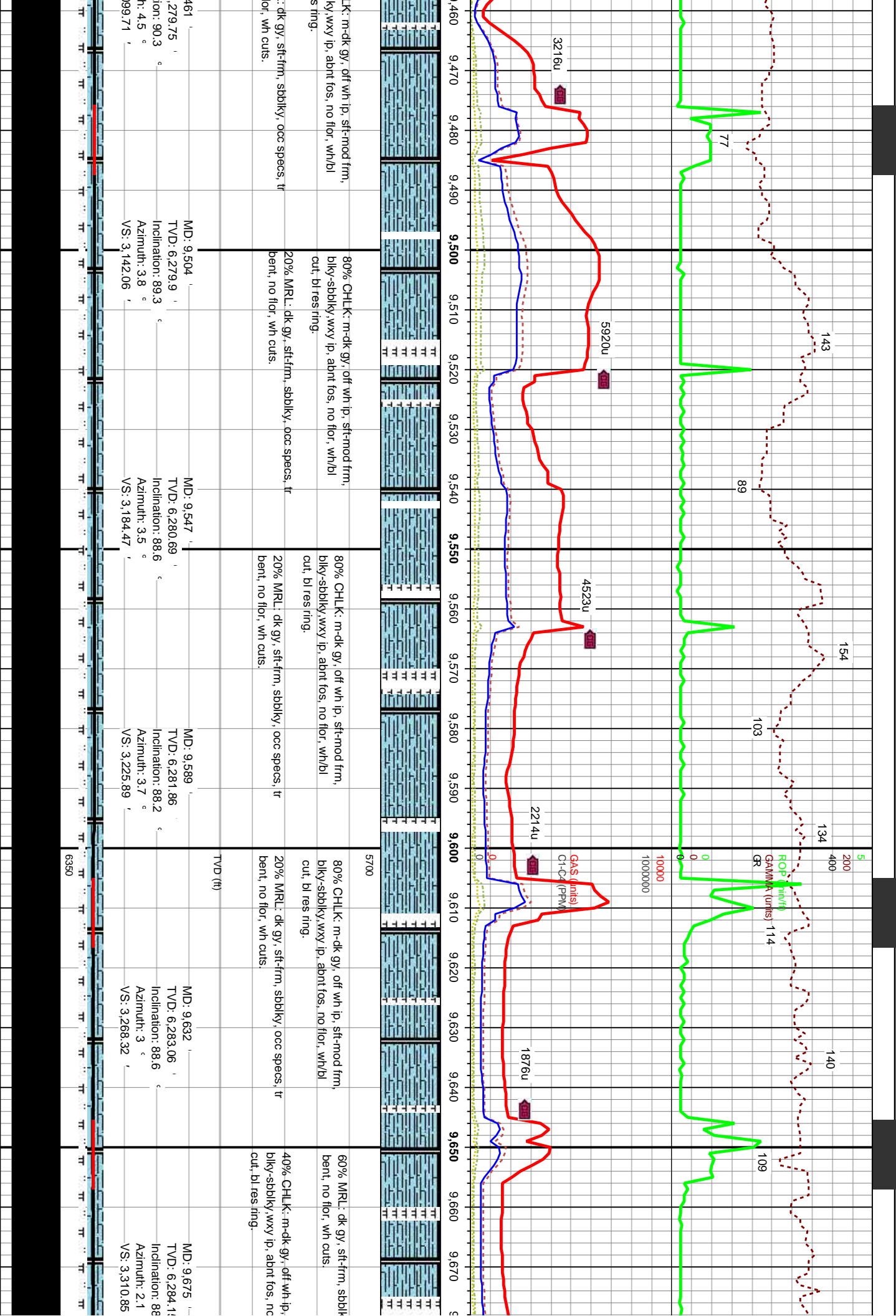
MD: 9.119
TVD: 6,284.3
Inclination: 90.5
Azimuth: 0.1
VS: 2,760.78

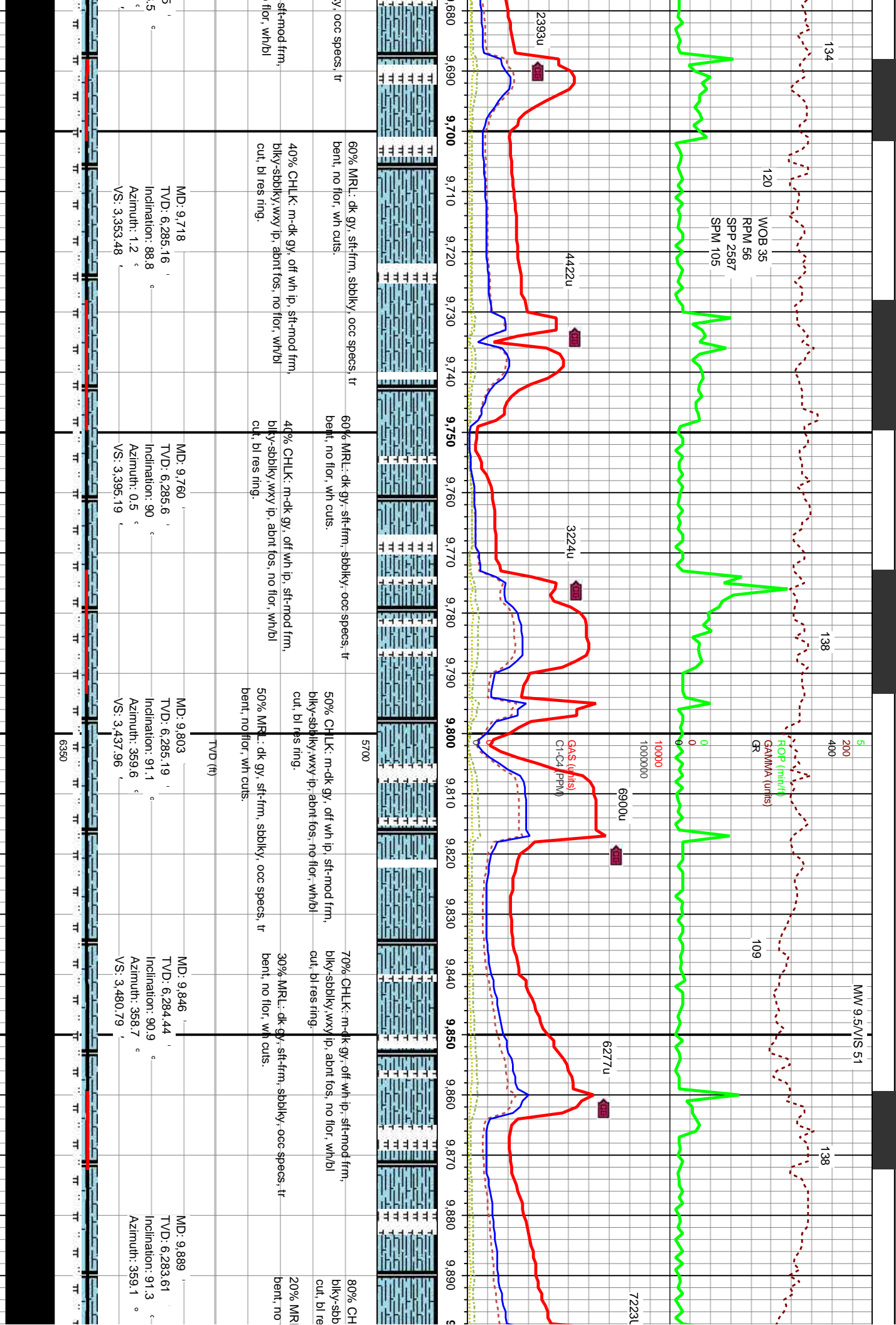
MD: 9.161
TVD: 6,283.75
Inclination: 91
