



Scale: 5" / 100'  
Measured Depth Log

<b>Well Name</b>	Pronghorn13-43-9HNB		
<b>Location</b>	NW/4SW Sec 9 T5N R61W		
<b>State</b>	Colorado	<b>County</b>	Weld
<b>Country</b>	USA	<b>Rig Number</b>	Cade 22
<b>API Number</b>	05-123-39287-00	<b>Field</b>	DJ. Basin
<b>Spud Date</b>	6/20/2014	<b>Drilling Completed</b>	7/5/2014
<b>Surface Coordinates</b>	1273 FSL X 220 FWL		
<b>Ground Elevation</b>	4637'	<b>K.B. Elevation</b>	4654'
<b>Logged Interval</b>	5700'	<b>To</b>	10814'
<b>Formation</b>	Niobrara "B"	<b>Total Depth</b>	10814'
<b>Type of Drilling Fluid</b>	WBM		

**Company** Bonanza Creek Energy  
**Address** 410 17th Street, Suite 1  
Denver, CO 80202

**Name** Leo Carrasco/Chris Irwin  
**Company** Décollement Consulting  
**Address** 13300 Braun Road  
Golden, CO 80401

























































## Operator

1500

## Accessories

## Fossils

Fossils	
 F FOSSIL	 ARGILLACEOUS
 GASTROPOD	 ARGILLITE GRAIN
 OOLITE	 B BENTONITE
 AMPHIPORA	 BITUMENOUS SUBSTANCE
 BELEMNITE	 BRECCIA FRAGMENTS
 BIOCLASTIC	 CALCAREOUS
 BRACHIOPOD	 CARBONACEOUS FLAKES
 BRYOZOA	 CHERT
 CEPHALOPOD	 CHERT
 CORAL	 COAL - THIN BEDS
 CRINOID	 DOLOMITIC
 ECHINOID	 FELDSPAR
 FISH	 FERRUGINOUS PELLET
 FORAMINIFERA	 FERRUGINOUS
 ANHYDRITIC	 GLAUCONITE
	 GYPSIFEROUS
	 HEAVY MINERAL
	 KAOLIN
	 MARLSTONE
	 MINERAL CRYSTALS
	 NODULES
	 PHOSPHATE PELLETS
	 PYRITE
	 SALT CAST
	 SANDY
	 SILICEOUS
	 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	

# Geologist

Inc.

## Rock Types

DOLOMITE		SHALE GRAY		TILL	
CHERT		SHALE COLORED		BENTONITE	
MARLSTONE		SILTSTONE		TUFF	
CLAYSTONE		SANDSTONE		IGNEOUS	
		CONGLOMERATE		METAMORPHIC	
SHALE		BRECCIA		Chalk	

## Other Symbols

## Oil Show

	GAS SHOW		M <sub>X</sub> MICROXLN
	ORGANIC		M <sub>S</sub> MUDSTONE
	P PINPOINT		A ANGULAR
	V VUGGY		R ROUNDED
	DEAD		S SUBANG
	EVEN		OIL SHOW
	QUESTIONABLE		S SUBSAND
			OVERTURNED STRATA
			NORMAL FAULT
			W <sub>S</sub> WACKESTONE

# Engineering

- SPOTTED STAINING
- BIT
- CONNECTION (LEFT)
- CONNECTION (RIGHT)
- REVERSE FAULT
- SIDEWALL CORE (LEFT)
- SIDEWALL CORE (RIGHT)
- BOUNDSTONE
- POOR
- MODERATE

## Porosity

	WELL		CHALKY
	CRYPTOXIN		EARTHY
	FINELYXYN		WIRELINE TESTED - LEFT
	WIRELINE TESTED - RT		GRAINSTONE
	LITHOGRAPHIC		FAULT
	FORMATION TOP		CORE - LOST
	CORE - RECOVERED		CORE
	FRACTURE		INTERCRYSTALLINE
	INTEROOLITIC		MOLDIC
	EARTHY		FENESTRAL
	CONNECTION GAS		SLIDE
	SURVEY		TRIP GAS

## Rounding

WIRELINE TESTED - RT  
GRAINSTONE  
LITHOGRAPHIC

Slide/Rotate

ROP  
ROF  
Gamma

Decollement on location  
07/02/2014 Start logging @  
5700'

Bit #: 3  
Type: HEO4JMRSV  
Size: 8.75  
Depth In: 5.634  
Jets: 3X20  
S/N: 1391830

MW: 9.2 V/S:38

Total Gas & Chromatograph

GAS  
C1  
C2  
C3  
C4

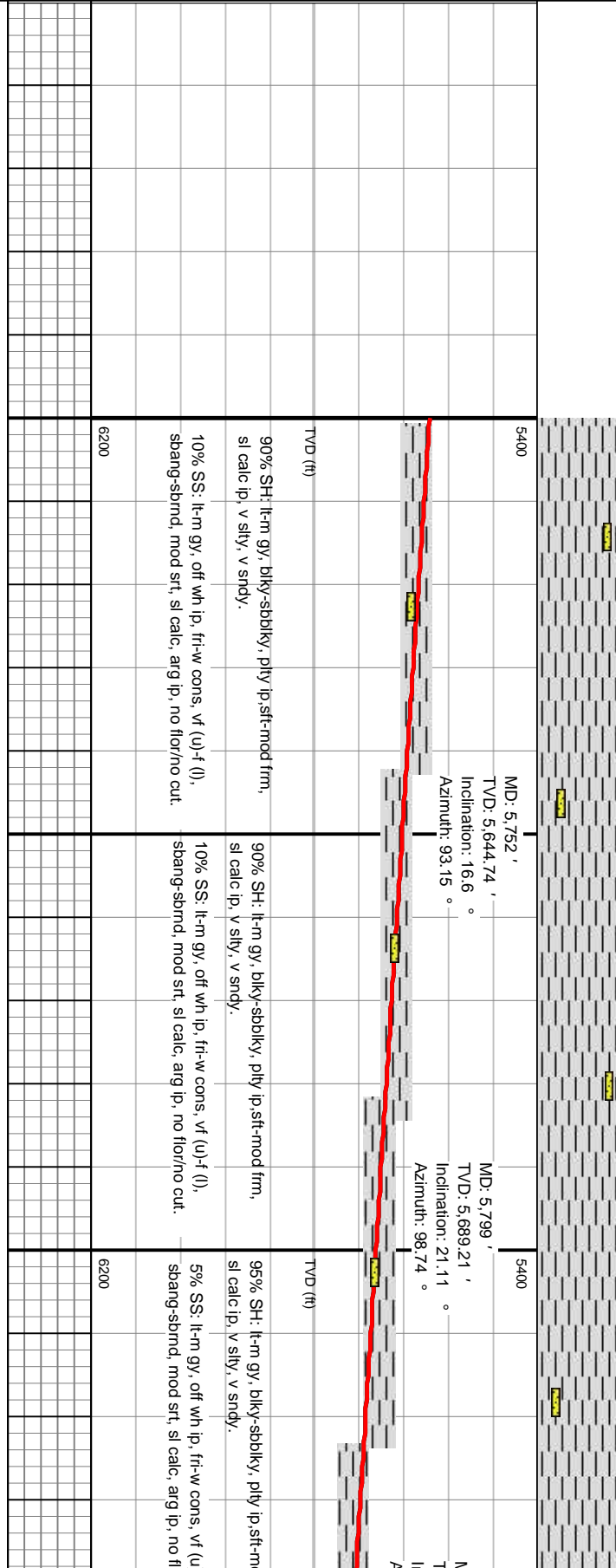
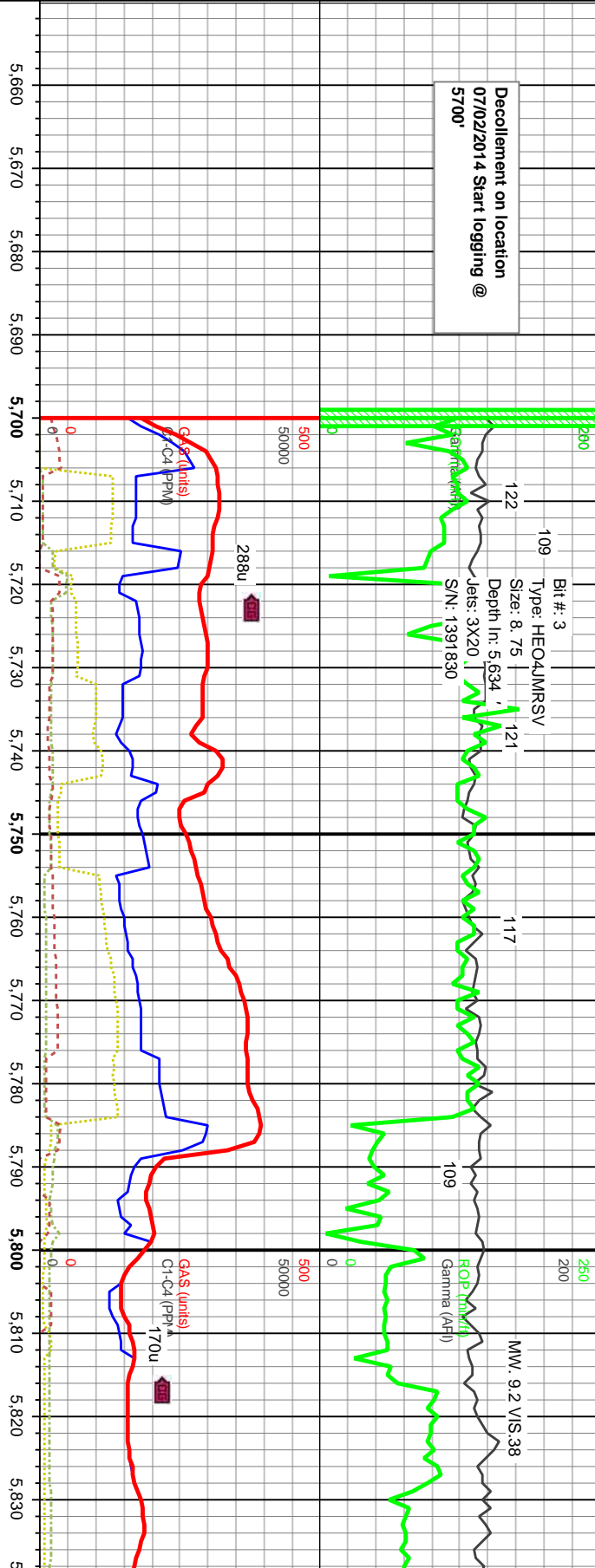
Depth Labels

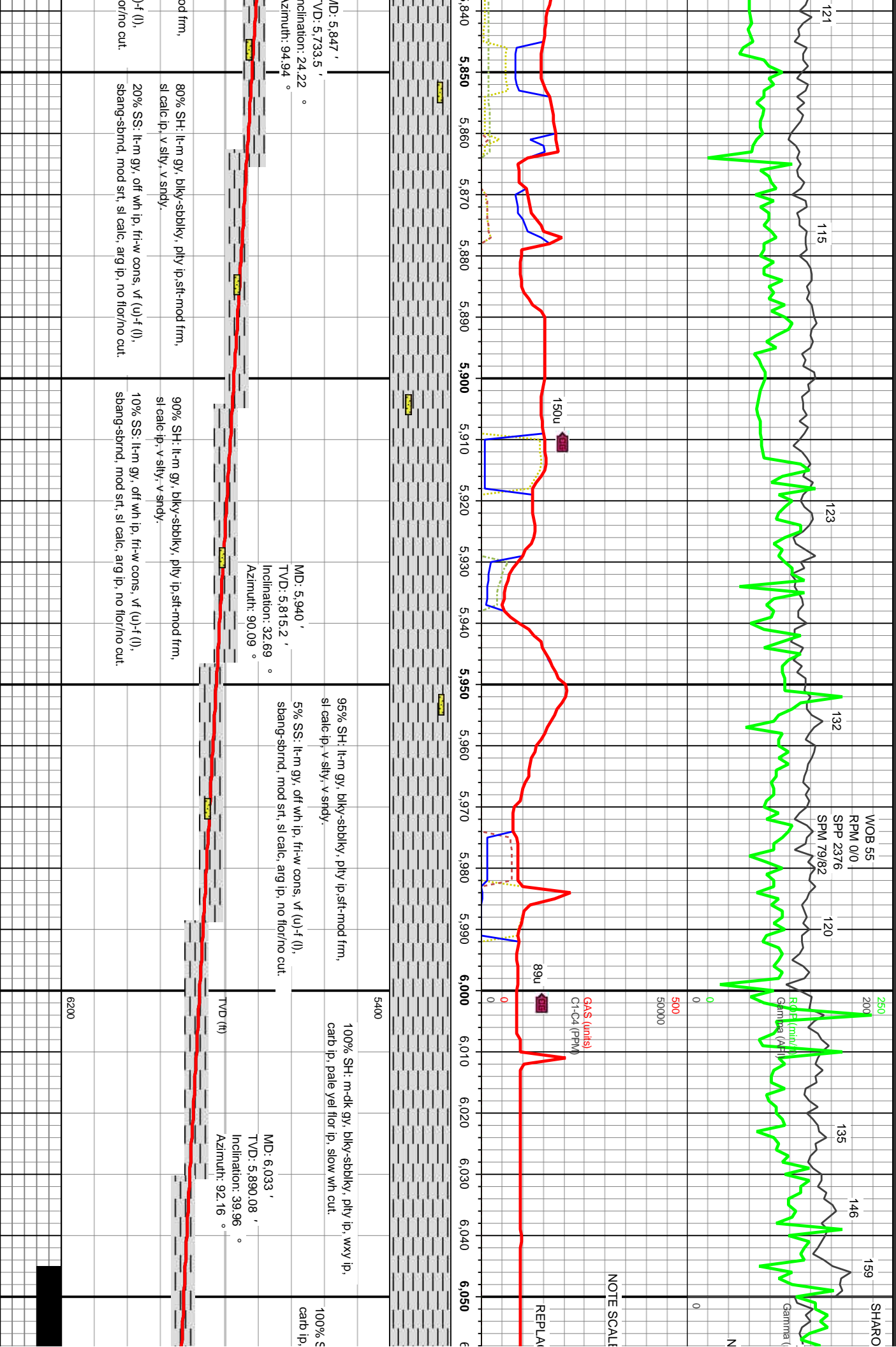
Interp Lith

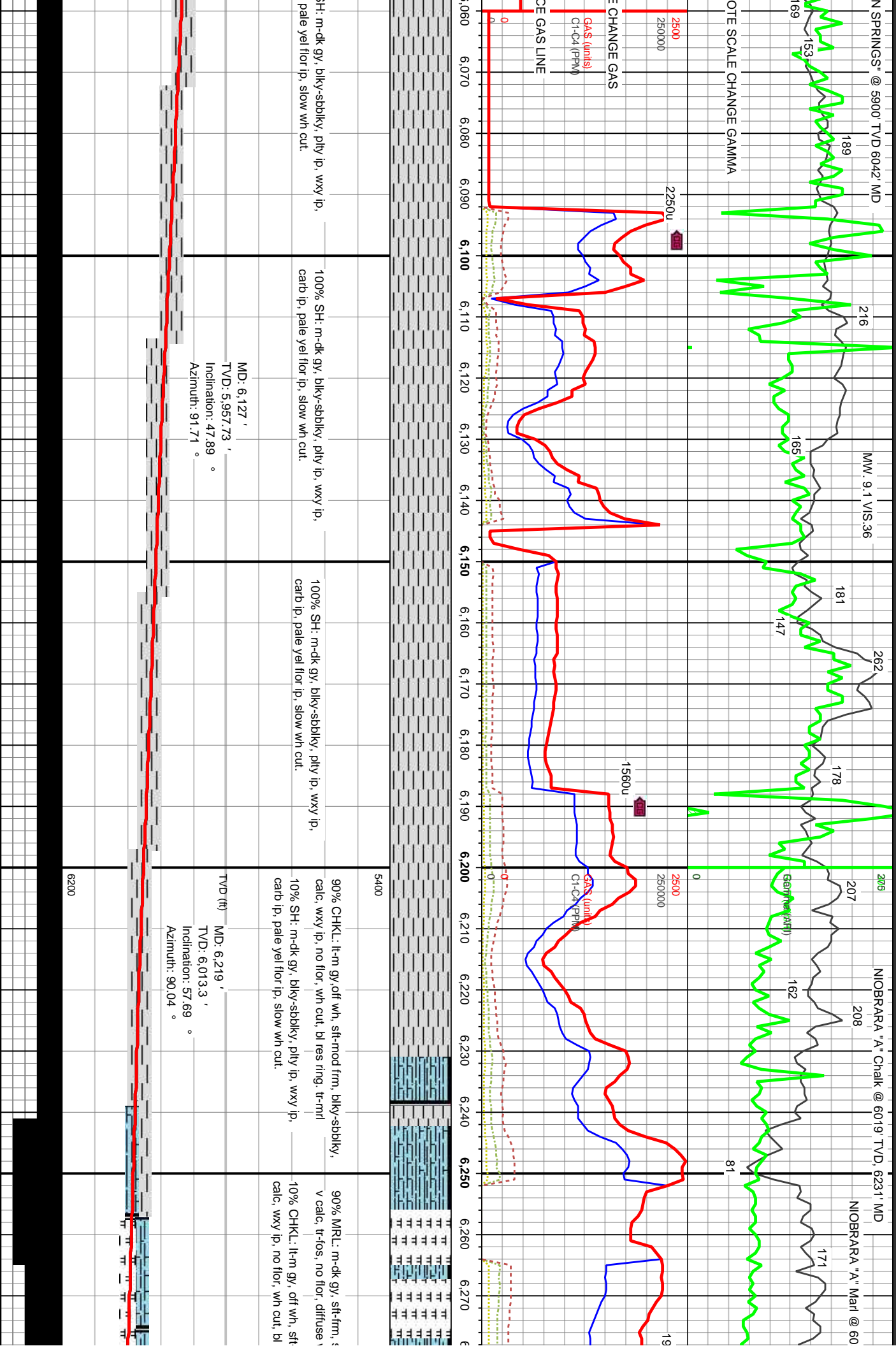
Well Bore  
TVD

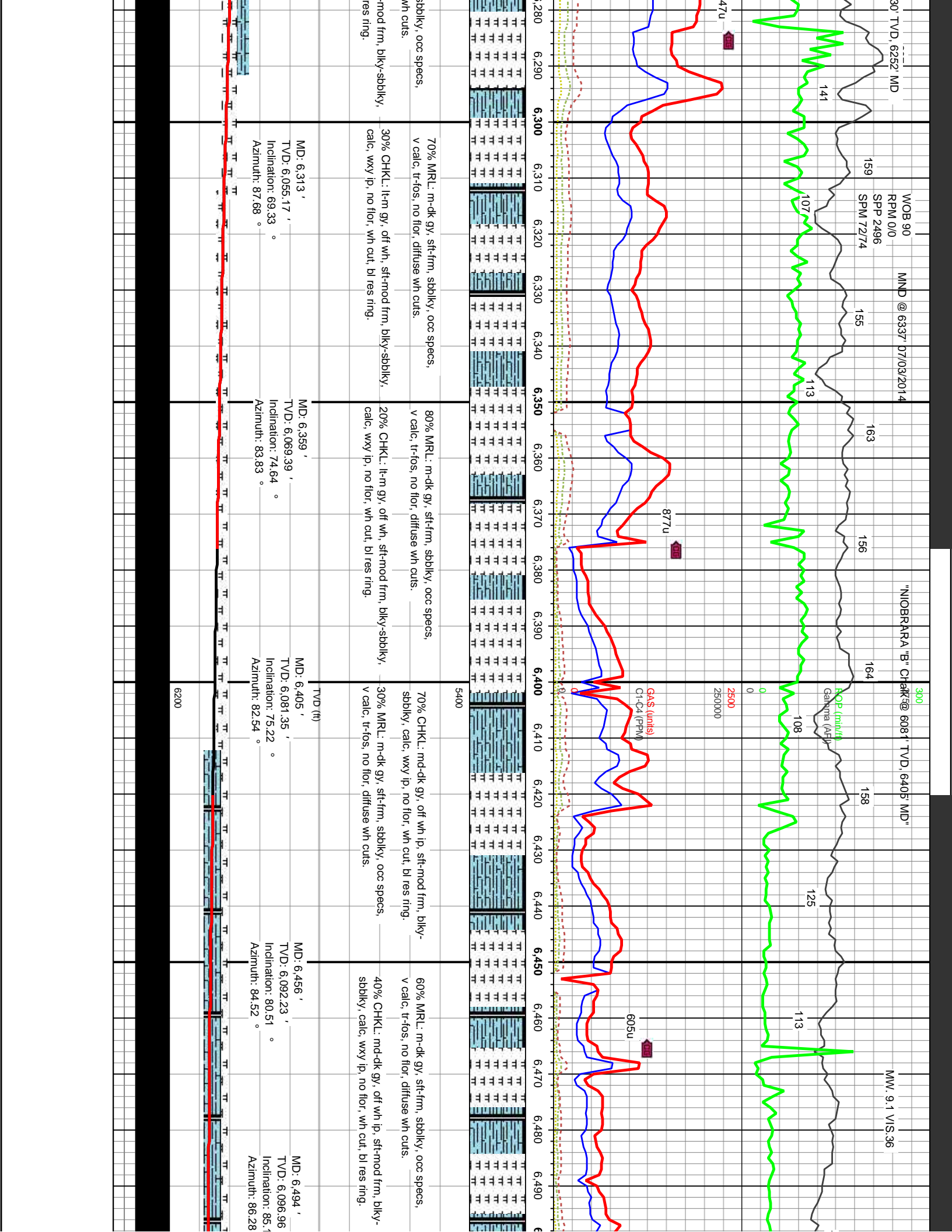
Gas Show

Images











TD Landing @ 6555' 07/03/2014

Bit #: 4  
Type: VSS13D  
Size: 6 1/8  
Depth In: 6,555'