Azimuth: 359.6
VS: 2,802.57

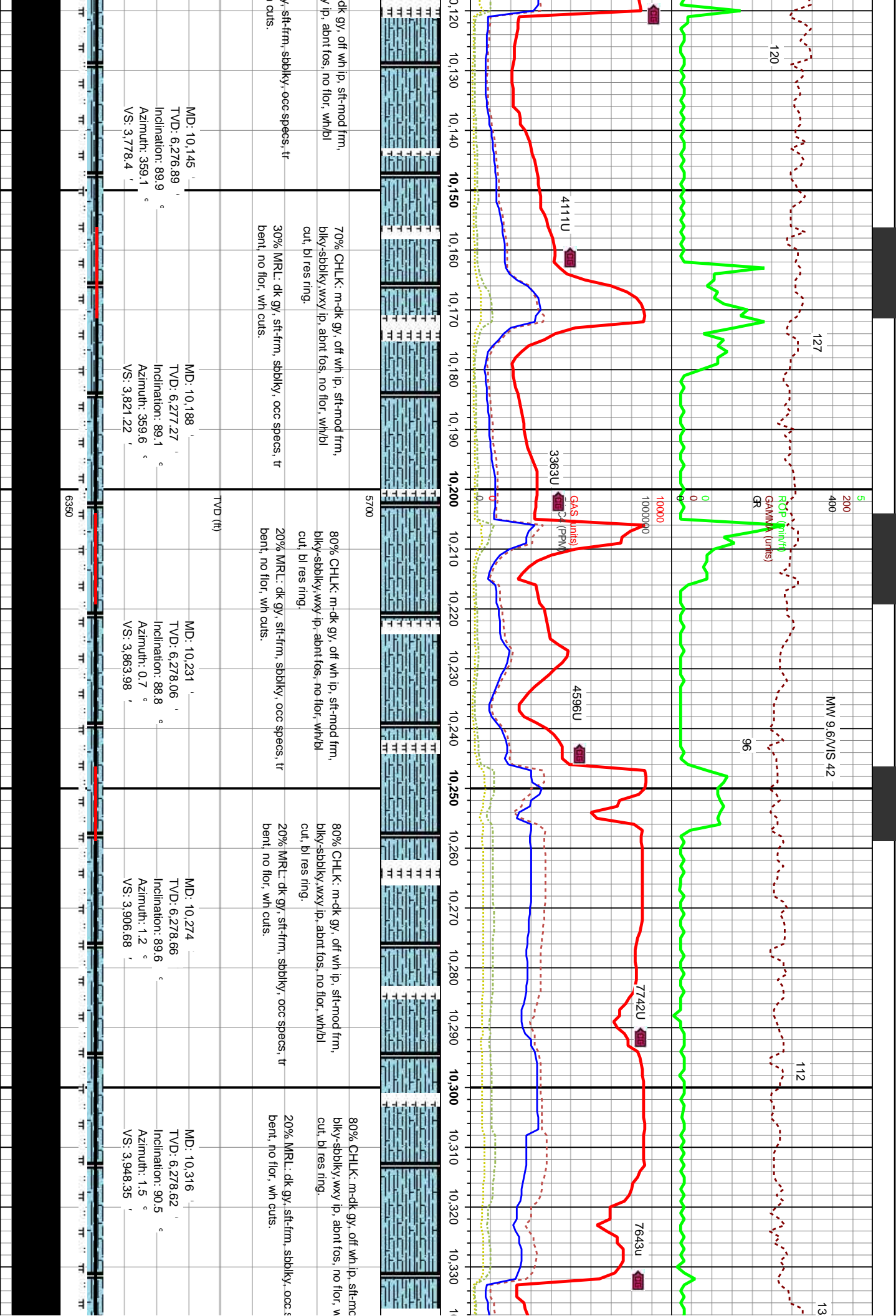
MD: 9.204
TVD: 6,282.93
Inclination: 91.2
Azimuth: 359.8
VS: 2,845.37

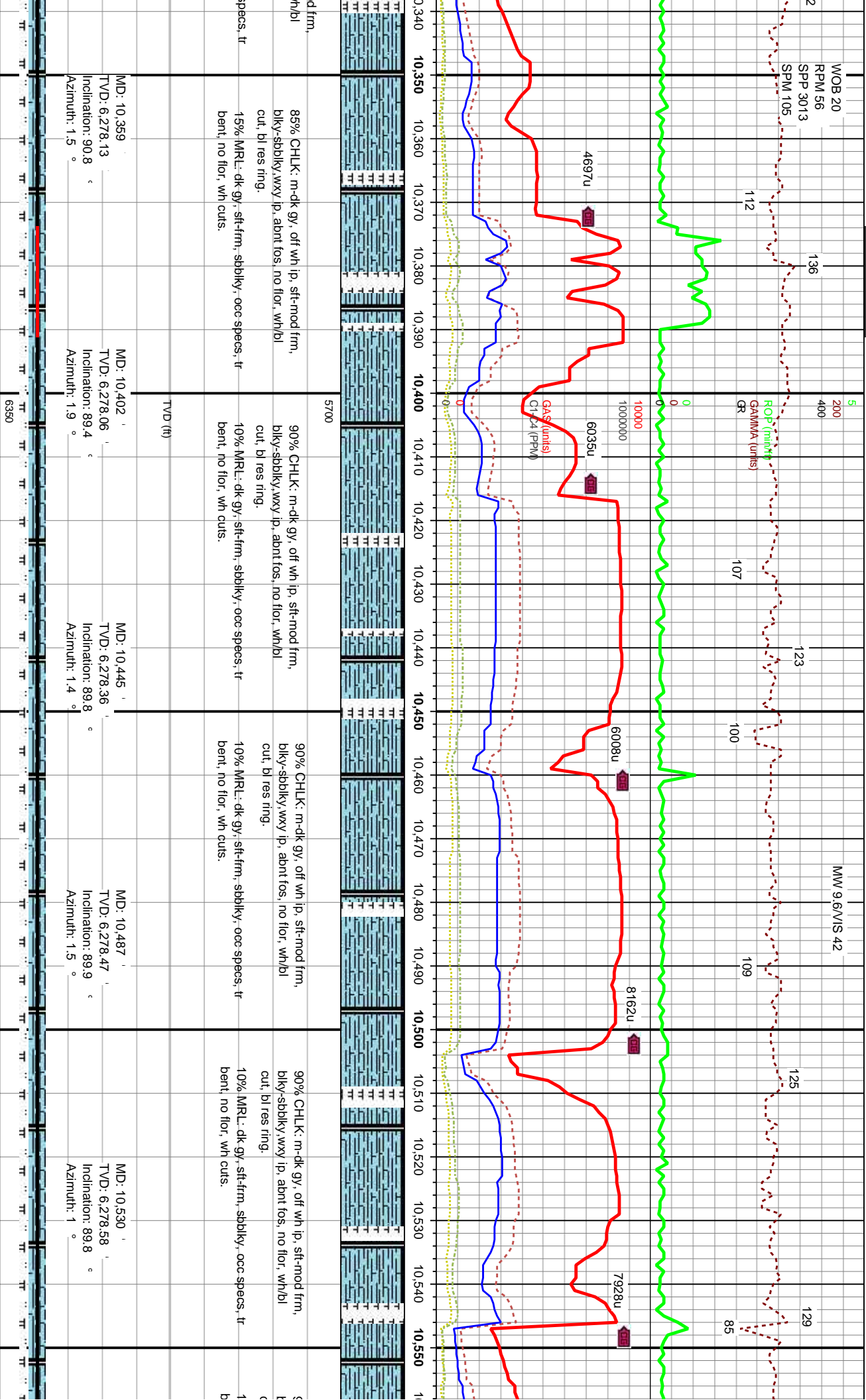


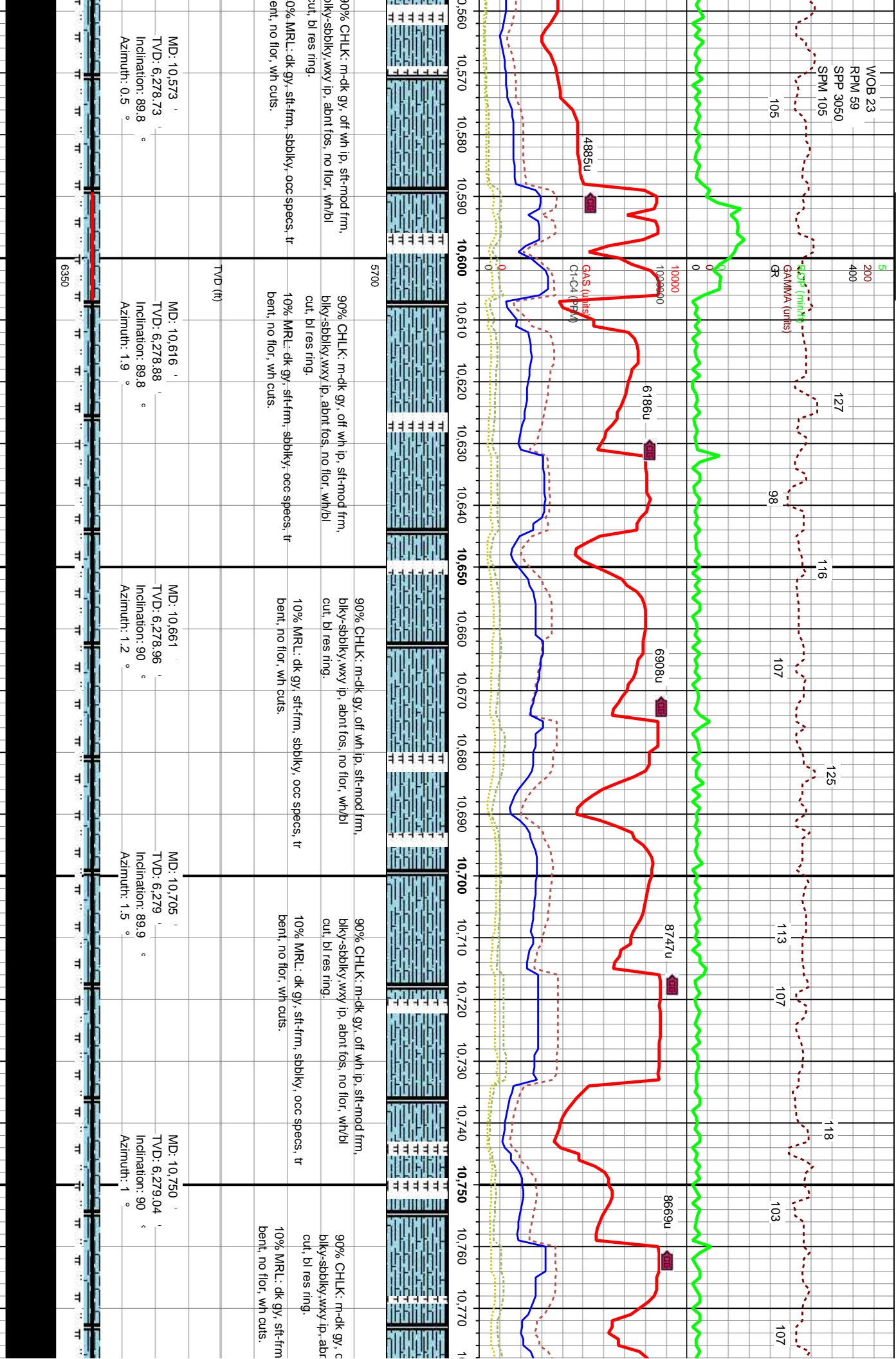








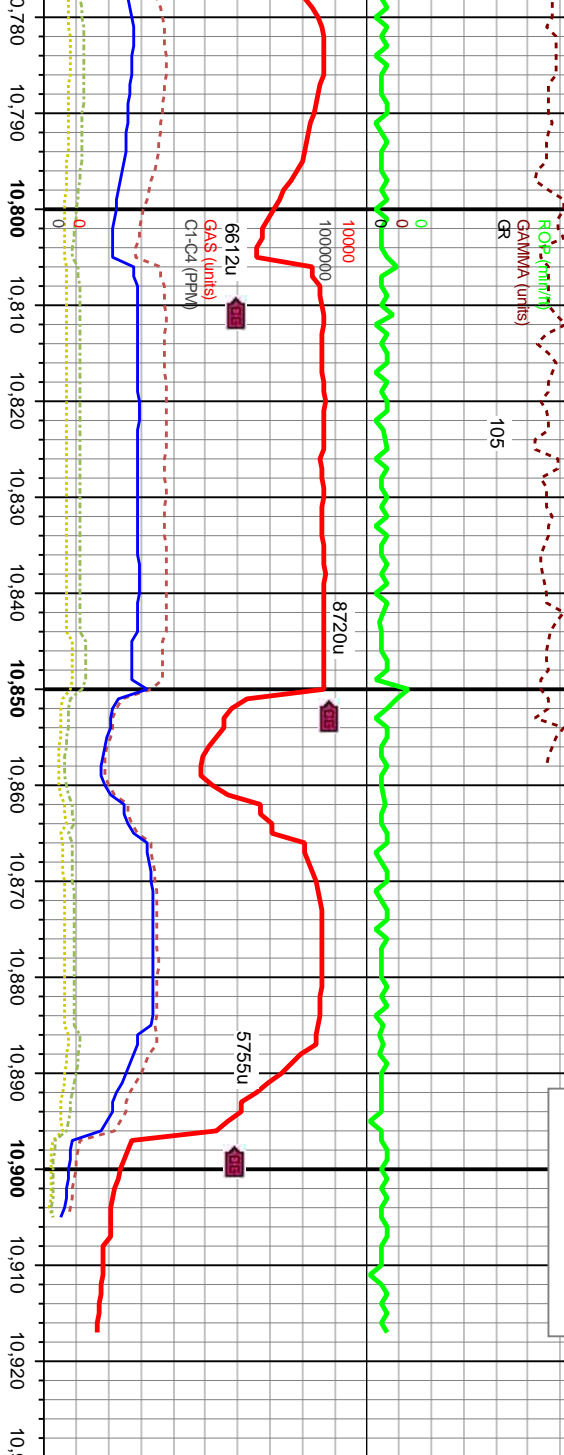




MND @ 10843' 06/10/2013

MW 9.6/VIS 42

TD @ 10917' 06/10/2013
12:45 am.



5700	90% CHLK: m-dk gy, off wh ip, sft-mod frm, blkly-sbbkly, wxy ip, abnt los, no flor, wh/bl cut, bl res ring.	85% CHLK: m-dk gy, off wh ip, sft-mod frm, blkly-sbbkly, wxy ip, abnt los, no flor, wh/bl cut, bl res ring.
	10% MRL: dk gy, sft-frm, sbbkly, occ specs, tr bent, no flor, wh cuts.	15% MRL: dk gy, sft-frm, sbbkly, occ specs, tr bent, no flor, wh cuts.
	TVD (ft)	
	MD: 10,795' TVD: 6,278.96' Inclination: 90.2° Azimuth: 1°	MD: 10,840' TVD: 6,278.88' Inclination: 90° Azimuth: 0.7°
		MD: 10,862' TVD: 6,278.88' Inclination: 90° Azimuth: 0.8° VS: 4,490.17'
		MD: 10,917' TVD: 6,278.88' Inclination: 90° Azimuth: 0.8°
6350		