Resume drilling 07/04/2014

Jets: 5x22

ROP (min)/S/N: 4006694

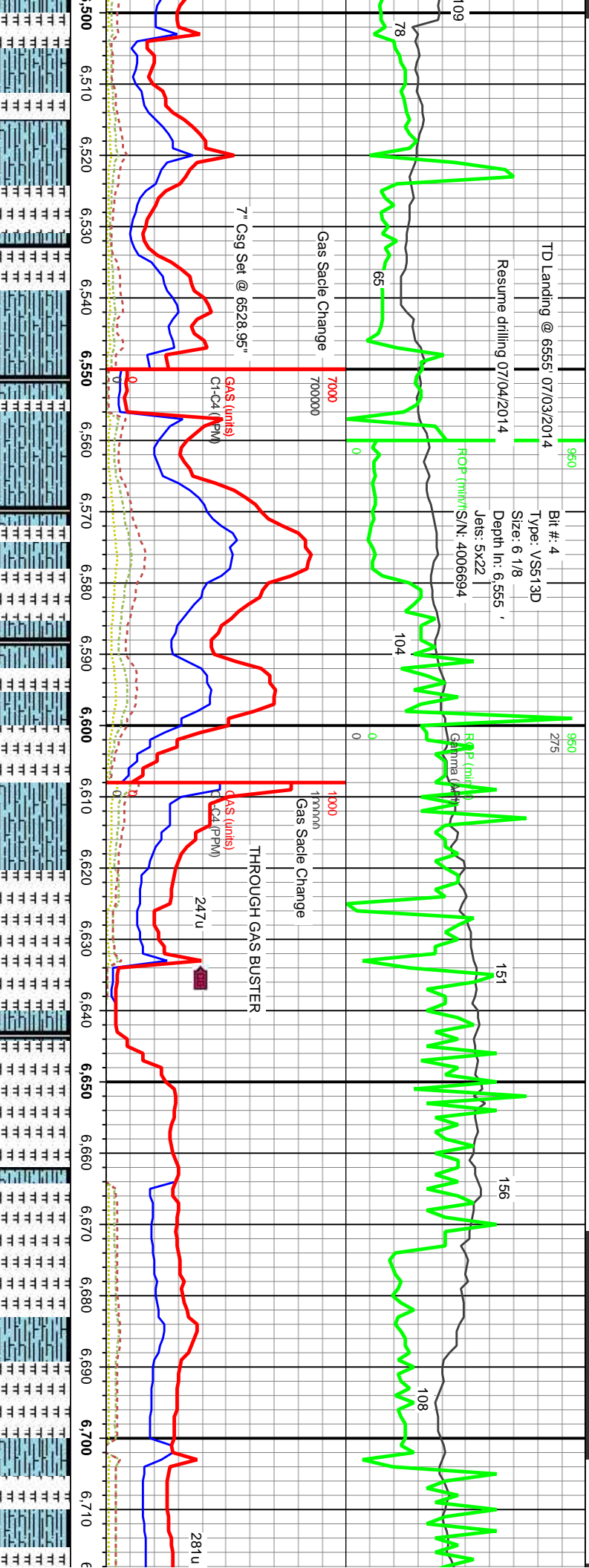
ROP (min)  
Gamma (API)

Gas Sacle Change

7" Csg Set @ 6528.95"

Gas Sacle Change

THROUGH GAS BUSTER



60% CHKL: m-dk gy, off wh ip, sft-mod frm, biky-sbblky, calc, wxy ip, no flor, wh cut, bl res ring.  
40% MRL: m-dk gy, sft-frm, sbblky, occ specs, v calc, tr-fos, no flor, diffuse wh cuts.

50% CHKL: m-dk gy, off wh ip, sft-mod frm, biky-sbblky, calc, wxy ip, no flor, wh cut, bl res ring.  
50% MRL: m-dk gy, sft-frm, sbblky, occ specs, v calc, tr-fos, no flor, diffuse wh cuts.

60% MRL: m-dk gy, sft-frm, sbblky, occ specs, v calc, tr-fos, no flor, diffuse wh cuts.  
40% CHKL: m-dk gy, off wh ip, sft-mod frm, biky-sbblky, calc, wxy ip, no flor, wh cut, bl res ring.

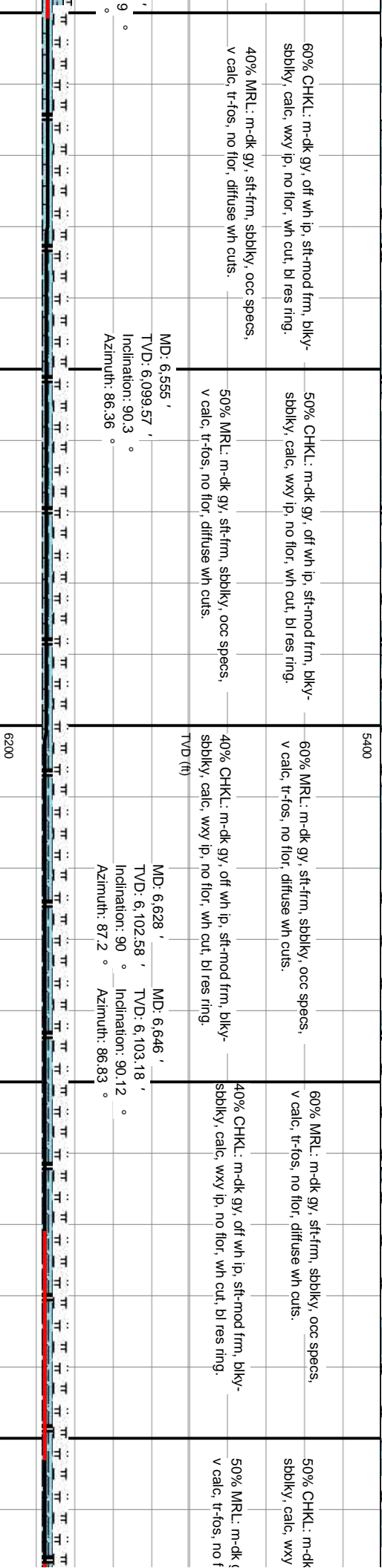
60% MRL: m-dk gy, sft-frm, sbblky, occ specs, v calc, tr-fos, no flor, diffuse wh cuts.  
40% CHKL: m-dk gy, off wh ip, sft-mod frm, biky-sbblky, calc, wxy ip, no flor, wh cut, bl res ring.

50% CHKL: m-dk gy, sft-frm, sbblky, occ specs, v calc, tr-fos, no flor, diffuse wh cuts.  
50% MRL: m-dk gy, sft-frm, sbblky, occ specs, v calc, tr-fos, no flor, diffuse wh cuts.

MD: 6,555'  
TVD: 6,099.57'  
Inclination: 90.3°  
Azimuth: 86.36°

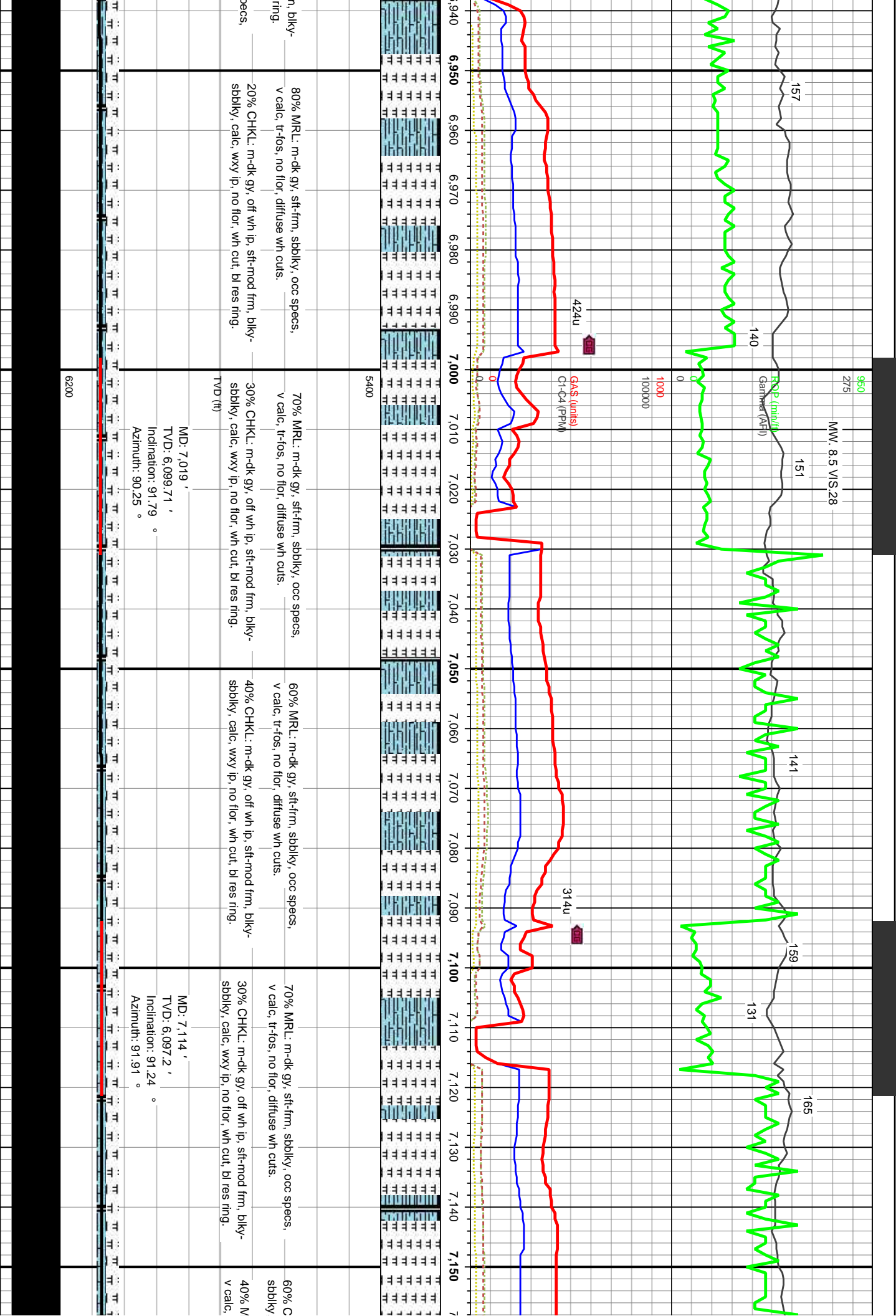
MD: 6,628'  
TVD: 6,102.58'  
Inclination: 90°  
Azimuth: 87.2°

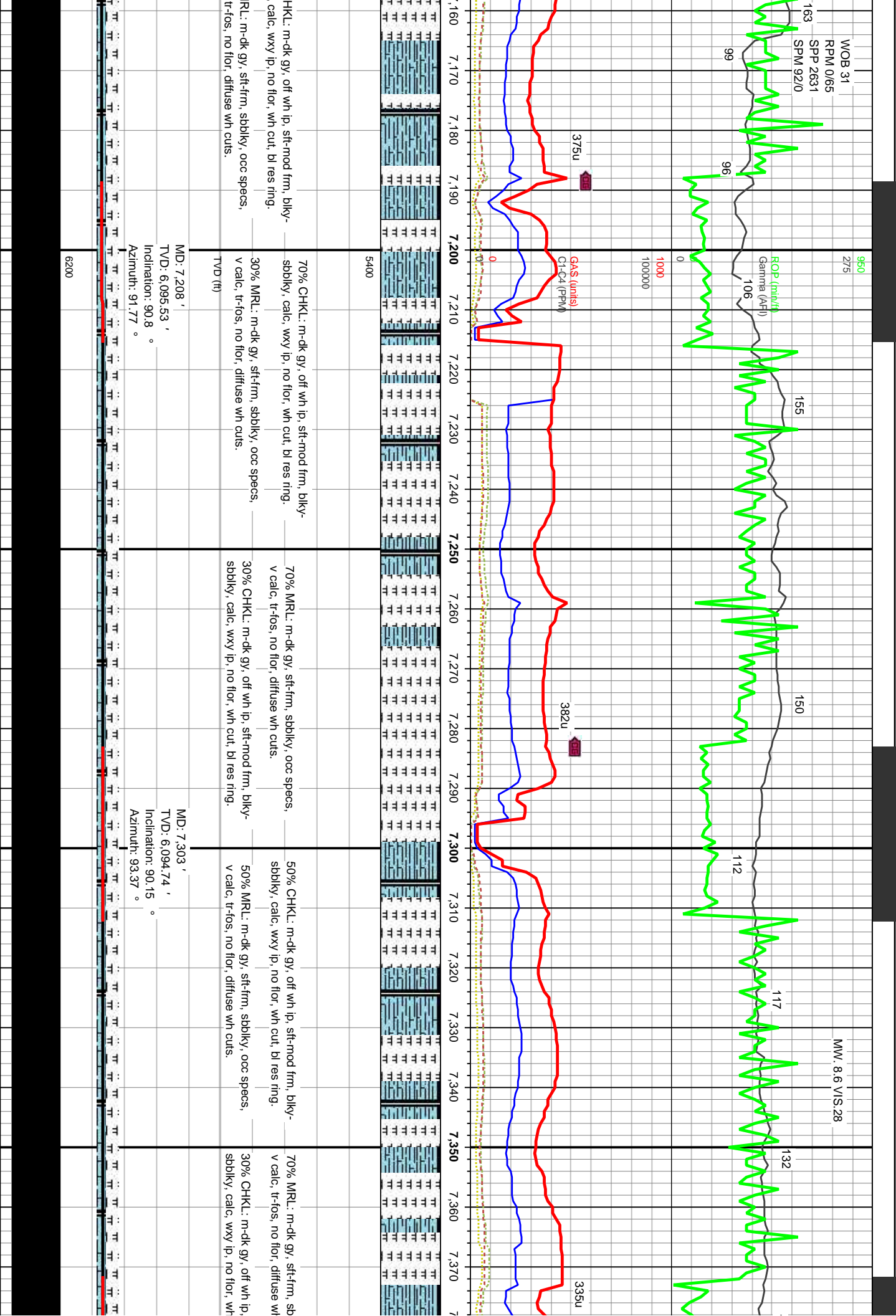
MD: 6,646'  
TVD: 6,103.18'  
Inclination: 90.12°  
Azimuth: 86.83°

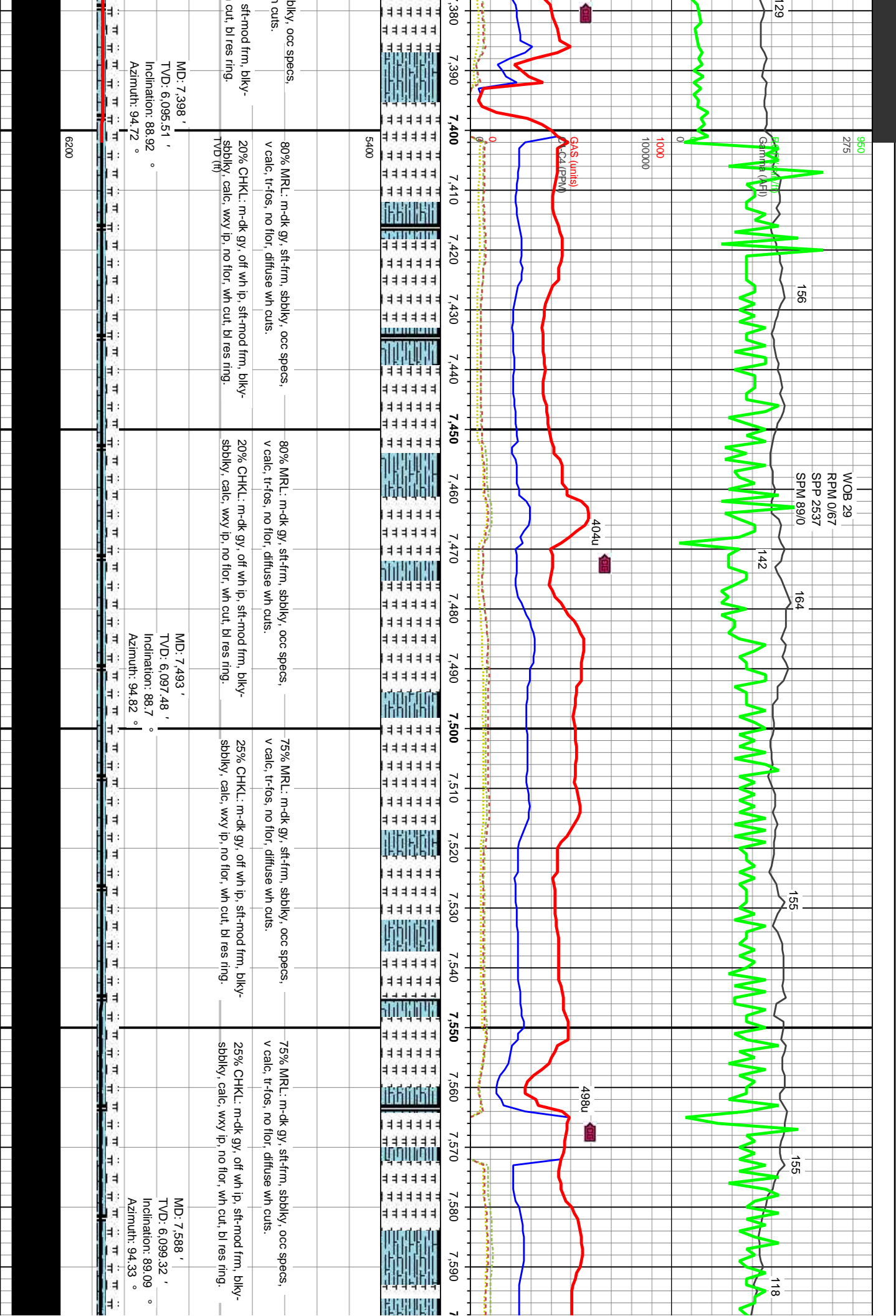


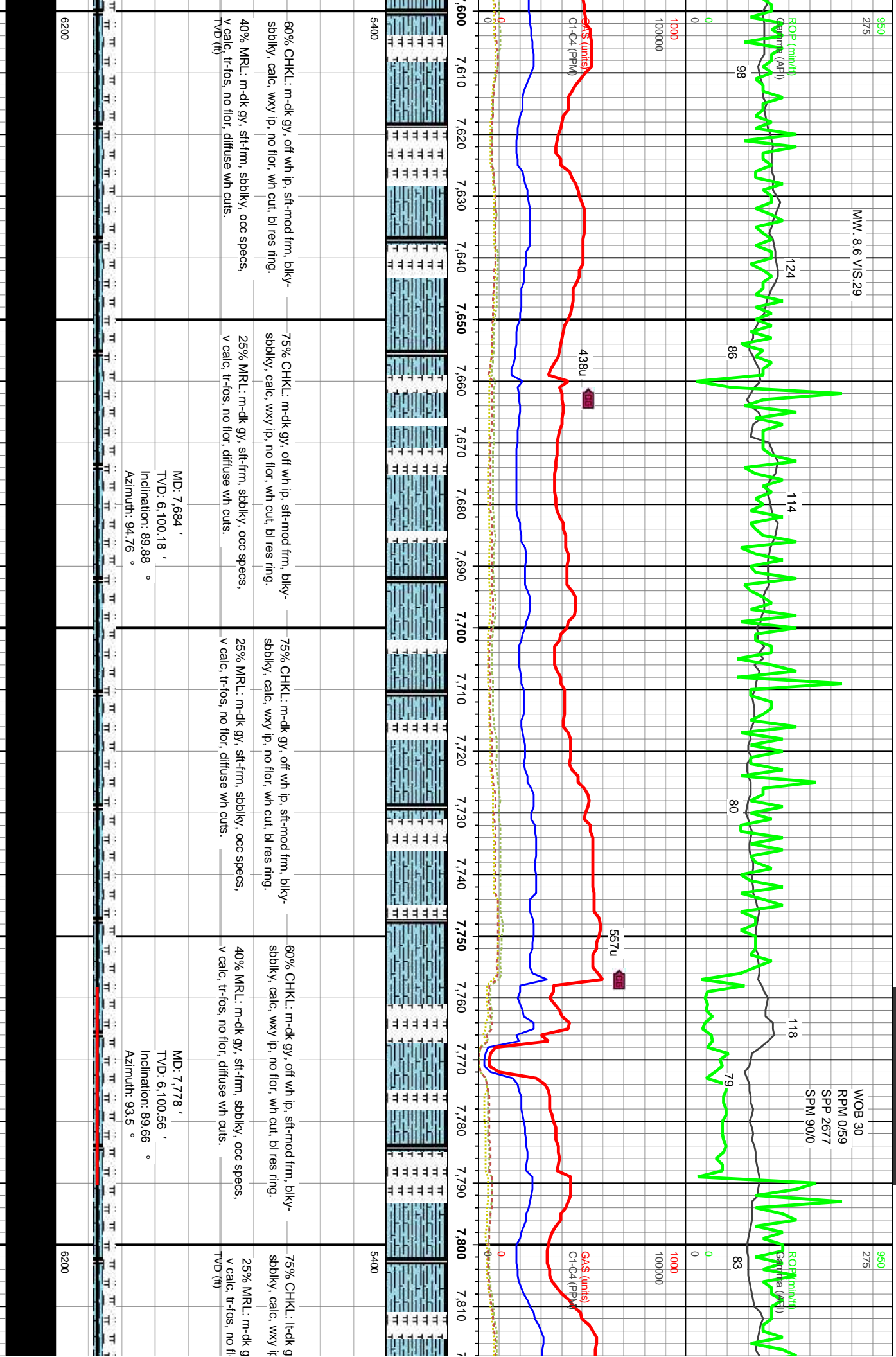














MIND @ 7998 07/05/2014

MMW 8.6 VIS.29  
950  
2/75

ROP (in/ft)  
Gamma (API)  
0  
1000  
100000

GAS (units)  
G1-G4 (PPM)

0

4581

5400

TVD (ft)

MD: 7.873 '  
TVD: 6,100.96 '  
Inclination: 89.85 °  
Azimuth: 93.2 °

MD: 7.968 '  
TVD: 6,101.76 '  
Inclination: 89.19 °  
Azimuth: 91.68 °

y, off wh ip, sft-mod frm, blk-  
y, no flr, wh cut, bl res ring.  
y, sft-frm, sbbkly, occ specs,  
or, diffuse wh cuts.

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

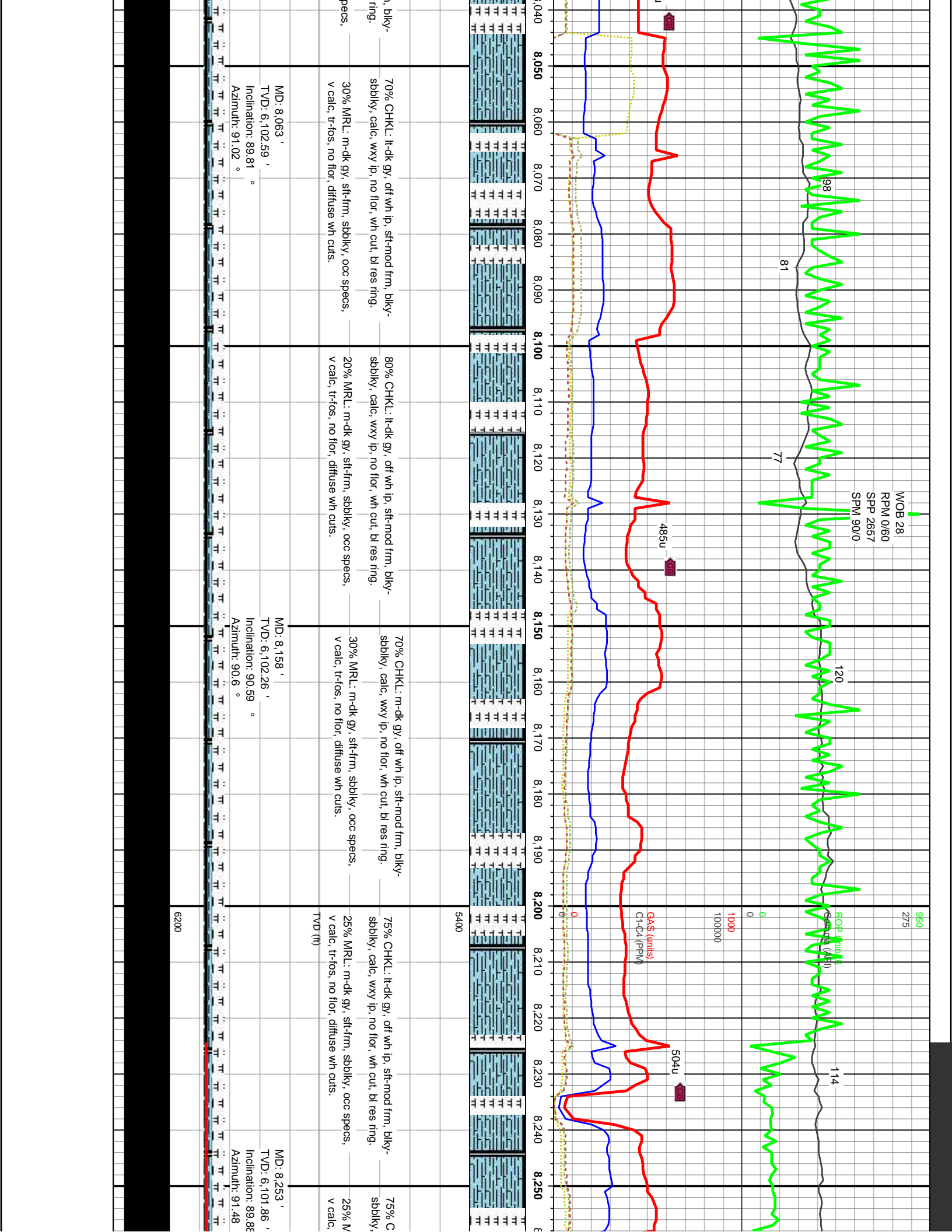
80% CHKL: m-dk gy, off wh ip, sft-mod frm, blk-  
sbbkly, calc, wxy ip, no flr, wh cut, bl res ring.  
20% MRL: m-dk gy, sft-frm, sbbkly, occ specs,  
v calc, tr-fos, no flr, diffuse wh cuts.

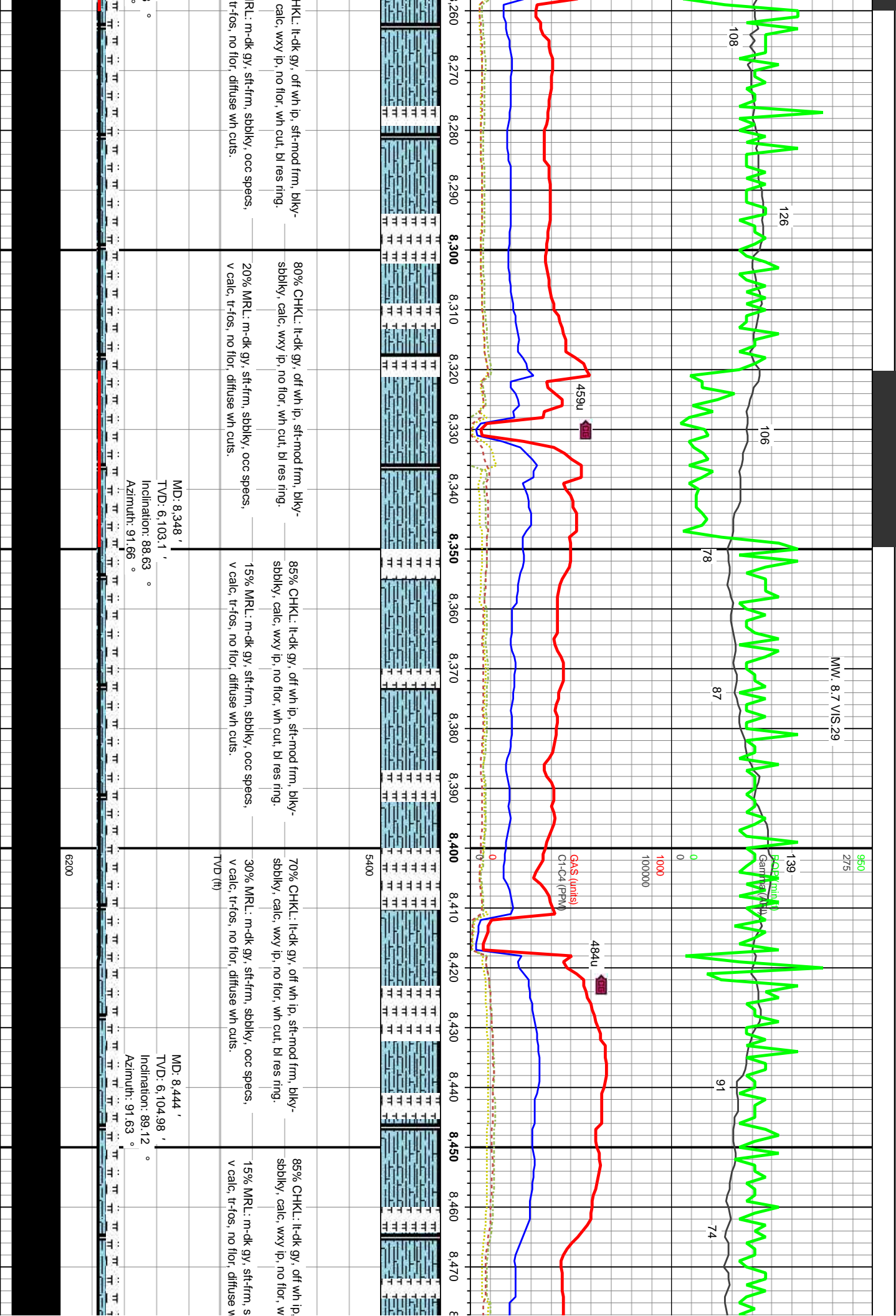
80% CHKL: lt-dk gy, off wh ip, sft-mod frm, blk-  
sbbkly, calc, wxy ip, no flr, wh cut, bl res ring.  
20% MRL: m-dk gy, sft-frm, sbbkly, occ specs,  
v calc, tr-fos, no flr, diffuse wh cuts.

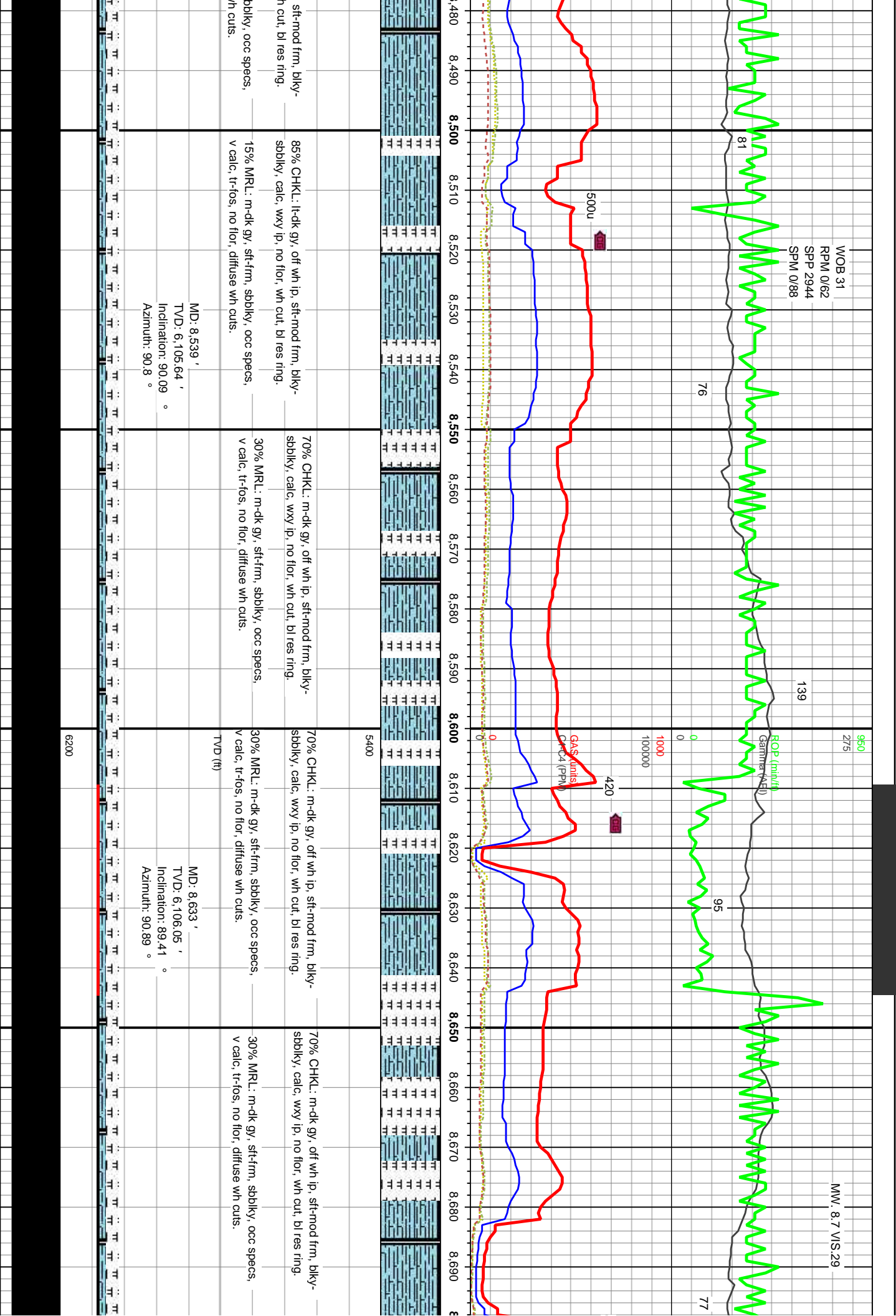
80% CHKL: lt-dk gy, off wh ip, sft-mod frm  
sbbkly, calc, wxy ip, no flr, wh cut, bl res  
20% MRL: m-dk gy, sft-frm, sbbkly, occ s  
v calc, tr-fos, no flr, diffuse wh cuts.

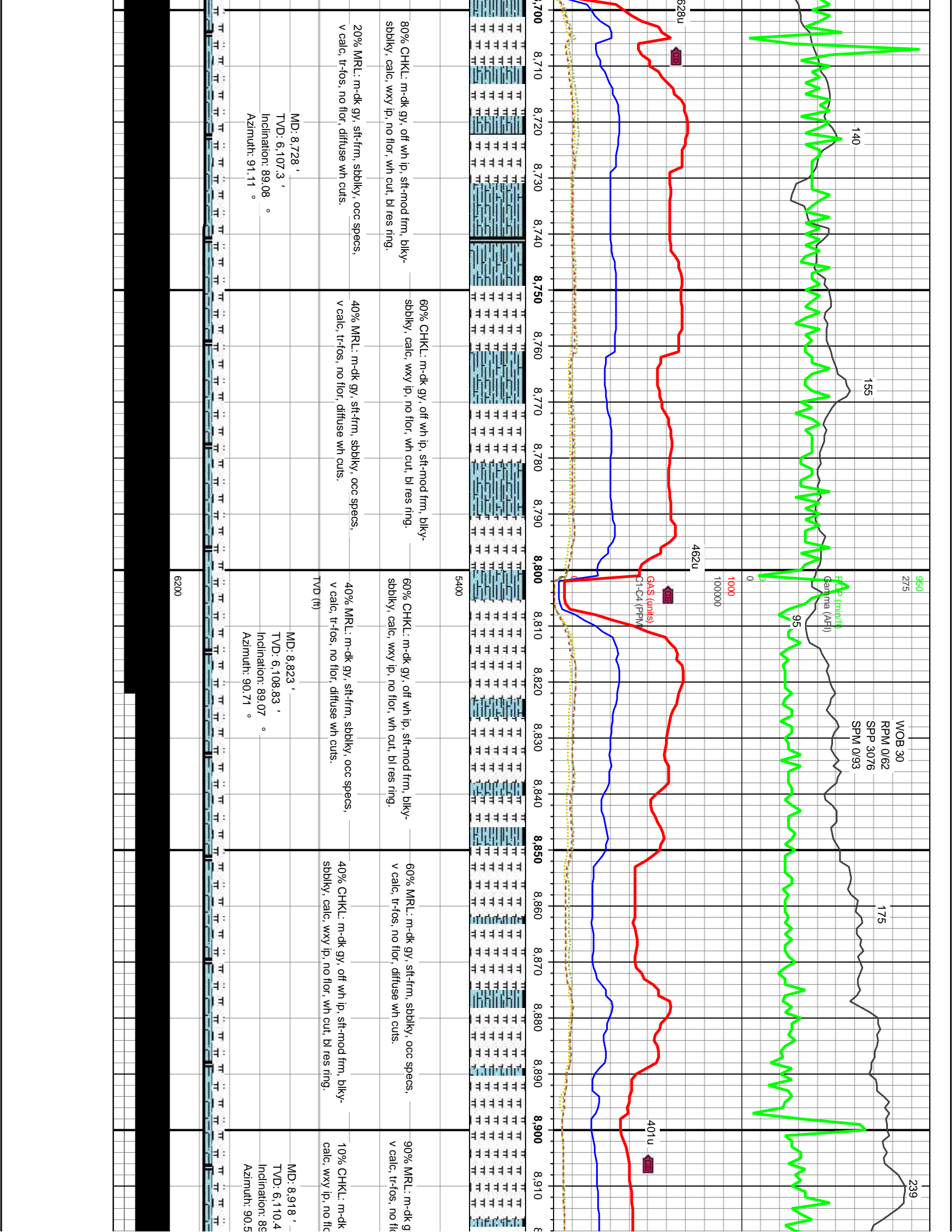
6200



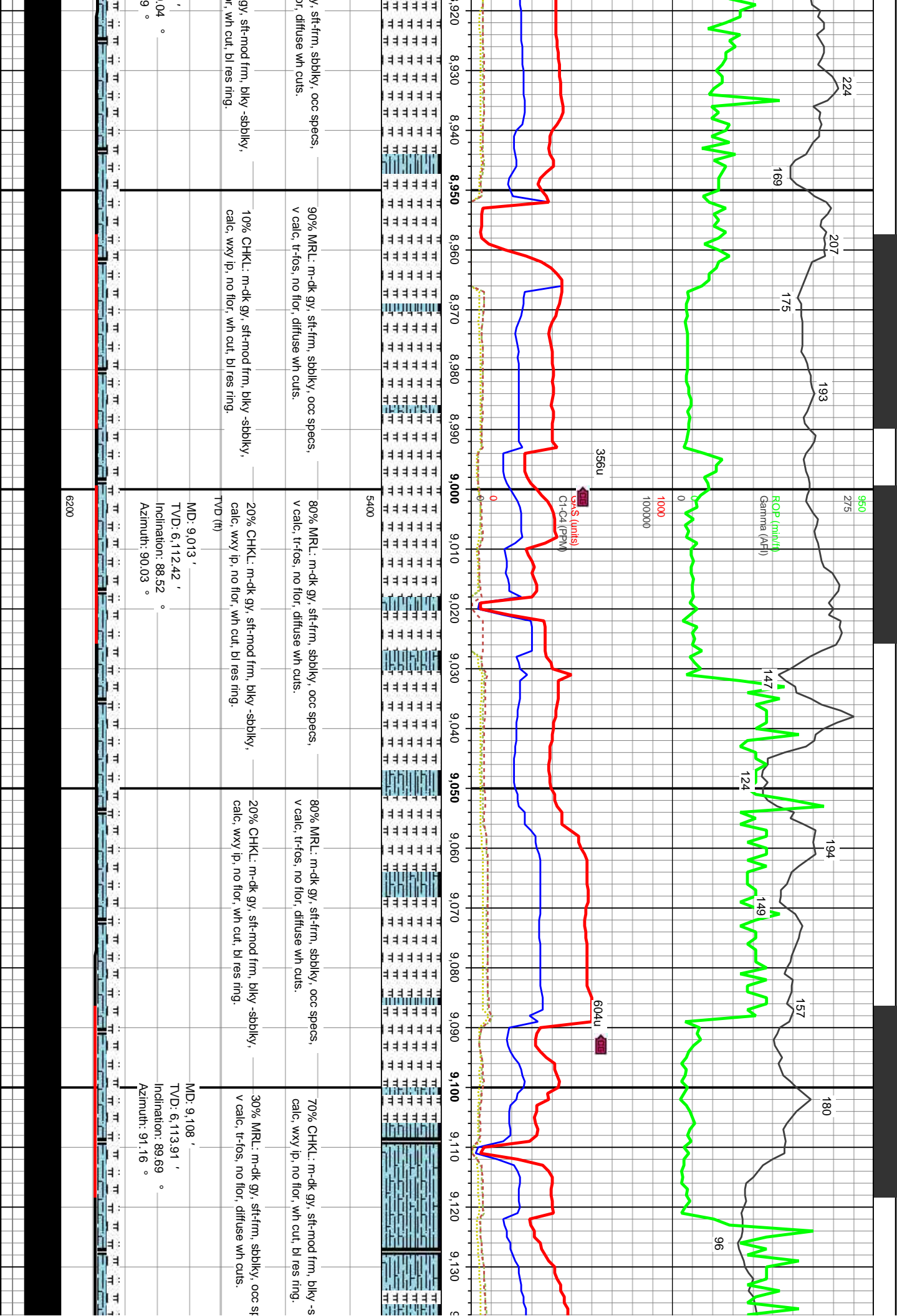




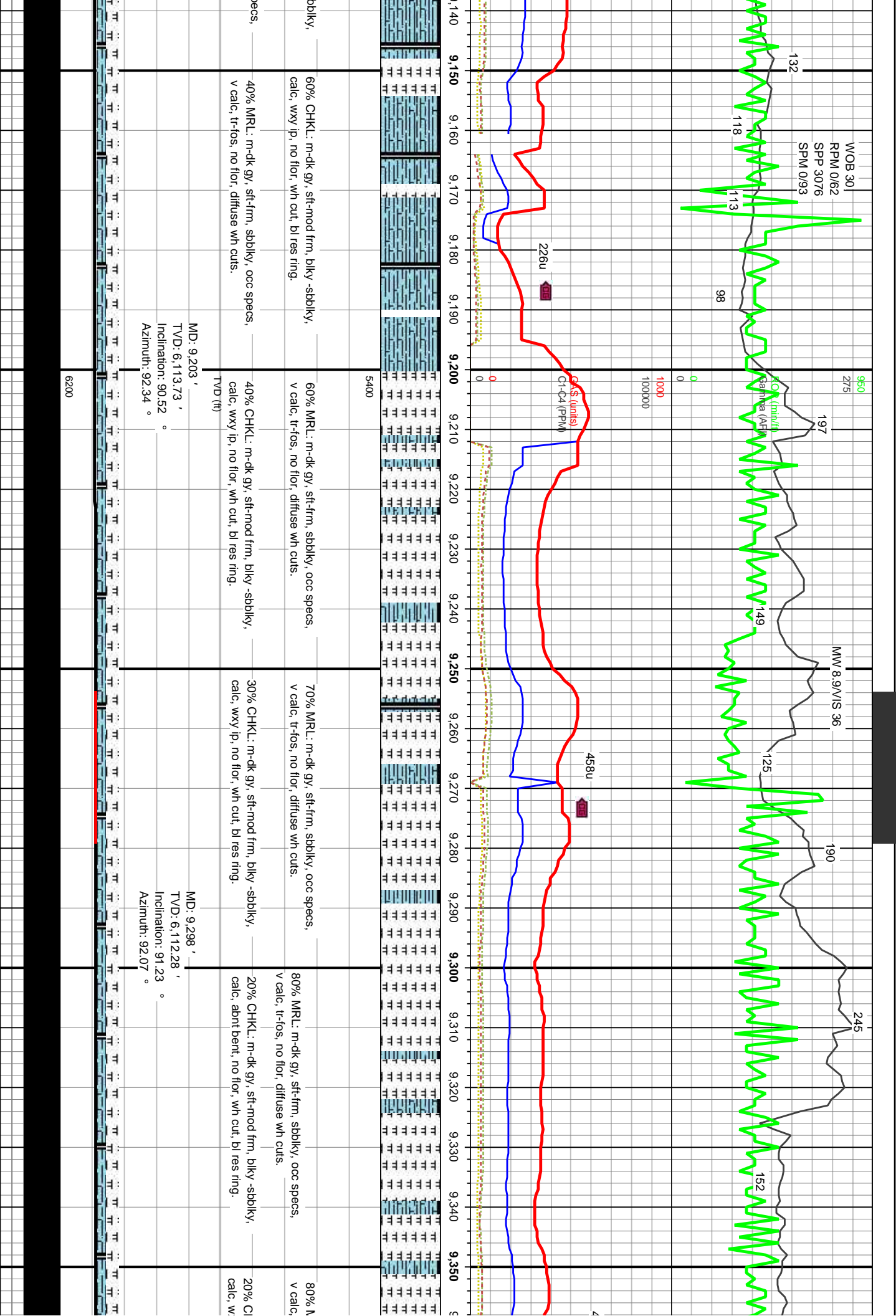


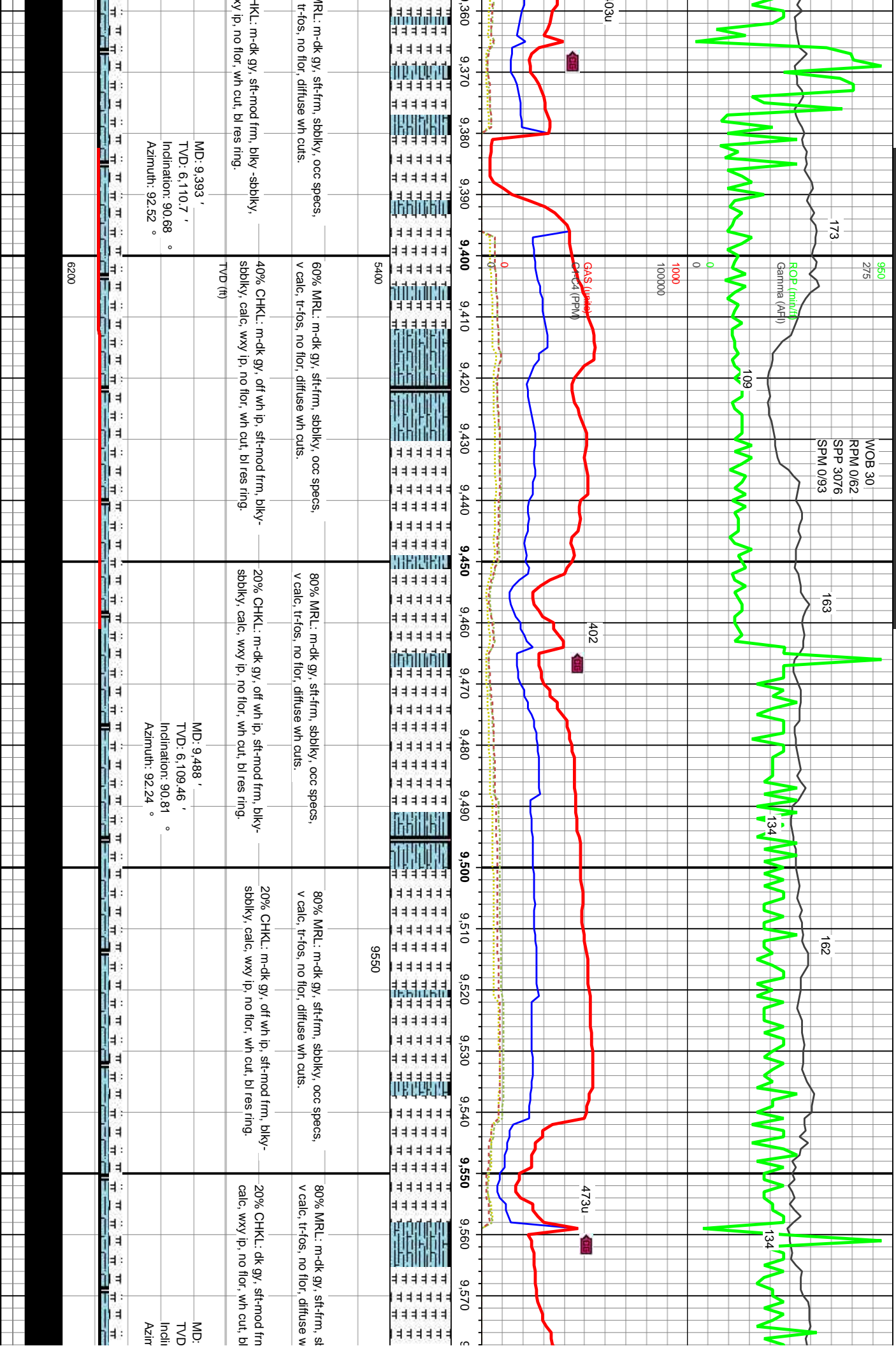


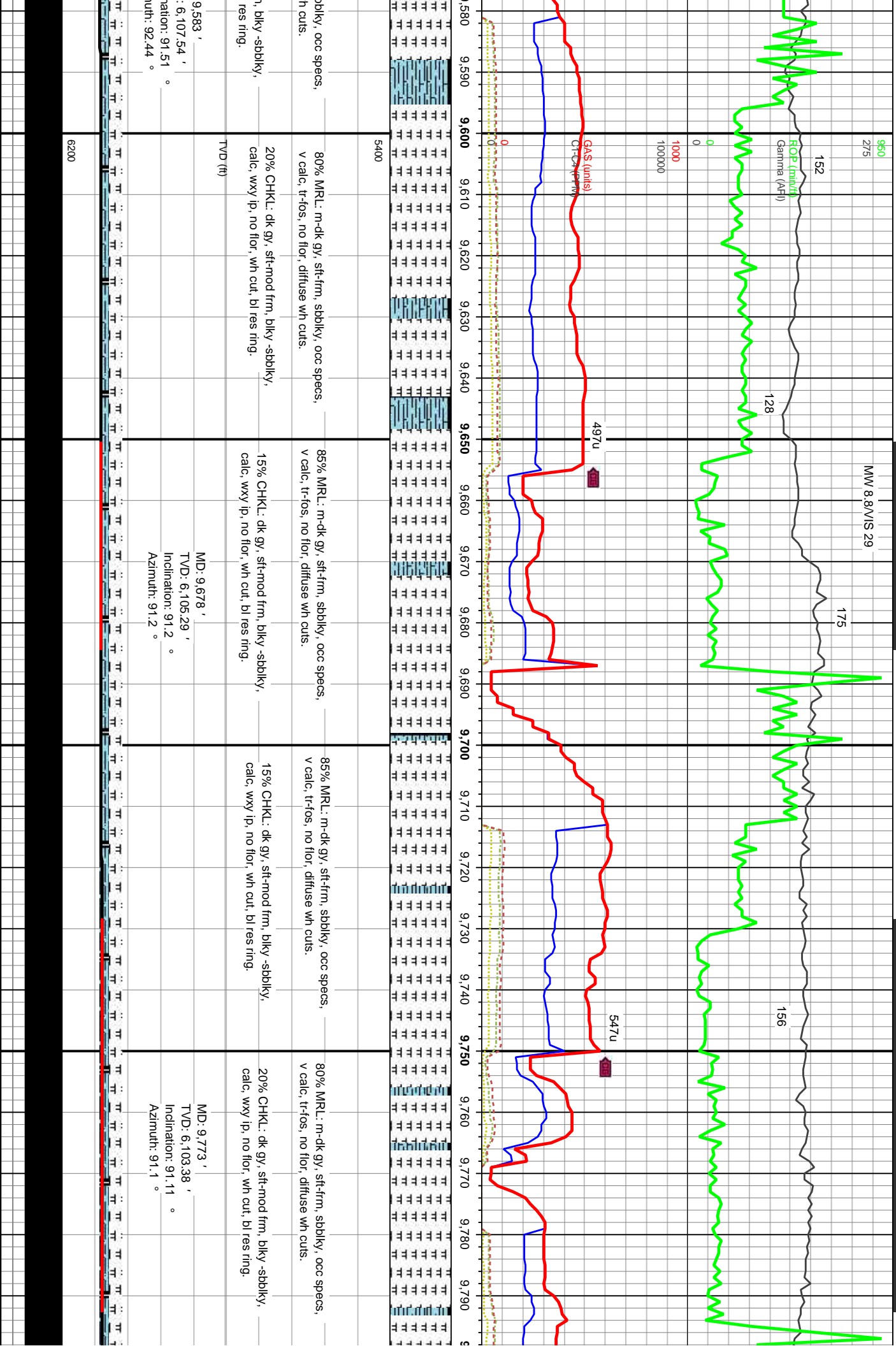


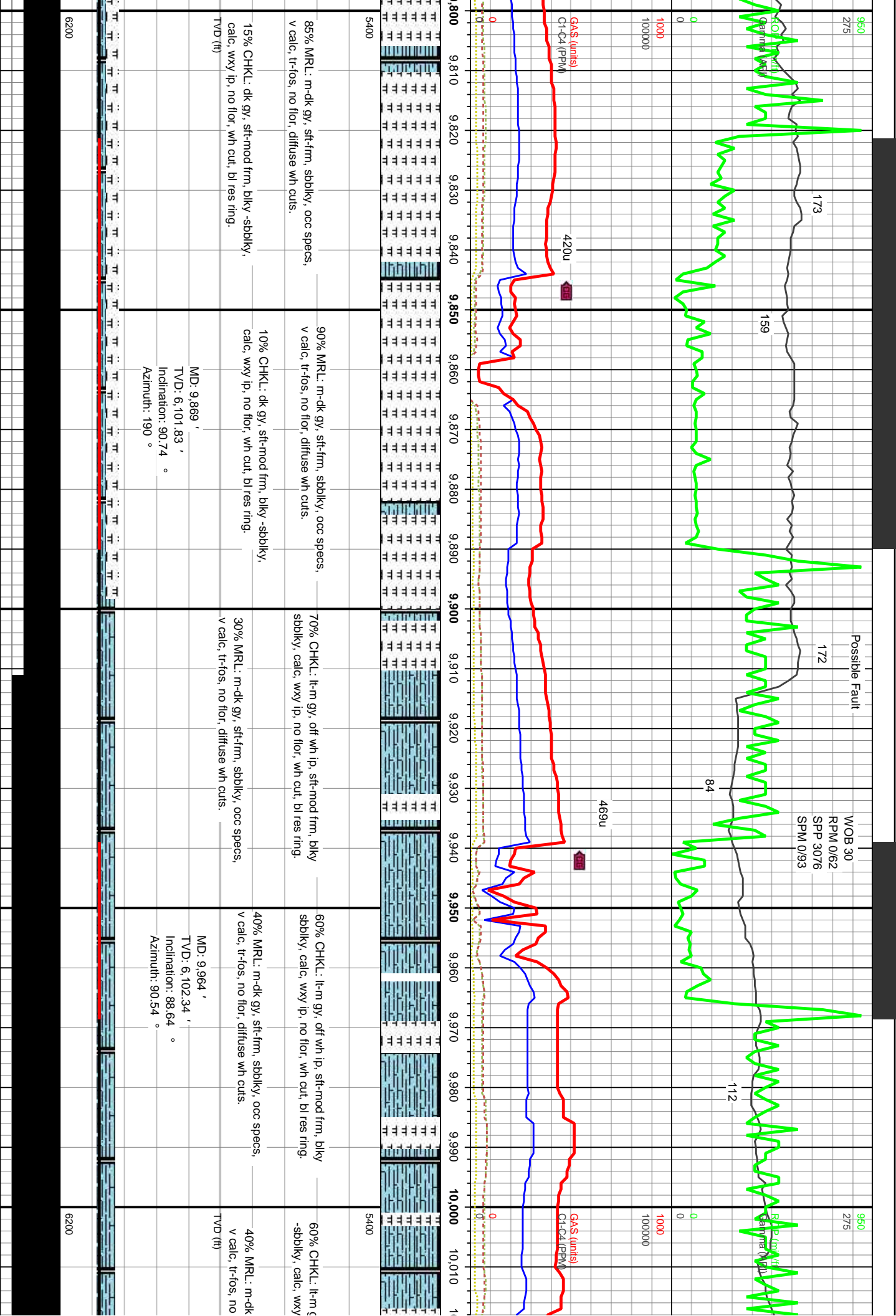








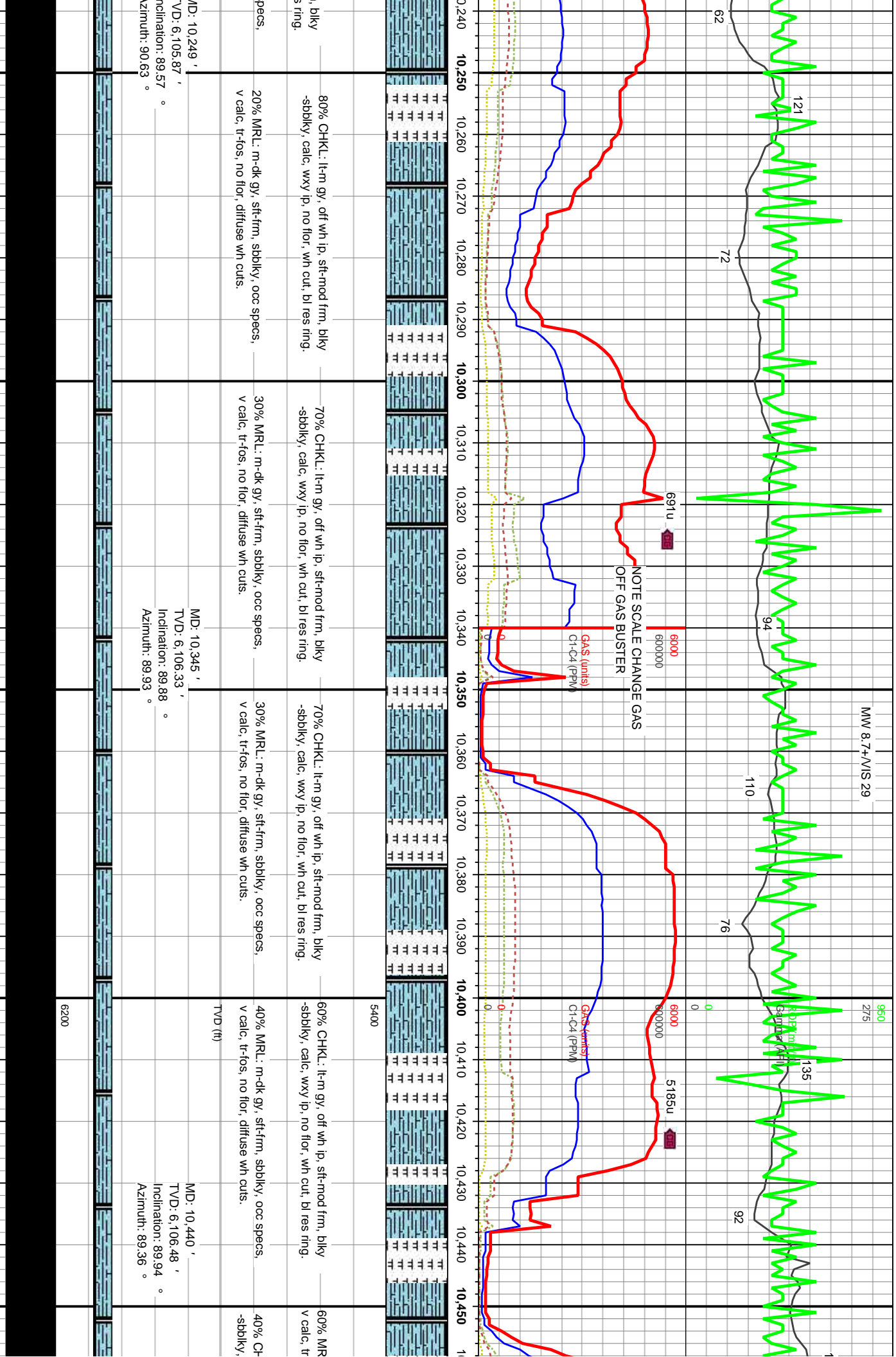


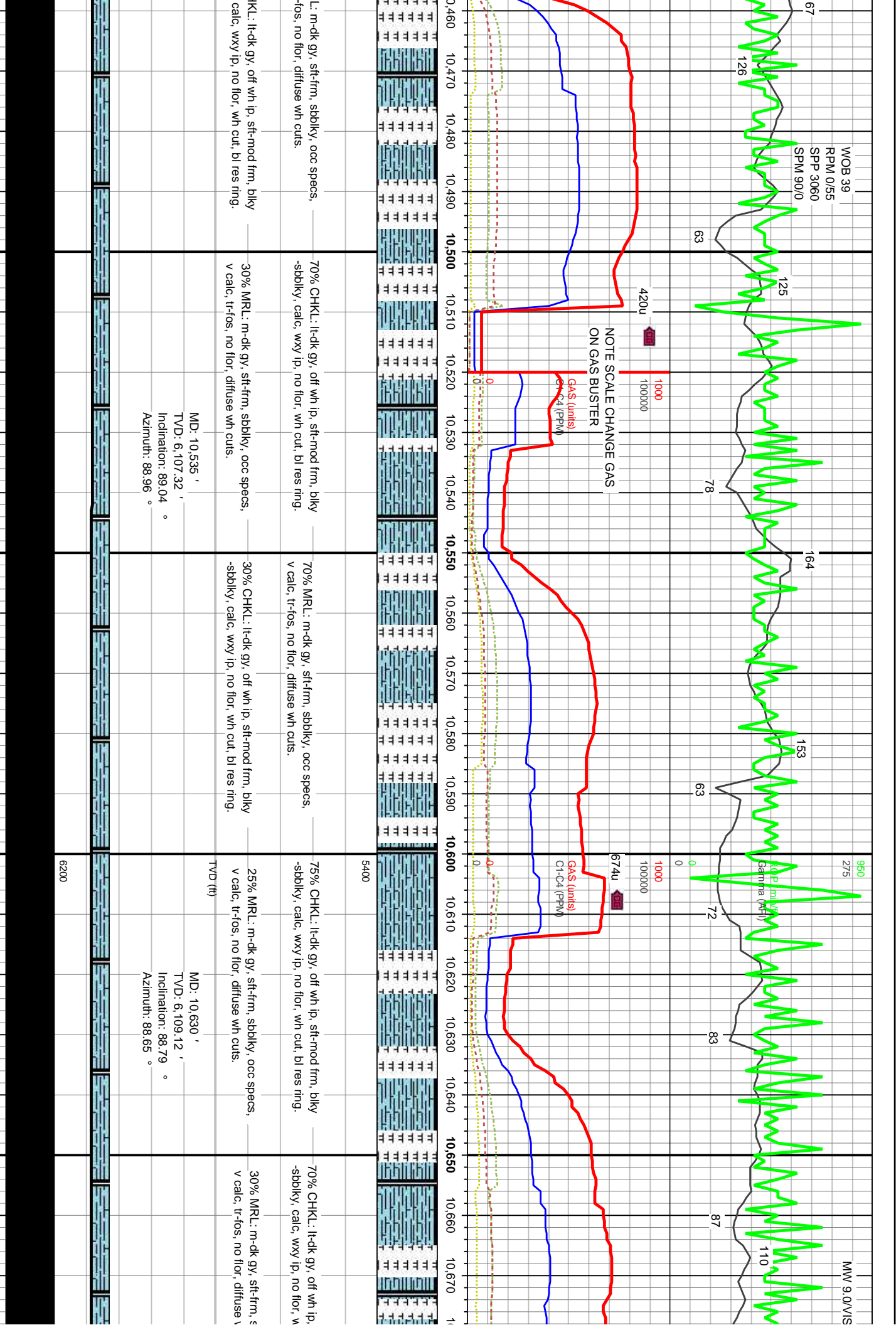


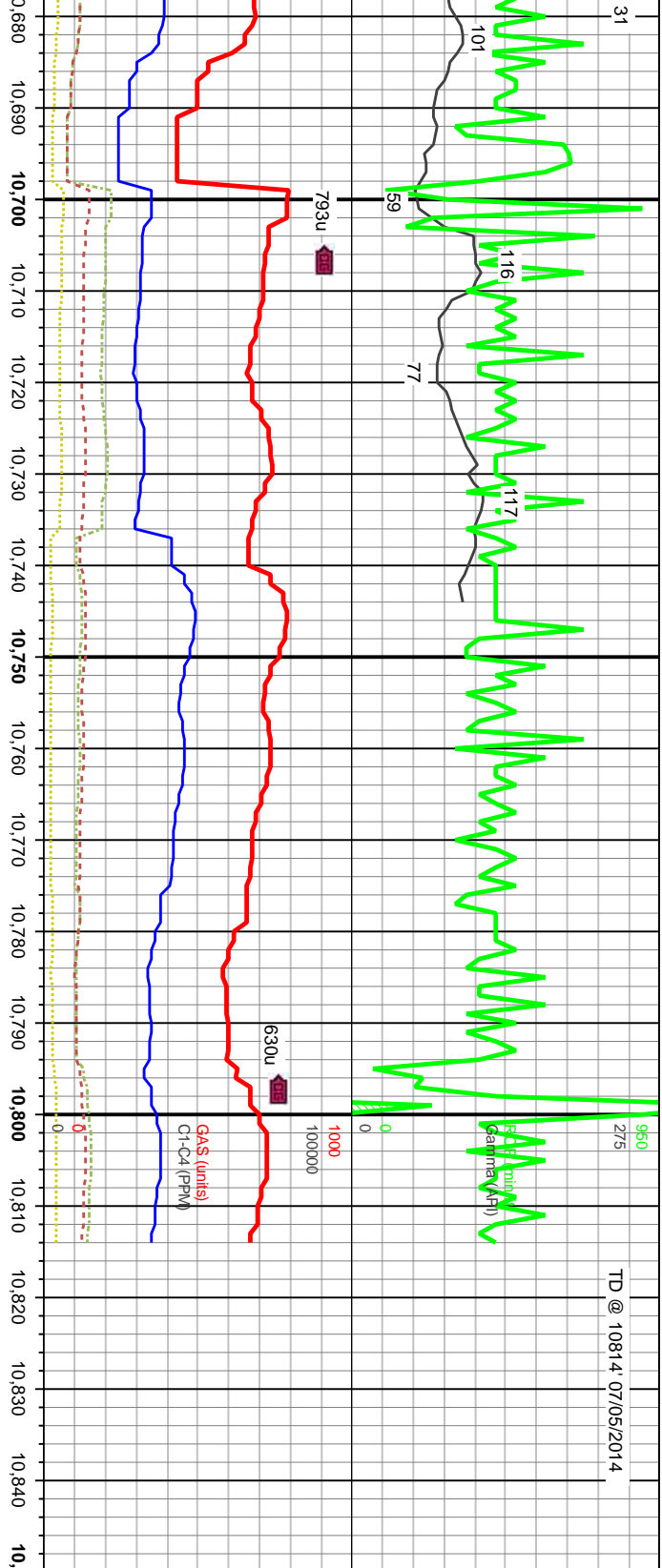












sft-mod frm, blkly wh cut, bl res ring.	60% CHKL: lt-dk gy, off wh ip, sft-mod frm, blkly -sbbkly, calc, wxy ip, no flor, wh cut, bl res ring.	70% CHKL: lt-dk gy, off wh ip, sft-mod frm, blkly -sbbkly, calc, wxy ip, no flor, wh cut, bl res ring.	5400
tblbky, occ specs, wh cuts.	40% MRL: m-dk gy, sft-frn, sbbkly, occ specs, v calc, tr-fos, no flor, diffuse wh cuts.	30% MRL: m-dk gy, sft-frn, sbbkly, occ specs, v calc, tr-fos, no flor, diffuse wh cuts.	40% MRL: m-dk gy, sft-frn, sbbkly, occ specs, v calc, tr-fos, no flor, diffuse wh cuts.
	MD: 10,742 ' TVD: 6,111.9 ' Inclination: 88.36 ° Azimuth: 88.1 °		TVD BIT PROJECTION MD: 10,814 ' TVD: 6,113.97 ' Inclination: 88.36 ° Azimuth: 88.1 °
			6200